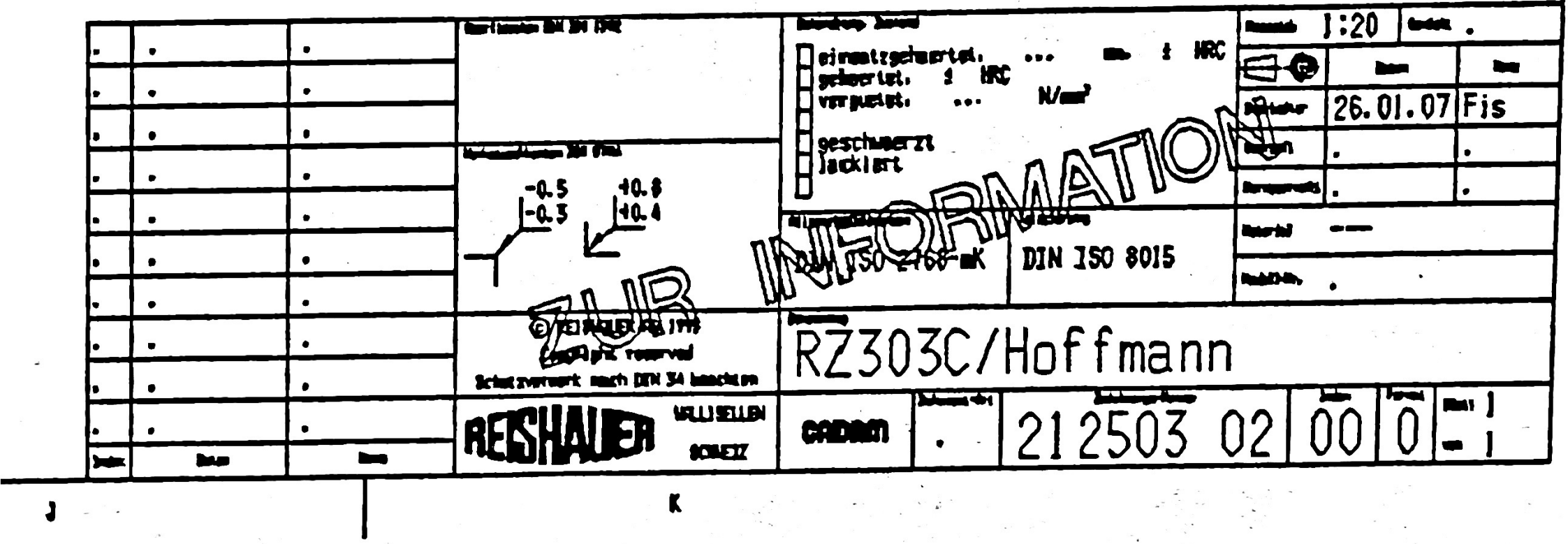
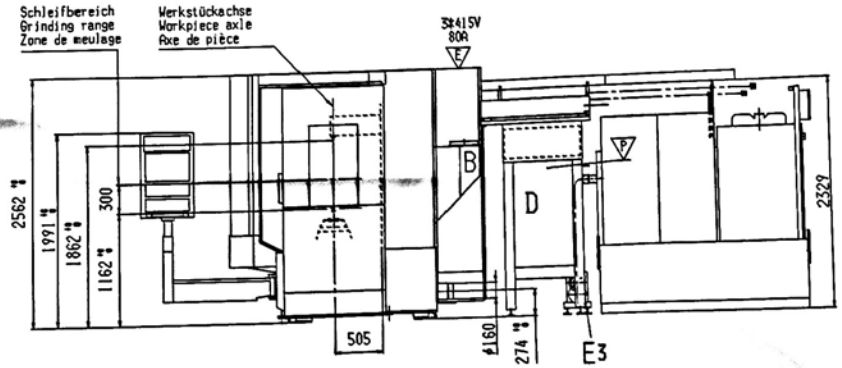
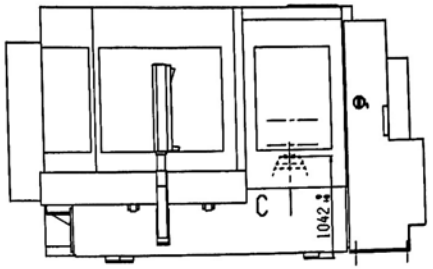
Verbindungen : B - D 212 499.00
Liaisons : B - G 212 498.00
Connections : E - E3 212 208.04







B Elektroschrank
Armoire électrique RZ303C
Electrical enclosure

C Maschine
Machine RZ303C
Machine

D Hydraulikaggregat
Ensemble hydraulique
Hydraulic unit

E Filteranlage
Agrégat de filtration Hoffmann
Filtering unit

E_3 Rückführpumpe
Pompe de renvoi
Return feed pump

Oelauffangwanne
Cuve collectrice d'huile
Oil collecting basin

Anschluss: elektrisch
Connexion: électrique
Connection: electric

Anschluss: Druckluft
Connexion: air comprimé
Connection: compressed air

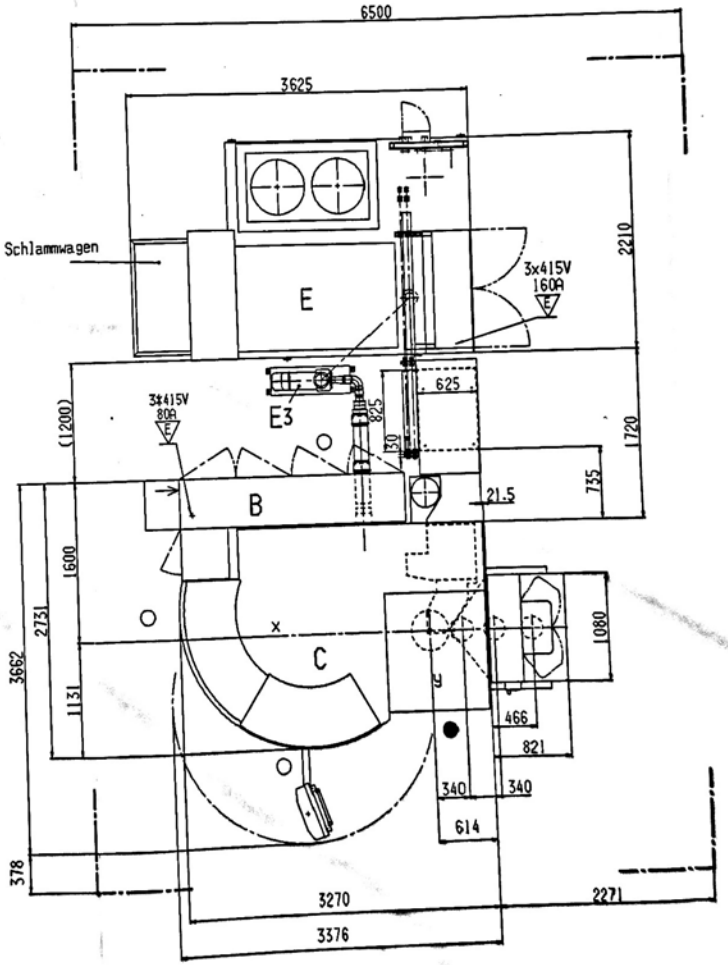
Hauptschalter
Interrupteur principal
Main switch

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

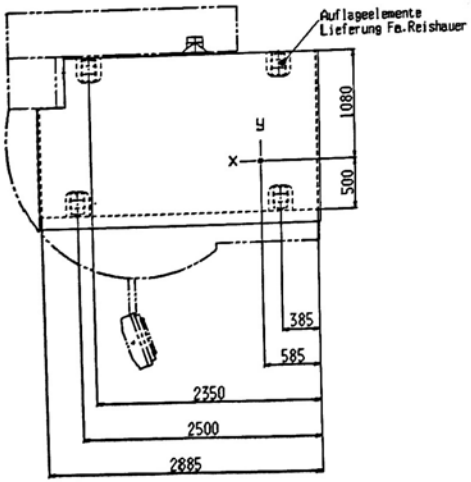
Nebenbedienungsseite
Place de commande secondaire
Auxiliary operator's stand

Luftaustritt
Sortie d'air
Air exit

Platzbedarf
Encombrement
Space requirement

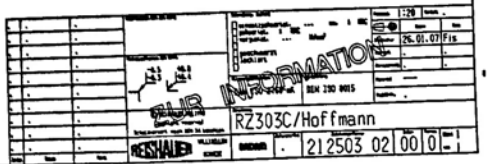


Auflagestellen
Points d'appui
Supporting pads

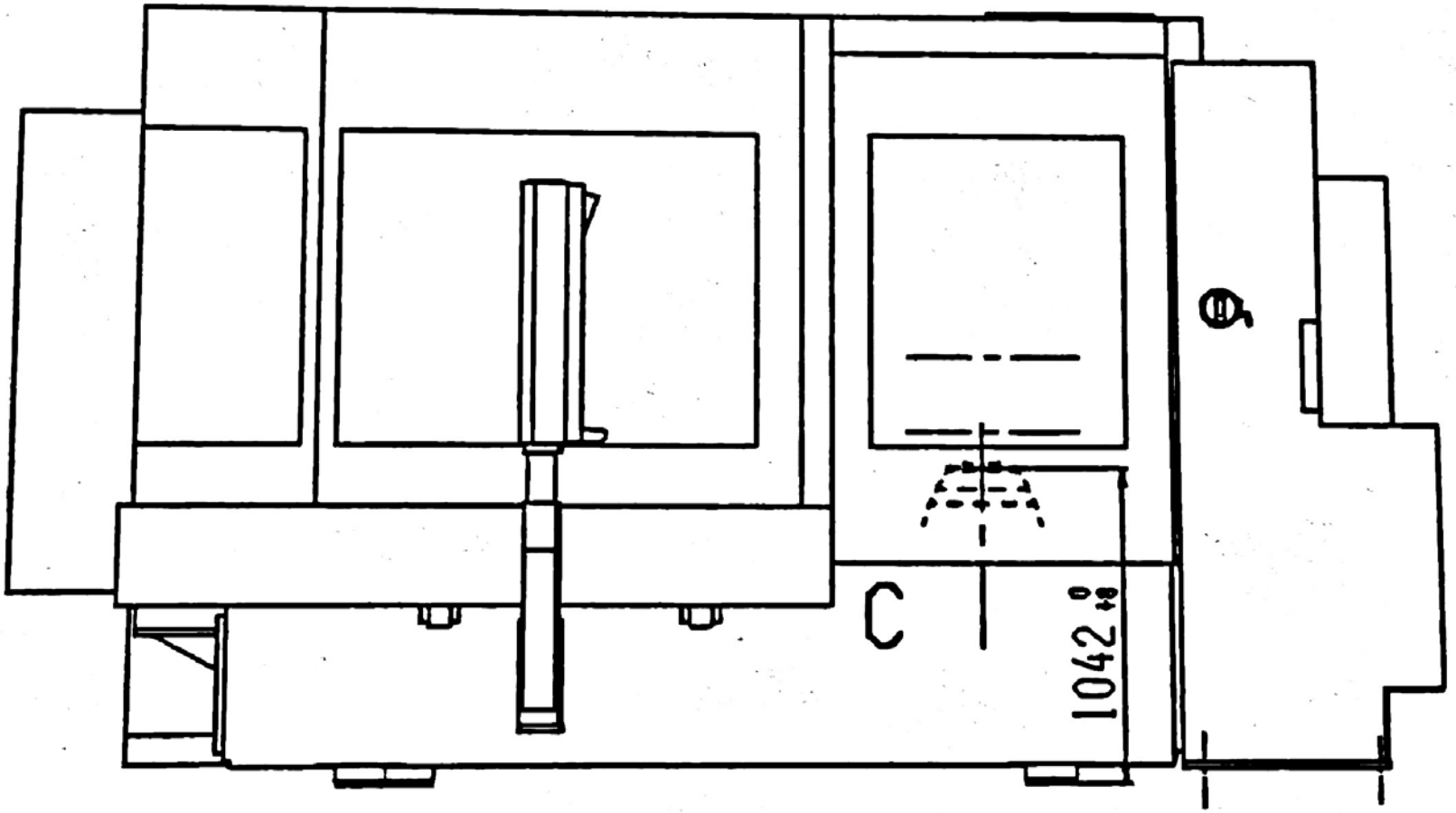


BMC	Schlauchlänge A	Prozessanschluss (2x)	DN
5025	582 371.00 L=	502 075.00	25
5027	582 513.00 L=1050		25
5027	582 371.00 L=	502 078.00	25
5028	582 513.00 L=1050		25
5179	582 369.00 L=	502 075.00	16
5173	582 426.00 L=1250		16
5026	582 369.00 L=	502 075.00	16
5225	582 462.00 L=1250		16
522511	582 464.00 L=400		16
522558	581 700.00 L=1000		16
522534	582 426.00 L=1250		16
522537	582 426.00 L=1250		16
522538	580 877.00 L=600		6
522539	580 877.00 L=600		6

Verbindungen : B - D 212 499.00
Liaisons : B - G 212 498.00
Connections : E - E3 212 208.04

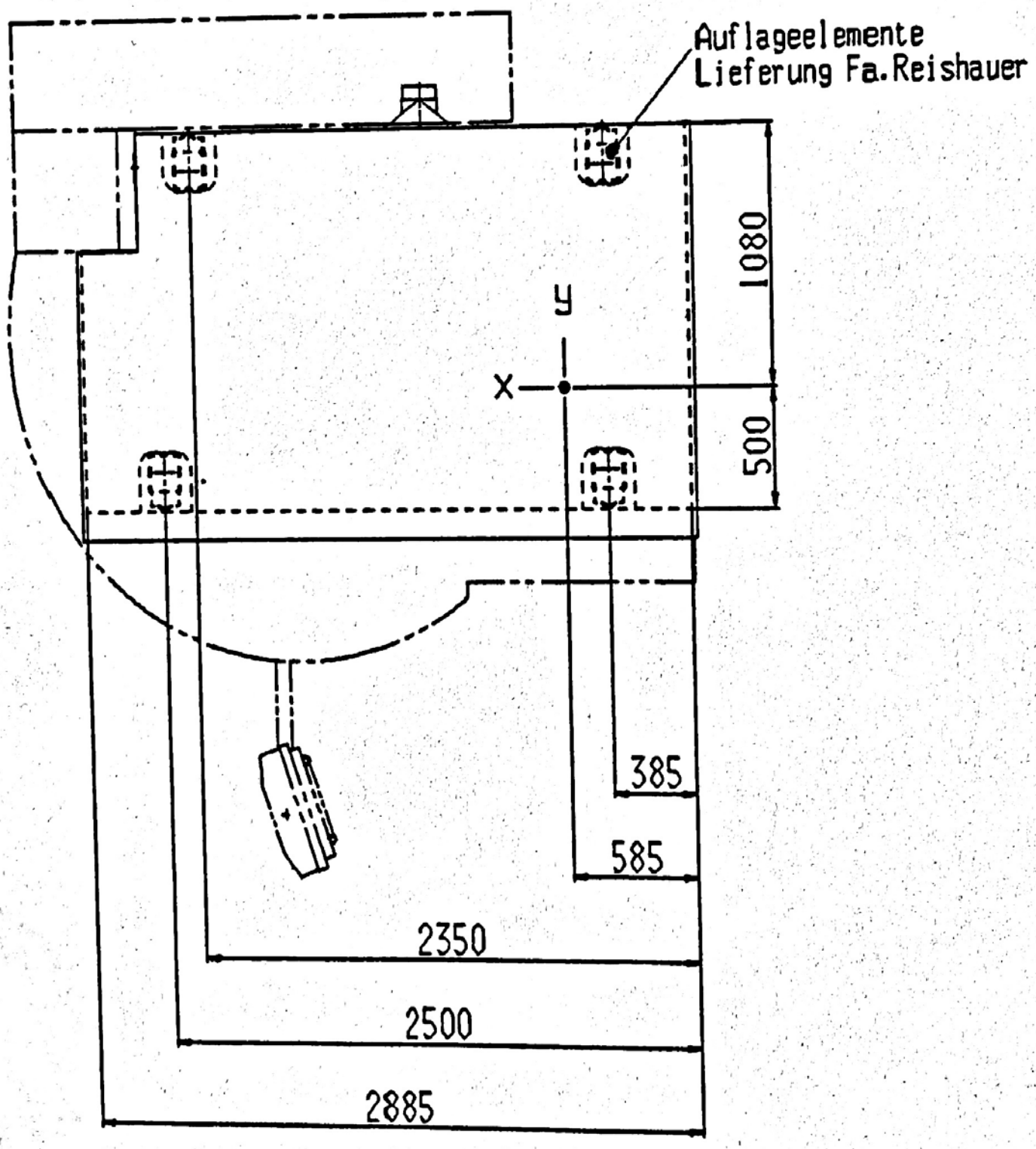


Schleifbereich
Grinding range
Zone de meulage
Werkstückachse
Workpiece axle
Axe de pièce
3*415V
80A
E
B
D
P
2562 +8 0
1991 +8 0
1862 +8 0
1162 +8 0
300
505
ϕ160
274 +8 0
E3
2329


C
1042
6500

378
3662
2731
1131
1600
(1200)
Schlammwagen
3x415V
80A
E
B
C
E3
E
3376
3270
3625
6500
825
30
625
614
340
340
466
821
21.5
1080
735
1720
2210
2271
3x415V
160A
E
1043

Auflagestellen
Points d'appui
Supporting pads



REISHAUER

RZ 303C

CNC Gear Grinder

Maintenance and Service Instructions

Inventory No.: ZC65-60A

Serial No.: 79023

Version: V02

Comment

This document is subject to change (updates, technical improvements) without prior notice, and Reishauer are not liable for printing errors or conformity of illustrations.

Danger

Prior to the operation of the machine RZ 303C, the CHAPTER *For Your Safety* must be read and understood by each of the operators.

Initial Installation

Transport Instructions

Survey

Danger of accident when transporting the machine!

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

Notes

- 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 can not be held liable for damage caused by non-observance of this instructions.
  The transport of the machine and units must be supervised by a Reishauer representative.
- Transport instructions are attached to the machine in a plastic cover. Transport instructions for non-Reishauer units can be found in the electrical cabinet of the respective units.

Prepare Machine for Transportation

What Needs to be Transported?

Scope of delivery from 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

Hood and loader are not dismantled in order to save time during the installation. The oil mist extractor will be dismounted and separately packed. The stack lights will be dismounted and packed in the air suction duct at the rear of the machine. The machine, ready for dispatch, requires a special truck to transport the machine, being **270** cm wide, plus an appropriate road profile.

- Required road profile B x H = min. 300 x 300, depending on transport means.
- Machine with hood, loader (RL 250) and attached electrical enclosure
  Size: L x B x H = 435 x 270 x 250 cm
  Weight: incl. counter support and tailstock, complete G = 12'000 kg
  without counter support G = 10'500 kg

Additional Units/Parts to be Transported with the Machine

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

- Hydraulic and pneumatic unit
- Recooling unit for spindle and motor cooling
- Operating panel
- Oil mist extractor (standard option ELBARON)
- Grinding oil unit (option)
- Loader (option)
- Conveyor (option)
- Tools plus miscellaneous small parts
- Stack lights
- Installation material (Cable ducts, cables, pipes, hoses, fixing material

Transportation Suspension Frame (on Loan)

The following material is supplied to the customer on loan for unloading and internal transportation:

- Suspension frame.
  For lifting the machine with a crane of 12.5 t capacity and min. 6 m lifting height.
- (4) SupraPlus endless ropes, color GRAY, with 4'000 kg capacity.
- Possibly additional supplementary means for transportation as per separate list.

The complete 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.

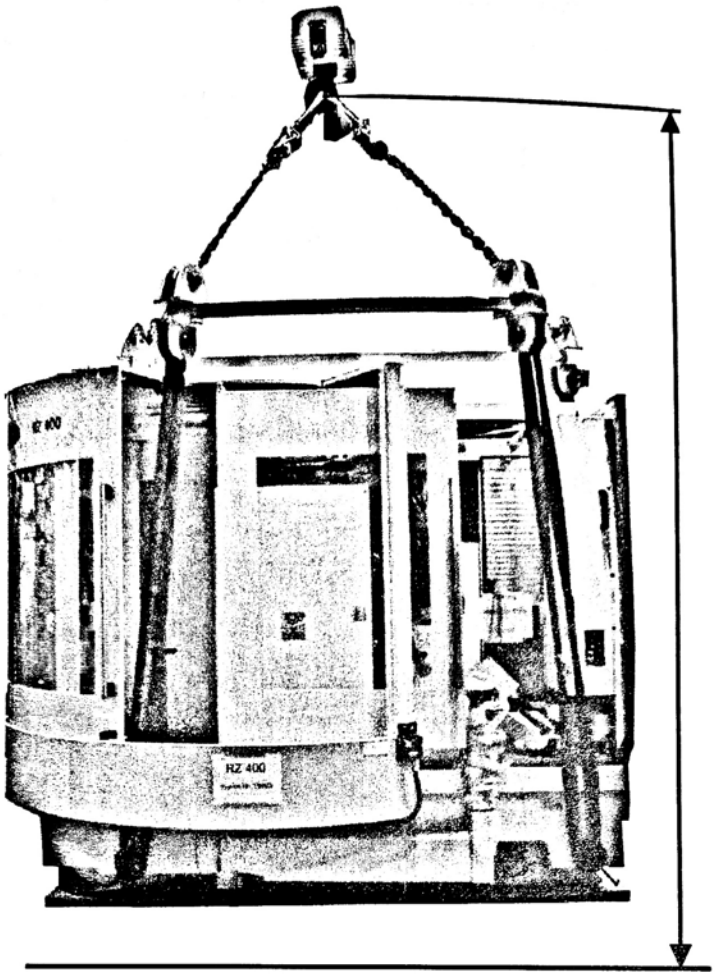
Unloading and Internal Transport at the Customer's Site

For the exact description of the transport, see SUB SECTION *Transporting the 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 lifting means and transporting means approved by Reishauer.



Required height of lift H = 6000 mm, incl. 400 mm clearance above floor.

Abb. 9: Machine, suspension frame and height of lift

Unloading at Customer's Site

For the unloading with the suspension frame you need:

- For machine with counter holder (W-axis),
  Crane or mobile crane, load capacity 12,5 t,
  min. lifting height of crane = **6** m + loading height of transport vehicle.
- For machine without counter holder,
  Crane or mobile crane, load capacity 11,0 t
  min. lifting height of crane = **6** m + loading height of transport vehicle.

Internal Transport at Customer's Site

If a 12,5 t crane is available at the customer's site

- Depending on circumstances, a flat-bed trailer, transporter roller or air cushion device can be of advantage, load capacity min. 11'000 to 12'500 kg.

If NO crane is available at the installation site

- Transportation with air cushion device or transporter roller, load capacity min. 11'000 to 12'500 kg.
  Lifting and lowering the machine by means of hydraulic jacks.
- Fork lift with a load capacity of 12,5 t and a fork length of min. 2.0 m.

Transport with an air cushion

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

Supplier's recommendation

For transporting the machine Reishauer AG recommend standard loading equipment and resources, available from the company:

- SpanSet Company

Place of Installation, Preparation

The location of the machine must be prepared prior to putting the machine in place.

Mark Position of Heavy Load Levelling Pads

In the description below the heavy load levelling pad is mentioned levelling pad.

1. Mark the position of machine base plate and the levelling pads on plant floor (and oil pan) according to the layout.
2. Adjust levelling pads 01-04 to mid-height of the adjustment range (levelling pad 25 mm back from levelling housing).

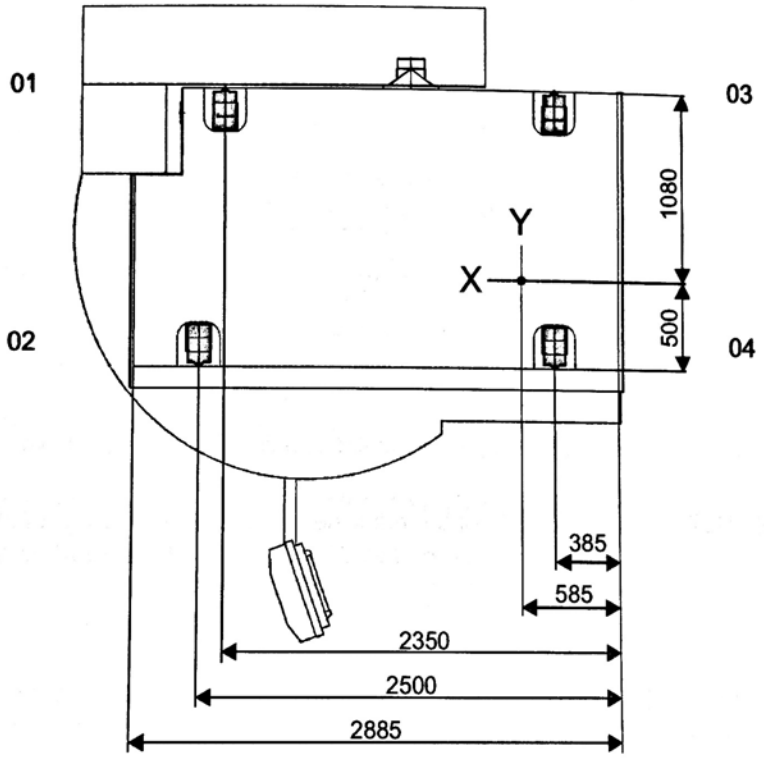


Fig. 10: Layout of levelling pads

3. Position levelling pads according to the figure below.

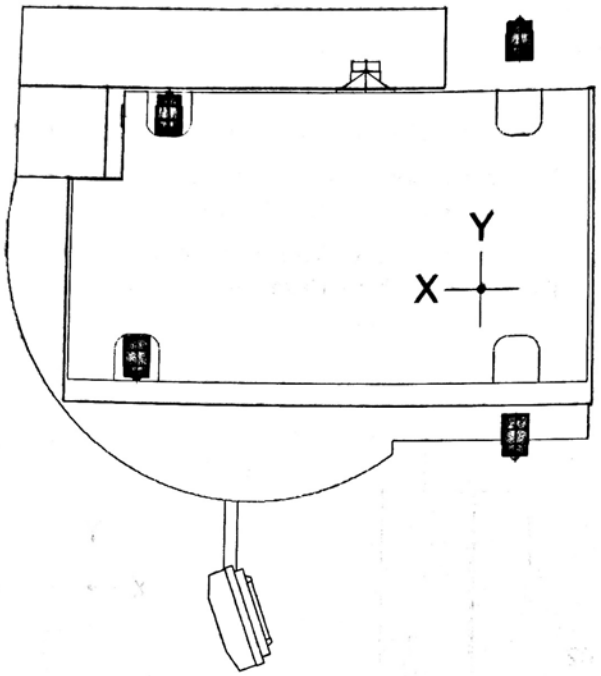


Fig. 11: Layout of levelling pads for levelling

EXPLANATION To begin with, the machine is being placed only on two levelling pads (01, 02).

RESULT The location for the machine is prepared and ready for placing the machine.

Transportation Machine to Installation Location

Required Material

- Complete suspension frame (RAG article no. 501157.00) consisting of:
  (1) Suspension frame
  (1) SpanSet chain unit type EP 4-8000/KL16-OKF; chain length 1m
  (4) SupraPlus endless sling 4000 GRAY, L = 3m (circumference 6m); WLL 4000 kg

As mentioned in SUB SECTION *Transportation instructions*, the suspension frame will be provided, to the customer, with the RZ 303C machine on a loan basis.

Danger

The suspension frame (RAG art. no. 501157.00) is designed for repeated lifting of the machine and is certified for a capacity of 15 t (150kN).

The suspension frame is only designed for the transport of the machine RZ 303C. It is not designed for any other transportation means.

First the following activities should be done:

1. Read SUB-CHAPTER *Transport instruction*.
2. Execute SUB-CHAPTER *Prepare installation location*.

RESULT The transport can take place appropiately and without any time delay.

Weight of machine approx. 10'500 kg without tailstock

Weight of machine approx. 12'000 kg with tailstock

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 (crane, fork lift, ropes etc.).
  Reishauer can not be held liable for damage caused by non-observance of this instructions.
  The transport of the machine and units must be supervised by a representative assigned 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.

Transportation Machine to Installation Location

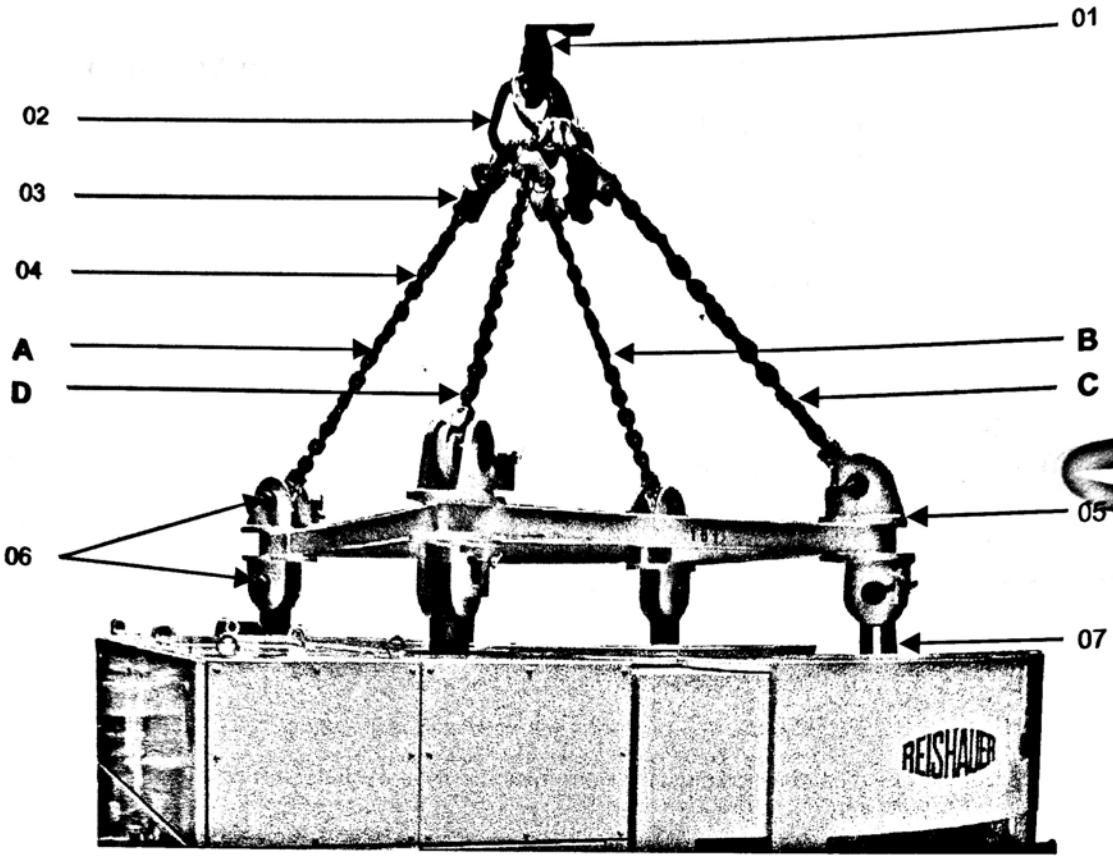


Fig. 12: Machine hooked to the lifting device (viewed from operator side)

01	Hook of hoist
02	2-chain with eyelet, consisting of:
03	Adjusting hook
04	Chain strand with hook
05	Suspension frame (15 tons loading capacity)
06	Quick lock bolt for load- and hoist ropes
07	4 pcs. SupraPlus endless ropes 4000/color GRAY, with protection hose

Procedure

Prepare suspension device

Danger

In order to securely transport the machine it is imperative, that when lifting the machine must be in a horizontal position. The length of the chains must be adjusted, if necessary, according to the table below.

1. Adjust number of chain links in chain string (04) on adjusting hook (03) according to table.

Chain	With counter support (W-Axis)	Without counter support (W-Axis)
A	28	28
B	25	24
C	24	20
D	26	23

2. Hook up suspension frame (05) with 2-chain (02) to hook of hoist (01) and lift up by approx. 1000 mm.
3. Fasten (4) SupraPlus-endless ropes (07) to the suspension frame (05) with quick lock bolts (06) and position frame with hoist above machine.

RESULT The suspension frame is positioned and ready to hook-up the machine.

Prepare Machine and Suspension Frame

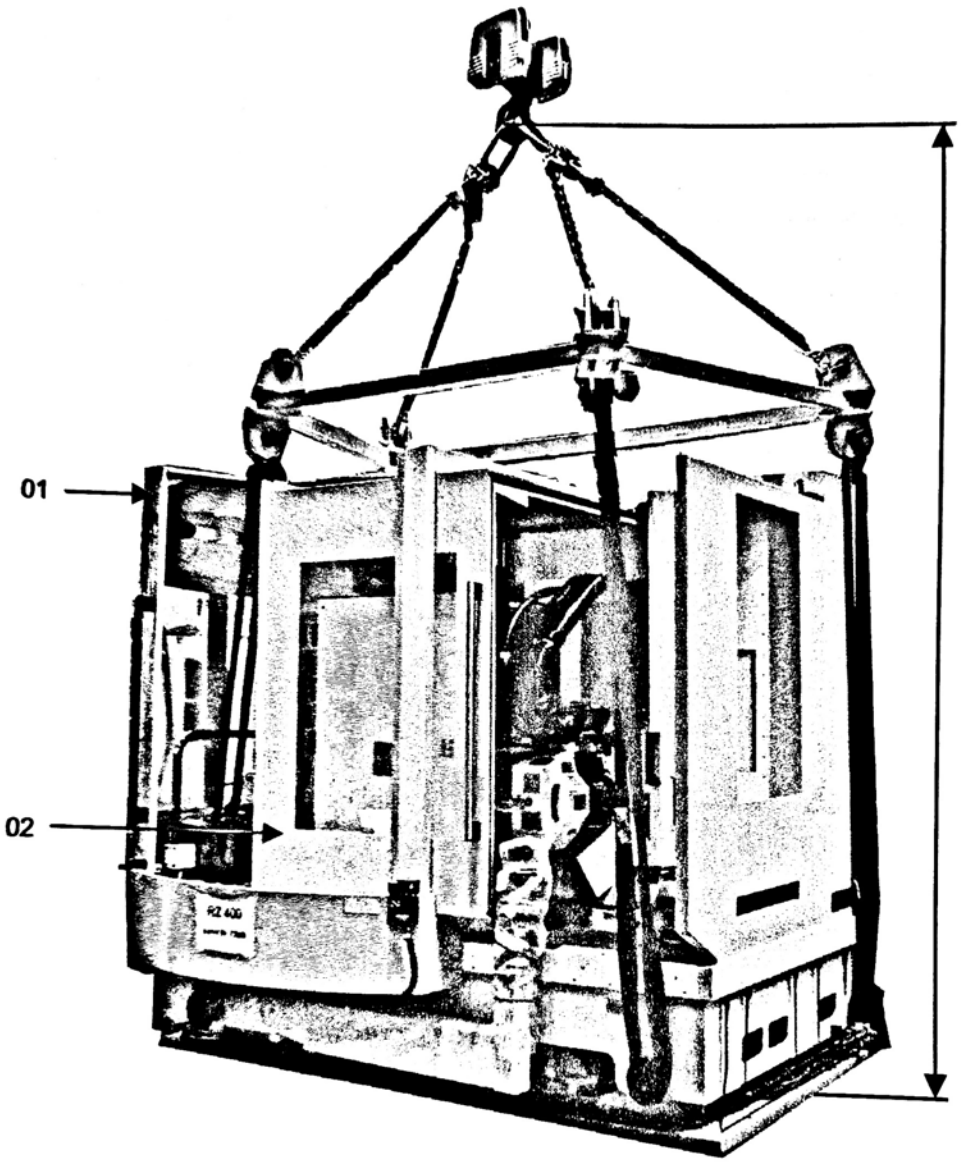


Fig. 13: Machine with suspension frame, arrangement of endless ropes

01	Circular door right
02	Grinding area door

Note

For the fastening of the SupraPlus endless ropes to the machine it is imperative that the right circular door (01) and the grinding area door (02) are both open.

Arrangment of SupraPlus endless ropes in the area of the electrical enclosure

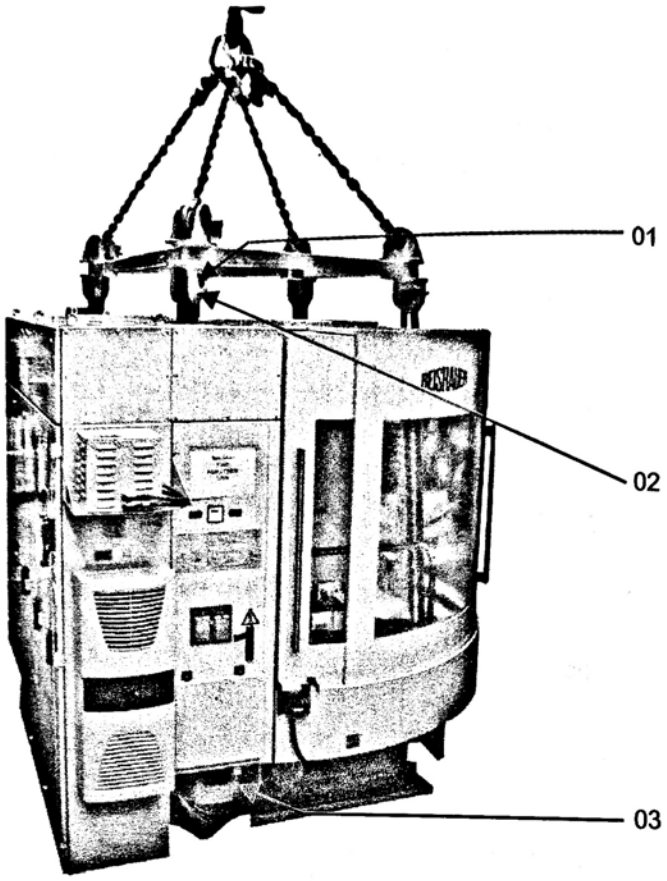


Fig. 14: Arrangement of endless ropes in area of electrical enclosure

01	Feed through at machine top side for SupraPlus endless rope
02	SupraPlus endless rope 4000/GRAY
03	Pos. of endless rope and round bolt in machine base see following figure

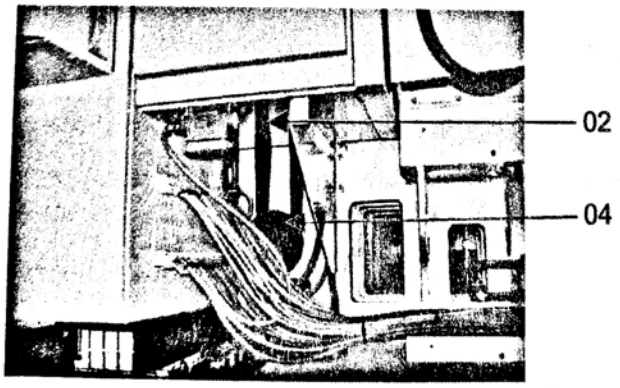


Fig. 15: SupraPlus endless rope on bolt in machine base, left and back of machine

02	SupraPlus endless rope 4000/GRAY
04	Round bolt in machine base (axially moveable)

1. Place SupraPlus sling (02) only with 180° looping angle around bolt in machine base (04).
2. Lift suspension frame with hoist slightly up to get tension to the frame and ropes.
3. Check correct seating of endless rope.
4. If not correct, lower machine and adjust accordingly.
5. Lift again machine carefully.
6. After lifting machine check the horizontal position.
7. If a tilted position exceeding approx. 20 cm, then the chain length needs to be corrected until the machine floats freely above the floor in a horizontal position.

Move Machine to the Installation Location and Lower Machine

1. Move machine to the installation location.
2. Before lowering machine check if levelling pads are located as per SUB SECTION *Prepare installation location*.

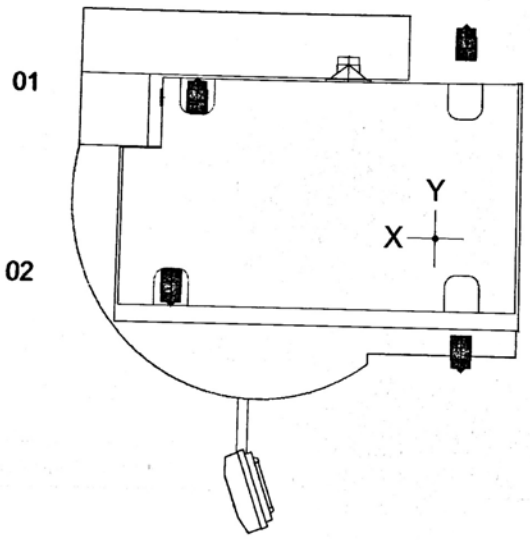


Fig. 16: Position levelling pads before lowering machine

3. Put machine onto the 2 levelling pads 01 and 02.

EXPLANATION The adjusting range of the levelling wedges (8 mm) may not be sufficient because the foundation is not in level. In such a case, spacer plates must be used between levelling wedge and machine base.

4. Do not unhook machine yet, for possible corrections.

RESULT The machine is ready for levelling.

Levelling of Machine

Measurement Set-up for Levelling

Necessary tools

1 Spirit level or electronic level, accuracy min. 0.02 mm / m

1 Set of gage blocks

1 Levelling edge

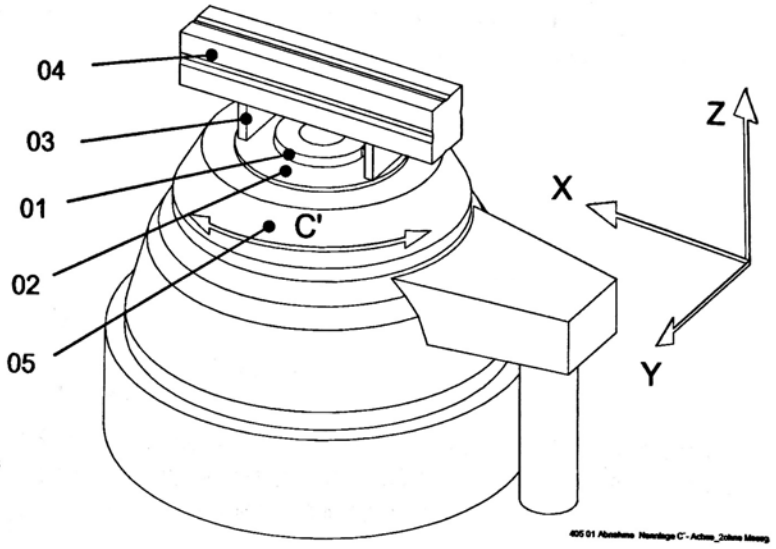


Fig. 17: Arrangement for levelling

01	Taper of workspindle
02	Face of workspindle
03	2 each gage blocks of equal size, min. 20 mm
04	Straight edge
05	Workspindle

Positioning of Spirit Level (Electronic Level)

1. Put two gage blocks (03) on face (02) of workspindle (06)
2. Put straight edge (04) on gage blocks (03).
3. Locate straight edge (04) by turning workpiece spindle (06) in the X direction as shown in above figure.

RESULT Measurement arrangement for levelling the machine is ready.

Levelling the Machine with Levelling Pads

Note

If the height of a levelling pad has to be reduced, reduce it by a larger amount as needed in order to be able to adjust upwards (play of spindle).

Levelling of machine

Starting position:
The machine is hooked to the crane and was lowered first only onto the 2 levelling pads 01 and 02 according to above mentioned SUB SECTION *Transportation of machine to installation location.*

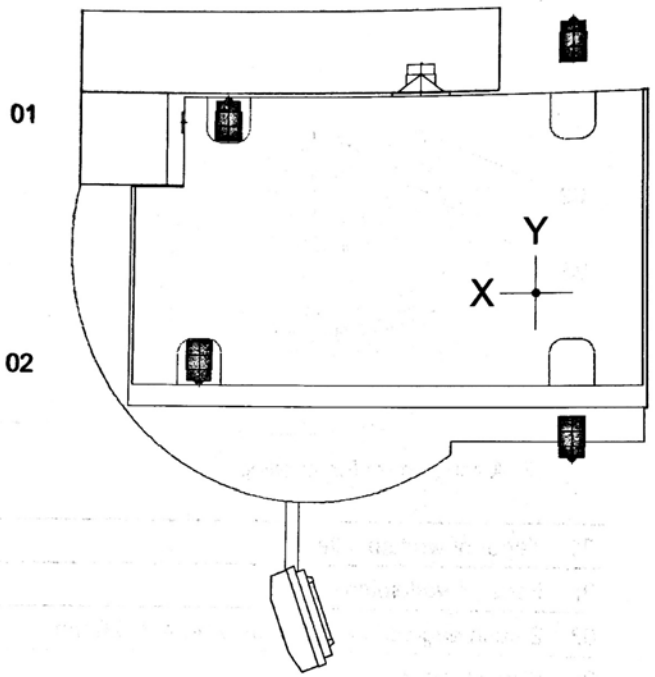


Fig. 18: Starting position, levelling 1st phase

1. Levelling of machine in Y-direction via levelling pads 01 and 02.
2. Rotate workspindle to bring level in X-direction.
3. Levelling of machine in X-direction with the crane.

RESULT The machine is levelled but only lowered down onto levelling pads 01 and 02

4. Rotate workspindle to bring level in Y-direction.

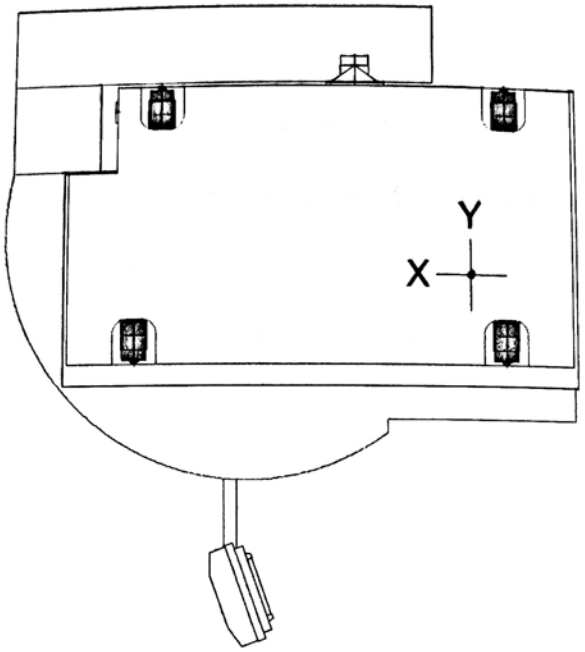


Fig. 19: Levelling 2nd phase

5. Place levelling pads 03 and 04 under the machine bed. Lift via levelling pad 03 until the level shows in Y-direction a variation of 0.04 mm/m. Lift via levelling pad 04 until the machine is again in level.
6. Again rotate workspindle to bring level in X-direction and check levelling.
7. If necessary correct levelling.
8. In a 3rd phase lower the machine slowly on the leveling pad 03 and 04. Finish levelling the machine via levelling pads 03 and 04 within tolerance according to table below.

Tolerances for levelling the machine

Measuring direction	Permissible value
X-direction	0.04 mm/m
Y-direction	0.04 mm/m

RESULT The machine is levelled within the tolerance.

Terminate transportation

1. After the machine has been placed onto the (4) levelling wedges (see SUB SECTION *Prepare installation location*) check if the pads are at the correct positions.
   Otherwise move the pads to the correct locations.
2. Lower suspension frame in order that the SupraPlus endless ropes will become loose.
3. Remove SupraPlus endless ropes from round bolt in machine base
4. Return complete suspension frame to Reishauer.

Levelling of Machine

Note

If the machine is installed the first time at 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.

EXPLANATION As next operation, the transport safety devices must be removed.

Transport External Components

Oil Recooling unit for separate Spindle- and Motor Cooling

See the transport instructions from the supplier

Grinding Oil Preparation System

see in this SECTION *Transportation of Grinding Oil Unit* and also the transport instructions from the supplier

Workpiece Loading and/or Conveyor Systems

See the transport instructions from the supplier

Mounting of Swivel Arm

Weight approx. 60 kg

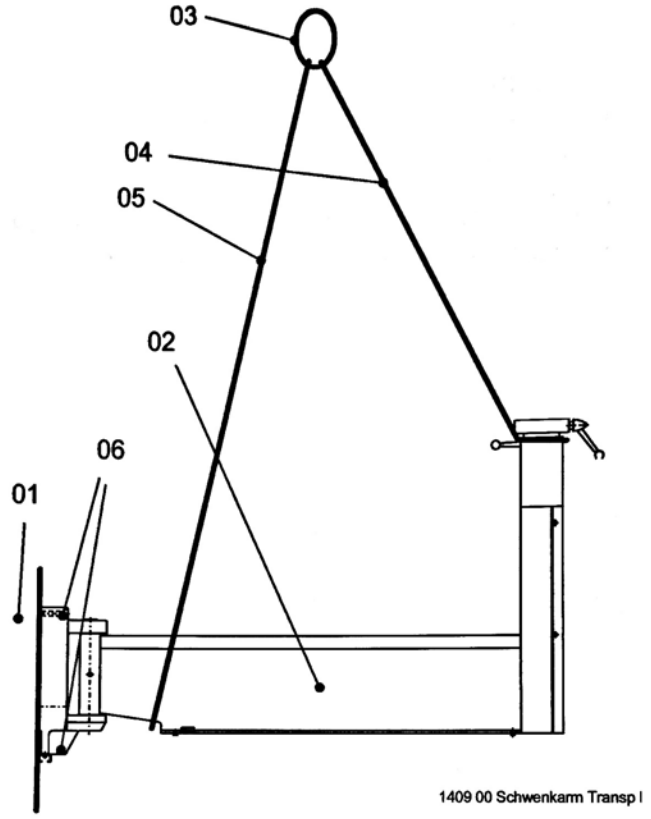


Fig. 20: Mounting of swivel arm of operator panel

01 Machine bed (front side)	02 Swivel arm
03 Oval eyelet O-75, at crane hook	04 Sling
05 Sling	06 Socket head screw M10x70

Transporting and Mounting of Swivel Arm

1. Hook up and lift swivel arm (02) by means of 2 slings (04, 05), oval eyelet (03) and crane.
2. Transport swivel arm (02) to machine and bring it in position.
3. Fix swivel arm (02) to front side of machine bed (01) by means of 4 cap screws M10x70 (06).

RESULT The swivel arm is positioned and fixed and ready for the operator panel.

Mounting of Operating Panel

Weight approx. 50 kg

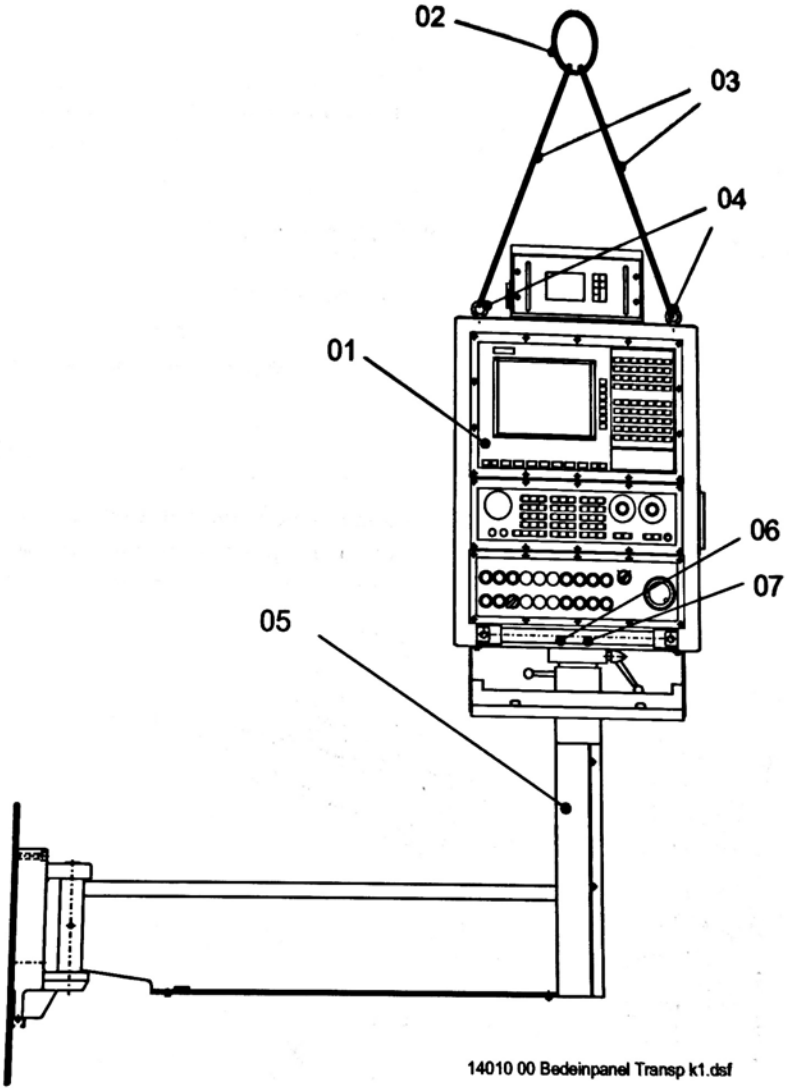


Fig. 21: Transporting and mounting of operating panel

01	Operating panel	02	Oval eyelet O-75, at cranehook
03	Sling incl. hook	04	Eyebolt M10
05	Swivel arm of operating panel	06	Socket head screw M6x16
07	Hex head screw M6x16		

Transporting and Mounting of Operating Panel

1. Hook up oval eyelet (02) and sling incl. hook (03) to crane and move to operating panel (01).
2. Hook up sling to eyebolt M10 (04) of operating panel.
3. Lift operating panel (01), bring it over swivel arm (05) and move it down to proper mounting position.
4. Open front door of operating panel (01) and bolt operating panel to swivel arm (05) by means of 2 cap screws M6x16 (06) plus 2 hex head screws M6x16 (07) (different type of screws due to space restrictions).

RESULT The operating panel (01) is mechanically fixed and ready for electrical connection.

Removing Transport Safety Devices

Note

It is the responsibility 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

Prior to removing the transport safety devices the machine must be levelled according to SUB SECTION *Levelling of machine*.

Do not operate the machine prior to removing all transport safety devices in order to avoid damage.

Remove all transport safety devices prior to moving any axes.

Note

The spindle leadscrew nuts of vertical axes are slackened for transportation purpose and they must be tightened prior to removing the transport safety devices.

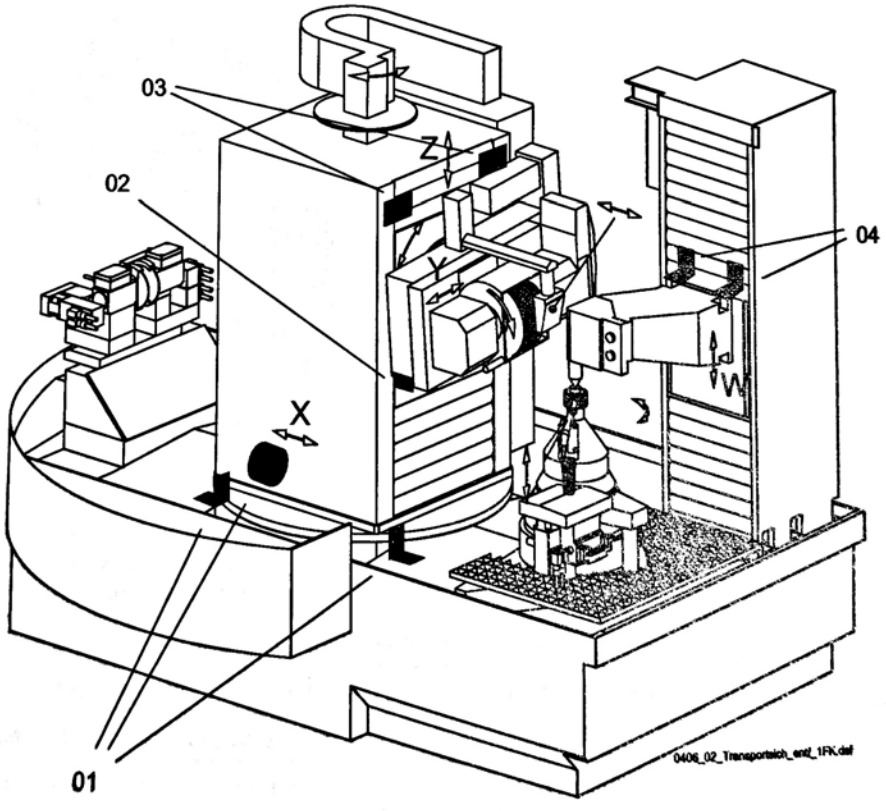


Fig. 22: Transport safety devices

REMARK All parts of the transport safety devices are marked red. The following parts must be removed:

Removing Transport Safety Devices

1. **X-axis**
   Remove two transport safety devices (01), fixed by 1 socket head screw M10x80 and 2 socket head screws M10 x 55.
   For this purpose, unscrew both bellows of the X-slide and move them aside.
   Tighten (screw) bellows and telescopic covers onto the slide (telescopic cov-
   ers can be fixed in both end positions of the X-slide). Make sure the seal of the covers are properly in place.
2. **Y-axis**
   Remove transport safety device (02). The same screws are partially used for fixing the covers and this screws need be tightened again.
3. **Z-axis**
   Remove rear cover of the turret. Turn spindle nut down to the slide stop (half a turn) and fix nut with slide. Remove cover over Y-motor. Remove two transport safety devices (03). Mount rear cover and cover over Y-motor.
4. **W-slide**
   Remove two transport safety devices (04). Tighten spindle nut to slide.
5. Mount all covers of guide ways.

Transporting the Hydraulic- and Pneumatic Unit

1. Read first SUB SECTION *Transport Instruction.*

Weight of hydraulic- and pneumatic unit approx. 400 kg

Transporting the Hydraulic- and Pneumatic Unit by Crane

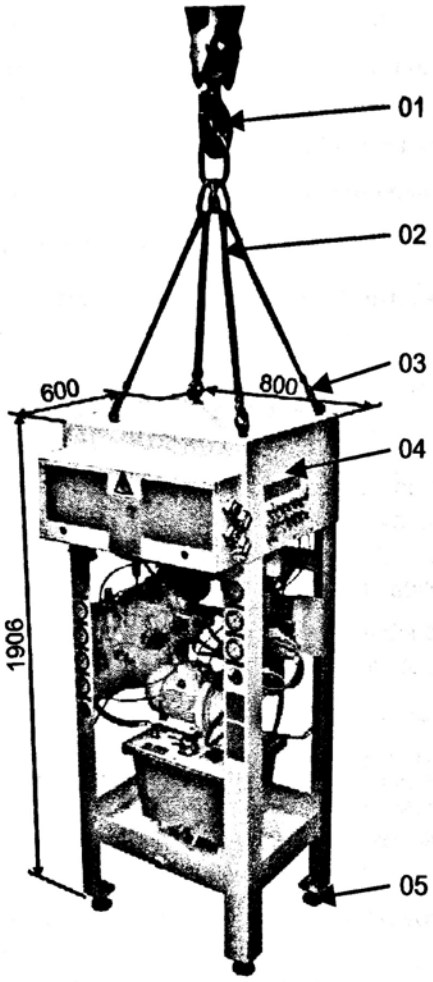


Fig. 23: Transporting the hydraulic and pneumatic unit by crane

01	Hook of crane, if necessary with eyelet O-75 (Slope angle of cable up to 60°)
02	2 each 1-strand cable incl. eyelet with hooks
03	4 each Eyebolt M10 DIN 580, supplied as additional parts
04	Hydraulic and pneumatic unit
05	4 each levelling screw, part of hydraulic and pneumatic unit

Note

The oil tank of the hydraulic unit must be completely emptied prior to any transportation.

Transporting the Hydraulic- and Pneumatic Unit

Note

REISHAUER recommends commonly available supplementary means for the transport, according to above figure.

Lifting the Hydraulic and Pneumatic Unit

1. Insert 4 eyebolts M10 (03) to cover of hydraulic and pneumatic unit (02).
2. Place 2 1-strand cables with hook (04) on hook of crane (05) and move over hydraulic and pneumatic unit (02).
3. Hook cable (04) in eyebolt M10 (03).
4. Lift hydraulic and pneumatic unit (02).

RESULT Hydraulic and pneumatic unit is now lifted up and in a horizontal position.

Positioning of Hydraulic and Pneumatic Unit

1. Transport hydraulic and pneumatic unit (02) to its proper place.
2. Lower hydraulic and pneumatic unit on its levelling screws (01).
3. Level the hydraulic and pneumatic unit by means of levelling screws (01).

RESULT The hydraulic and pneumatic unit (02) is now ready to be connected to the machine, according to layout, hydraulic, pneumatic and electrical diagrams.

Transportation Grinding Oil Unit HOFFMANN

First the following activities must be executed:

1. Read SUB SECTION *Transportation Instruction.*

Nbr.	Denomination	Unit [kg]
1 pcs.	Filter HSF 100 SE	2440
1 pcs.	Return pump pump	105
1 pcs.	Mud cart	160
	Entire unit	2705

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 filtering 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 filtering 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..

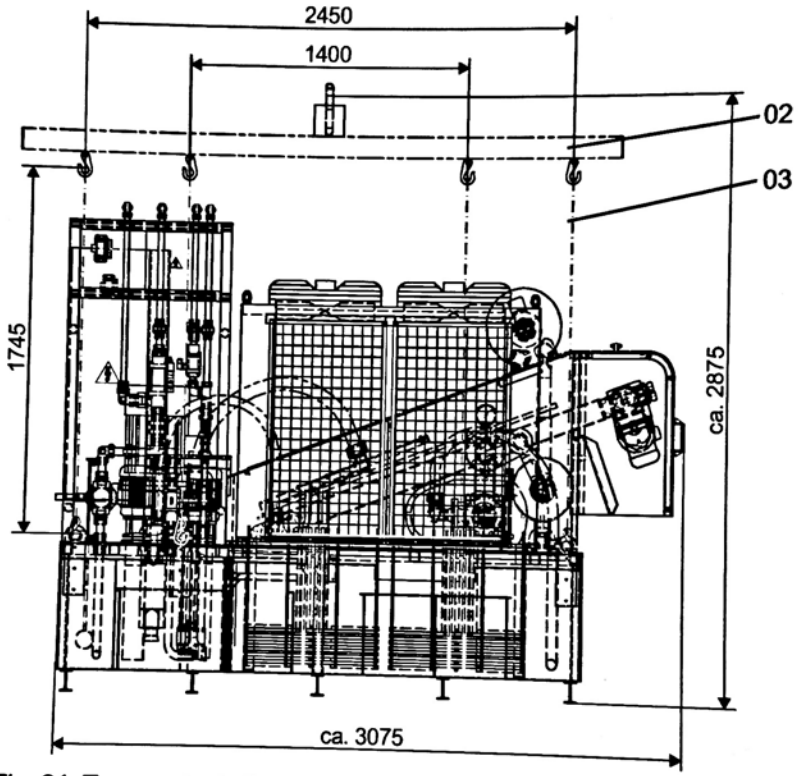


Fig. 24: Transport grinding oil unit HOFFMANN HSF 100 SE

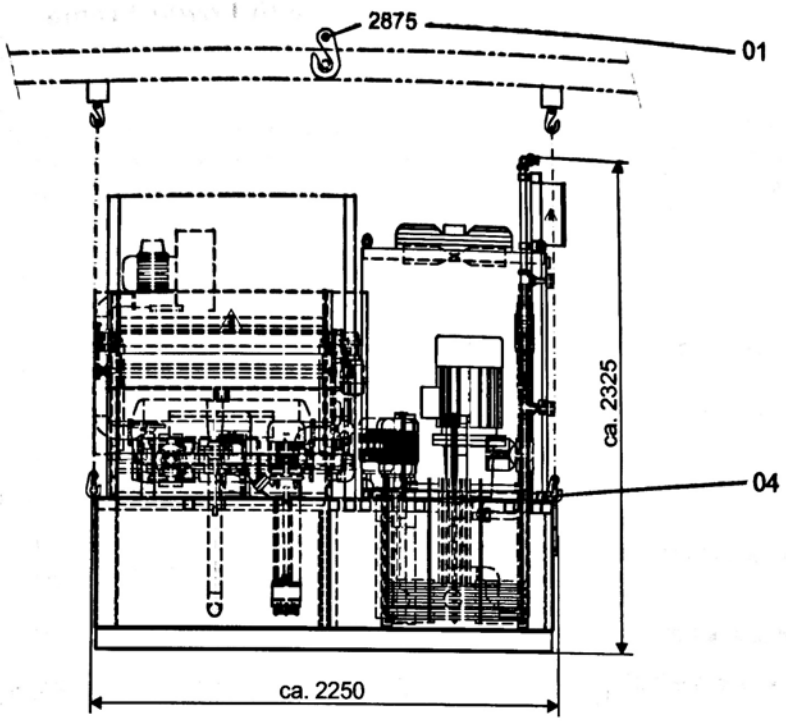


Fig. 25: Transport HOFFMANN HSF 100 SE

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

Return-Pump Pump with Lower Frame

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

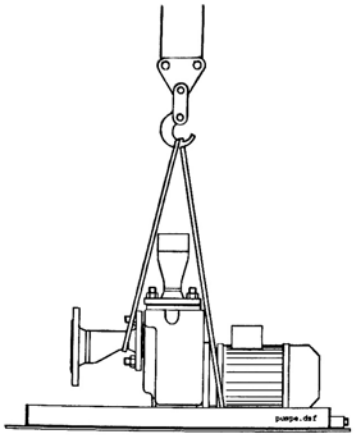


Fig. 26: Return-pump pump with lower frame

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

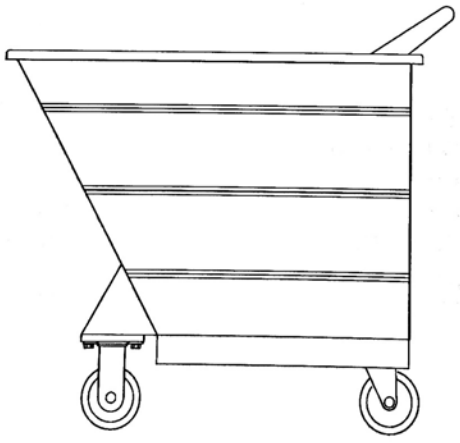


Fig. 27: Mud cart

Transportation

Pick-up with fork lift.

Final Preparation and Installation

EXPLANATION

The machine is ready for operation provided the machine and the internal loader RL 300NC have been levelled, completed and installed and the machine axes geometry tests have been verified in the quality assurance papers (see SUB SECTION *Quality Assurance Machine Installation* in this SECTION).

Note

The activities described in the following explanations may only be carried out by specialized personnel.

Installation of Machine, Loader RL 300NC and Final Preparation of Entire Equipment

1. Cleaning of machine, loader RL 300NC, hydraulic unit, grinding oil unit HOFFMANN and all loose parts.
2. Connect the hydraulic unit electrically and pneumatically to the machine.
3. Connect the HOFFMANN grinding oil unit electrically to the machine.
4. According to customer option:
   > Mount and connect oil mist separator.
   (see also SUB SECTION *Mounting of ELBARON oil mist separator* in this SECTION).
   > Connect central oil mist separator unit to the machine.
5. Install piping between gear grinding machine and HOFFMANN grinding oil unit. For this the sealing cones on the pipe connections must be dismantled on both the gear grinding machine as well as the HOFFMANN grinding oil unit. (Concerning piping see the following SUB SECTION *Grinding oil connections for HOFFMANN grinding oil unit*.)
6. Connect pressurized air to the pneumatic of the gear grinding machine as well as to the HOFFMANN grinding oil unit.
7. In case that options automatic fire alarm and fire extinguisher are included:
   - Connect automatic fire alarm and fire extinguisher electrically to the machine.
   - Install piping between machine and automatic fire alarm and fire extinguisher.
8. Fill grinding oil into the the big tank, up to the mark on the sight glass of the HOFFMANN grinding oil unit (see SUB-CHAPTER *Utilities* in the operating manual CHAPTER *Concept, Function, Technical Data* as well as in the separate operating instructions from HOFFMANN).
9. Fill coolant (grinding oil) up to the mark on the sight glass at the chiller housing of the HOFFMANN grinding oil unit (see SUB CHAPTER *Utilities* in the operating manual CHAPTER *Concept, Function, Technical Data*).
10. Fill hydraulic oil up to the sight glass of hydraulic tank (see the SUB SECTION *Utilities* in the operating manual SECTION *Concept, Function, Technical Data*).
11. Connect electrically operator panel to the machine.

12. Check and make sure that all transport safety devices of the axes X, Y1, Z1 and W have been removed (see also SUB SECTION *Removing transportation safety devices* in this SECTION).

RESULT Axes can be moved again.

13 Connect electrical enclosure of the HOFFMANN grinding oil unit to main power supply.

14. Connect electrical enclosure of the machine electrically to main power supply

Check Levelling

15. Double check the levelling and correct, if necessary *(see* SUB SECTION *Levelling of machine* in this SECTION*)*.

Tolerances for the Levelling of the Machine

Measuring direction	Permissible value
X-direction	0.04 mm/m
Y-direction	0.04 mm/m

16. Record the measured values *(see* SUB SECTION *Quality assurance Machine installation* in this SECTION).

RESULT Machine is installed and ready for geometry checks.

Place of Installation for Loader RL 300NC, Preparation

EXPLANATION

The machine RZ 303C is already in place and levelled.

The location of the loader must be prepared prior to putting the loader in place.

Required material

included with loader RL 300NC delivery content:

- 4 pcs. flush anchor HKD-S M16 × 65
  HILTI art.-no. 242873
- 4 pcs. hex. head screw M16 x 130, DIN 931 (quality 8.8)
- 4 pcs. floor plate 100 × 100 × 15 mm (for support of loader levelling feet).

Required tool

- 1 pc. hammer
- 1 pc. setting tool HSD-G M16 x 65
  HILTI art. no. 243744

Mark position for plugs HKD-S M16 × 65, drill and set plugs

1. Mark the position for the compact plugs HKD-S M16 x 65 according to the lay-out.
2. Drill (4) blind holes (02) 20 mm diameter and 70 mm deep. Make sure that drilled holes are exactly vertical.

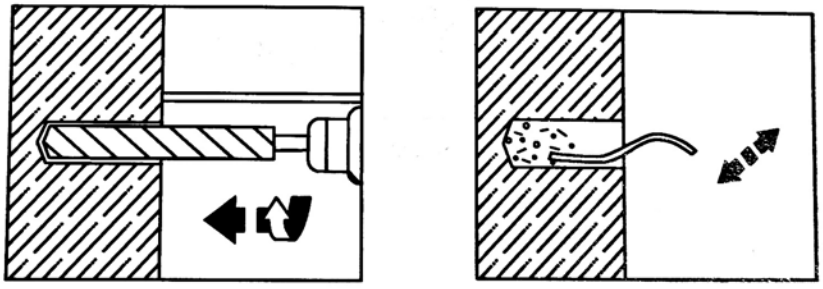


Fig. 28: HILTI instruction: Drill anchor hole / blow out (example wall mounting)

Danger when blowing out drilled hole with compressed air!

In order to avoid eye injuries, wear safety glasses when blowing out the drilled holes.

3. Blow-out drilled holes with compressed air.

Place of Installation for Loader RL 300NC, Preparation

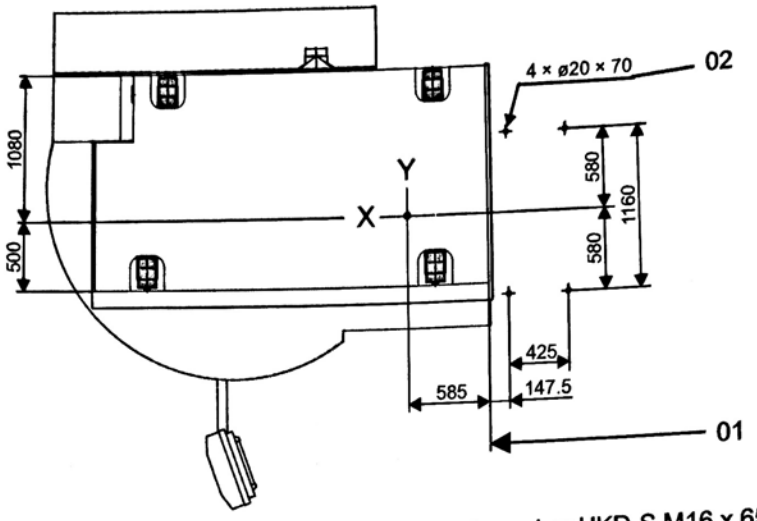


Fig. 29: Position of the (4) flush fitting drop-in anchor HKD-S M16 x 65

01	Reference surface is lower edge of machine base
02	4 pcs. blind holes

4. Insert 4 pcs. flush fitting drop-in anchors HKD-S M16 x 65 into the drilled holes using the setting tool HDS-G M16 x 65.

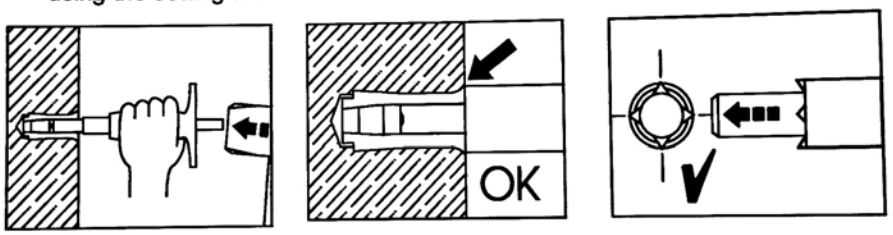


Fig. 30: HILTI instruction: Set anchor by using setting tool.

Note

Make sure that upper edge of the drop-in anchors are flush with the concrete floor.

RESULT The 4 pcs. flush fitting drop-in anchors HKD-S M16 × 65 are set.

5. Place and align 4 pcs. floor plates (03) on floor as per following figure.

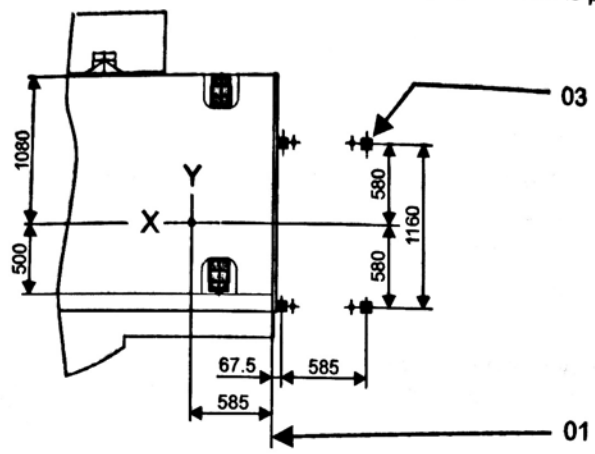


Fig. 31: Position of floor plate for the 4 pcs. loader feet

01	Reference: Surface of lower edge of machine base
03	Floor plate 100 × 100 × 15 mm

RESULT The place for installation is prepared and ready for placing the loader RL 300NC.

Transport Loader RL 300NC

First carry out the following activities:

1. Read SUB SECTION *Transport instructions.*
2. Carry out SUB SECTION *Prepare installation location.*
3. Prior to transportation and prior to integration of loader RL 300NC with the gear grinding machine, it is mandatory to disassemble any possible mounted workholding fixtures on the workpiece spindle (C'-axis) of the machine.

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

Loader weight, approx. 1'500 kg

Risk of accident when transporting loader RL 300NC!

Improper transport of the loader RL 300NC can cause serious bodily injuries to the transport personnel. The following instructions must therefore be strictly followed!

Risk of accident by steel strapping ribbons

Eventually used packing steel strapping ribbons are heavily pretensioned. Risk of injuries from whipping packing steel strapping ribbons when severing the ribbons!

Tilt Danger of loader when transportation with fork lift truck

- Transportation of loader RL 300NC is only permitted with a hoist.
- In case of transportation with a fork-lift truck or similar, due to the top-heaviness of the equipment, acute tilt danger exists for the loader RL 300NC and the fork-lift truck.

Risk of accident by suspended load

Death or injury, therefore do not work or stay under the suspended load!

Danger of collision due to top-heaviness of loader RL 300NC

When placing the loader RL 300NC down on the exact machine location, outmost precaution is required, because due to the inclined hanging of the loader the machine could be damaged. The uneven balanced loader, when transported, must be aligned with weight compensation to approach the machine safely.

Danger of collision between loader RL 300NC and machine

During transportation of the loader RL 300NC to the final and correct location, in conjunction with the machine, utmost caution is required!

Not observing this danger notes can lead to heavy bodily injuries and damage to machine and loader.

In the case of loader transport the oil mist hood and possibly an already mounted clamping fixture on the workpiece spindle (C'-axis), are in particular endangered by the gripper arm of the loader, therefore:

- Dismount the workholding fixture on workpiece spindle (C'-axis) before transporting the loader RL 300NC!
- Highest caution when transporting and integrating the loader into the grinding machine.

Note

- When the loader 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 certified loading equipment (hoist, 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 loader 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 loader and the guarantee of safety are suspended from the loader in a transparent package.

Lift up Loader RL 300NC with Hoist

Dimensions [mm]	Length	Width	Heigth
Loader	approx. 1510	approx. 1270	approx. 2544

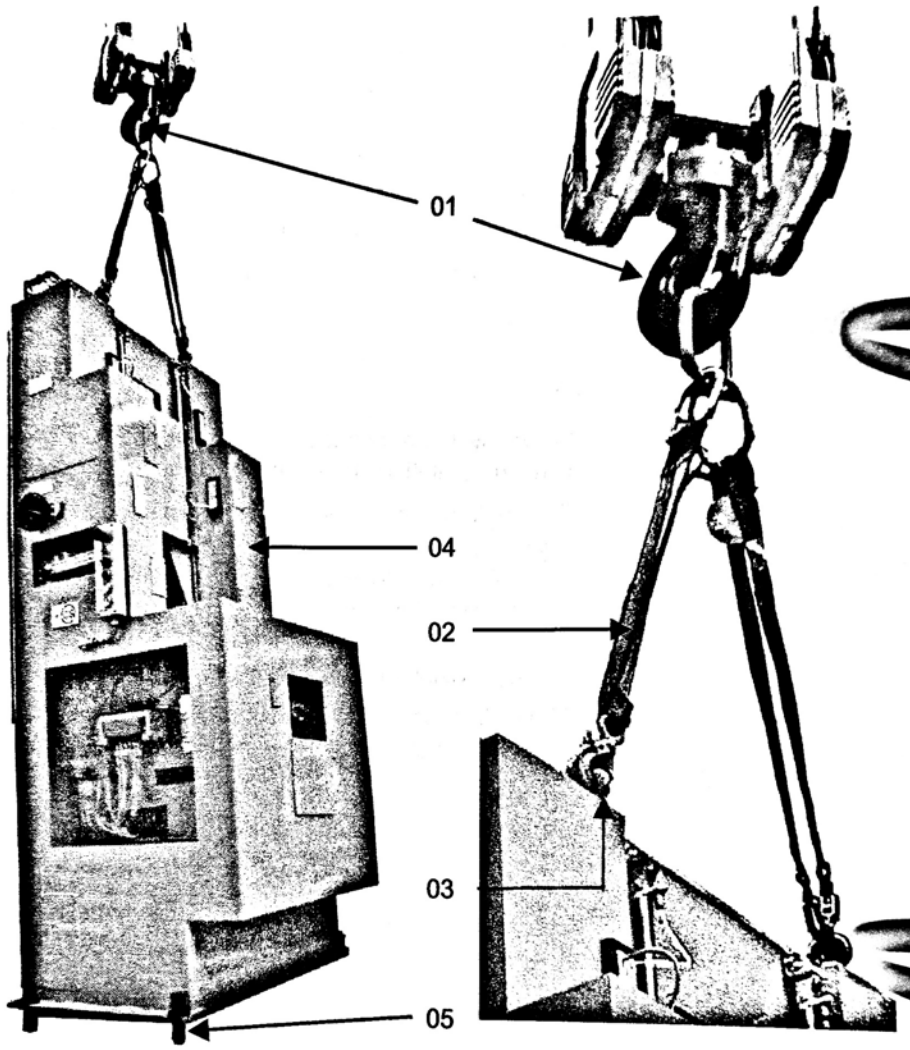


Fig. 32: Loader freely floating — Detail of suspension

01	Hook of hoist, if necessary with oval eye O-75 (Inclination angle of steel ropes max. 60°)
02	(2) 1-stranded steel ropes with hook
03	(2) Ring bolts M16 DIN 580, available as auxiliary items
04	Loader RL 300NC
05	(4) Leveling feet

Note

The loader RL 300NC does not hang on the hoist absolutely perpendicular.

Move loader RL 300NC to installation site and place down

1. Move loader RL 300NC to the installation site.
2. Before finally placing down, check whether the floor plates for the loader leveling feet are positioned, as per SUB SECTION *Prepare installation location.*

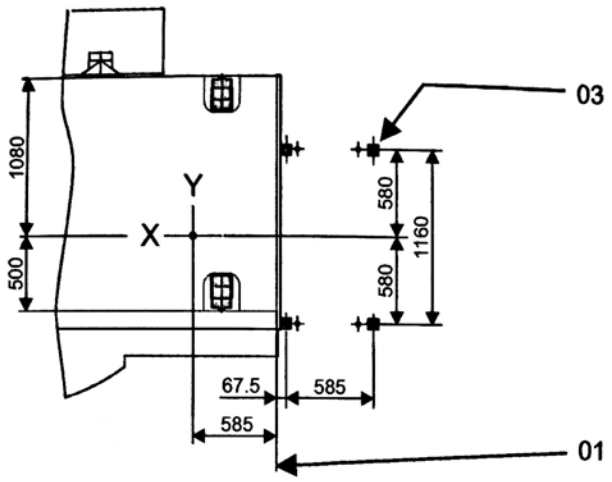


Fig. 33: Position of floor plates for the (4) loader leveling feet

01	Reference: Surface of lower edge of machine base
03	Floor plate 100 × 100 × 15 mm

Danger of collision due to top-heaviness of loader RL 300NC

When placing the loader RL 300NC down on the exact machine location, outmost precaution is required, because due to the inclined hanging of the loader the machine could be damaged. The uneven balanced loader, when transported, must be aligned with weight compensation to approach the machine safely.

3. Place loader RL 300NC down on the floor plates.
4. Do not unhook the loader yet.

RESULT The loader is ready for leveling.

Alignment of Loader RL 300NC

EXPLANATION

The loader RL 300NC was placed with the loader feet onto the 4 floor plates. The loader must now be aligned mechanically in the X-, Y- and Z-direction with reference to the C'-axis on the machine.

Required Tool

- (1) Spanner wrench size 62 mm
- (1) Flat wrench size 17 mm
- (1) Flat wrench size 41 mm

Reference values

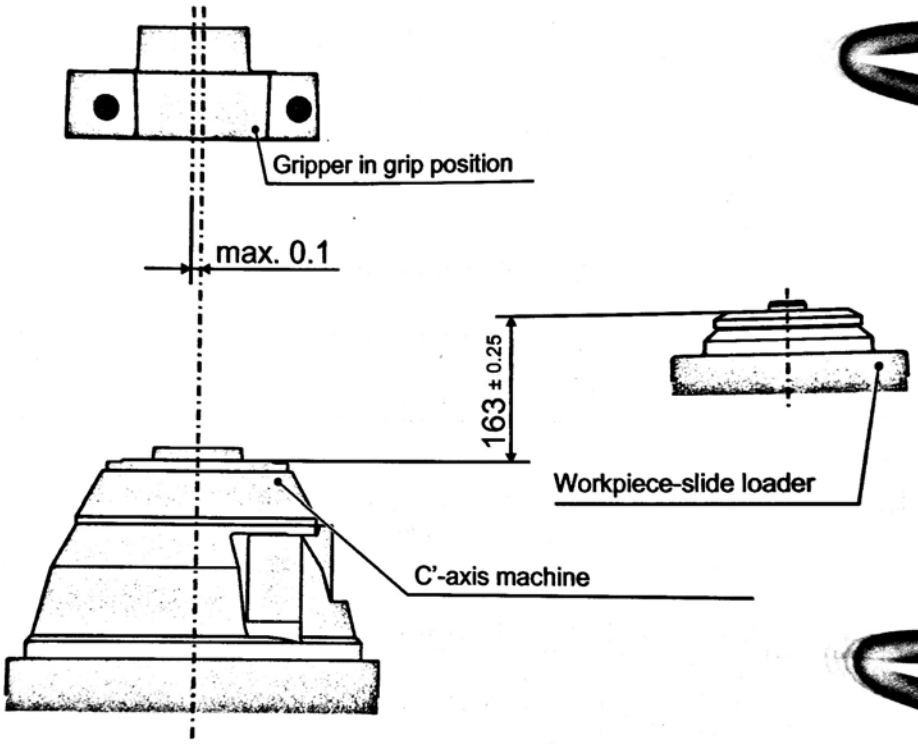


Fig. 34: Alignment of loader and machine

The workpiece locating surface of the C'-axis, of the already levelled machine, is considered to be the reference. The settings, which are required to achieve the reference values, will be performed on the loader according to the following instructions:

Align loader RL 300NC in Z-direction

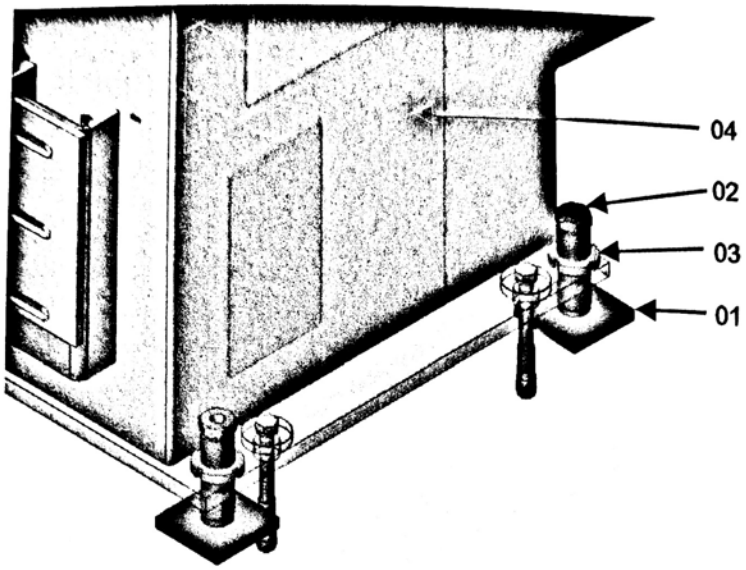


Fig. 35: Alignment in Z-direction

01	Floor plate 100 x 100 x 15	02	Adjustment foot
03	Round nut	04	Loader RL 300NC

5. For the alignment in Z-direction, loosen the round nut (03) with the spanner wrench size 62 mm.
6. To align the loader RL 300NC (04) in vertical direction, the adjustment feet (02) are adjusted with the flat wrench size 41 mm to the required height.
7. Tighten round nut (03) again.

Alignment in X- and Y-direction

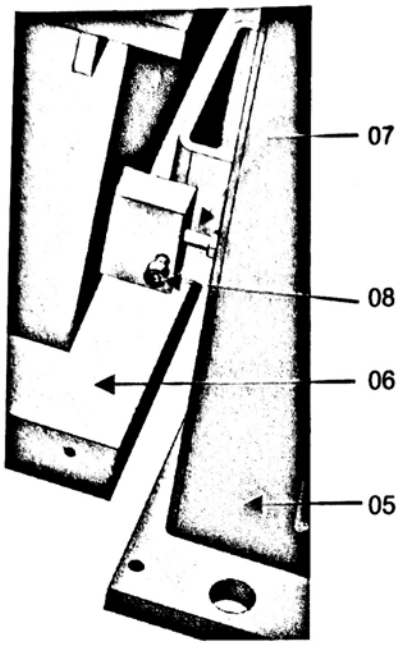


Fig. 36: Alignment in X- and Y-direction

05 Loader RL 300NC	06 Machine RZ 303C
07 Hex. head screw M10 x 20	08 Hex. head screw M10 x 50 / 32

8. For the horizontal alignment in X-direction, adjust both hex. head screws (07) to the required position.
9. For the horizontal alignment in Y-direction, adjust both hex. head screws (08) to the required position.

RESULT The loader RL 300NC is aligned with reference to the workpiece spindle (C'-axis) in X-, Y- and Z-direction.

Fasten Loader RL 300NC to the Floor

EXPLANATION The loader was placed with the feet on the 4 floor plates and was aligned in X-, Y- and Z-direction with reference to the C'-axis.

Note

The loader shall not be fasten to the machine.

Required Material

included with loader RL 300NC:

- 4 pcs. disk (03), D = 60 mm, thickness 12 mm
- 4 pcs. hex. head screw (04) DIN 931, M16 x 130

Required Tools

- 1 pc. flat wrench size 24 mm

Fasten loader RL 300NC

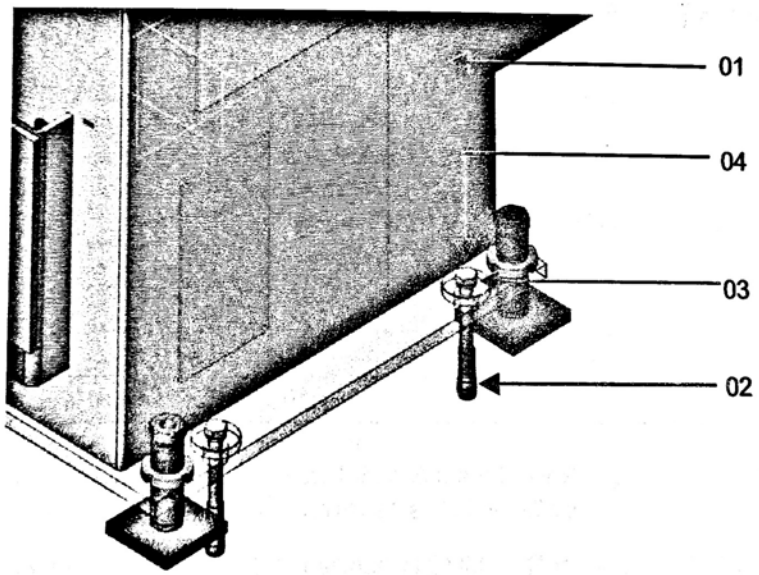


Fig. 37: Loader anchorage

01	Loader shelf	02	Flush anchor
03	Disk	04	Hex. head screw M16 x 130 DIN 931

1. Fasten 4 pcs. hex. head screws (04) with one or, if necessary, with two disks (03) each to anchors (02) and tighten with 60 Nm to loader shelf.

RESULT The loader is installed and ready.

Final Preparation and Installation of Loader RL 300NC to the Machine RZ 303C

EXPLANATION The loader RL 300NC is ready for operation provided it has been levelled, completed and installed as well as electrically connected to the machine RZ 303C

Note

The activities described in the following explanations may only be carried out by specialized personnel.

Final Preparation and Installation of Loader RL 300NC

1. Cleaning of loader RL 300NC and all loose parts.
2. Connect the loader RL 300NC electrically to the machine.
3. Connect the loader RL 300 NC pneumatically to the hydraulic unit.
4. Install hose connection for cleaning of the spinning station between machine and loader RL 300NC.

RESULT Axes of loader RL 300NC can be moved.

Check Levelling

5. Double check the levelling and correct, if necessary *(see* SUB SECTION *Levelling of loader RL 300NC* in this SECTION*)*.

Tolerances for the Levelling of the Loader 300NC

Measuring direction	Permissible value
X- direction	0,1 mm/m
Y- direction	0,1mm/m
Z- direction	0,1 mm/m

6. Record the measured values *(see* SUB SECTION *Quality assurance Machine installation* in this SECTION*)*.

RESULT Loader RL 300NC is installed and ready for geometry checks..

Grinding Oil Connections for Hoffmann HSF 100 SE/K unit

Floor plan exemplary

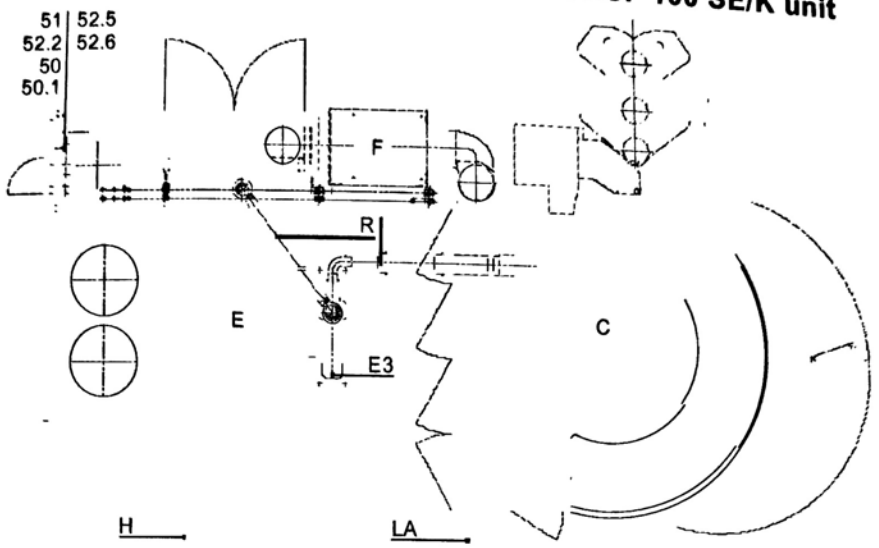


Fig. 38: Grinding oil connections Hoffmann HSF 100 SE/K with 1 pcs. RZ 303C

Pos	Function	Value [l/min]	Pressure [MPa]
50	Tangential nozzle grinding process cooling	...160	0,8 ...2,0
50.1	Flushing work area	...160	ca. 0,8
51	Cooling dressing device, Process cooling	ca. 40	0,5
52.2	Cooling machine base and cooling dresser motor spindle	30	0,5
52.5	Spindle coolant supply line	ca. 15	ca. 0,5
52.6	Spindle coolant return line	ca. 15	ca. 0,5
R	Return cooling media	Max. 200	0
C	Machine		
E	Filter Hoffmann		
E3	Return pump pump		
F	Oil Mist Prescreener mechanical		
H	Filter Hoffmann – Sludge cart		
LA	Fire Extinguisher Unit		

Quality Assurance Machine Installation

Record Measured Values

Levelling of machine

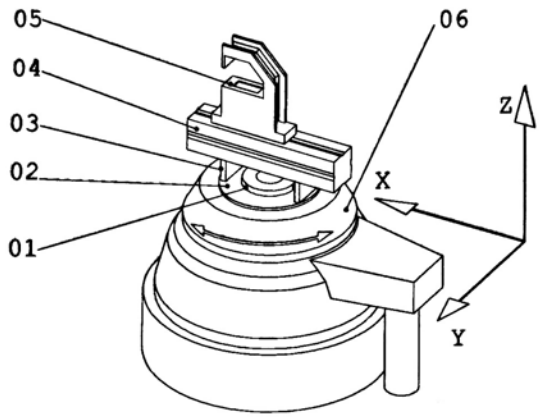


Fig. 39: 1821 Check the levelling

01	Short taper on the workpiece spindle
02	Clamping surface on the workpiece spindle
03	2 pcs. equal gauge blocks with min. height of 20 mm
04	Straight edgel
05	Level instrument
06	Workpiece spindle

Check and Record Levelling

1. Double check the levelling and correct, if required *(see* SUB SECTION *Levelling of machine* in this SECTION*)*.
2. Record measured values.

RESULT Machine is levelled and ready for further geometrical checks.

Tolerances / measured values

Measuring direction	Permissible value	Measured value
X-direction	0,04 mm/m	
Y-direction	0,04 mm/m	