

Transport, Installation, Start-up

R300

Valid from the machine No. 485024

Note on applicability

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Safety Instructions

Notes on Transport, Installation, Start-up



Use only suitable hydraulic jacks to lift the machine and adequate transport casters or armored rollers with appropriate carrying capacity for transport.



If the door to the work area is open, the door safety interlock will remain open after disconnecting the power supply line.



Transport locks can be identified by their red color.

Failure to follow proper procedures for transport, installation and start-up is prone to cause accidents and may induce damages to or malfunctions of the machine for which **INDEX** rejects any liability or warranty.

Prior to delivery of the machine, the procedures for unloading, transporting to the installation site, installation, and start-up must be carefully planned while absolutely observing the cautions below in this document.

Associated transport instructions and/or manufacturer documentations exist for separate units such as chip conveyor, bar feeder, bar loading magazine and similar devices. These documentations must also be followed without fail.

General sources of danger during in-house transportation



Danger to life!

Do not stand under suspended loads.

Machines must be transported by authorized and qualified personnel only.

Act responsibly when transporting the machine and always consider the consequences. Avoid dangerous and risky actions.

Slopes and gradients (driveways, ramps, etc.) are particularly dangerous. Use extra care if such passage-ways cannot be avoided.

Ensure secure and proper seating of the cargo. If necessary, use additional fixtures to ensure that the cargo is not able to slip.

The transport vehicles must be able to produce sufficient traction and braking forces for safe transport.

Dimensions and Masses

The machine and control cabinet masses are indicated on the respective machine installation chart in Chapter "Working Documents".

The masses of optional separate units, such as chip conveyor, bar feeder, bar loading magazine and similar devices, can be found either in the specific transport instructions/manufacturer documentation for these options or accessories, or in the corresponding machine installation chart in Chapter "Working Documents".

Transporting and Lifting Aids

For lifting and transporting the individual units, only lifting and transporting aids having sufficient capacity and loading space must be used.

Transport equipment, ropes

For lifting the machine with a crane use only the provided transportation gear. This also applies to certain separate units such as bar feeder and the bar loading magazine.

For lifting all other separate units with a crane no special transportation equipment will be provided.

When selecting your own transportation equipment and ropes make sure that they have the recommended capacity and length.

When selecting and applying the transportation equipment and ropes/round slings respectively, consider the following instructions in this document, e. g.:

- Unloading the machine with a crane or a mobile crane.
- Unloading and transporting of separate units.

Preparations

This section is addressed to the persons responsible for the installation and their staff.

The information provided here allows you to prepare the installation site and its surroundings such that the machine, when delivered, can be installed and put into operation immediately.

Be sure to carefully plan the delivery, unloading, and transporting of the machine from the unloading site to the installation site.

Take the size (dimensions) and masses of each unit into consideration.

Suitable transporting and lifting means must be available when the machine is delivered.

Any obstacles along the transport route from the unloading site to the installation site must be eliminated before the machine is delivered.

Check the transport route for load capacity, levelness, damaged pavement, traverse grooves, slopes, gradients, etc.

Is the width and height of entrances and gates sufficient?

If elevators are to be used, do they have sufficient capacities?

Proper planning will pay off!

Appropriate Transporting and Lifting Means

- Crane
- Mobile crane
- Forklift (only for separate units; **not** suitable for the machine)
- Transport trolley
- Transport casters
- Armored rollers
- Hydraulic jack
- Forklift truck (only for separate units).

Space Requirements

The following must be ensured:

- Sufficient free space around the machine.
- Sufficient movement space for the operator.
- Sufficient space for maintenance and repair.
- It must be possible to open all doors of the machine completely.
- Space for placing blank and workpiece pallets, workpiece containers, chip trolleys, tool trolleys, etc.

Use the machine installation chart in Chapter “Working Documents” to determine the required space.

Chapter “Working Documents” also includes specific installation charts for additional equipment such as bar feeders, bar loading magazines, etc.

Subsoil, Foundation

A special foundation is not necessary. Only the bearing capacity and strength of the floor must be suitable for the machine weight based on constructional aspects.

There must be no expansion joints in the area of the machine footprint.

The machine can be anchored in the foundation. For the distances between the anchoring holes, see the machine installation chart in Chapter “Working Documents”.

Bar guides, bar feeders, and bar loading magazines must generally be anchored in the foundation (for information, see the associated operating instructions and the machine installation chart in Chapter “Working Documents”).

If a bar feeder or bar loading magazine is used, **INDEX** also recommends anchoring the machine in the foundation.

Environmental Conditions

See Environmental Conditions in the document “Safety instructions”



If the actual conditions at the installation site differ from these specifications, be sure to contact INDEX or an INDEX representative.

Power Supply



The power supply cord to the machine should be as short as possible. Use a sufficient wire size.

The power supplies for the programmable logic controller (PLC) and the numerical control (NC) require stable mains conditions, i.e., the max. allowed operating voltage fluctuations are +10% or -10%.

The mains line must comply with the regulations of the local electricity supplier and the IEEE directives. For further information, see the machine installation chart in Chapter "Working Documents".



The locally valid guide lines and regulations must be taken into consideration.

Main Circuit Breaker



Check that the building connection has sufficient capacity to cover the additional load to be protected. Discuss any unclear conditions with your local electricity supplier.

The main circuit breaker is not included in the delivery of the machine. It must be installed outside the machine according to DIN EN 60204-1.

If a pre-transformer is required, the main circuit breaker must be installed before the pre-transformer, i.e., on the primary side.

The loads to be protected depend on the existing operating voltage.

The values for:

- Machine connection,
- operating voltage,
- main circuit breaker

are indicated on the name plate or the wiring diagram.

External Data Transfer



Data lines must not be routed directly next to power lines.

For data transfer to/from external computers or storage devices, suitable metal conduits must be installed for the data lines.

Compressed-Air Supply



Observe the max. allowed connection pressure for the machine. See the pneumatic diagram in Chapter "Working Documents".

Machines equipped with pneumatically actuated components require a compressed-air supply with the following capacity:

Operating pressure6-10 bar
Air demand.....depending on the machine equipment

For the air supply on the machine, see the machine installation chart in Chapter "Working Documents".

Pressure Accumulator

If the machine was shipped by plane, all accumulators attached to the machine are depressurized.

Before start-up of the machine, all accumulators must be filled with nitrogen (N₂) by a specialist. The prescribed pressures must be observed.

For the prescribed pressures, see the hydraulic diagrams in Chapter "Working Documents".



The locally valid guide lines and regulations must be taken into consideration.

Operating Fluids to be Provided

- Hydraulic fluid ¹⁾
- Lubricating oil ¹⁾
- Approx. 1 kg of high-performance grease for chuck
- Cooling lubricant

For the appropriate types of lubricating oil, hydraulic fluid, grease, and cooling lubricant, see the Chapter "Notes on Operating Materials" and "Hydraulic Diagrams and Machine Installation Chart" in Chapter "Working Documents".



Caution:
For the cooling of the spindle only a lubricating oil in accordance with ISO VG5 is used.

¹⁾ The machine is delivered with a full tank.

Pumps and Tanks

Changing the hydraulic fluid and cooling lubricant is part of the periodic maintenance tasks.

To fill the machine's hydraulic fluid tank with hydraulic fluid, a pump with a 10 µm fine filter (absolute) is required that may be used for this purpose only.

A simple pump is sufficient to extract the used hydraulic fluid or cooling lubricant. The same pump may be used to fill the cooling lubricant tank; however, it must be thoroughly flushed with fresh cooling lubricant.

A robust container is required for collecting the extracted fluids. Suitable containers are metal barrels of sufficient capacity and with proper labels, which can be tightly closed.

Chip Removal

If the machine is equipped with a chip conveyor, a chip trolley, its height matching the chip conveyor's dropping height, is required. The chip trolley should have a device for draining the accumulating cooling lubricant so it can be returned to the cooling lubricant tank.

This will protect the environment and save cost.

Disposal of Used Operating Materials

Decide in advance on how to dispose of used operating fluids such as hydraulic fluid, lubricating oil, and cooling lubricant in an environmentally friendly manner.

Observing the Ground and Waste Water Regulations



The locally valid guide lines and regulations must be taken into consideration.

The machine contains water-polluting substances such as water-miscible cooling lubricants and mineral oils. These substances may leak from the machine in case of adverse events.

Therefore, the machine must be installed in a place that excludes any harm by these substances to waters or ground water.

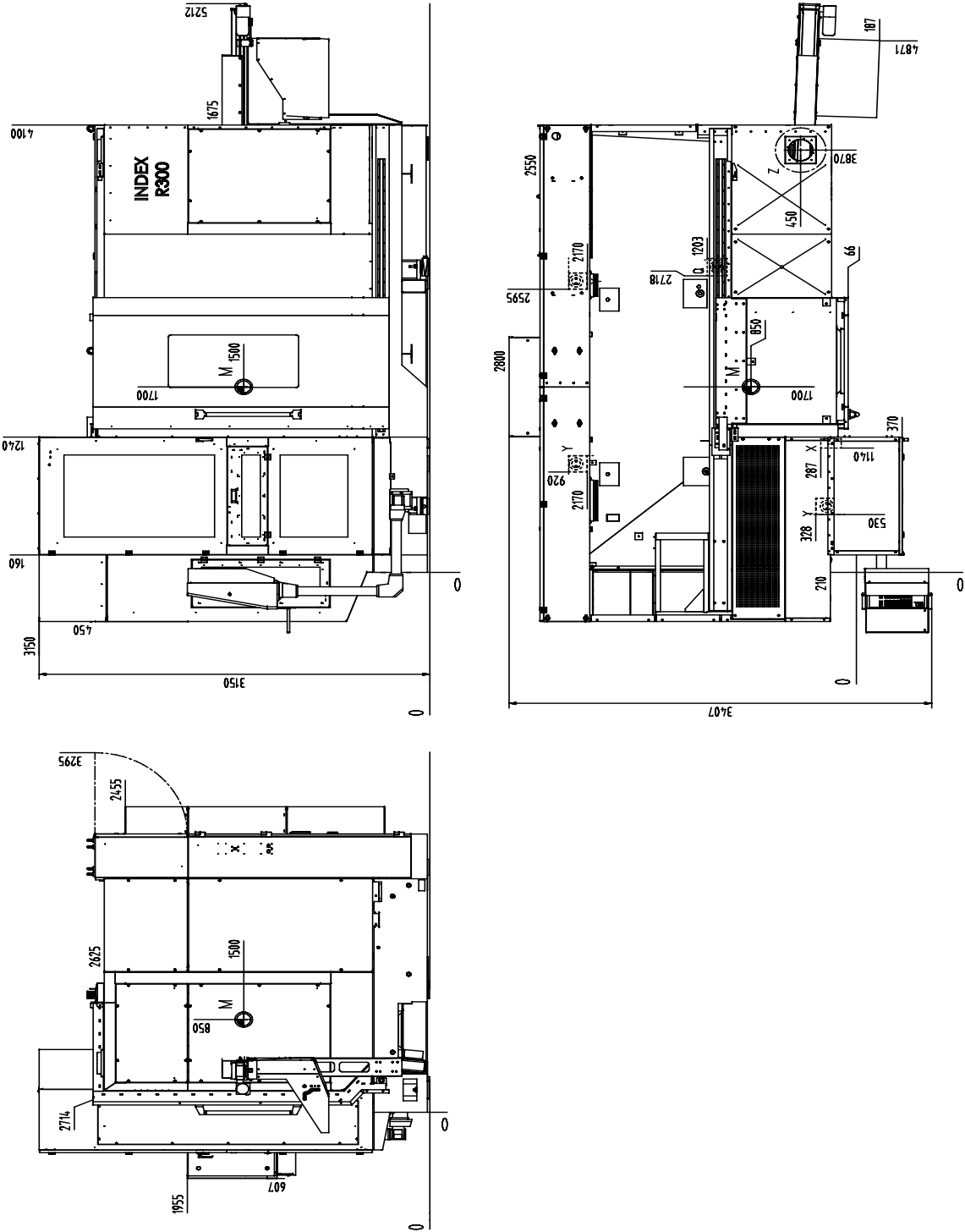
Possible preventive measures:

- Place the machine inside a tight trough.
- Seal the floor of the factory hall.

Transport

Transport and Installation Charts R300

Transport Chart (Without Transport Means)



Display of a machine in standard version.



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Delivery

Machine

The machine will be delivered by a special truck.

The machine will be in the following condition when delivered:

- The hydraulic fluid and lubrication oil tanks will be full.
- The cooling lubricant tank will be empty. (The machine has a chip conveyor with an integrated cooling lubricant tank or a separate coolant cleaning system. The chip conveyor and coolant cleaning system are separate units.)
- Certain moving parts on the machine, such as sliding covers and the swiveling operating panel, are secured by transport locks or were removed.
- Protruding machine parts hampering the transport may have been removed.
- All blank parts of the machine were treated by spray-covering with an anti-rust agent.

Pressure Accumulator

If the machine was shipped by plane, all accumulators attached to the machine are depressurized.

Before start-up of the machine, all accumulators must be filled with nitrogen (N₂) by a specialist. The prescribed pressures must be observed.

For the prescribed pressures, see the hydraulic diagrams in Chapter "Working Documents".

Other Separate Units

Certain options or accessories such as chip conveyor, bar feeder, bar loading magazine, etc. are usually separate units.

Chip conveyors usually rest on a transport base for shipping.

The bar feeder and bar loading magazine are delivered in a special shipping crate.

Loose parts such as keys, tools, and fittings, are supplied in a special box, which may be included with a separate unit.

Before unloading, check the machine, the enclosed accessories, and any separate units for external damages and completeness (compare bill of lading with delivery note).

Have the carrier confirm any damages or missing parts on the bill of lading or delivery note.

In case of damages during transport, it is recommended to take photos of the damages for evidence.

Inform **INDEX** or the **INDEX** representative.

INDEX R300

Transporting the Machine

INDEX

Kunde: _____

Projekt-Nr.: _____ Masch.-Nr.: _____

Machine mass

approx. 19000 kg

Transporting with Transport Casters



The machine is transported by a forwarder using a special truck.

For internal transport, the machine is prepared while still on the truck and placed onto transport casters or armored rollers. Adequate hydraulic jacks are used to lift the machine.

The steering caster of the transport casters or armored rollers is located at the counter spindle end (Fig.: 1).

The machine is supported by a winch during loading and unloading. Round slings are used between the winch and the lifting or lashing points for securing. (Fig.: 2)



Fig.: 1

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Fig.: 2



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Fig.: 3 Overall view of the special truck



Fig.: 3

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Due to the machine's high center of gravity, we recommend transporting with transport casters only if the ground is absolutely even and horizontal.



INDEX uses plastic plates or Teflon plates to bridge slightly uneven points and to reduce the rolling resistance. (Figs. 4 and 5)
This applies in particular to transporting on irregular or soft grounds such as industrial parquet floors or rubber or PVC-based floor covers.



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Fig.: 4



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Fig.: 5

Suspension and lashing points

The lifting and lashing points that serve to secure the load on the truck are also used for loading and unloading the machine. As shown in Fig. 6, two of the lifting and lashing points (**Y**) and the round slings (**X**) are connected with the winch (**Z**) installed on the truck.



The two free lifting and lashing points (**Y**) are used to secure the transport casters to prevent the load from slipping.



The machine may not be operated without the cover (**A**), except when the feeder is attached.



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Fig. 6



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Fig. 1: Hydraulic jack

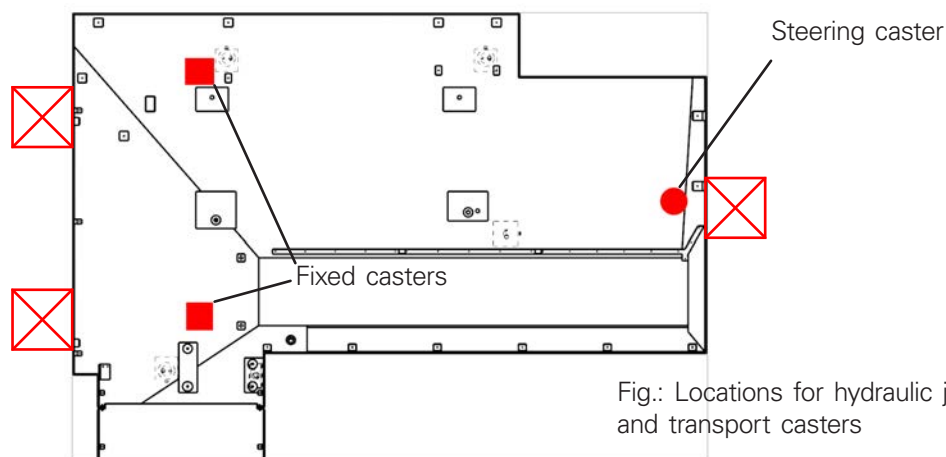


Fig.: Locations for hydraulic jacks and transport casters

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The locations shown must absolutely be observed. The supporting points for the transport casters can be recognized by additional welded steel plates



Lower the machine gently with the help of hydraulic jacks in **several small steps** (alternating between the main and counter spindle ends). This is done by continuously underpinning and securing the machine with appropriate timber. The same procedure is basically used also for lifting the machine.



Always apply the hydraulic jacks only where indicated (Fig.). It may be necessary to remove the guide panels near the chip conveyor opening.

Be sure to provide for a three-point support when lifting or lowering the machine with hydraulic jacks: two transport casters or armored rollers or supporting on the floor on one side, hydraulic jacks on the other side.

Always lift the machine with hydraulic jacks on one narrow side only. The other narrow side must rest on the transport means or on the floor.

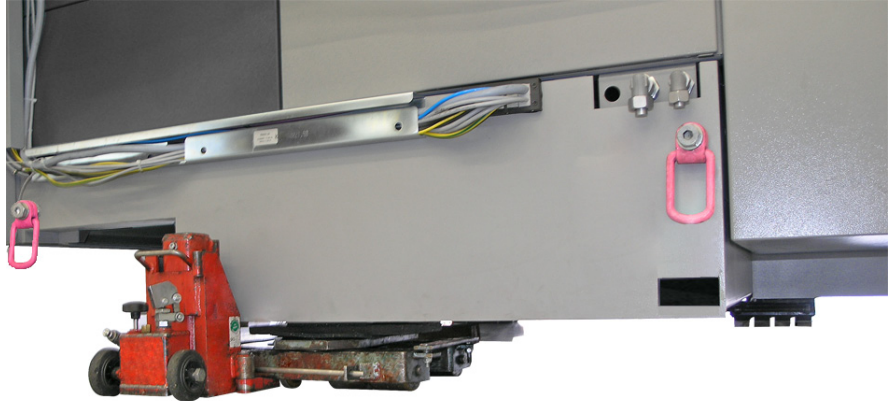
Do not lift the machine more than absolutely necessary.

As the center of gravity is not in the center of the machine, if 2 hydraulic jacks are used, each hydraulic jack should have a capacity of 1/3 of the machine mass.

If only one hydraulic jack is used, it should have a capacity of at least 2/3 of the machine mass.

Procedure in detail:

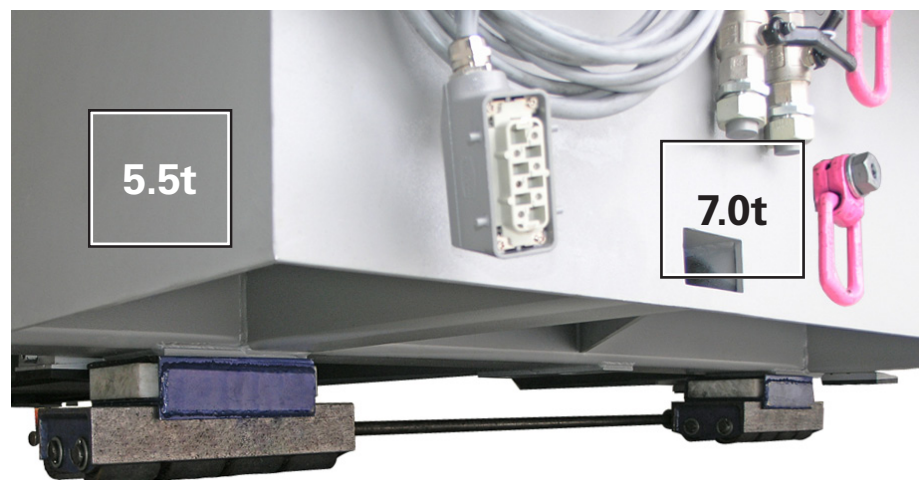
- Lift the counter spindle end and remove the steering caster.
- Immediately underpin with suitable timber and secure.



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Fig.: Location of the hydraulic jack and steering caster at the counter spindle end, and loading pressure

- Lift the main spindle end and remove the transport casters.
- Immediately underpin with suitable timber and secure.



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Fig.: Location of the fixed casters at the main spindle end, and load

- Then lower the machine to the floor in **several small steps**, alternating between the main and counter spindle ends.



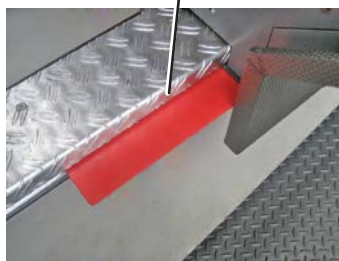
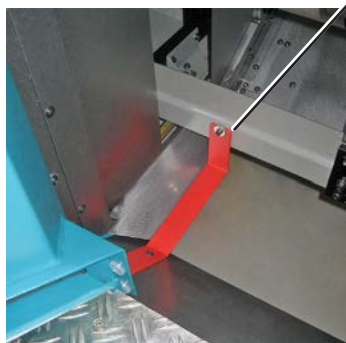
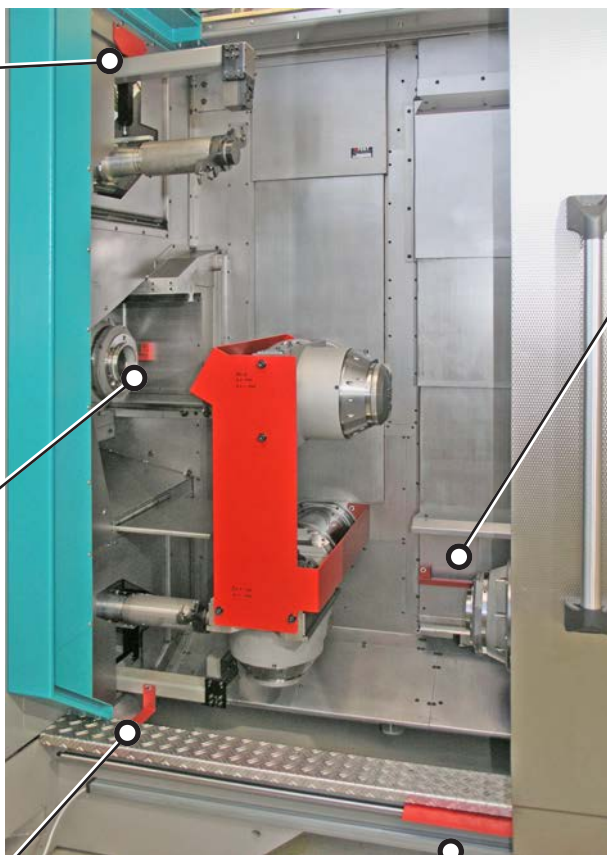
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Fig.: Locations of the hydraulic jacks at the main spindle end

Locations of the Transport Locks on the Machine



All transport locks must be removed prior to machine start-up. Transport locks can be identified by their red color. Close the fastening points of the transport locks using the provided screws.



Unloading the machine with a crane



Suspended loads!
Fatal danger by a crushing machine.
Do not step under suspended loads and use only the permitted transportation equipment.

Height of crane hook above ground level:

Height of the unit (e.g. Machine, control cabinet etc)

+ Lifting gear or length of slings above the unit	approx. 1,2 m
+ Floor height of truck	approx. 1,3 m
+ Hoisting	0,2 m

Remove all securing devices for transportation on the truck.

Attach the supplied lifting gear.



Use a crane with sufficient carrying capacity. Unload the machine as close as possible installation site.
Short transportation distances reduce the risk of accidents.

Lift machine slowly and carefully.



Make sure to keep the machine in a horizontal position. The centre of gravity is not exactly in the middle of the machine. If necessary put down the machine again and correct the tilt by adjusting the hooks on the beam.

Lift machine off the truck or move truck from under the suspended machine.

Place the transportation (e. g. trolley) means under the machine.



Ensure that the selected transportation equipment has sufficient load bearing capacity. It must be at least equal to the machine mass.
When using a trolley the load bearing area must be larger than the machine area (floor area).

Lower machine slowly and carefully onto the trolley, remove the lifting equipment and move the machine to the installation site.

INDEX R300

Transporting the Machine

INDEX

Kunde: _____

Projekt-Nr.: _____ Masch.-Nr.: _____

Machine mass

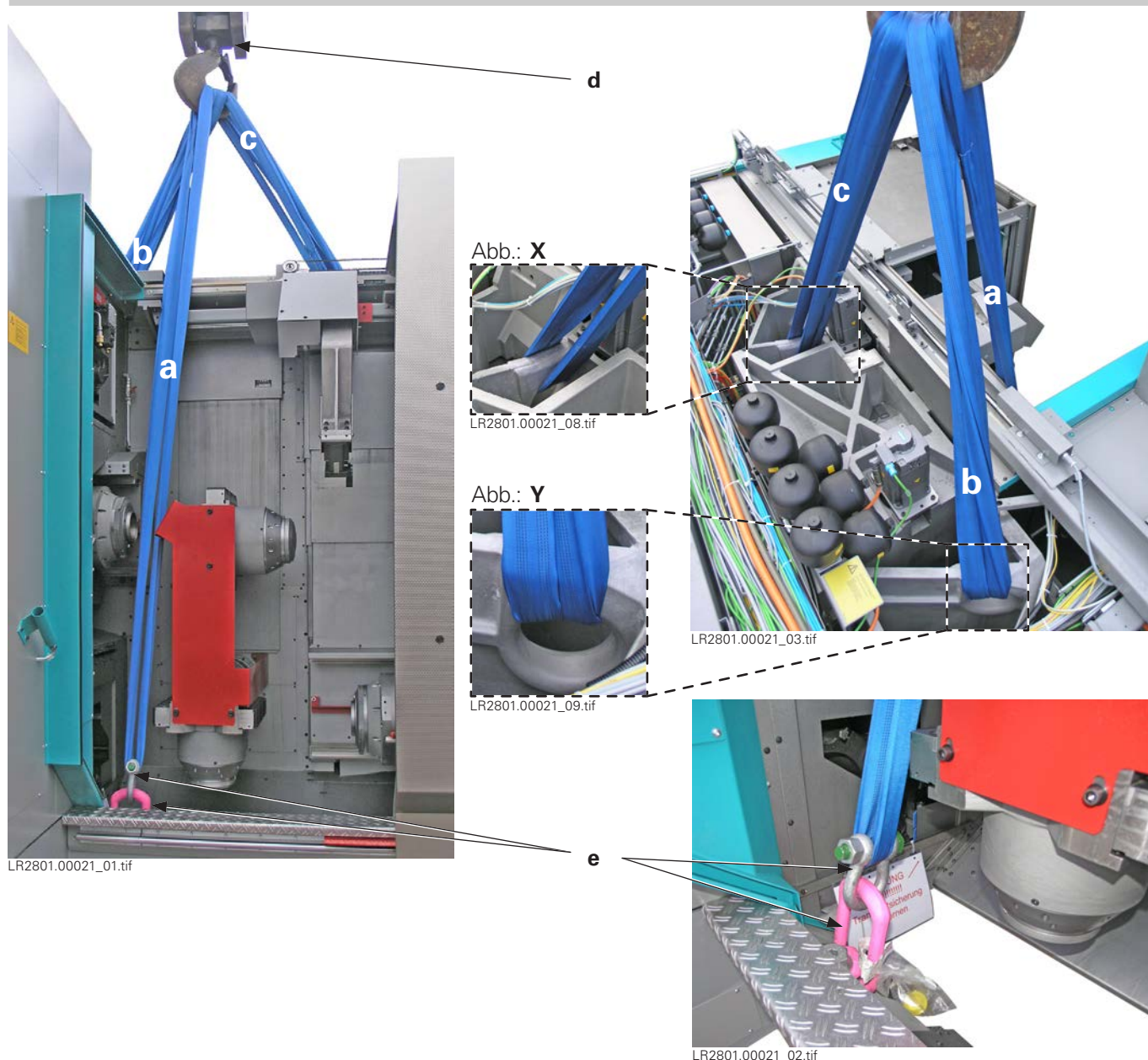
approx. 19000 kg

Transport by crane



The round slings used to transport the machine by crane (**a** = 3500 mm, **b** = 3400 mm, and **c** = 3800 mm) must only be used as specified in this document. Incorrect use can result in dangerous shifts in the center of gravity, which could cause the machine to fall.

The round sling (**a**) is attached to the machine using the hook (**d**) and a mounting lug with shackle (**e**). The round slings (**b** and **c**) are directly attached to the lugs provided for this purpose (fig.: **X** and **Y**) on the frame of the machine via the hook (**d**).





The figures showing the machine tied down on a truck are provided as an example. The tie-down method can vary depending on the type of truck used.



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Unloading and Transporting of Separate Units

Options or accessories such as chip conveyors, bar feeders, bar loading magazines, etc. are separate units.

They have dedicated transport regulations that must be observed for unloading and transporting (see the manufacturer's documentation).



Do not stand under suspended loads.

Minor separate units do not have specific transport regulations.
They either rest on a pallet or are included in the packaging of another unit.

Use suitable transport ropes or belts for unloading and transporting.

Attach the transport ropes or straps making sure they cannot slip and the load is securely suspended.

Attach the ropes or straps to any eyebolts that are provided for transport.

Unpack the Accessories and Check them for Completeness

After unloading, unpack the machine accessories and check them against the information on the delivery note for completeness (compare with bill of lading or delivery note).

In case of discrepancies, contact **INDEX** or your **INDEX** representative.

Installation

Electrical Connection

Important Notes



Caution! Danger of Life!

All work on the electrical equipment must be carried out exclusively by properly trained qualified personnel.



The control voltages are connected on one side with PE according to EN 60204-1. See the information on the wiring diagram.

The control cabinet may be opened only when the main switch is switched off. While the main switch is switched on, the control cabinet must be secured according to the valid safety standards.



See the order confirmation for the precise electrical requirements. The electrical specifications provided are decisive and binding. They must be available to **INDEX/TRAUB**'s customer service at any time.

The machine must be connected to the electrical supply network via the main switch (multi-wire cable). Be sure to observe the clockwise phase sequence for the connection.

The electrical connection is indicated in the wiring diagrams.

The machine is prepared for connection to three-phase power supplies (TN mains system).

Before connecting, check that the available line voltage matches the machine's operating voltage. If this is not the case, you will need an appropriate transformer connected in front of the machine.



The locally valid guide lines and regulations must be taken into consideration.

Installing the Machine


The R300 machines are equipped with five adjustable feet as standard (see Figs. "Leveling the entire machine" and "Adjustable machine foot").



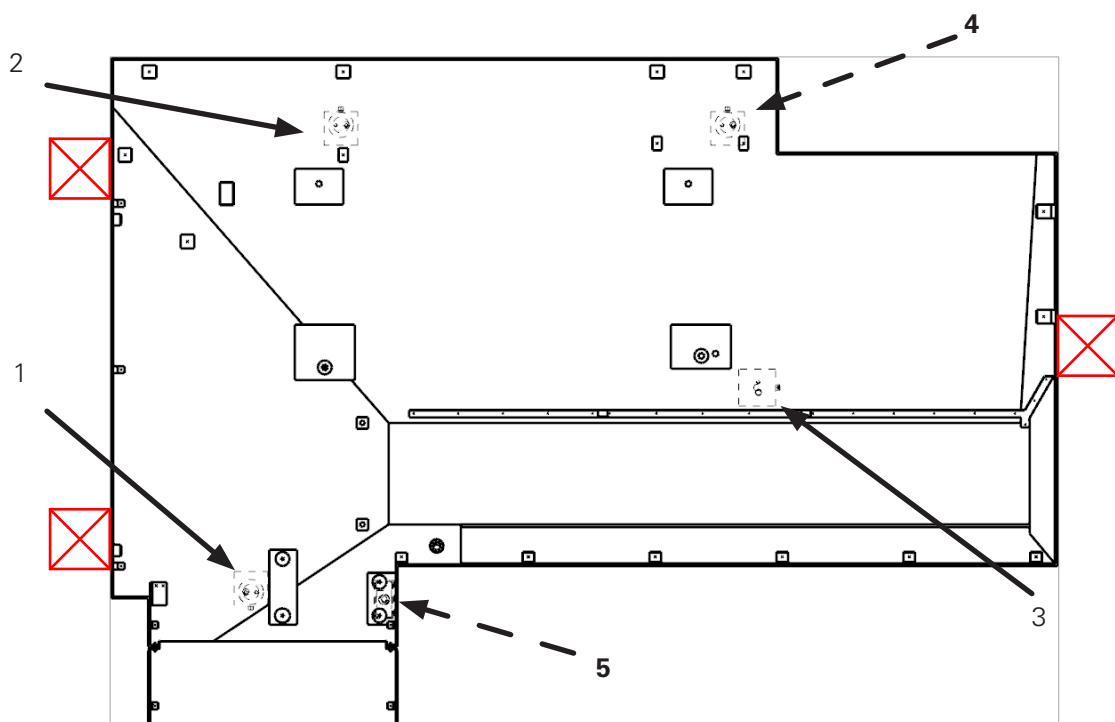
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Fig. 1: Hydraulic jack



Screw back the machine feet 4 and 5 before lowering the machine onto the floor. They are used only for support. The machine is leveled only by means of the machine feet 1, 2 and 3. Always support the leveling process with suitable hydraulic jacks. Be sure to observe the locations of the hydraulic jack  (see pictures in "Transport of the Machine").

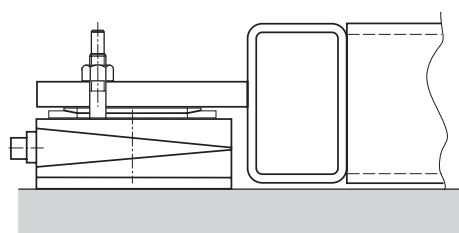
See the installation chart for the static load distribution to each machine foot.



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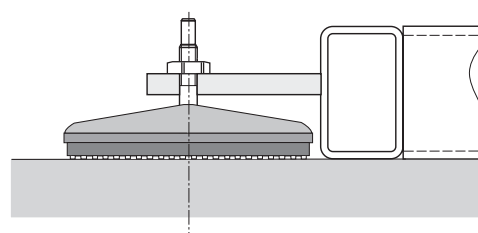
Fig.: "Leveling the entire machine"

Machine feet 1 - 4



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Machine foot 5



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Fig.: Adjustable machine foot

Level the Machine

(Accuracy 0,1 mm/m - also testing by inverting the level)

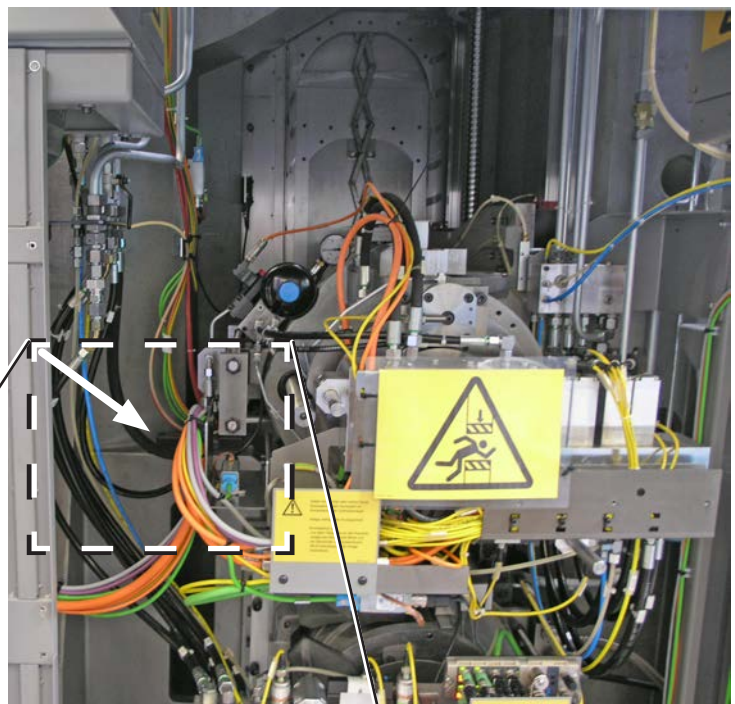
Leveling the Z-Axis

Place precision spirit levels on the alignment surface. See Fig. - Back of the machine - Left of the tool carrier



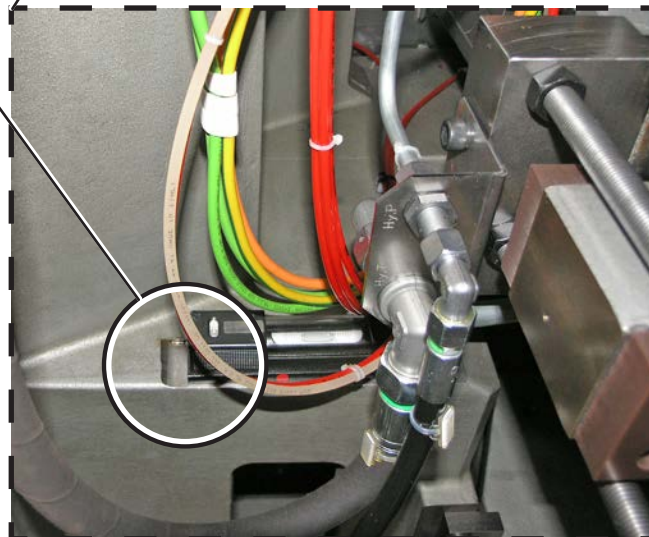
Take care of the cutter exit (X) when placing the spirit level!

Now level the machine by adjusting the machine feet 1, 2, and 3.



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X



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Leveling the Y-Axis

Place precision spirit levels on the alignment surface. See Fig. - Main spindle end.

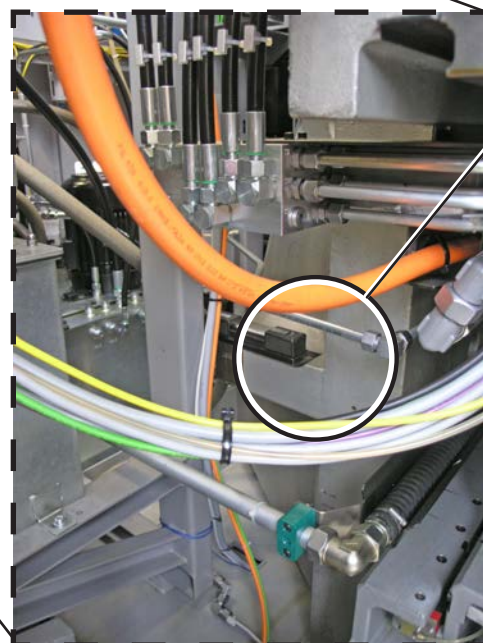


Take care of the cutter exit (X) when placing the spirit level!

Now level the machine by adjusting the machine feet 1, 2, and 3.



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Adjusting Machine Feet 4 and 5

Place precision spirit levels on the alignment surface. See Fig. - Back of the machine - Left of the tool carrier



Take care of the cutter exit (X) when placing the spirit level!

- Now carefully adjust the machine feet 4 and 5 such that the spirit level does not respond.



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X



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Running Machines on an External Cooling Water System

To ensure reliable operation of one or more machines on an external cooling water system, the following points must be observed:

- Provide the cooling systems with frequency-controlled pumps. This will compensate for pressure fluctuations and excessive pressure due to differing usage quantities.
Ensure trouble-free operation of the cooling system at partial loads.
- Install an overpressure relief device in the cooling line.
- Consider the pressure difference (see table) in the cooling water line between the supply and return sections.
- Reduce the cooling water amount to the prescribed amount via a control valve on each machine. This is to ensure an even supply to all machines.
- Route the lines to the machine as straight as possible. This will avoid turbulence by booster pumps and/or pipe bends that lead to disturbance of the flow sensors. (See the installation chart for details.)
- Install thermometers and pressure gauges in the forward and return flows of each cooling water line to be able to assess the cause of failure in case of problems.
- Install filters (fineness <0.1mm) with shut-down valves in the forward flow of the cooling water line of all machines.
- Install shut-off valves or solenoid valve for each machine, so each machine can be disconnected separately if repairs are necessary.
- Disconnect the machine from the water circuit (e.g., via solenoid valves) at power-down (main switch), so cooling water will no longer flow through the control cabinet.
- When connecting older machines to the external cooling water supply, be sure to consult **INDEX** Werke or a representative beforehand.

Technical Data of the Cooling Water Supply

Machine	Water temperature [°C]	Cooling water flow Q_{\min}/Q_{\max} [l/min]	Differential pressure P_{supply} and P_{return} [bar]	Required cooling capacity [kW]	Pressure in the cooling system [bar]
R200	20°C±2°K	70 - 90	4	15	8
R300	20°C±2°K	70 - 90	4	21	8

Installation and Leveling of Options and Accessories

A bar feeder or bar loading magazine must be fastened to the machine using dowels. The dowels are included with the machine.

The bar guide, bar feeder or bar loading magazine have leveling elements that allow them to be aligned flush with the working spindle with ± 0.1 mm/m accuracy.

The workpiece conveyor belt, pallet station, etc. also have leveling elements that allow them to be aligned longitudinally and laterally to the main spindle rotating axis with ± 0.1 mm/m accuracy.

(For further information, see the corresponding installation chart in Chapter "Working Documents".)

Start-up

This section lists all the actions that must be carried out in the order given before the machine is ready for start-up.

Only then the machine is ready for operation.

Cleaning the Machine

All blank parts of the machine were treated by spray-covering with an anti-rust agent. Usually this protective cover is flushed away by the coolant during the operation of the machine.



To prevent solvent splashes from entering the eyes when cleaning the machine, be sure to wear suitable protective goggles.

For cleaning the inside of the machine's working area, protect your hands and arms by wearing clothes with long sleeves and suitable gloves.

Risk of injury by sharp machine parts and tool edges!

The anti-rust agent must be washed off, if the machine is put into operation only after a long time so that the protective layer has become very tough.

The mounting surfaces for tool holders and accessories must also be cleaned.

For this purpose, only solvents may be used that do not affect the machine paint. Suitable solutions are turpentine, petroleum or benzine.

Check the Operating Fluid Levels and Replenish, if Necessary.

Hydraulic system: Oil level check

Cooling lubricant unit: Replenish cooling lubricant

Centralized lubrication: Oil level check

Auxiliary equipment: Oil level check



For information on the lubricating oil, hydraulic fluid and cooling lubricant grades, as well as on volumes and filling positions, see Document "Notes on Operating Materials" and the machine installation chart in Chapter "Working Documents".

Pressure Accumulator

If your machine was shipped by plane, all accumulators attached to the machine are depressurized.

Before start-up of the machine, all accumulators must be filled with nitrogen (N₂) by a specialist. The prescribed pressures must be observed.

For the prescribed pressures, see the hydraulic diagrams in Chapter "Working Documents".

Removing the Transport Locks



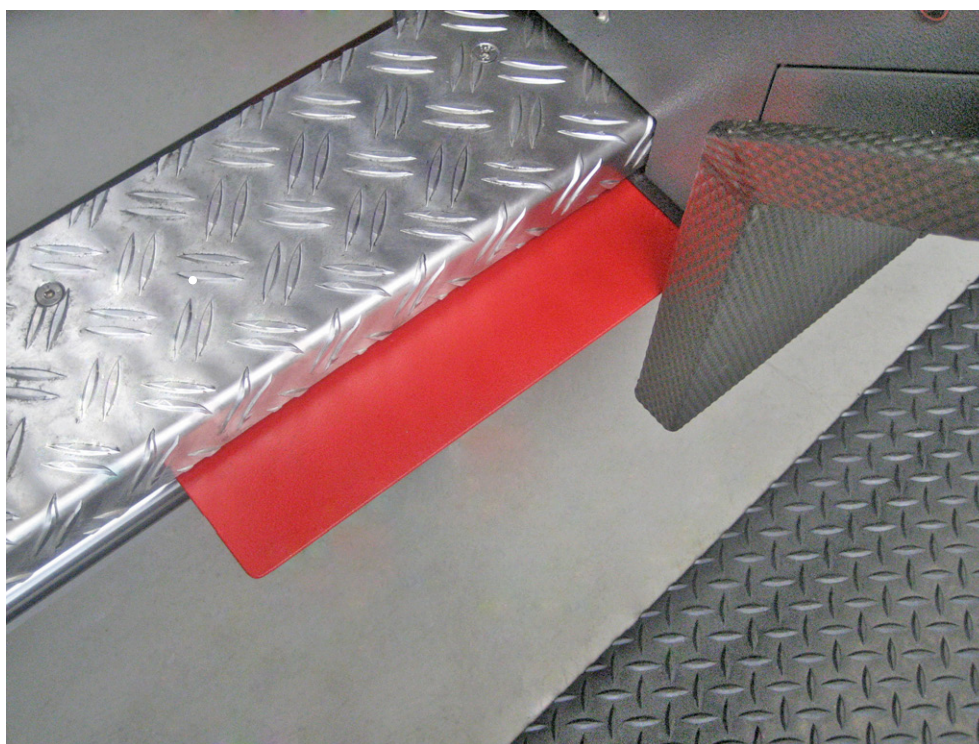
If the door to the working area is open, the door safety interlock will remain open after disconnecting the power supply line.



Transport locks can be identified by their red color.

Remove all transport locks prior to machine start-up.

Store the removed transport locks at a safe place so they are available for another transport in the future.



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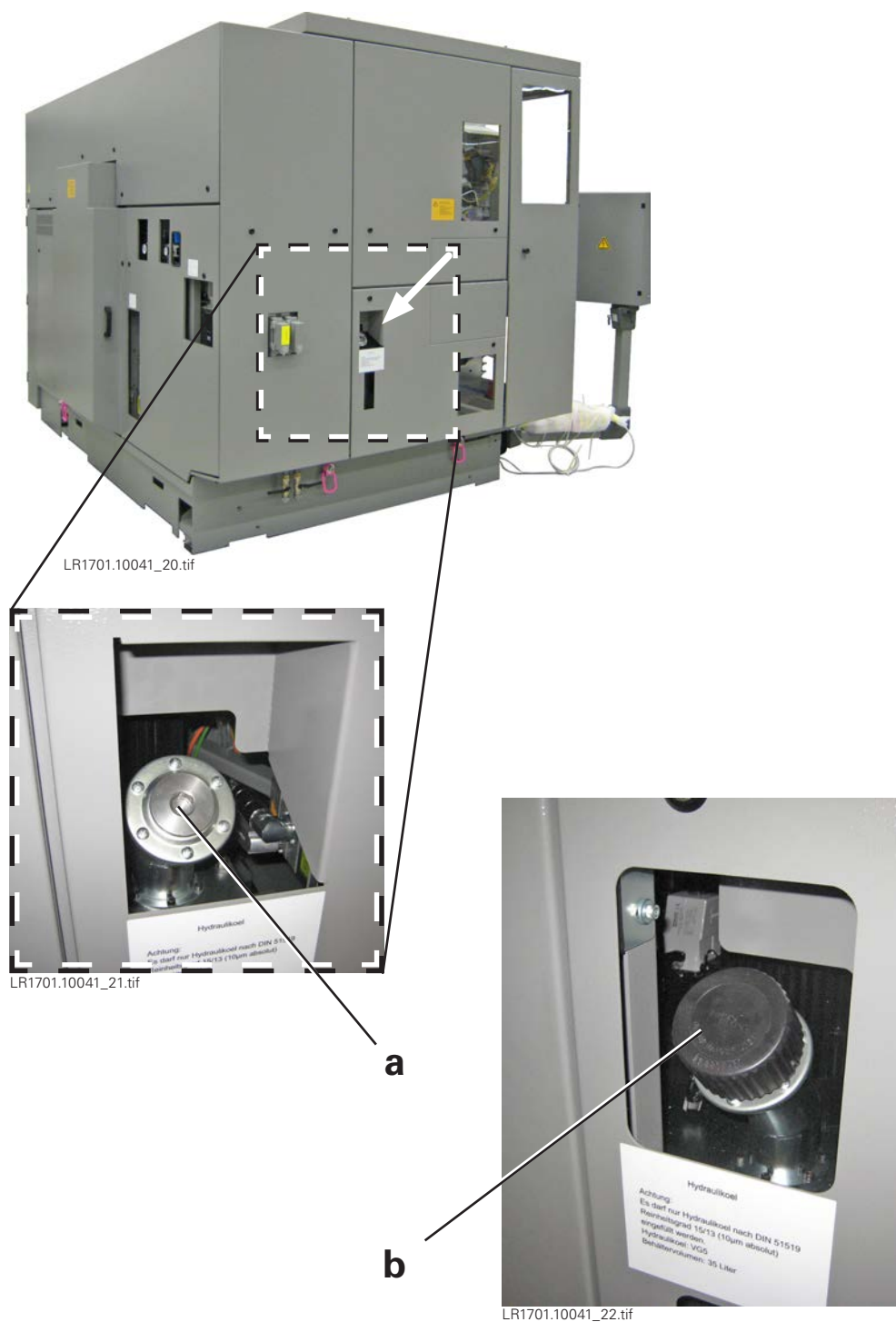
Fig.:
Examples of a transport lock for work area door

Attaching Filling and Venting Filters

For transporting, the filler neck on the hydraulic tank was closed.

Before initial start-up of the machine screw, remove the blanking plug **(a)** and replace it with the filler and venting filters **(b)**.

Hook the filling and venting filters onto the safety chain and screw in.



Data Loss Due to Prolonged Downtime



The machine is functional only after all data have been entered.

After a prolonged downtime of the machine, data may be lost in the RAM. In such a case, the lost data must be re-entered or re-loaded before the machine can be put back into operation.

The data are recorded in the start-up report and backed up on a storage medium. The start-up report and the storage medium are located in the document pocket in the door of the control cabinet.

Switching on the Machine

See Chapter "Operating the Machine".

Relocation

Only for Machines Equipped With Chip Conveyor

Unscrew the coolant hose from the screw connection above the coolant tank and loosen the power line connections to the chip conveyor's coolant motor and drive motor.

Pull out the chip conveyor and clean it.

Only for Machines Equipped With Blank Feeder

Disconnect the energy supplies, and close the connections, if applicable.



For transport by air, all accumulators attached to the machine must be depressurized by a specialist.

Provide the appropriate transport gear for the feeder.



Replace the filling and venting filters with plugs.

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INDEX-Werke GmbH & Co. KG
Hahn & Tessky

Plochinger Straße 92
D-73730 Esslingen

Fon +49 711 3191-0
Fax +49 711 3191-587

info@index-werke.de
www.index-werke.de