

# RCS Climbing Device and Hydraulics

## Assembly, Commissioning and Maintenance

### Spare Parts and Circuit Diagrams

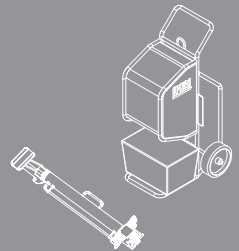
Assembly Instructions – Issue 03/2019



Climbing Device RCS 50  
PERI Item No. 109765  
S/N 109.063-575



Hydraulic Pump RCS 4 x 190 bar,  
380 – 460 V, PERI Item No. 109766  
S/N 964.020



## Key



Safety instructions



Tip



Information



Visual check



Load-bearing point



Misapplication

## Dimension specifications

Dimensions are usually given in mm. Other units of measure, e.g. cm, are specified in the illustrations. Load details are usually given in kg. Other measurement units, e.g. t, are specified in the illustrations.

## Conventions

- Instructions are numbered with:  
1. ...., 2. ...., 3. ....
- The result of an instruction is shown by: →
- Position numbers are clearly provided for the individual components and are given in the drawing, e.g. **1**, in the text in brackets, for example (1).
- Multiple position numbers, i.e. alternative components, are represented with a slash, e.g. **1 / 2**.

## Arrows

- Arrow representing an action

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## Warning Signs

The safety instructions alert site personnel to the risks involved and provide information on how to avoid these risks.

Safety instructions are featured at the beginning of the section ahead of the instructions, and are highlighted as follows:



### **Danger**

This sign indicates an extremely hazardous situation, which, if not avoided, could result in death or serious injury.



### **Warning**

This sign indicates a hazardous situation, which, if not avoided, could result in death or serious injury.



### **Caution**

This sign indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.



This sign indicates situations in which failure to observe the information can result in material damage.

## Intended Use

The Climbing Device RCS 50 is used exclusively for lifting a climbing unit, consisting of formwork and supporting structure, to the next concreting section.

PERI products have been designed for exclusive use in the industrial and commercial sectors by suitably trained personnel only.

These Assembly Instructions serve as a basis for the project-related risk assessment as well as instructions for the provision and use of the system by the contractor (user). However, they do not replace them.

The components are to be inspected before each use to ensure they are in perfect condition and that they function correctly.

Only PERI original components may be used. The use of other products and spare parts represents a misapplication with associated safety risks.

Changes to PERI components are not permitted and represent a misapplication with associated safety risks.

Safety instructions and permissible loads must be observed at all times.

Components provided by the contractor must conform with the requirements found in these Assembly Instructions as well as all valid construction guidelines and standards.

Deviations from the standard configuration are not permitted. Special applications must be described in the form of detailed planning and operating instructions based on a separate risk assessment. These special applications must be approved by PERI.

Anything other than the use that is specified in Point 1 is considered contrary to the designated use!

For damage arising from non-intended use:

- the operator bears the sole responsibility,
- the manufacturer assumes no liability.

## Standard Assembly

### General

The climbing mechanism for the Self-Climbing System RCS consists of:

- Climbing Device RCS 50
- Hydraulic Pump RCS 4 x 190 bar, 380 – 460 V
- Climbing Shoe RCS
- Climbing Rail RCS, if required with Climbing Rail Extension RCS 125

### Function

The Climbing Device RCS 50 is positioned on the Climbing Shoe RCS.

The Climbing Shoe RCS is anchored to the building by means of a Wall or Slab Shoe. The Climbing Device works together with the climbing pawl in the Climbing Shoe. The claw on the piston engages the climbing bolts (spacers in the Climbing Rail RCS) and pushes both of them, together with the supporting structure, upwards. At the end of the stroke, the pawl in the Climbing Shoe engages in another climbing bolt. Once the cylinder is retracted, the pawl carries the load and the claw circumvents the next climbing bolt. After this, the claw engages this climbing bolt.

### Applications

With the help of the Climbing Hydraulics RCS, climbing units can be moved vertically without using a crane.

Standard supporting structure:

- Guided Climbing Formwork RCS C
- Light Climbing Formwork RCS CL
- Climbing Protection Panel RCS P
- Material Lifter RCS ML and Guided Material Platform RCS MP (used in the same way as the RCS P).

For special applications, the design engineer must check whether additional or alternative measures are required for the climbing procedure. These measures are to be shown and described in the general arrangement drawings and assembly plans.

The structures shown in these Assembly Instructions are examples and feature only one component size. They are valid accordingly for all component sizes contained in the standard configuration.

### Additional PERI product information

- Instructions for Assembly and Use (e.g. for RCS C, RCS CL or RCS P)
- Instructions for Use (e.g. for the Lifting Beam RCS 10 t)
- PERI PI – separate product information (e.g. for permissible anchor loads)

## Technical Data

### Climbing Device RCS 50

Stroke length        effective 500 mm (maximum 575 mm)  
Lifting power        maximum 50 kN (11.2 kip)  
Operating pressure 190 bar (19 MPa)

### Hydraulic Pump RCS 4 x 190 bar, 380 – 460 V

Power supply        400 V/50 Hz (3-phase) flow rate 6 l/min  
Power supply        460 V/60 Hz (3-phase) flow rate 7 l/min  
Sound emissions    64 dB (A) at a distance of 1.0 m

#### **Information only – for use only in Canada:**

#### **Hydraulic Pump RCS 4 x 190 bar, 460 V CSA**

Power supply        460 V/60 Hz (3-phase) flow rate 7 l/min

## Cleaning and Maintenance Instructions

The Climbing Device RCS 50 has been designed for long-term use on construction sites.

In order to ensure cost-effective, technical and safe use over a long period, it is important to take a value-preserving approach.

Repairs which require welding or deformation of components must be carried out by PERI.

Use PERI original components as spare parts.

## Instructions on Use

Use in a way not intended or deviating from the intended use according to the Assembly Instructions represents a misapplication with a potential safety risk.

Changes to PERI components are not permitted.

Only PERI original parts may be used. The use of other products and spare parts represents a misapplication with associated safety risks.

Operations with damaged or incomplete lifting equipment are not permissible.

The system described in these Assembly Instructions may contain patent-protected components.

## Target Groups

### Contractors

These Assembly Instructions are intended for contractors who use PERI products for

- assembling, modifying and dismantling operations, or
- use them, e.g. for concreting, or
- who have them used, e.g. for forming operations.

### Construction site coordinator

The Safety and Health Protection Coordinator\*

- is appointed by the client,
- must identify potential hazards during the planning phase,
- determines measures that provide protection against risks,
- creates a safety and health plan,
- coordinates the protective measures for the contractor and site personnel so that they do not endanger each other,
- monitors compliance with the protective measures.

### Competent person

Due to the specialist knowledge gained from professional training, work experience, and recent professional activity, the competent person has a reliable understanding of safety-related issues and can correctly carry out inspections. Depending on the complexity of the test to be undertaken, e.g. scope of testing, type of testing or the use of a certain measuring device, a range of specialist knowledge is necessary.

\* Valid in Germany: Regulations for Occupational Health and Safety on Construction Sites 30 (RAB 30).



## Target Groups

### Qualified personnel

PERI products may only be assembled, modified or dismantled by personnel who are suitably qualified to do so. For the work to be carried out, the qualified personnel must have received instructions\*\* covering at least the following points:

- The plan for the assembly, modification or dismantling of the PERI product in an understandable form and language.
- The measures necessary to safely assemble, modify or dismantle the PERI product.
- Naming of the preventive measures to be taken to avoid the risk of persons and objects falling.
- The safety precautions to be taken in the event of changing weather conditions that could adversely affect the safety of the PERI product concerned, as well as the personnel.
- Details regarding permissible loads.
- Description of all other risks and dangers associated with assembly, modification or dismantling operations.

**In other countries, ensure that the relevant national guidelines and regulations in the respective current version are complied with!**

\*\* Instructions are given by the contractor himself or a competent person selected by him.

## Safety Instructions

### General

Deviations from the standard configuration and/or intended use present a potential safety risk.

All country-specific laws, standards and other safety regulations are to be taken into account whenever our products are used.

In the case of unfavourable weather conditions, suitable precautions and measures are to be implemented, in order to guarantee working safety and stability.

The contractor (user) must ensure the stability throughout all phases of construction. He must ensure and verify that all occurring loads are safely transferred.

The contractor (user) has to provide safe working areas for site personnel which are to be reached through the provision of safe access ways. Areas of risk must be cordoned off and clearly marked. Hatches and openings on accessible working areas must be kept closed during working operations.

For a better understanding, detailed illustrations are partly incomplete. Some safety installations which have possibly not been shown in these detailed descriptions must nevertheless still be available.

### Storage and transportation

Do not drop the components.

Store and transport components ensuring that no unintentional change in their position is possible. Detach lifting gear from the lowered units only if these are in a stable position and no unintentional change is possible.

When moving the components, make sure they are lifted and set down in a way that any unintentional tilting over, falling apart, sliding or rolling away is prevented.

Use only suitable lifting accessories to move the components as well as the designated load-bearing points.

During the lifting and moving procedure, ensure that all loose parts are removed or secured.

During the moving procedure, always use a guide rope.

Move components on clean, flat and sufficiently load-bearing surfaces only.

PERI products must be protected against the effects of the weather and aggressive materials if safety is then likely to be affected!

## Safety Instructions

### Product-Specific

#### Operations

The contractor must ensure that the assembly, modification, dismantling, moving, use and handling of the product is managed and supervised by qualified personnel and authorised personnel.

**All persons working with the product must be familiar with the operating instructions and safety information.**

The contractor has to ensure that the official Assembly Instructions, Instructions for Assembly and Use, other instructions required for operations or assembly, relevant planning documents, parts lists and other data are available to the users.

#### Access ways and working areas

Safe access to all working areas must be guaranteed at all times.

Working areas must remain free of any tripping hazards.

Working platforms are to be kept clean and tidy.

Avoid installing working areas and access points in areas of risk.

Make sure the Hydraulic Pump is positioned on a level and sufficiently load-bearing surface.

### Assembly

Mandatory personal protective equipment (PPE):

- safety helmet
- safety shoes
- protective gloves

There is always the possibility of unforeseen risks arising during assembly work. Assess the degree of risk in each individual case and, if necessary, take measures to prevent or at least minimise the risk.

If guardrails cannot be used due to technical reasons or have to be removed, then site personnel are to be secured by other means (e.g. through rope protection).

Site personnel are forbidden to remain in areas below where assembly work is being carried out unless the area of risk has been provided with sufficient protection against falling, overturning, sliding or rolling objects and masses. The area of risk is to be cordoned off and clearly marked.

Risk of crushing!  
Do not touch if the load is moving!

## Safety Instructions

### Protection against falling objects

Secure tools and materials to prevent them from falling to the ground.

Concrete residue and other dirt deposits are to be removed.

Avoid positioning working areas and access points in areas of risk. If this is not possible due to work procedures, suitable equipment (e.g. protective roofs) must be available to provide protection against falling objects. This also applies to work requiring only a short period of time.

Operational working areas at great heights are to be secured against falling objects by means of appropriate constructional measures. Safety nets (mesh size  $\leq 2$  cm) and planking are considered to be suitable here, and are to be installed very close (distance  $\leq 5$  cm) to the building.

### Climbing procedure

Anchoring of the climbing units in the next concreting section is only to be carried out after the required concrete strength has been reached.

As a result of the moving procedure, leading edges are formed between the platforms. If work is carried out in this area, site personnel must be secured (e.g. through rope protection). Cordon off the area of risk!

During the moving procedure, neither persons nor construction materials or tools are allowed to be transported.

When climbing with climbing hydraulics, details regarding the arrangement of the hydraulic hoses must be considered.

### In the case of malfunctions

- lower platform to the next possible position and secure.
- leave the climbing unit in the safest way possible.
- an authorised person is to be informed immediately!

### Maintenance and repairs

- Only use materials which are in perfect condition.
- Components of the climbing systems are to be checked for signs of damage by qualified personnel and authorised persons on a regular basis. Dirt which affects functionality is to be removed immediately.
- Damaged components are to be inspected, removed and replaced.
- Determine the cause of any damage that occurs on a recurring basis and rectify.

PERI climbing hydraulics may not be used if the type plate is missing, incomplete or illegible.

## A1 Climbing Device RCS 50

- (1) Climbing Device RCS 50  
Item no. 109765 (S/N 109.063-575)
- (1.1) Piston head with claw and roller
- (1.2) Cylinder base
- (1.3) Return flow from the piston rod side A with the hydraulic quick-coupler (nipple) left + right<sup>1)</sup>
- (1.4) Inflow to the piston base B with the hydraulic quick-coupler (bushing) left + right<sup>1)</sup>
- (1.5) Reposition device
- (1.6) Locking lever
- (1.7) Measuring connection
- (1.8) Lowering brake valve
- (1.9) Protection caps

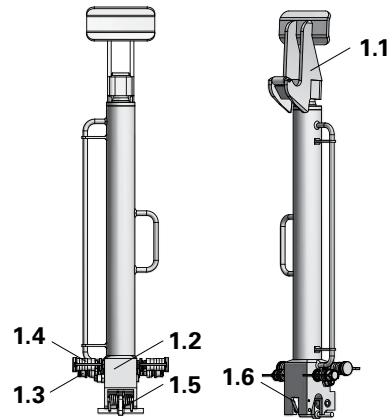


Fig. 1: Climbing Device RCS 50



Due to the clear arrangement of the quick-coupler nipple (return) and bushing (inflow) on the Climbing Device and Hydraulic Pump, a wrong connection of inflow and return lines is impossible. When moving, fit quick-couplers with protection caps (1.9) which protect against dirt and damage. (One set with 4 pieces, Item no. 125632)

<sup>1)</sup> To prevent the quick couplers from colliding with the platforms or other parts of the climbing protection panel when climbing, it is possible to arrange the couplings vertically using angle pieces.

→ **Contact PERI!**

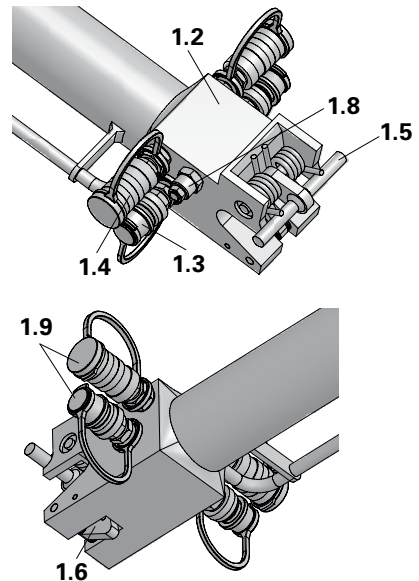


Fig. 2: Base of the Climbing Device

## A1 Climbing Device RCS 50

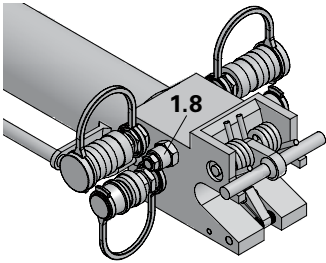


Fig. 3: Lowering brake valve (1.8)

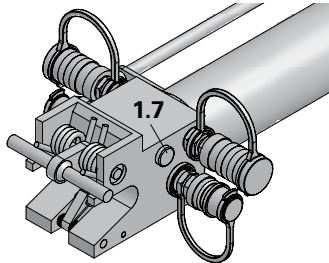


Fig. 4: Measuring connection (1.7)

## A2 Hydraulic Twin Hose RCS

- (2.1) Hydraulic Twin Hose RCS 10 m, Item no. 110069 (SK050.723A)
- (2.2) Hydraulic Twin Hose RCS 20 m, Item no. 110070 (SK050.724A)
- (2.3) Hydraulic Quick-Coupler (bushing), Item no. 110822
- (2.4) Hydraulic Quick-Coupler (nipple), Item no. 110823
- (2.5) Retaining ring (bushing)

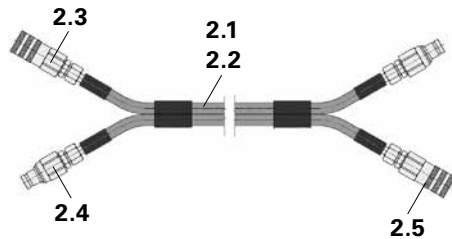


Fig. 5: Hydraulic Twin Hose

## A3 Hydraulic Pump RCS

- (3) Hydraulic Pump RCS 4 x 190 bar, 380 – 460 V for 4 climbing devices, Item no. 109766 (S/N 964.020)

Information only - Hydraulic Pump RCS 4 x 190 bar, 460 V CSA, Item no. 114243 (S/N 964.020-CSA) only for use in Canada

- (3.1) Operating lever
- (3.2) Motor protection plug CEE
- (3.3) Electricity socket with phase inverter

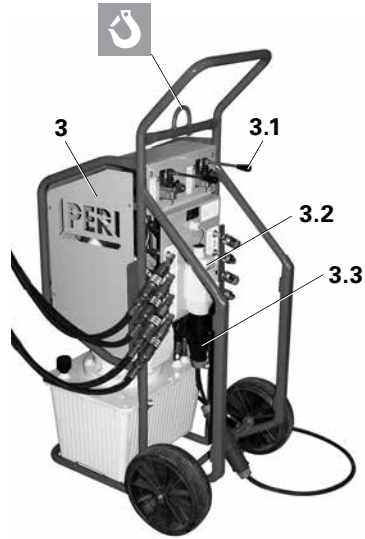


Fig. 6: Hydraulic Pump

- (3.4) Hydraulic oil tank capacity: max. 22 litres
- (3.4a) Oil drain screw
- (3.5) Oil level indicator with thermometer
- (3.6) Filling piece with ventilation filter
- (3.7) Return flow filter

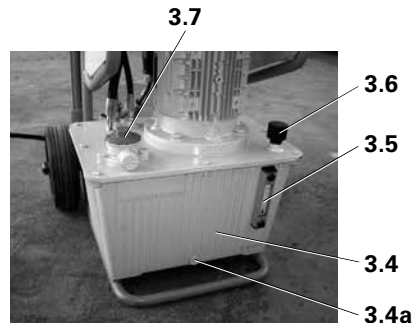


Fig. 7: Hydraulic Oil Tank

- (3.11) Measuring connection for pressure check (only through PERI personnel)



Fig. 8: Measuring Connection in the Pump

## A3 Hydraulic Pump RCS

- (3.1) Hand valve in the middle position
- (3.2) Switch
- (3.3) Electricity socket with phase inverter
- (3.8) Return flow on piston rod side A of the cylinder with hydraulic quick-coupler (bushing)
- (3.9) Inflow for piston head side B of the cylinder with hydraulic quick-coupler (nipple)
- (3.10) Rotary field control lamp
- (4.1) Adapter Cable RCS accessory for supply line with CEE socket  
Operational voltage 380 – 400 V/16A, 50 Hz
- (4.2) Plug Socket RCS, black accessory for assembly of Adapter Cable  
Operational voltage 380 – 460 V, 50 – 60 Hz

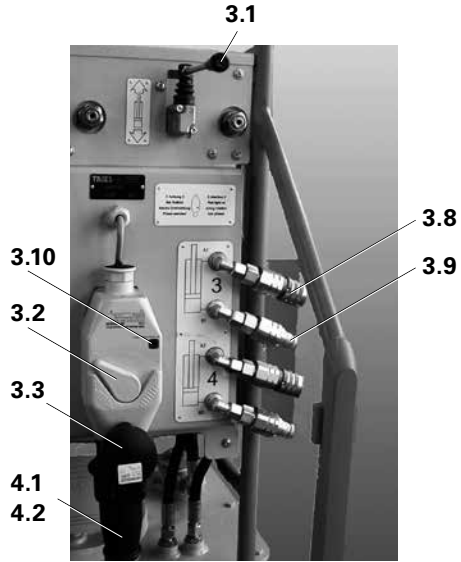


Fig. 9: Hydraulic Pump connections

### A3.1 Functionality of the flow divider

A flow divider is installed for each pair of cylinders in the Hydraulic Pump which evenly divides the flow of the hydraulic oil to the cylinders.

This ensures load-independent synchronisation of the cylinder.

Synchronisation deviations can be corrected in the respective end position by keeping the cylinder running against the limit stop for a period of time.

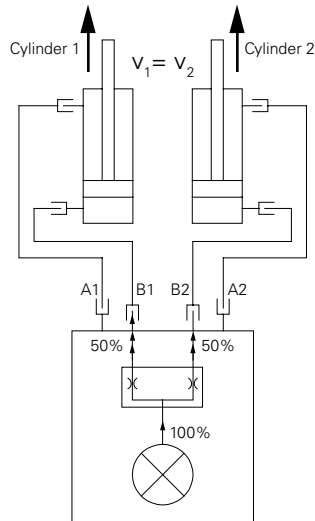


Fig. 10: Functionality of the flow divider



## A4 Climbing Shoe RCS

(5) Climbing Shoe RCS, Item no. 109468

(5.1) Climbing pawl

(5.2) Folding runner

(5.3) Securing pins

(5.4) Pawl lock

(5.5) Hinged bail

(5.6) Locking spring

(5.7) Locating pin for climbing device

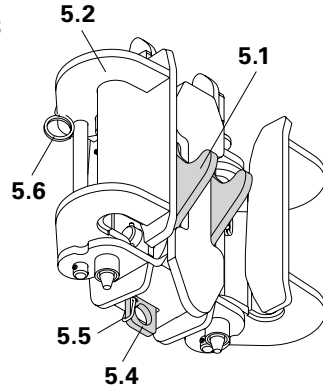


Fig. 12: Climbing Shoe RCS closed and climbing pawl activated

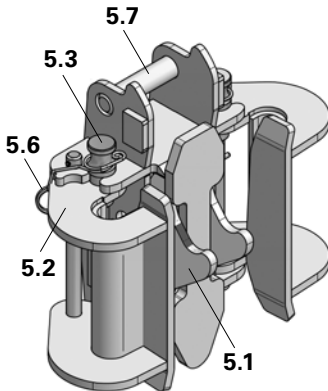


Fig. 11: Climbing Shoe RCS from above

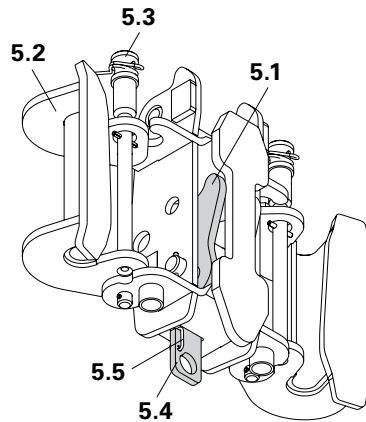


Fig. 13: Climbing Shoe RCS open and climbing pawl deactivated

## A5 Climbing Device in Use

### For use in the Self-Climbing System RCS C with Wall Shoe RCS

- (9) Climbing Rail RCS
- (9.1) Climbing Bolt (spacer in the climbing rail)
- (1) Climbing Device RCS 50
- (5) Climbing Shoe RCS
- (6) Wall Shoe RCS

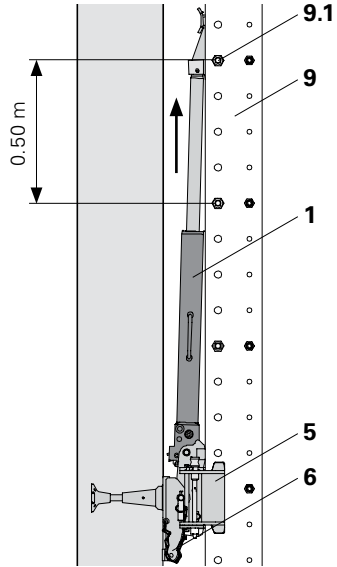


Fig. 14: Climbing Device in use with RCS C

### For use with the Climbing Protection Panel RCS P with Slab Shoe RCS

- (9) Climbing Rail RCS
- (9.1) Climbing Bolt (spacer in the climbing rail)
- (1) Climbing Device RCS 50
- (5) Climbing Shoe RCS
- (7) Slab Shoe RCS

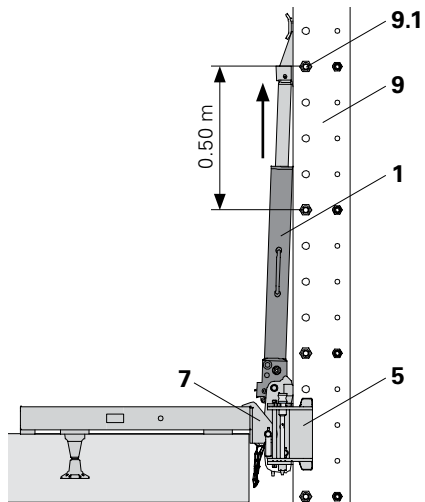


Fig. 15: Climbing Device in use with RCS P

### **B1.1 Moving on the construction site**

- Keep bushing and nipples of all quick-couplers clean and fit with protection caps during transportation (one set with 4 pieces, Item no. 125632) or couple them together.
- Transport the hydraulic cylinder only with the piston rod in a retracted position.
- Transport the hydraulic hoses rolled up – do not drag along the ground.

### **B1.2 Temporary storage on the construction site**

- Clean bushing and nipples of all quick-couplers and fit with protection caps when storing, or connect together.
- Store the hydraulic cylinder with the piston rod in a retracted position.
- Store the hydraulic hoses rolled up.
- When storing, place the hydraulic cylinder in its designated transport box, see B2.
- Do not store the Hydraulic Pump in a horizontal position as the oil can escape through the ventilation valve.

### **B1.3 Transport from and to the construction site**

- Clean dirt off climbing device and Hydraulic Pump, and dry.
- Fit bushing and nipples of all quick-couplers with protection caps or couple together.
- Transport hydraulic hoses rolled up.
- Fill the hydraulic cylinder and hydraulic hoses with oil.
- Transport the hydraulic cylinder only with the piston rod in a retracted position.
- When transporting, place the hydraulic cylinder in its designated transport box and secure, see B2.
- When transporting, place the Hydraulic Pumps in their designated transport boxes and secure, see B2.
- Do not transport the Hydraulic Pump in a horizontal position as the oil can escape through the ventilation valve.
- When moving transport crates with the crane, use suitable lifting slings that are wrapped around the underside.

### **B1.4 Longer storage periods**

- Do not drain the oil during downtime.
- Protect connections against corrosion through a suitable preserving agent. Close all openings airtight.
- If stored in regions characterised by high humidity, additionally fill the hydraulic oil tank to the brim with hydraulic oil and ensure that the unit is firmly closed.

## B2 Packaging



### Transport crates

- are only used for transport and storage purposes.
- do not use as load-handling equipment!



- Clean dirt off climbing device and Hydraulic Pump, and dry.
- Fix protection caps to bushing and nipples of all quick-couplers.
- Place hydraulic cylinder in the designated transport crate.
- Store the hydraulic hoses rolled up.
- Do not store Hydraulic Pump in a horizontal position as the oil can escape through the ventilation valve.
- Fix a cover to the transport crate.

Climbing Device RCS 50                      26.0 kg  
 Item no. 109765  
 S/N: 109.063-575)

Hydraulic Pump RCS                              109.0 kg  
 Item no. 109766  
 (S/N: 964.020)

Hydraulic Twin Hose RCS  
 Length 10 m                                      9.0 kg  
 Item no. 110069  
 Length 20 m                                      16.0 kg  
 Item no. 110070

All weight details do not include the oil.

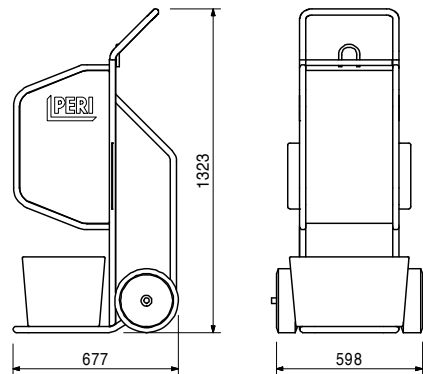


Fig. 16: Transport Crate for the Climbing Device



Fig. 17: Transport Crate for the Hydraulic Pump

### Dimensions of the Hydraulic Pump RCS:



## C1 Initial Commissioning

### Measures before the initial commissioning

- Check the completeness of the technical documentation, e.g. hydraulic plan, equipment list, electrical wiring diagram, instructions for switch and motor.
- Site personnel to familiarise themselves with the equipment using the available documentation.
- Compare required type of current and voltage with that specified on the type plate.
- Connecting the plug socket is carried out by qualified personnel. see C2.2.
- Check the rotary field on the rotary field display, see D3.1. If the control lamp changes to red, change rotary field direction with the integrated phase inverter.
- Check that the oil tank is clean.
- Fill tank with hydraulic oil, see C3.4.
- Check temperature of the electric motor.
- Check temperature of the hydraulic oil and, if necessary, bring to operating temperature, see C3.3.
- Clean bushing and nipples of all quick-couplers and check for signs of damage.
- Check all fittings and re-tighten if necessary.
- Carefully vent the system during initial commissioning or after intermediate storage, see D5.2.



Fig. 18: Hydraulic Pump

## C2 Commissioning

### C2.1 Measures taken during commissioning

- Listen out for any pump noises after starting up.
- Check the rotary field.
- Check level of the hydraulic oil and top up if necessary.
- Check temperature of the electric motor.
- Check temperature of the hydraulic oil and, if necessary, bring to operating temperature, see C3.4.
- Check filter and, if necessary, clean or replace.
- Carefully vent the system during initial commissioning or after intermediate storage, see D5.2.
- Check the functionality of the hand valve and hydraulic cylinder.
- Check components and connections for signs of external leakage.
- Never re-torque leaking screw connections under high pressure, but only after a pressure release!

### C2.2 Electrical connection



**Connection carried out only by authorised qualified personnel.**

#### Accessories:

- Plug Socket RCS Item no. 110279 (S/N: K016.440) for connection plug on the pump.
- Adapter Cable RCS Item no. 110280 (S/N: SK050316BX) for operating voltage 400 V and a power supply line with CEE coupling 16 A.

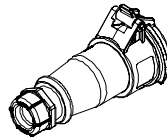


Fig. 19: Plug Socket RCS

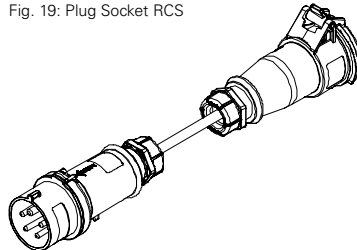


Fig. 20: Adapter Cable RCS

## C2 Commissioning During Low Temperatures

### Re-commissioning after a long downtime

- Thoroughly clean and rinse preserved equipment before commissioning. Any remaining preservation agents can block the valves.
- Drain condensation water from the hydraulic tank.
- Check hydraulic oil after a long stand-still period for usability and change if necessary.



All recommended measures for the initial commissioning also apply for re-commissioning.



With low temperatures, warm up hydraulic oil by flushing the system in order to reach the required start viscosity.

### Recommended hydraulic oil for low temperatures:

Shell Tellus

## C3 Maintenance and Repairs

### C3.1 Overview

Damage and any resulting downtime can be avoided by carrying out scheduled maintenance work.

PERI recommends shortened maintenance intervals:

- for equipment showing signs of heavy wear.
- with high thermal and mechanical loads.
- when subject to heavy soiling.

Maintenance and repairs	Recommended maintenance intervals
Clean machine housing and cylinder. Lubricate moving parts on the cylinder.	daily
Clean oil filter and replace if necessary, see C3.5. Replace hydraulic oil, see C3.4.	before use on next jobsite, minimum 1x yearly
Replace hoses.	if damaged, before use on next jobsite, minimum 1x yearly
Replace sealings.	with oil leakage
Check fluid level in the oil tank, see C3.2. Check oil temperature and oil level, see C3.3. Check whether there are signs of leakage. Check working and control pressures. Check whether any noises or vibrations are present.	daily to weekly
Check: Equipment mountings Pipe and hose lines (connections, chafe marks, kinks) Protective covers, display devices Ventilation filter in the filling piece	weekly to monthly
Check: Machine housing (dirt, damage) Efficiency control	monthly to quarterly
Check the complete hydraulic pump (deposit formation, rust formation).	yearly



## C3 Maintenance and Repairs

### C3.2 Check fluid level in oil tank

If fluid volume is too low

- the operating temperature increases,
- which leads to air inclusions,
- and results in the hydraulic cylinder being extended jerkily.

Therefore:

- keep the oil level display device clean.
- continually monitor the oil level.
- immediately refill the missing hydraulic oil.
- determine the cause of excessive oil consumption.

### C3.3 Check oil temperature and oil level



- **The operating temperature of the hydraulic oil increases with an increase in the outside temperature.**
- **Switch off the hydraulic pump if the oil temperature goes over 70 °C.**
- **Determine the cause of the overheating (e.g. no pressureless flow, outside temperature is too high).**



- The oil level can vary depending on the type, quantity and size of the consumer.
- Recommended operating temperature of the hydraulic oil: 45° C (average temperature of the hydraulic oil in the tank).



Fig. 21: Oil temperature and oil level

#### **The thermometer (3.5) gives the following readings:**

- operating temperature of the oil.
- regularly check the oil temperature during operations.
- oil level indicator.

## C3 Maintenance and Repairs

### C3.4 Replacing the hydraulic oil

#### Drain hydraulic oil and clean oil tank:

1. Completely retract the piston rod.
2. Clean hydraulic tank especially in the area of the filling piece.
3. Switch off the pump and drain the hydraulic oil in a warm condition.
4. Remove the oil drain screw (3.4a) – hex. screw SW 10.
5. Completely drain the tank.
6. Clean hydraulic tank if necessary.
7. Clean return flow filter or replace if necessary.
8. Check ventilation filter in the filling piece (3.6) for signs of dirt.
9. For extremely dirty equipment or when changing the hydraulic oil, rinse with separate oil.
10. Drain flushing oil from the hydraulic tank and clean once again if necessary.



- **Instructions for the safe handling of hydraulic oil are included in the safety data sheet of the oil selected for use.**
- **Avoid body contact and contact with the structure. Information on cleaning and correct disposal are included in the safety data sheet of the hydraulic oil selected for use.**

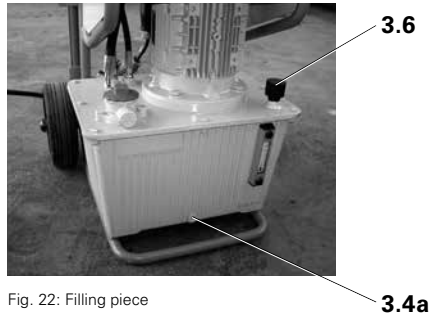


Fig. 22: Filling piece

#### Filling with new hydraulic oil:

1. Pouring in hydraulic oil via the filter.
  - Fill tank only up to the top marking. Avoid overfilling!
  - The hydraulic oil used must be free of water and dirt.
  - Pour in hydraulic oil using a clean filling sieve (separate filling sieve, filling funnel with sieve insert, or using an ultra-fine filter).
  - Do not mix hydraulic oils from different manufacturers and quality.
2. Close the filling opening with end cap.
3. Check the oil level.
4. Check the tightness of the oil tank (e.g. cap, pipe penetrations, flanges).
5. Record type of oil used and amount in the maintenance chart.

#### Recommended hydraulic oil:

HVLP 46 – DIN 51524,  
e.g. PERI Hydraulic Oil HV LP46, 20 L,  
Item no. 057376.  
Filling quantity: max. 22 litres.

## C3 Maintenance and Repairs

### C3.5 Cleaning and replacing the oil filter

1. Unscrew the plastic cap of the return flow filter (3.7) and open (Fig. 23). Plastic cap presses the filter element (3.12) into the lower part of the housing (3.13) by means of a spring.
2. Pull out the lower part of the housing (3.13) including the filter element (3.12) from the head piece. (Fig. 24)



Make sure that the hydraulic oil tank remains free of any dirt and impurities.

1. Drain contaminated oil from the lower part of the housing (3.13) and dispose of correctly.
2. Clean filter element (3.12); if necessary, dispose of correctly and replace with a new filter. (Fig. 25)
3. Press lower part of the housing (3.13) with filter element into the head piece.
4. Fit red plastic cap and tighten.

(3.12) Filter element  
Type: ARGO P3.0520-51

(3.13) Lower part of the housing  
Type: ARGO FR 072.0104

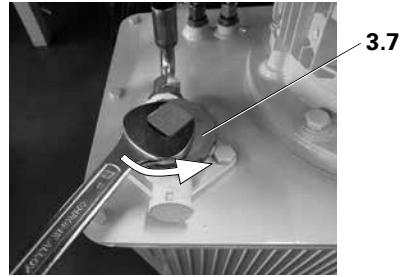


Fig. 23: Screwing on the cap

**(3.7) Return flow filter**  
S/N: K017.006

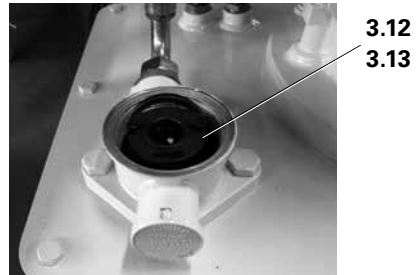


Fig. 24: Removing the filter element



Fig. 25: Dismantling the filter element

## D1 Preparations

### D1.1 Preparations for the hydraulics

- Check the age of the hydraulic hoses and replace if necessary.
- Carefully vent the hydraulic cylinder and hoses before use, see D5.2.
- Clean the oil filter and replace if necessary, see C3.5.
- Check fluid level in the oil tank and top up hydraulic oil if required, see C3.2 and C3.4.
- Unravel any loops and twists in the hydraulic hoses.
- Do not place any objects on the hydraulic lines.
- Clean all bushing and nipples of all quick-couplers.
- Check the rotary field on the rotary field display, see D3.1.
- Check the temperature of the oil, see C3.3.
- With low temperatures, warm up the hydraulic oil by flushing the system in order to reach the required start viscosity.
- Listen out for any pump noises after starting up.
- Check components and connections for signs of leakage.

### D1.2 Preparations on the self-climbing system



- **Through the climbing procedure, additional open edges are created. Cordon off areas of risk or secure by means of other measures!**
- **Ensure that the climbing rail rests on the pawl of the climbing shoe on which the climbing device is positioned. If the vertical spacing of climbing shoes is divisible by approx. 50 cm, deactivate the other climbing shoes during the climbing procedure.**
- **Ensure that no objects or parts of the intermediate platform project into the area of the hoses.**



If manual intervention is necessary during the climbing procedure, the platform to be climbed may only be accessed after consultation with the operating personnel!



Monitor the climbing procedure from a safe position.

## D2 Installing the Climbing Device

### D2.1 General assembly

#### Standard arrangement

Two cylinders per climbing unit are in use.

#### Position of the hydraulic hoses

- Depending on the position of the pump, connect the hydraulic hoses left or right on the climbing device.
- Connect the hydraulic hoses so that they are not pulled upwards by the platform during climbing.

#### Position of the hydraulic pump with RCS C/CL:

For the climbing procedure place the hydraulic pump on the intermediate platform of the stationary climbing unit.

#### with RCS P:

Place the hydraulic pump for the climbing procedure on the building slab.



- Arrange the hoses so that they are not caught up or crushed in the climbing unit or the building during the climbing procedure.
- In the area of the platforms which are to be climbed, ensure that the hoses remain loop-free.
- To prevent the quick couplers from colliding with the platforms or other parts of the climbing protection panel when climbing, it is possible to arrange the couplings vertically using angle pieces. Contact PERI!



In order to save time, use 2 sets of hydraulic hoses, hoses should be laid alternating between the wall and climbing rails.

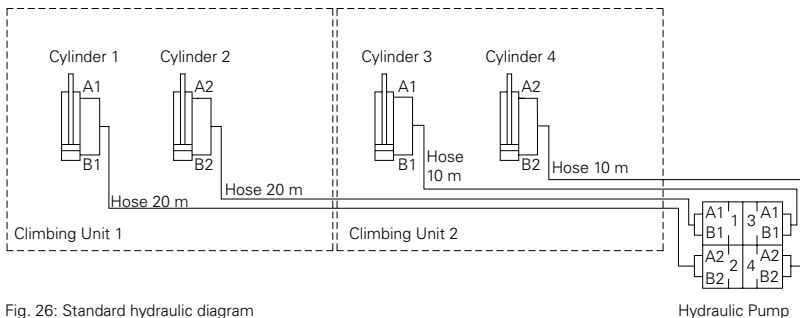


Fig. 26: Standard hydraulic diagram

## D2 Installing the Climbing Device

### D2.2 Hose arrangement for self-climbing procedure of the last unit

For each climbing section, move the last unit to be climbed separately. Adapt control sequence as the hydraulic pump is climbed at the same time. Two cylinders are in use on one climbing unit.



Do not connect Cylinders 3 + 4 to the hydraulic pump!

#### Position of the hydraulic pump with RCS C/CL:

For the climbing procedure place the hydraulic pump on the intermediate platform of the stationary climbing unit. The hydraulic pump is climbed at the same time. In this case, the operator is on the platform.

#### with RCS P:

Place the hydraulic pump for the climbing procedure on the building slab. Move the hydraulic pump with the crane.

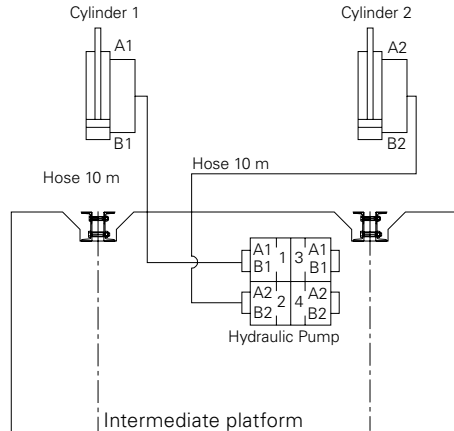


Fig. 27: Hydraulic diagram for climbing with the last unit with RCS C/CL

## D2 Installing the Climbing Device

### D2.3 Hose arrangement for special climbing units with 3 brackets with RCS C/CL

Three cylinders are in use per climbing unit.

**Procedure:**

1. Attach Cylinders 1 + 2 to the outside brackets of Unit 1.
2. Attach Cylinder 3 to the middle bracket of Unit 1.
3. Place Cylinder 4 on Unit 2 and connect but do not install.

**Alternative:**

At the position of the non-installed cylinder, a short-circuit connection can be used, see D5.2.



**When extending the cylinder, check the synchronisation several times and, if necessary, re-adjust Cylinder 3 by separately extending and retracting. Climbing back with three brackets is only carried out if a fourth cylinder is connected (as is mentioned in the first procedure).**



**Ensure that Cylinders 1 – 3 extend simultaneously. When using the Cylinder 4, make sure that this is positioned so that there is no risk of crushing when extending!**

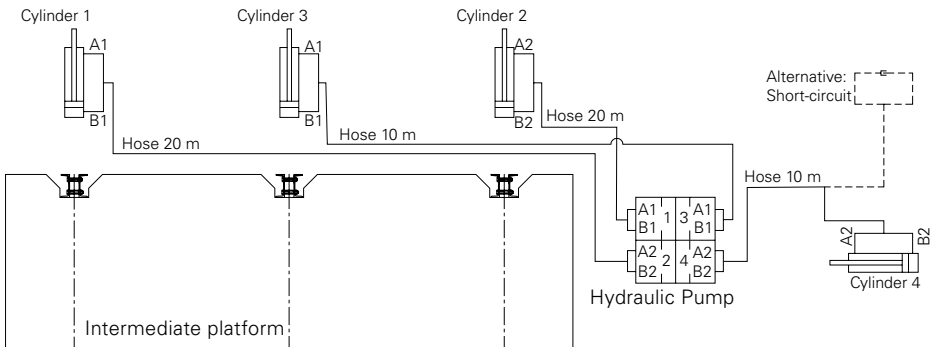


Fig. 28: Hydraulic diagram for special climbing units with 3 brackets

## D2 Installing the Climbing Device

### D2.4 Connecting the hydraulic lines

The quick-couplers on the pump are marked accordingly (A1–A2, B1–B2).



The arrangement of the plugs and sockets of the quick-couplers is clearly shown and cannot be mixed up.

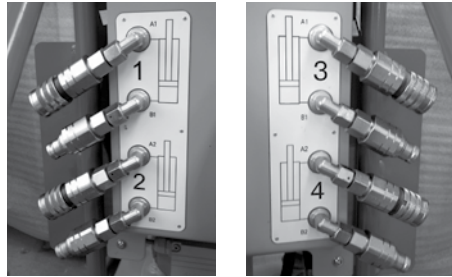
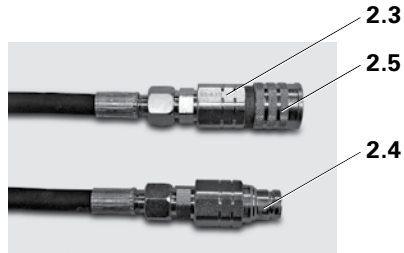


Fig. 29: Quick-couplers on the pump

- The quick-couplers consist of:
- (2.3) Bushing with retaining ring  
Item no. 110822
  - (2.4) Nipple  
Item no. 110823
  - (2.5) Retaining ring



#### Procedure:

1. Clean nipple (2.4) and bushing (2.3).
2. Push the nipple as far as possible into the bushing until the retaining ring (2.5) engages.
3. Turn retaining ring with a quarter-turn (right or left) = secured. Accidental disconnection is thus prevented.

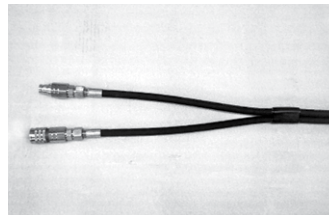


Fig. 30: Quick-coupler connections



## D2 Installing the Climbing Device

### D2.5 Mounting on the Self-Climbing System RCS C



Are the hydraulic hoses connected on the correct side?

#### Installing the climbing device

1. Place the climbing device (1) on the locating pin of the climbing shoe (5C).
2. Position the claw (1.1) within the climbing rails (9).



- Is the locking lever (1.6) fully engaged on the cylinder base?
- Are the claws fully engaged under the climbing bolts (9.1)?
- Are the hydraulic hoses arranged so that they do not get tangled during the climbing procedure?

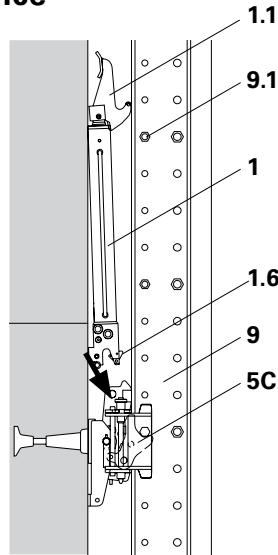


Fig. 31: Installing the Climbing Device in RCS C

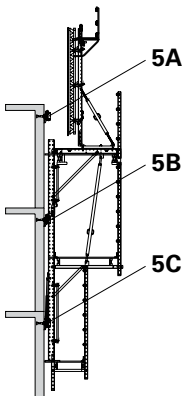


Fig. 32: Overview of Climbing Shoes RCS C

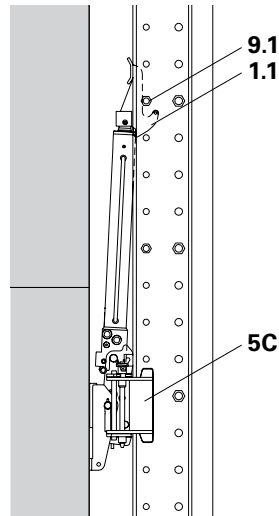


Fig. 33: Installed climbing device

## D2 Installing the Climbing Device

### D2.5 Mounting the Self-Climbing System RCS CL

#### 1. Mount the Climbing Rail Extension

- Fix Climbing Rail Extension 125 (10) at the top of the climbing rail (9) and secure with fitting pins  $\varnothing 26$ .
- The climbing device can also be installed if the climbing rail is 125 mm lower than in case of standard use. The vertical load then does not take place via the top climbing shoe. Shorter intermediate strokes may possibly be required.

#### 2. Installing the climbing device

- Place the climbing device on the locating pin of the climbing shoe (5C).
- Position the claw on the piston (1.1) within the Climbing Rail Extensions.



- Is the locking lever (1.6) fully engaged on the cylinder base?
- Are the claws (1.1) fully engaged under the climbing bolts?
- Are the hydraulic hoses arranged so that they do not get tangled during the climbing procedure?

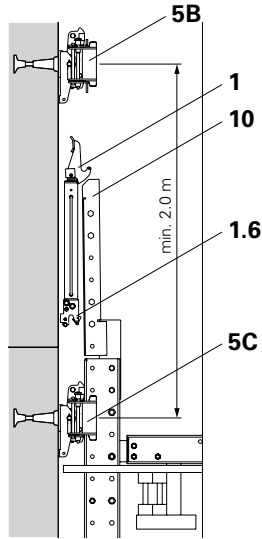


Fig. 34: Climbing Rail Extension and Climbing Device with RCS CL

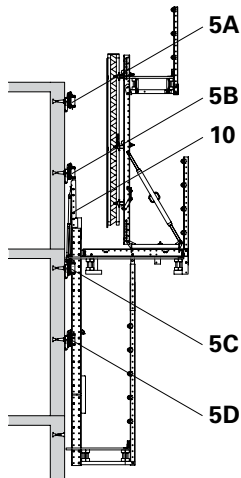


Fig. 35: Overview of the Climbing Shoe RCS C

## D2 Installing the Climbing Device

### D2.7 Mounting the Self-Climbing System RCS P

#### Installing the climbing device

- Place the climbing device (1) on the locating pin of the climbing shoe (5B).
- Position the claw (1.1) within the climbing rail.



- Is the locking lever (1.6) fully engaged on the cylinder base?
- Are the claws (1.1) fully engaged under the climbing bolts?
- Are the hydraulic hoses arranged so that they do not get tangled during the climbing procedure?

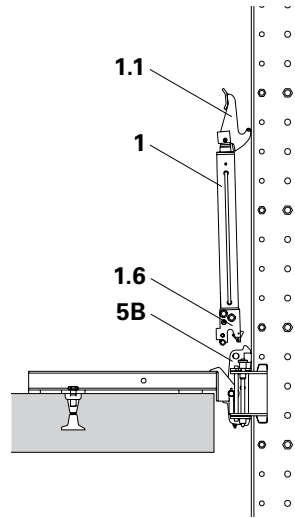


Fig. 36: Installing the Climbing Device in RCS P

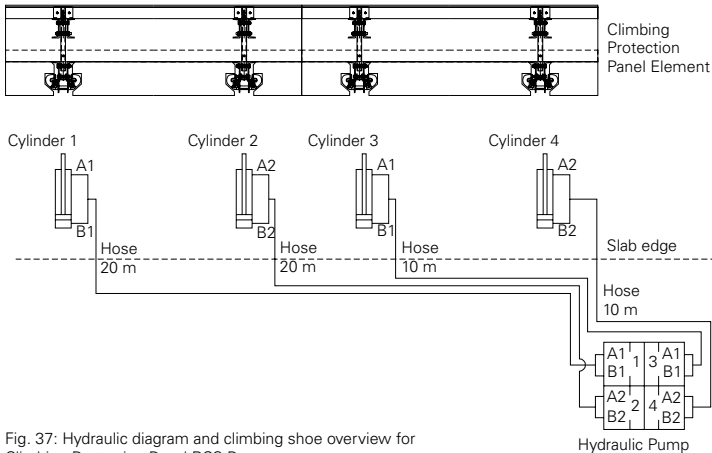


Fig. 37: Hydraulic diagram and climbing shoe overview for Climbing Protection Panel RCS P

## D3 Self-Climbing Procedure

### D3.1 Operating the hydraulic pump



**Take into account the enclosed separate operating instructions for the motor protection switch and electric motor!**

#### **Protective motor switch:**

- (3.2) Switch
- (3.3) Electricity socket with phase inverter
- (3.10) Rotary field control lamp

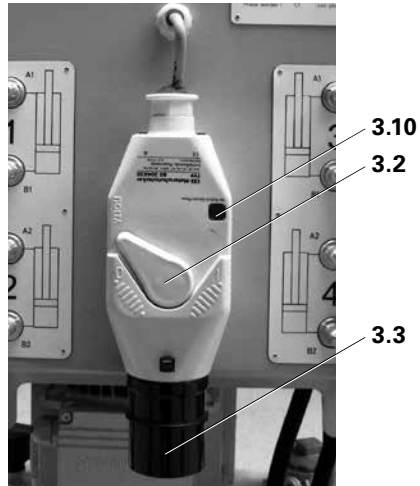


Fig. 38: Protective motor switch



If the rotary field display (3.10) is red, turn the phase inverter 180° in the plug (3.3). Rotary field is changed.



Fig. 39: Electricity socket with phase inverter

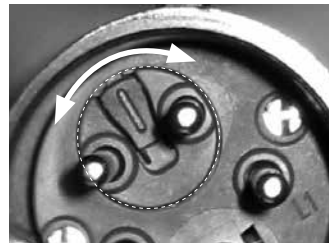


Fig. 39a: Phase inverter

## D3 Self-Climbing Procedure

### D3.1 Operating the hydraulic pump

Hand valve	Connections
Right	3 + 4
Left	1 + 2

#### 1. Switch on hydraulic pump:



Are both hand valves (3.1) in the middle position?

- Turn the toggle on the protective motor switch (3.2) to the right. Hydraulic pump is switched on.

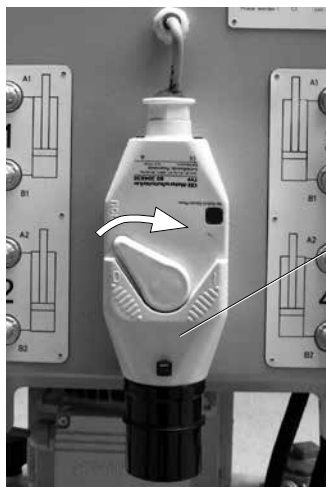


Fig. 40: Switching on the hydraulic pump

#### 2. Extend the climbing device:

- Push hand valve (3.1) upwards. Cylinder extends.

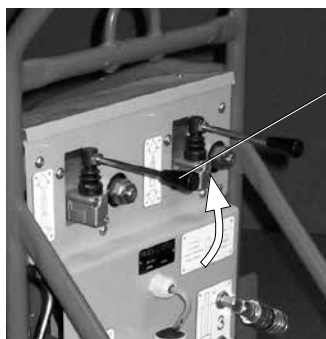


Fig. 41: Extending the cylinder

## D3 Self-Climbing Procedure

### D3.1 Operating the hydraulic pump

#### 3. Extending the climbing device:

- If it is not the case, activate the Climbing Shoe (5) on which the climbing device is placed, see D3.7.
- Extend the pistons of all the hydraulic cylinders up to the first climbing bolt (9.1). Load is carried by the claw on the piston (1.1).



Are all claws engaged on the climbing bolts? If necessary, deactivate the other climbing shoes, see D3.8.

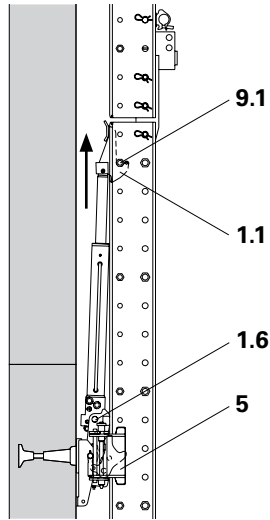


Fig. 42: First stroke

#### 4. Retracting the climbing device:

- Push the hand valve (3.1) downwards. Cylinder retracts.

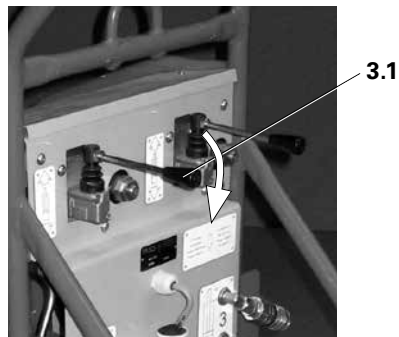


Fig. 43: Retracting the cylinder

## D3 Self-Climbing Procedure

### D3.1 Operating the hydraulic pump

#### 5. Retracting the climbing device:

- Retract pistons of all hydraulic cylinders.
- Claw (1.1) circumvents the climbing bolts (9.1), hydraulic cylinder tips backwards.
- Retract piston until claw on the piston engages under the climbing bolts.



Are all claws engaged on the climbing bolts?

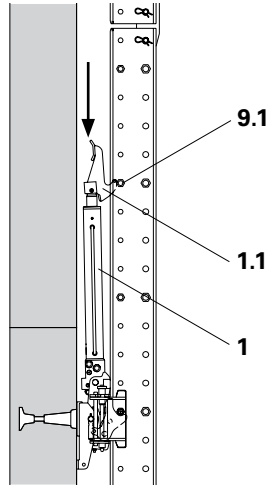


Fig. 44: Retracting the climbing device

#### 6. Switching off the hydraulic pump:

- Turn the toggle on the motor protection switch (3.2) to the left. Hydraulic pump switches off.



Always switch off the hydraulic pump if the climbing hydraulic is non-operational.

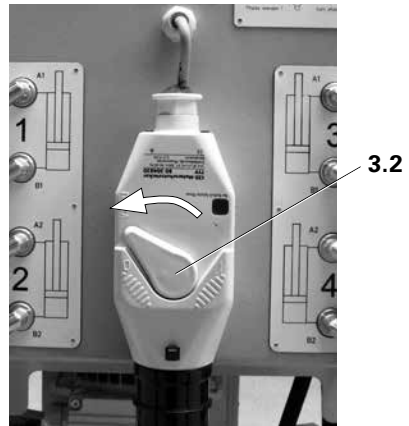


Fig. 45: Switching off the hydraulic pump

## D3 Self-Climbing Procedure

### D3.2 Inserting into the Climbing Shoe with RCS C

Before the last stroke:

**Standard situation:**

**Vertical bearing at the height of the intermediate platform**

- Top climbing shoe (5A) is deactivated, see D3.8.
- In order to allow easier insertion in the top climbing shoe, open both folding runners, see D3.6.
- Middle climbing shoe (5B) is activated, see D3.7.

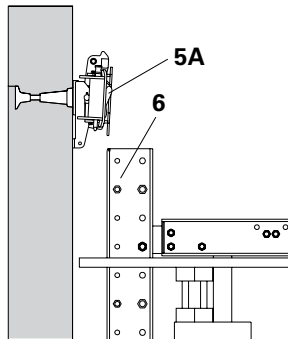


Fig. 46: Inserting into the Climbing Shoe with RCS C

**Alternatively:**

**Vertical bearing at the height of the working platform**

- Top climbing shoe (5A) is activated, see D3.7.
- Both folding runners are closed, see D3.6.
- Middle climbing shoe (5B), on which the climbing device is placed, is deactivated during the last stroke, see D3.8.

**Adjusting the climbing system**

- In order to allow easier insertion, the framework can be adjusted:
- By turning the Framework Spindle (11), the inclination of the top climbing rail (9A) is adjusted relative to the bottom climbing rail (9B).
- In the event of a lateral offset, extend the cylinder to the same height, see D5.4.

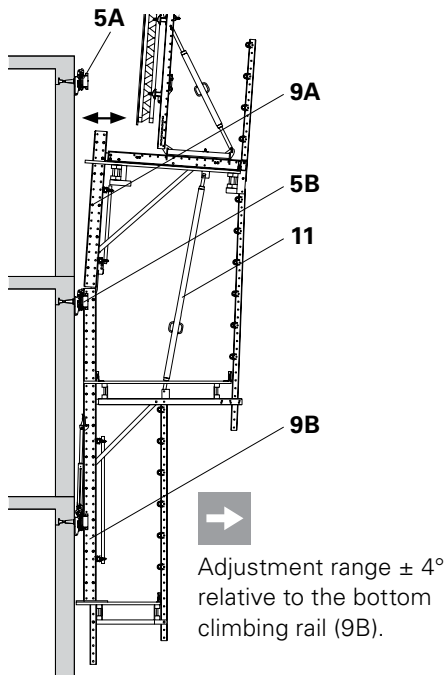


Fig. 47: Adjusting the climbing system



## D3 Self-Climbing Procedure

### D3.3 Inserting into the Climbing Shoe with RCS CL

- After reaching the next climbing shoe (5A or 5B), insert the Climbing Rail Extension 125. For an overview of the climbing shoe, see Fig. 35.
- In the event of a lateral offset, extend the cylinder to the same height, see D5.4.

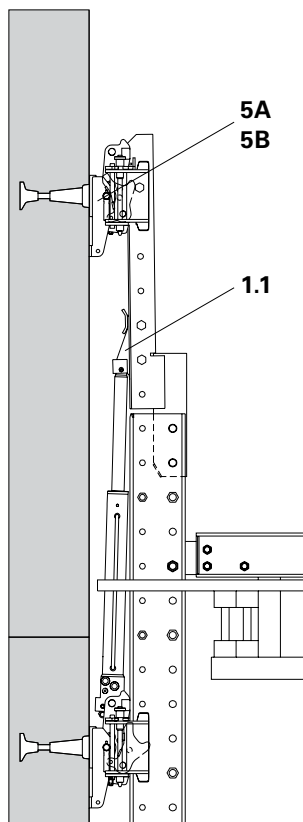


Fig. 48: Inserting into the Climbing Shoe with RCS CL

## D3 Self-Climbing Procedure

### D3.4 Inserting into the Climbing Shoe with RCS P

- Top climbing shoe (5A) is deactivated, see D3.8.
- Both folding runners (5.2) are open, see D3.6.
- Middle climbing shoe (5B) is activated, see D3.7.

After reaching the top climbing shoe:

- Stop stroke.
- Close the folding runner (5.2) of the top Climbing Shoe (5A), see D3.6.
- Continue stroke.

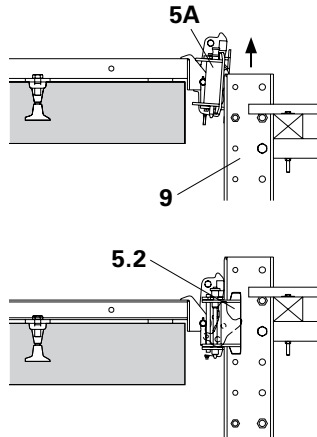


Fig. 49: Inserting into the Climbing Shoe with RCS P

### Using the Guide-in Tool:



If the folding runners cannot be closed:

- Pull Climbing Rail with Guide-in Tool RCS (8) inwards.
- Close folding runners.
- Remove Guide-in Tool.

Attachment point:

Pin  $\varnothing$  21 (8.1).

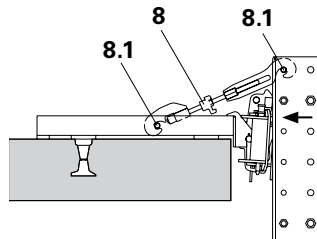


Fig. 50: Guide-in Tool RCS

## D3 Self-Climbing Procedure

### D3.5 Last stroke

During the last stroke of a climbing procedure, the vertical load is transferred to another climbing shoe.

Therefore, the climbing shoe which should serve as the vertical bearing must be activated:

- Activate the climbing shoes which are intended to be used as the vertical bearing, see D3.7.
- Interrupt the last stroke after load change and deactivate the pawls of the other climbing shoes, see D3.8.
- Put down climbing unit on the climbing pawls (5.1) of the activated shoes.

(Fig. 51)

- After the last stroke, completely retract all cylinders.

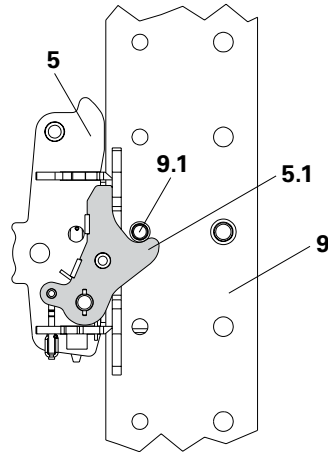


Fig. 51: Positioning on the climbing shoe



After every climbing procedure, carry out a reference run in order to correct any synchronisation deviation, see D5.4.



- Are all climbing rails (9) aligned with the respective climbing shoes (5)?
- Are all climbing pawls (5.1) completely engaged under the climbing bolts (9.1)?
- Are all climbing shoes activated which serve as vertical bearings?

## D3 Self-Climbing Procedure

### D3.6 Opening and closing the climbing shoe

#### Opening the climbing shoe

1. Release the locking spring (5.6).
2. Lift securing pins (5.3).
3. Fold back the folding runner (5.2) of the climbing shoe.
4. Re-insert securing pins in the opened position.
5. Same procedure with the other folding runner.

#### Closing the climbing shoe

1. Lift securing pins (5.3).
2. Fold forward the folding runner (5.2) of the climbing shoe.
3. Re-insert securing pins in the closed position.
4. Fix the locking spring (5.6).
5. Same procedure with the other folding runner.

#### Risk of collapse!

**Do not open the climbing shoe under load or during the climbing procedure!**

#### Risk of crushing!

**Do not touch if the load is moving!**



Are both securing pins on the climbing shoe completely inserted downwards and is the locking spring fixed in position?



Opening of the climbing shoe

- makes it easier to insert the climbing rail (9) during climbing,
- allows the insertion of the climbing rail during the initial assembly.

#### Dismantling the climbing shoe

Pull the opened climbing shoe between the climbing rail (9) and wall first upwards and then sideways, see Instructions for Assembly and Use for the Rail Climbing System RCS C or RCS CL.

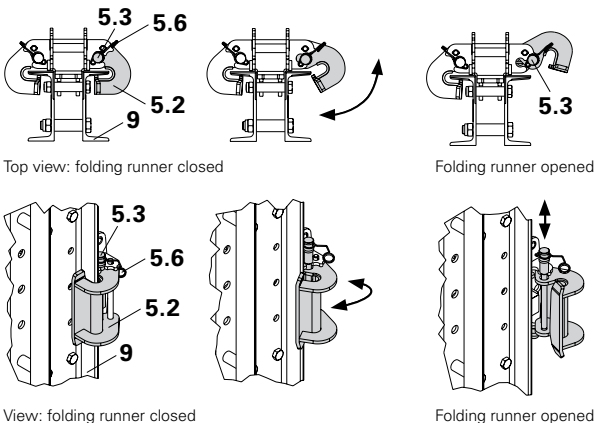


Fig. 52: Opening and closing the climbing shoe

## D3 Self-Climbing Procedure

### D3.7 Activating the climbing shoe



This position serves to transfer vertical forces from the climbing rail during working operations as well as during climbing.

1. Pull the pawl lock (5.4) on the Climbing Shoe RCS (5).
2. Fold down the hinged bail (5.5).
3. Let go of the pawl lock. Climbing pawl swivels out of the climbing shoe through spring force if no climbing bolt (9.1) impedes the climbing pawl (5.1).

**The climbing pawl is activated and operational.**



- Does the climbing pawl (5.1) automatically fold out of the climbing shoe?
- Is the hinged bail (5.5) in a clear position?

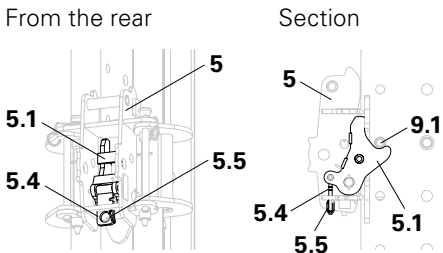


Fig. 53: Climbing pawl activated

### D3.8 Deactivating the climbing shoe



**In a deactivated position, no vertical force from the climbing rail can be transferred via this particular shoe.**

**Risk of crushing!**

**Do not touch if the load is moving!**

1. Pull the pawl lock (5.4) on the Climbing Shoe RCS (5). The climbing pawl (5.1) is pulled into the shoe.
2. Fold up the hinged bail (5.5) on the pawl lock (5.4) and then let go of the pawl lock. The hinged bail (5.5) is then clamped and blocks the climbing pawl.

**The climbing pawl is locked and non-operational.**



Is the hinged bail (5.5) in a clear position?

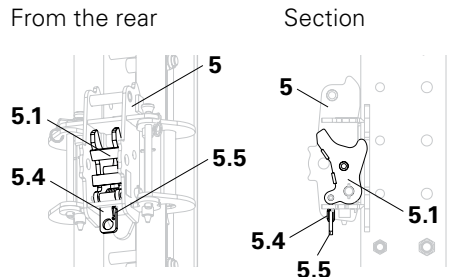


Fig. 54: Climbing pawl locked

## D4 Dismantling the Climbing Device

### D4.1 Disconnecting the hydraulic lines

1. Turn the retaining ring (2.5) on the socket (2.3) until reaching the check mark.

Coupling is unlocked. (Fig. 56)

2. Press the retaining ring (2.5) on the socket. Coupling is released.

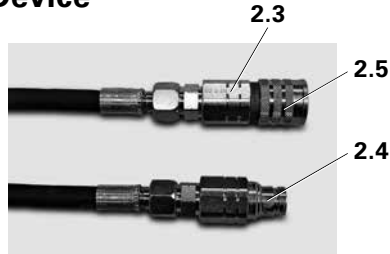


Fig. 55: Quick-Couplers

(2.3) Hydraulic Quick-Coupler (bushing)  
Item no. 110822

(2.4) Hydraulic Quick-Coupler (nipple)  
Item no. 110823

(2.5) Retaining ring

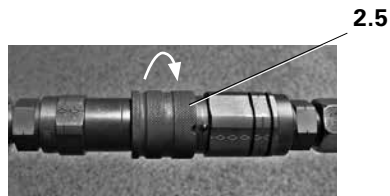


Fig. 56: Turning the retaining ring

### D4.2 Dismantling the climbing device

1. Before dismantling, completely retract the cylinder!
2. Release the hydraulic hoses from the climbing devices with the help of the quick-couplers (D4.1)
3. Operate the locking lever (1.6) on the cylinder base and laterally incline the climbing device so that the locking lever can no longer engage.
4. Lift the climbing device out of the climbing shoe.
5. Transport the hydraulic pump, climbing device and hydraulic hoses to the next climbing unit.

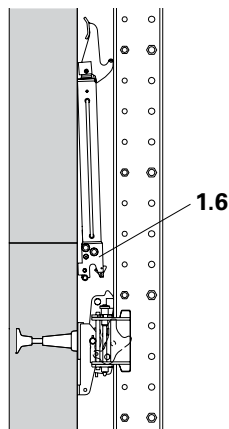


Fig. 57: Dismantling the climbing device

## D5 Remedial Measures for Malfunctions

### D5.1 Overview

Malfunction	Cause	Remedial measure
Cylinder sinks	Air in the hydraulic system	Vent the system, see D5.2.
	Load safety valve is defect	Replace climbing device. Repairs carried out by PERI.
	Sealing is defect	Replace climbing device. Repairs carried out by PERI.
Uneven cylinder extension and retraction	Air in the hydraulic system	Vent the system, see D5.2.
	Dirt in the hydraulic system	Replace hydraulic oil, see C3.4 and, if necessary, clean hydraulic tank and oil filter, and replace, see C3.5.
	Synchronisation deviation	Carry out a reference run, see D5.3.
	Leakage between pump and cylinder	Retract all cylinders in order to lower the climbing unit on the climbing pawls. Identify leakage point and seal; replace if necessary.
	Flow divider defect	Carry out a reference run, see D5.3. Repairs carried out by PERI.
Climbing rail does not insert into the shoe or climbing is not straight	Lateral offset through synchronisation deviation	Extend cylinder to the same height, see D5.4.
Climbed too far		Retract all cylinders in order to lower the climbing unit onto the climbing pawls. Contact PERI.
Hydraulic oil leaks	Hydraulic hose is broken or leaks	Immediately stop the climbing procedure and replace the hydraulic hose. Check all hydraulic hoses.
	Leaking hose connections	Switch off the hydraulic pump = pressure relief. Tighten hose connections.

## D5 Remedial Measures for Malfunctions

### D5.1 Overview

Malfunction	Cause	Remedial measure
Cylinder does not extend	Climbing unit blocked	Retract all cylinders in order to lower the climbing unit onto the climbing pawls. Remove blockage.
	Insufficient oil in the hydraulic tank	Determine the cause of the hydraulic oil loss and eliminate. Top up hydraulic oil.
	Polarity on the motor swapped	Check rotary field display and, if necessary, change with phase inverter, see D3.1.
	Leakage in hydraulic system	Identify leakage point and seal; replace if necessary.
Pawl does not engage in the shoe	Climbing pawl blocked	Remove blockage.
	Pawl moves sluggishly or is dirty	Clean the moving parts, functionality test.
	Spring in climbing shoe is broken	Release climbing pawl manually, see D5.5. Replace climbing shoe. Repairs carried out by PERI.
	Cylinder does not extend far enough Synchronisation deviation	Carry out a reference run, see D5.3.
Cylinder does not fall back in the climbing rail or does not engage	Locking lever in the cylinder base does not completely engage	Correctly place the cylinder base on the bolts of the climbing shoe.
	Spring in the cylinder base is broken	Release climbing device manually, see D5.5. Replace climbing device. Repairs carried out by PERI.
	Cylinder cannot completely retract Synchronisation deviation	Carry out a reference run, see D5.3.



## D5 Remedial Measures for Malfunctions

### D5.2 Venting the system

In order to ensure a reliable operation of the system, the system must be completely vented during the initial commissioning on site, after tubes and hoses have been replaced, or after maintenance work has been carried out on the cylinder. In this process, the oil level in the hydraulic pump must always be checked and topped up as required.

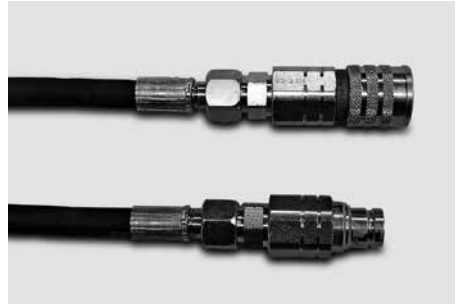


Fig. 58: Free hose couplings

### Venting during initial commissioning

1. Couple hose on the hydraulic pump side.
2. Connect coupling pair at the other end to the cylinder.
3. Place cylinder in an upright position.
4. Completely extend the cylinder in order to displace the air pockets on the rod side.
5. Uncouple the cylinder and create a short-circuit connection.(Fig. 59)
6. Switch on hydraulic pump and flush hose for approx. 1 minute by operating the hand valve.
7. Uncouple hose ends from each other and re-connect the cylinder.
8. Place the cylinder upside down.
9. Completely retract the cylinder in order to displace the air pockets on the piston side.
10. Uncouple cylinder and flush hose once again for approx. 1 minute by means of a short-circuit connection in order to eliminate air pockets.
11. Extend and retract the cylinder pair several times in order to check the synchronisation.



Fig. 59: Short-circuit connection

## D5 Remedial Measures for Malfunctions

### D5.2 Venting the system

#### Venting during hose replacement

1. Detach old hose.
2. Connect new hose on the hydraulic pump side.
3. Connect coupling pair at other end.  
Short-circuit connection (Fig. 59)
4. Switch on hydraulic pump.
5. Push hand valve upwards. Hose is flushed for approx. 1 minute.
6. Disconnect hose ends from one another.
7. Connect cylinder according to the circuit diagram.
8. Extend and retract the cylinder pair several times in order to check the synchronisation.
9. Vent cylinder if required – see previous section “Venting during initial commissioning”.



Extend and retract the cylinder several times in order to check for leakage and the synchronisation. In the process, run at maximum pressure for a longer time in the end positions.

### D5.3 Carrying out a reference run

Carry out a reference run if there is any synchronisation deviation in a cylinder pair.

1. Extend both cylinders until the climbing pawl or piston claw engages the climbing rail. The piston of the non-engaged climbing device moves very slowly (the leak oil in the flow divider allows end position compensation).
2. Then move both cylinders against stop for approx. one minute.



Carry out this operation after each climbing procedure in order to eliminate the standard deviations of the flow divider.



#### Manual end position compensation

If synchronisation deviation is too large when under load, then carry out a manual end position compensation with the help of a short-circuit connection:

## D5 Remedial Measures for Malfunctions

### D5.4 Extending the cylinders to the same height

A large synchronisation deviation can result in a lateral offset. In rare cases, this could negatively affect the “threading” of the RCS Rails in the next climbing shoe. This deviation can be corrected even if the pistons have not been completely extended.

1. Decouple the inflow and outflow of Cylinder 2 (is extended further).
2. Connect the hoses with one another. Short-circuit connection has now been created, see D5.2.
3. Extend the remaining Cylinder 1. (Fig. 60)
4. As soon as the lateral offset has been corrected, re-couple Cylinder 2.
5. Press hand valve upwards until both cylinders have been completely extended.

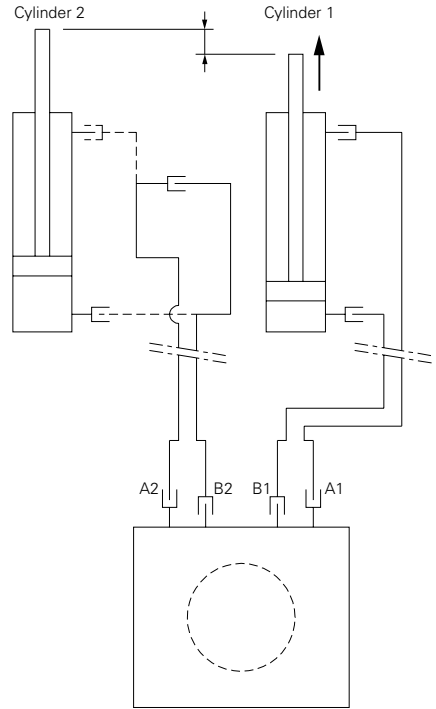


Fig. 60: Extending the cylinders to the same height

## D5 Remedial Measures for Malfunctions

### D5.5 Releasing the climbing pawl by hand

In the event of a broken leg spring in the climbing shoe (5), manually release the climbing pawl (5.1) with the help of the pawl lock (5.4).

**This procedure is required in order to replace the climbing shoe.**



**After completing the climbing procedure, replace the climbing shoe or have repair work carried out by PERI!**

**Risk of crushing!**

**Do not touch if the load is moving!**

#### Procedure:

1. Completely extend the pistons of all hydraulic cylinders. Climbing bolt (9.1) has passed the climbing pawl (5.1).
2. Press the pawl lock (5.4) upwards by hand so that the climbing pawl is activated. (Fig. 61)
3. Retract the hydraulic cylinder until the climbing bolts (9.1) are positioned on the climbing pawl (5.1).



Are all climbing pawls (5.1) engaged?

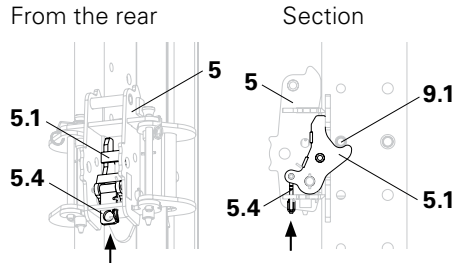


Fig. 61: Manually activated climbing pawl

## D5 Remedial Measures for Malfunctions

### D5.6 Dismantling the climbing device with broken spring



**After climbing procedure is completed, replace the climbing device or have repairs carried out by PERI!**

**Risk of crushing!  
Do not touch if the load is moving!**

In the event of a broken leg spring in the cylinder base, tip back the climbing device (1) by hand into the climbing rail (9). This procedure is necessary in order to replace the cylinder.

**Procedure:**

1. Retract piston until the claw (1.1) is guided around the climbing bolts (9.1).
2. If the claw does not remain in the rail: position claw (1.1) by hand between the profiles of the climbing rail. (Fig. 62)
3. If the cylinder head remains in the rail: extend the cylinder so that the claws (1.1) engage the climbing bolts (9.1).



Are all claws engaged on the climbing bolts?



Also use this procedure in the event of forward or laterally inclined climbing rails.

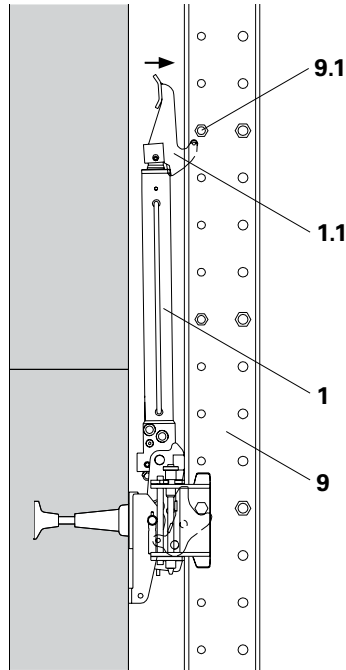


Fig. 62: Tipping back the climbing device by hand

# Part E Connection and Circuit Diagrams



## E1 Hydraulic Connection Diagram

### Standard hose arrangement diagram

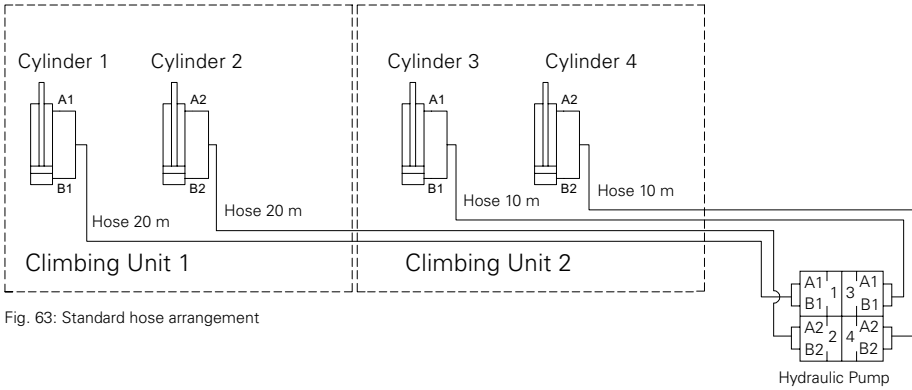


Fig. 63: Standard hose arrangement

### Details: cylinder, hoses and hydraulic pump

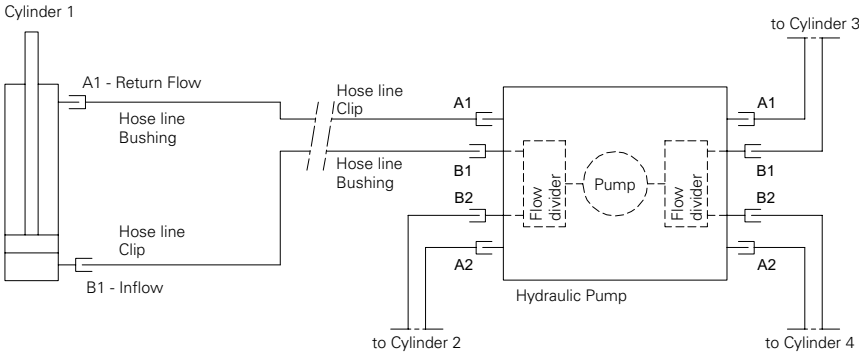


Fig. 64: Diagram for activating the hose connection of a cylinder

# Part E Connection and Circuit Diagrams

## E2 Hydraulic Circuit Diagram

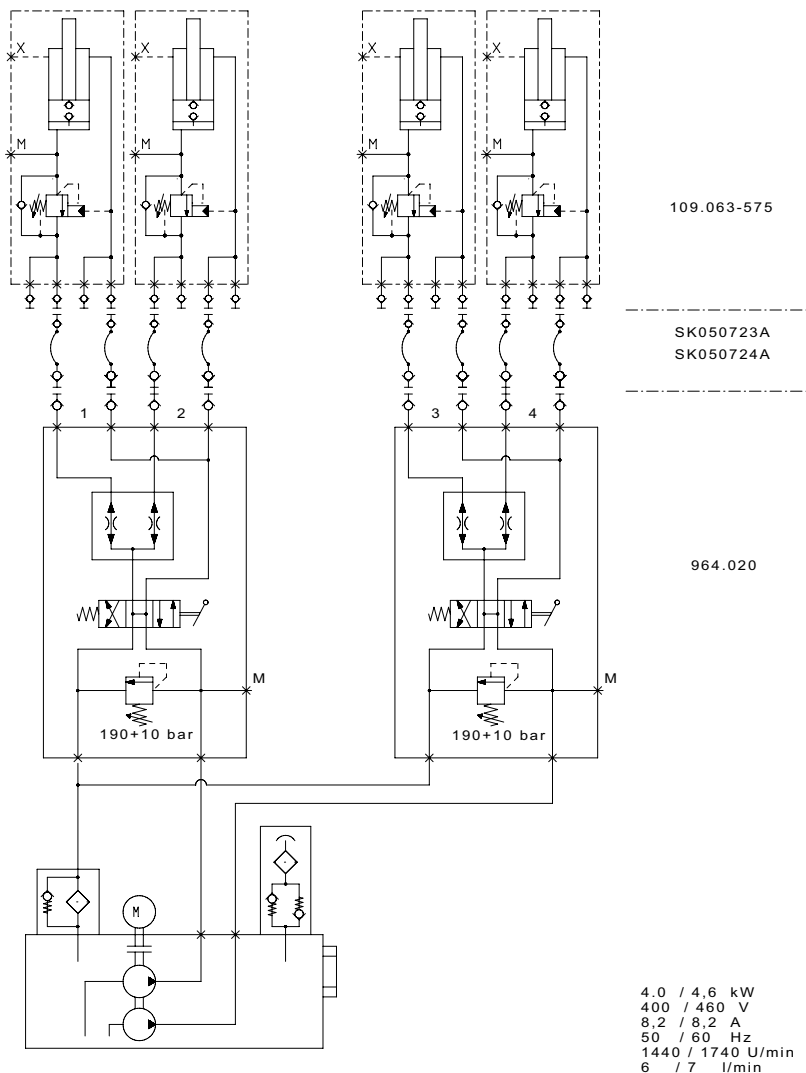


Fig. 65: Circuit diagram for the Hydraulic Pump RCS

# Part E Connection and Circuit Diagrams



## E2 Hydraulic Circuit Diagram

Hydraulic circuit diagram:  
Climbing Device RCS 50

Item no. 109765 (109.063G)

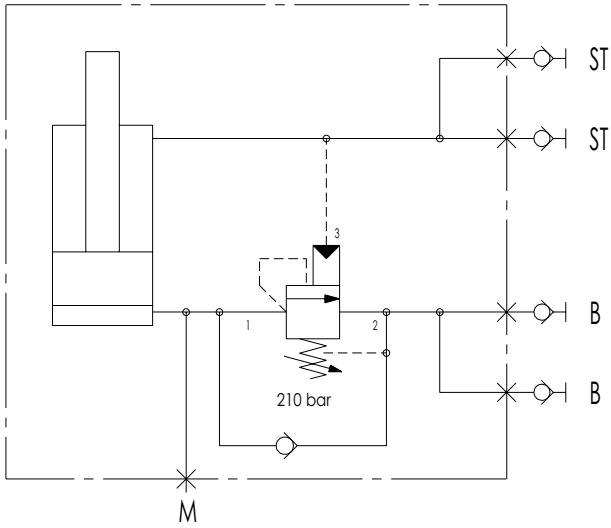


Fig. 66: Hydraulic circuit diagram for the Climbing Device RCS 50



# Part E Connection and Circuit Diagrams



## E3 Electrical Power Supply Diagram

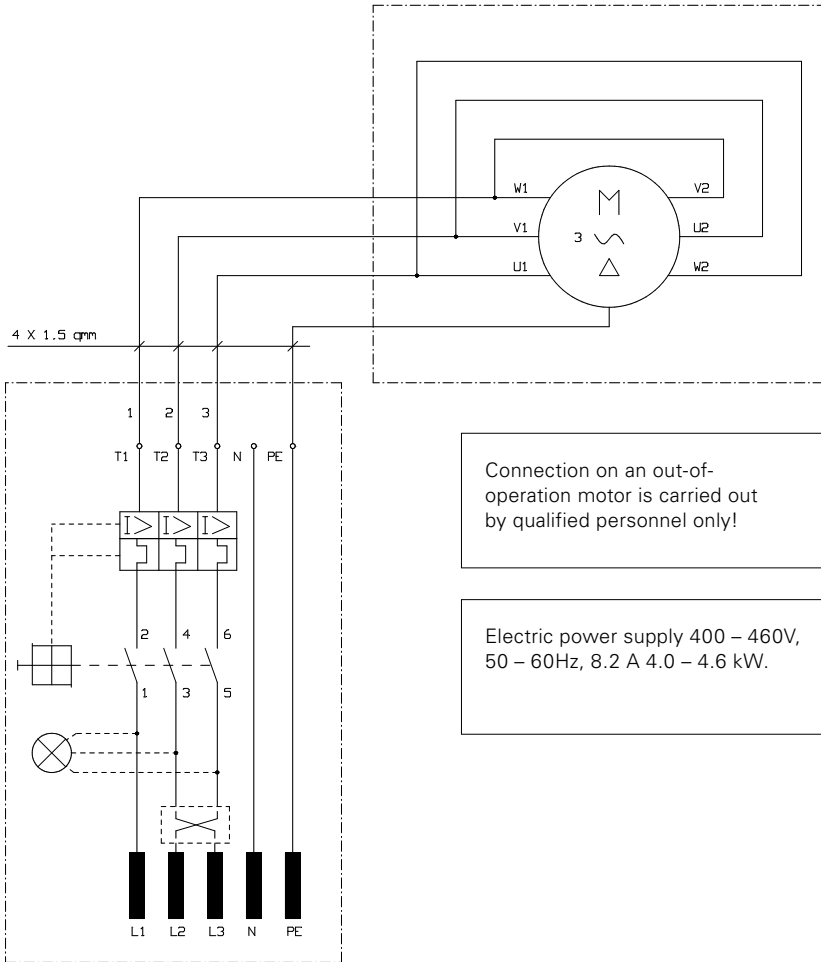


Fig. 67: Electrical power supply diagram

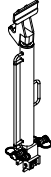




Item no.	Weight kg
109765	27.00

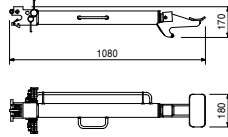
## Climbing Device RCS 50

For crane-independent climbing of RCS climbing units.



## Technical Data

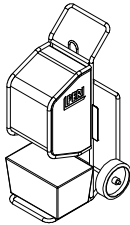
Maximum lifting capacity 50 kN.



109766	109.00
--------	--------

## Hydraulic Pump RCS 4 x 190 bar, 380 – 460 V

Hydraulic Pump to drive the Climbing Device RCS 50.



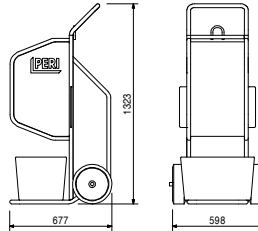
Accessories

## Technical Data

Technical Data: see Product Information.

## Note

Only use original PERI Hydraulic Fluid HV LP46.



057376	17.40
--------	-------

## Hydraulic Fluid HV LP46, 20 L

114243	109.00
--------	--------

## Hydraulic Pump RCS 4 x 190 bar, 460 V CSA

Hydraulic Pump to drive the Climbing Device RCS 50.

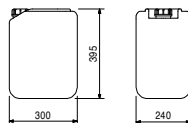
## Note

Information only – for use only in Canada: CE Declaration of Conformity not valid here. Only use original PERI Hydraulic Fluid HV LP46.

## Technical Data

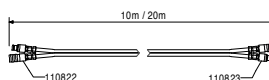
Technical Data: see Product Information.

Item no.	Weight kg	
057376	17.400	<b>Hydraulic Fluid HV LP46, 20 L</b> High grade, synthetic hydraulic fluid for PERI Hydraulic Pumps.

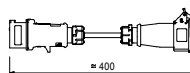
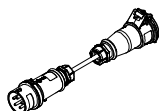


110069	9.000	<b>Hydraulic Twin Hose RCS</b>	<b>Complete with</b> 2 x 110822 Quick-Coupler Bushing RCS 2 x 110823 Quick-Coupler Nipple RCS
110070	16.000	<b>Hydraulic Twin Hose RCS 10 m</b>	
		<b>Hydraulic Twin Hose RCS 20 m</b>	

For connecting the Hydraulic Pump RCS to the Climbing Device RCS 50.  
With quick-couplers.



110280	0.500	<b>Adapter Cable RCS</b>	<b>Note</b>
		For the power supply of the Hydraulic Pump RCS.	With CEE Plug 400 V 16 A.



Item no. Weight kg

110279 0.250

### Plug Socket RCS, black

For the power supply of the Hydraulic Pump RCS with 380 – 460 V, 50 – 60 Hz.



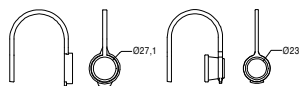
### Note

Connection to the power supply only to be done by qualified personnel.



125632 0.050

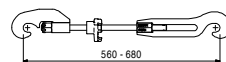
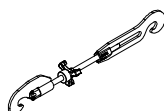
### Protection Covers Climbing Device RCS



114317 3.210

### Guide-in Tool RCS

For pulling and aligning the Climbing Rail RCS in order to close the folding runners of the climbing shoe.



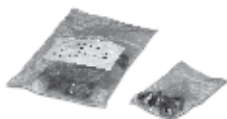
115581 10.280

### Service Box Hydraulics

Complete with

- 1 x 115590 Tool Box 580 x 260 x 285 mm
- 1 x 115583 Manometer Type 570 VA-Geh.
- 1 x 115584 Measuring Hose MKT 6-02 DN02
- 1 x 115582 Measuring Coupling SMK 20-G 1/4-PC
- 1 x 115591 Double Open-Ended Wrench SW 10 x 13
- 1 x 115592 Double Open-Ended Wrench SW13 x 17
- 1 x 115588 Double Open-Ended Wrench SW 19 x 24
- 1 x 051778 Double Open-Ended Wrench SW 24 x 27
- 1 x 115589 Double Open-Ended Wrench SW 27 x 32
- 1 x 057278 Pin Spanner Set, 8-piece
- 1 x 115585 Hex. Pin Spanner SW 12
- 1 x 057279 Hex. Pin Spanner SW 14
- 1 x 115587 Standard Screwdriver 6.5 mm
- 1 x 057282 Water Pump Pliers  
l = 300 mm, e = 48 mm

Item no.	Weight kg		
115147	0.750	<b>Angle Fitting Set PS</b> SK080515 Conversion Set for 2 cylinders 109.063B-575.	<b>Note</b> consisting of: Locking Screw K006.080 (4x) Elbow Union K018.740 (4x) Screw Connection K018.294 (4x)



115396	0.720	<b>Fitting Set PS short RCS</b> SK080.709A Replacement Fitting Set for Item no. 109765 Climbing Device RCS for 2x 110822 Quick-Coupler Bushing and 2x 110823 Quick-Coupler Nipple (1x Cylinder 109.063E-575).	<b>Complete with</b> 1 x 109765 Climbing Device RCS 50 <b>Note</b> consisting of: Screw Connection K018.294 (4x) Screw Connection K018.739 (4x)
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110823	0,171	<b>Quick-Coupler Nipple RCS</b>
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110822	0.297	<b>Quick-Coupler Bushing RCS</b>
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## Einbauerklärung

im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anh. II 1. B  
für unvollständige Maschinen



Hersteller	In der Gemeinschaft ansässige Person, die bevollmächtigt ist, die relevanten technischen Unterlagen zusammenzustellen
PERI GmbH Rudolf-Diesel-Strasse 19 89264 Weissenhorn	PERI GmbH Rudolf-Diesel-Strasse 19 DE - 89264 Weissenhorn

### Beschreibung und Identifizierung der unvollständigen Maschine

Produkt / Erzeugnis	Klettermechanik RCS
Typ	Klettertechnik
Maschinennummer	MO-18-12493#0#
Projektnummer	PRJ-2018-11-16-0001
Handelsbezeichnung	Klettermechanik RCS
Funktion	Das Kletterwerk RCS 50 steht auf dem Kletterschuh RCS. Der Kletterschuh RCS ist über einen Wand- oder Deckenschuh am Bauwerk verankert. Das Kletterwerk arbeitet mit der Klinke im Kletterschuh zusammen. Die Klaue am Kolben rastet in die Kletterbolzen (Distanzierungen in der Kletterschiene RCS) ein und schiebt beide zusammen mit der Traggerüstkonstruktion nach oben. Bei Hubende rastet die Klinke im Kletterschuh in einen anderen Kletterbolzen ein. Beim Einfahren des Zylinders übernimmt die Klinke die Last und die Klaue umfährt den nächsten Kletterbolzen. Danach rastet die Klaue in diesen Kletterbolzen ein.

Es wird erklärt, dass die folgenden grundlegenden Anforderungen der Maschinenrichtlinie 2006/42/EG erfüllt sind:

1.1.3, 1.3., 1.6.1, 1.3.7, 1.3.1, 1.3.2, 1.3.9, 1.5.1, 1.5.15, 1.6.3, 1.6.5

Ferner wird erklärt, dass die speziellen technischen Unterlagen gemäß Anhang VII Teil B erstellt wurden.

Es wird ausdrücklich erklärt, dass die unvollständige Maschine allen einschlägigen Bestimmungen der folgenden EG-Richtlinien bzw. Verordnungen entspricht:

2014/68/EU	Richtlinie 2014/68/EU des Europäischen Parlaments und des Rates vom 15. Mai 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung von Druckgeräten auf dem Markt Veröffentlicht in L 189/164 vom 27.06.2014
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### Fundstelle der angewandten harmonisierten Normen entsprechend Artikel 7 Absatz 2:

EN ISO 12100:2010-11	Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobewertung und Risikominderung (ISO 12100:2010)
EN 60204-1:2006-06	Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen
EN 614-1:2006+A1:2009	Sicherheit von Maschinen - Ergonomische Gestaltungsgrundsätze - Teil 1: Begriffe und allgemeine Leitsätze
EN ISO 13857:2008	Sicherheit von Maschinen - Sicherheitsabstände gegen das Erreichen von Gefährdungsbereichen mit den oberen und unteren Gliedmaßen (ISO 13857:2008)
EN 349:1993+A1:2008	Sicherheit von Maschinen - Mindestabstände zur Vermeidung des Quetschens von Körperteilen
EN ISO 4413:2010	Fluidtechnik — Allgemeine Regeln und sicherheitstechnische Anforderungen an Hydraulikanlagen und deren Bauteile (ISO 4413:2010)

Der Hersteller bzw. der Bevollmächtigte verpflichten sich, einzelstaatlichen Stellen auf begründetes Verlangen die speziellen Unterlagen zu der unvollständigen Maschine zu übermitteln. Diese Übermittlung erfolgt in Papierform

Die gewerblichen Schutzrechte bleiben hiervon unberührt!



## Einbauerklärung

im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anh. II 1. B  
für unvollständige Maschinen



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**Wichtiger Hinweis! Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn gegebenenfalls festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen dieser Richtlinie entspricht.**

Weissenhorn, 30.01.2019

Ort, Datum



Unterschrift  
Dipl.-Ing. Rainer Bolz  
Head of R&D Formwork

Seite 2/2

This document is a translation into English from the German original.

## Declaration of Incorporation

In accordance with the EC-Machinery Directive 2006/42/EG,  
Annex II 1. B for partly completed machinery



Manufacturer	Person established within the Community authorized to compile the relevant technical documentation.
PERI GmbH Rudolf-Diesel-Strasse 19 89264 Weissenhorn	PERI GmbH Rudolf-Diesel-Strasse 19 DE - 89264 Weissenhorn

### Description and identification of the partly completed machinery

Product	Climbing Mechanism RCS
Type	Climbing Technology
Machine number	MO-18-12493#0#
Project number	PRJ-2018-11-16-0001
Trade Name	Climbing Mechanism RCS
Function	The Climbing Device RCS 50 is positioned on the Climbing Shoe RCS. The Climbing Shoe RCS is anchored to the building by means of a wall or slab shoe. The climbing device works together with the climbing pawl in the climbing shoe. The claw on the piston engages the climbing bolts (spacers in the Climbing Rail RCS) and pushes both of them, together with the supporting structure, upwards. At the end of the stroke, the pawl in the climbing shoe engages in another climbing bolt. Once the cylinder is retracted, the pawl carries the load and the claw circumvents the next climbing bolt. After this the claw engages this climbing bolt.

It is declared, that the following essential requirements of the Machinery Directive 2006/42/EG are fulfilled:

1.1.3, 1.3., 1.6.1, 1.3.7, 1.3.1, 1.3.2, 1.3.9, 1.5.1, 1.5.15, 1.6.3, 1.6.5

It is also declared, that the specific technical documentation has been drawn up in accordance with Annex VII, Part B.

It is expressly declared, that the partly completed machinery complies with all relevant provisions of the following EC Directive or Directives.

2014/68/EU	Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonization of the laws of the Member States relating to the availability of pressure equipment on the market Published in L 189/164 of 27.06.2014.
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### Reference to the harmonized standards used, as referred to in Article 7 (2)

EN ISO 12100:2010-11	Safety of machines – General design principles – Risk assessment and mitigation (ISO 12100:2010)
EN 60204-1:2006-06	Safety of machines – Electrical equipment of machines – Part 1: general requirements
EN 614-1:2006+A1:2009	Safety of machines – Ergonomic design principles – Part 1: terminology and general principles
EN ISO 13857:2008	Safety of machines – Safety distances to prevent hazardous areas being reached by the upper and lower limbs (ISO 13857:2008)
EN 349:1993+A1:2008	Safety of machines – Minimum gaps to avoid crushing of parts of the human body
EN ISO 4413:2010	Fluid technology - General rules and safety requirements for hydraulic systems and their components und deren Bauteile (ISO 4413:2010)

The manufacturer or his authorized representative shall be obliged to communicate to the national authorities, on a reasoned request, the specific documentation concerning the partly completed machinery. This information shall be supplied in digital form or, on request, in paper form.

The industrial property rights remain unaffected by this!

## Declaration of Incorporation

In accordance with the EC-Machinery Directive 2006/42/EG,  
Annex II 1. B for partly completed machinery



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**Important note! The partly completed machinery must not be put into service until it has been established, where appropriate, that the machinery into which the partly completed machinery is to be incorporated complies with the provisions of this Directive.**

Weissenhorn, 30.01.2019

Place, Date



Signature  
Dipl.-Ing. Rainer Bolz  
Head of R&D Formwork

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