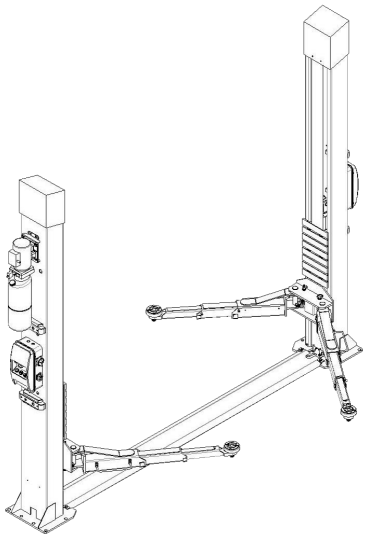
4-tonne two-post lift (electric lock release) - Operating instructions

Model: Hammer Tools CLD 4000 Pro



English

Lifting capacity: 4000 kg

Power supply: 230 V or 400 V, depending on version

Frequency: 50 Hz

230 V: single-phase | 400 V: three-phase

Motor power: 2.2 kW

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About this edition

This manual includes the complete content of the newly supplied 48-page German manual for HAMMER TOOLS CLD 4000 Pro. The current dimension drawing supplied separately replaces Figure 1. Installation, safety, operation and maintenance instructions, exploded views and parts lists are included. Original illustrations and part references are retained; a legend explains foreign-language image labels where needed.

This manual covers the 230 V single-phase and 400 V three-phase versions. Safety lock release and lowering are controlled electrically using the DOWN button. Use only the circuit diagram for the version supplied (Figure 17: 400 V three-phase; Figure 18: 230 V single-phase).

Electrical work must be performed only by a qualified electrician using the circuit diagram for the version actually supplied. Check the rating plate before connection.

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1. Safety instructions

1.1 On delivery, check that all components of the complete system are present before installation.

1.2 Read the entire instruction manual thoroughly before putting the lift into service.

Anyone unfamiliar with this manual must not operate the lift.

1.3 Installation and adjustment personnel must have basic mechanical and electrical knowledge.

1.4 Install the lift in a room large enough for unobstructed operation with the necessary safety clearances.

1.5 Install only on structurally sound, load-bearing concrete. Installation on asphalt, tiles or defective or cracked concrete is prohibited.
1.6 Do not install immediately next to heaters, air conditioners, water connections, stoves or humidifiers.

1.7 Keep away from very dusty areas and environments containing chemicals or corrosive substances.

1.8 Before installation, check that the mains voltage matches the specifications in this manual and on the machine nameplate.

1.9 Do not install on upper floors or above basements without approval from the building authority.

1.10 Conduits for electrical cables must comply with the applicable electrical installation standards.

1.11 Remove all obstructions beneath and around the lifting platform before starting work.

1.12 No one may stand alongside the lift during raising or lowering. No occupants may remain in the raised vehicle.

1.13 The vehicle weight must not exceed the rated lifting capacity.

1.14 Disconnect the power supply completely when the lift is not in use.

1.15 Perform the maintenance specified in this manual. Regularly inspect and maintain all essential components.

1.16 The operator must provide a fire extinguisher at the installation site.
1.17 Swing all four lifting arms clear and clear the drive-through area before driving the vehicle in. Do not kick the lifting arms, as this damages the locking teeth.

1.18 Before raising, make sure that all lifting-arm locking teeth engage correctly.

1.19 Always lift the vehicle with all four lifting arms simultaneously. Lifting with fewer arms is prohibited.

1.20 Always engage the mechanical safety locks after raising.

Working under a vehicle without the safety locks engaged is prohibited.

1.21 Swing the lifting arms back to their original position before driving the vehicle out to prevent a collision with the vehicle.

1.22 Install the short lifting arms at the front and the long lifting arms at the rear (standard arrangement for front-engined vehicles).

1.23 The safety cable must be taut. During electric lock release, the locking blocks in the main and secondary posts must open fully at the same time.

• Note: These safety instructions cannot cover every possible operating situation. The operator must have basic safety knowledge.

2. Product features

The lift is designed for safe and reliable operation, with hydraulic drive for smooth running and low noise. Two hydraulic cylinders provide even raising and lowering. Two equalising cables synchronise the movement of both carriages and help prevent the vehicle from tipping. The electromagnetic safety locks provide operating safety. The lifting-arm locks have widened toothed blocks to prevent the arms from slipping and improve safety when lifting vehicles.

3. Main technical specifications

Note: Versions with different voltages and frequencies can be supplied to order. Refer to the machine nameplate for details.

Maximum lifting capacity (kg)	4000
Lifting height (mm)	1900
Full lifting time (s)	60
Power supply	230 V single-phase / 400 V three-phase
Motor power	2,2 kw
Rated hydraulic pressure	20 MPa

4. Overall dimensions of the lift

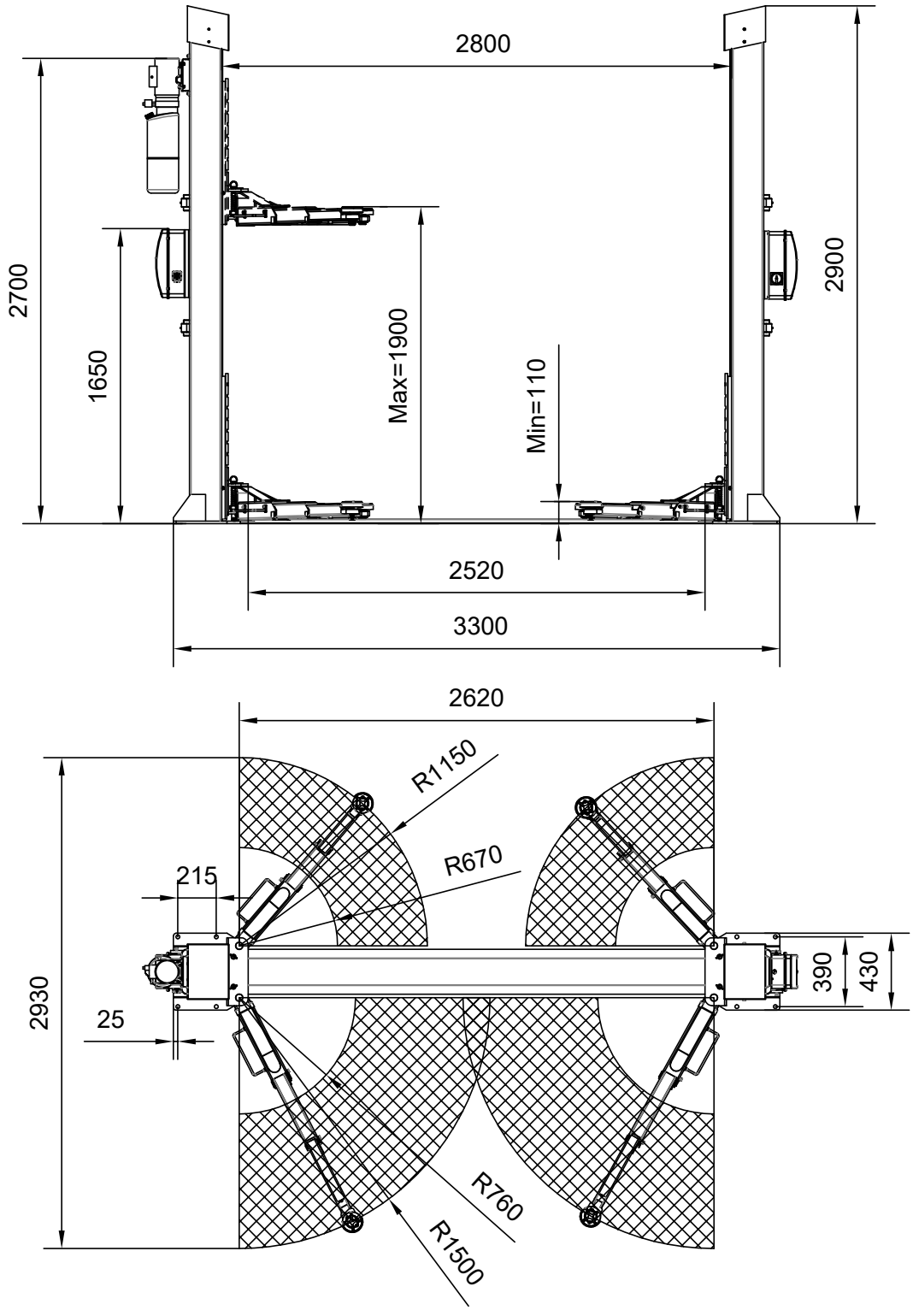


Figure 1: Overall dimensions (unit: mm)

5. Foundation dimensions of the lift

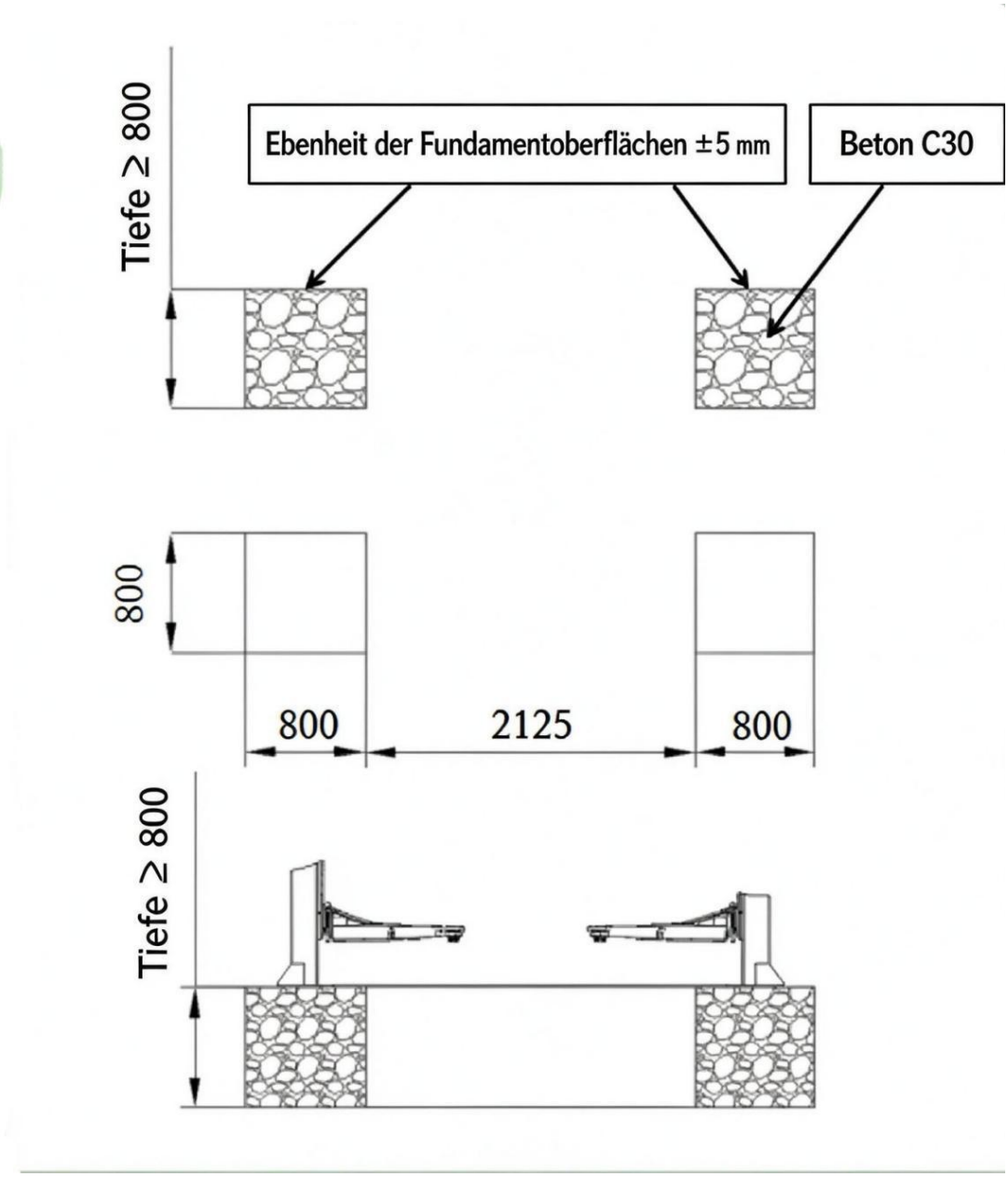


Figure 2: Foundation drawing (unit: mm)

Illustration labels

Original label	Translation
Tiefe ≥ 800	Depth ≥ 800
Ebenheit der Fundamentoberflächen ±5 mm	Foundation surface levelness ±5 mm
Beton C30	C30 concrete

6. Construction and operating principle

The lift consists of a main post, secondary post, floor plate, carriages, lifting arms, hydraulic cylinders, hydraulic power unit, control boxes, electric locking mechanism and chains (see Figure 3).

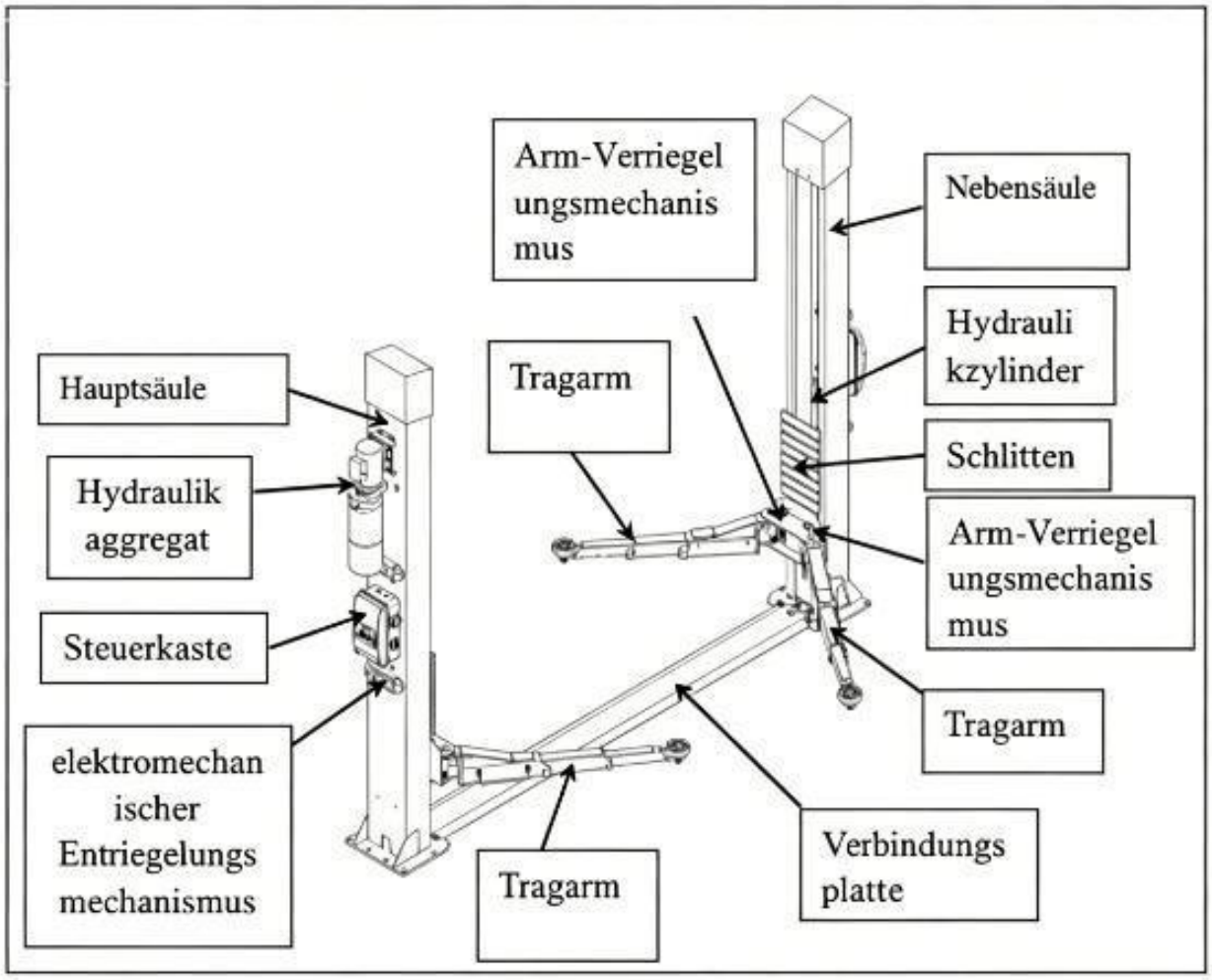


Bild 3 Hauptaufbau des Hebebühnenaggregats

Illustration labels

Original label	Translation
Hauptsäule	Main post
Hydraulikaggregat	Hydraulic power unit
Steuerkasten	Control box
elektromechanischer Entriegelungsmechanismus	Electromechanical lock-release mechanism
Arm-Verriegelungsmechanismus	Lifting-arm locking mechanism
Nebensäule	Secondary post
Hydraulikzylinder	Hydraulic cylinder
Schlitten	Carriage
Tragarm	Lifting arm
Verbindungsplatte	Connecting floor plate
Bild 3 Hauptaufbau des Hebebühnenaggregats	Figure 3: Main components of the lift

Component descriptions

• Posts: Basic structures supporting the carriages, cylinders and other drive components.

• Carriages: Lifting components that move vertically inside the posts.

• Lifting arms: Arms fitted to the carriages to support the vehicle at its underbody lifting points.

• Floor plate: Floor-level component routing the cables, hydraulic hoses and wiring between the main and secondary posts.

• Electric locking mechanism: Electromagnetically controlled safety component. If pressure drops, the locking tooth secures the carriage.

• Hydraulic cylinders: Drive components. Oil pressure extends the piston rods, which raise the carriages via the chains.

• Hydraulic power unit: Drive unit. The motor drives the oil pump, drawing oil through a filter and delivering it under pressure.

• Lifting-arm lock: Safety mechanism preventing the lifting arms from rotating.

• Chain: Transmission component, attached at one end to the base of the post and at the other end to the carriage.

• Control box: Control unit for raising and lowering.

Operating principle

Raising: The power-unit motor drives the oil pump. Pressurised oil flows into the cylinders, extending the piston rods and raising the carriages and lifting arms synchronously via the chains.

Lowering: The power unit's return line opens, allowing the weight of the carriages to force the oil back into the reservoir.

7. Installation and adjustment

Installation note

Incorrect installation can cause equipment damage or personal injury. The manufacturer is not liable for direct or indirect damage caused by improper installation or use.

Install the lift on a level surface to ensure level lifting. Slight floor slopes can be compensated with suitable thin shims. Steep slopes significantly impair the lift's ability to remain level. If the floor appears sloped, inspect it or, preferably, cast a new level concrete floor. Even under otherwise ideal conditions, level lifting depends on the levelness of the installation surface. Do not assume that the lift can compensate for major floor irregularities.

Do not install the lift on asphalt. Apart from concrete, do not install it on any surface that fails to meet the minimum foundation requirements. Do not install the lift on concrete with major cracks, fractures or other damage. Consult a structural engineer in such cases.

Do not install on upper floors or above basements without written approval from an engineer.

Overhead obstructions: No heaters, structural members or electrical cables may run above the installation location.

Floor thickness checks: Drill test holes to determine the concrete thickness. Where several lifts are installed at one site, check each installation position separately.

Power supply: Prepare the supply before installation. Electrical installation by a certified electrician is recommended.

Before installation, study the manual and check for transport damage and missing parts. Then proceed as follows:

7.1 Install in a dust-free indoor area with lighting of at least 100 lux.

Maintain a wall clearance of at least 1000 mm, sufficient room for vehicle movement in front of and behind the lift, and a room height of at least 4000 mm for escape and working space (Figure 4).

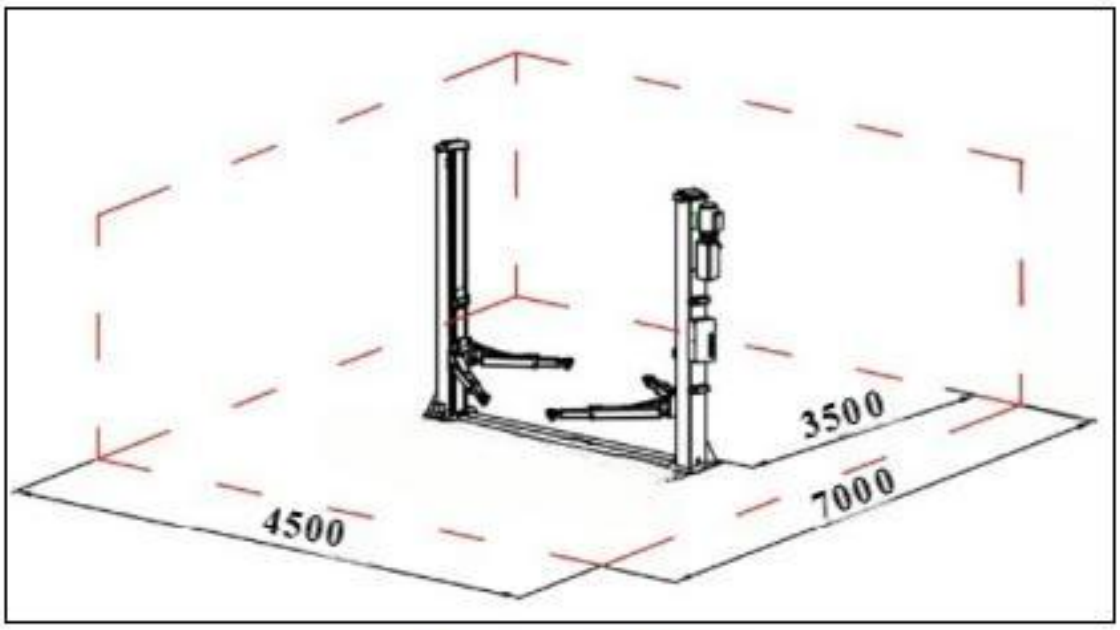


Bild 4: Aufstellraum

Illustration labels

Original label	Translation
Bild 4: Aufstellraum	Figure 4: Installation space

7.2 Install only on C30 concrete at least 800 mm thick, with a levelness tolerance of less than 5 mm. New concrete must cure for at least 20 days (Figure 2).

7.3 Position the main post on the foundation. Drill the holes using a rotary hammer, vacuum out the drilling dust and carefully drive in the anchor bolts. The bolts must project no more than 50 mm above the floor. Leave the nuts loose initially (Figure 5).

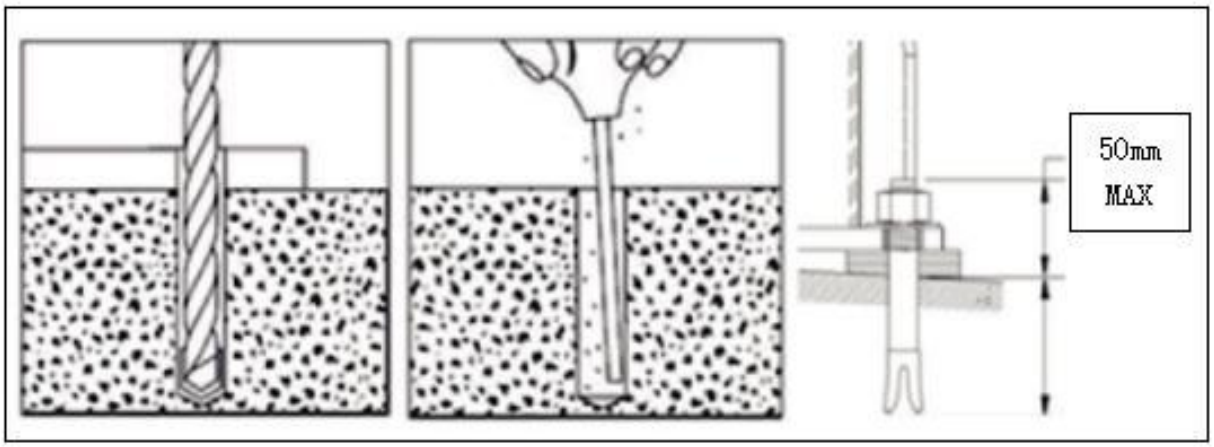


Figure 5

Figure 5

Drilling requirements

1. Do not use excessively worn or damaged drill bits.

2. Keep the drill perpendicular to the floor while drilling.

3. Do not apply excessive force. Withdraw the drill bit occasionally to remove drilling dust from the hole.

4. The drilling depth must equal the expansion anchor length. The distance from the bolt head to the concrete floor must be at least twice the bolt diameter. If drilling fails, reposition the lift and drill again.

7.4 Secure the secondary post in the same way as the main post. Keep the difference between the two base-plate diagonal measurements within 3 mm (Figure 6).

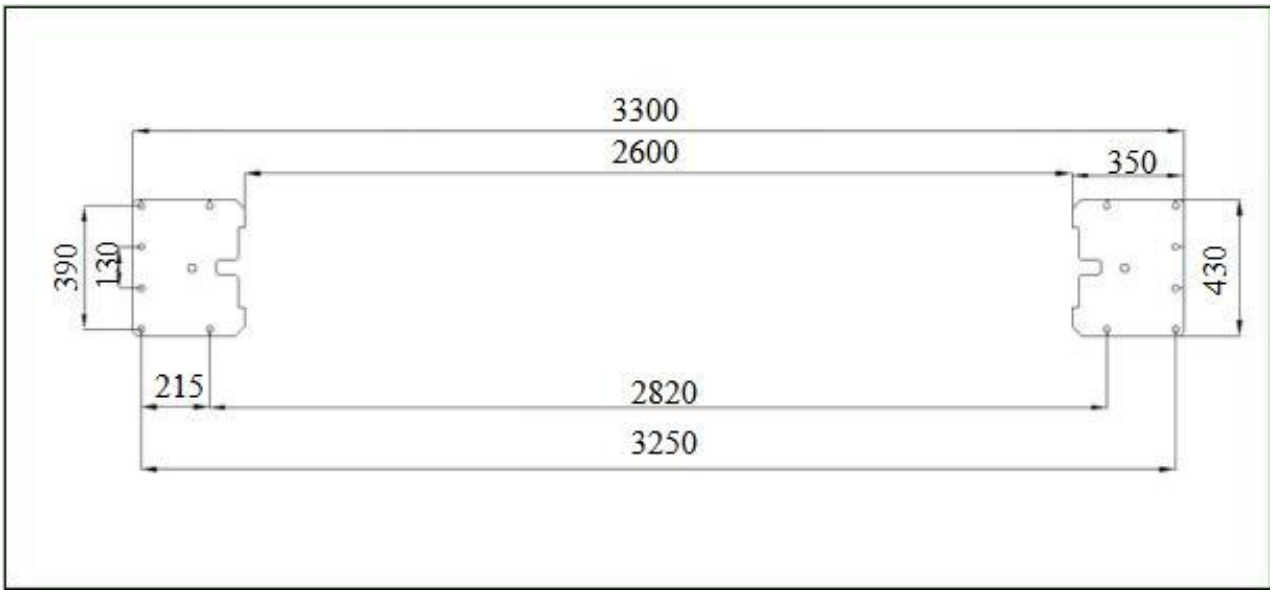


Figure 6: Base-plate arrangement (unit: mm)

7.5 Tighten the anchor nuts with a torque wrench. Check that the posts are vertical using a spirit level and correct with shims if necessary (Figure 7).

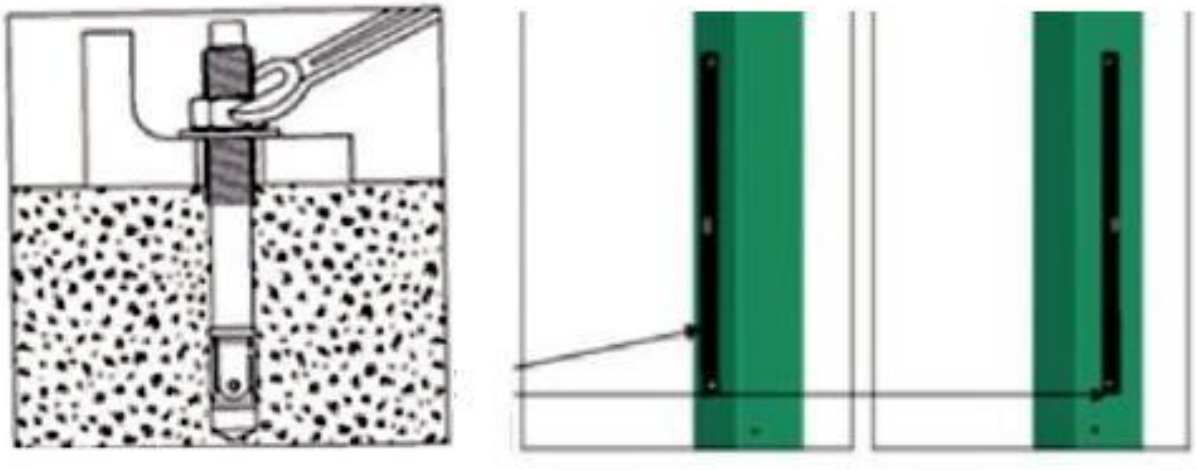


Figure 7

Note: 1. Use only a torque wrench for the foundation bolts, never an impact tool.

2. The total shim thickness at any one point must not exceed 5 mm. Support the entire base plate to prevent lifting-arm vibration during lifting.

7.6 Install the equalising cables with the carriages engaged in the first safety-lock position. Route the cables as shown in Figure 8. Leave the nuts loose initially and adjust tension during synchronisation. Tighten the threaded end of each cable. Both carriages must be locked at the same height. Set both cables to the same pretension for synchronous carriage movement.

Note: Tighten the threaded rods at the cable ends. Make sure both carriages are locked at the same height during adjustment. Adjust the two steel cables to a defined and equal tension so that both carriages move synchronously.

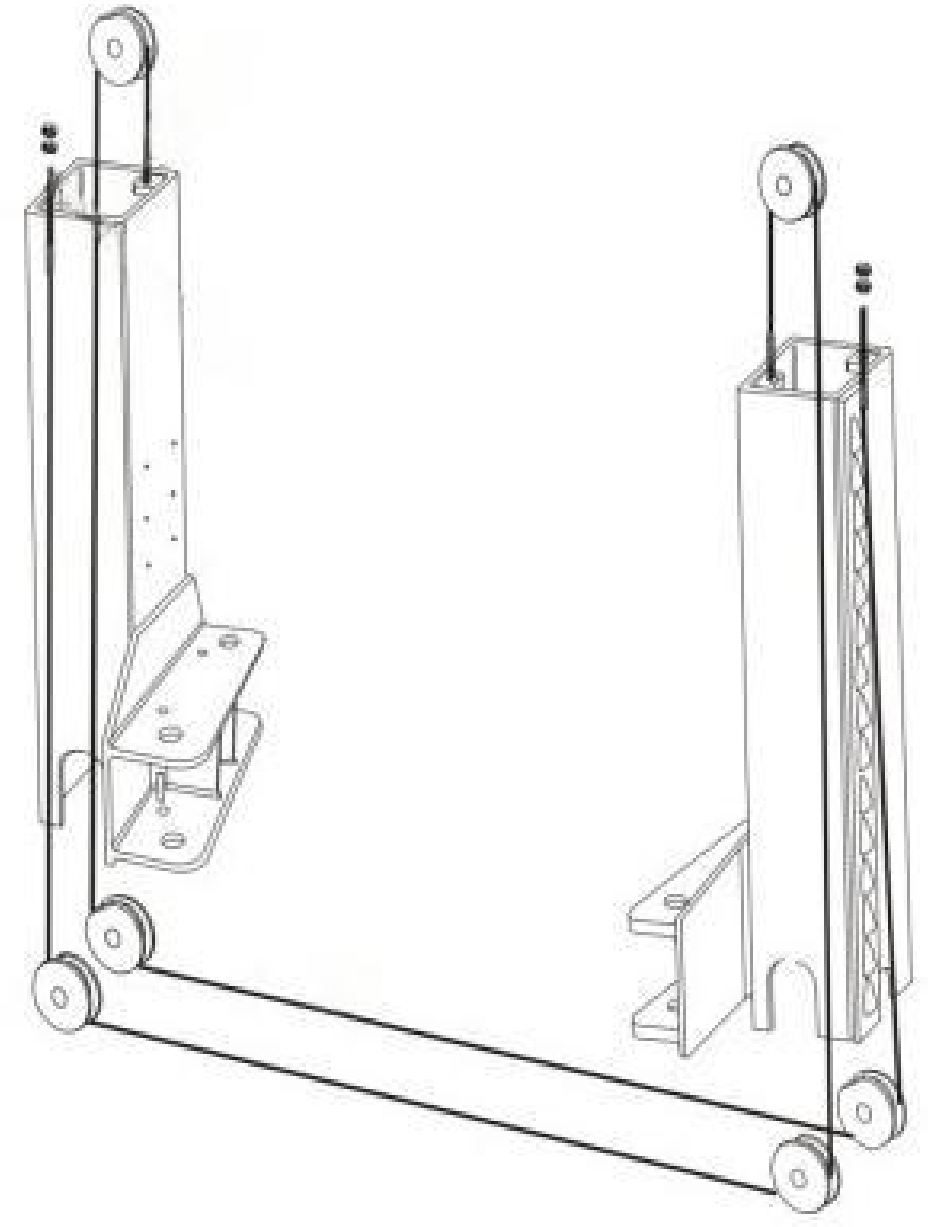


Figure 8: Steel-cable pulley block

7.7 Installing the lifting arms: Attach the 4 lifting arms to the carriages using the pivot pins. Use the short lifting arms at the front and the long lifting arms at the rear.

(Note: Fit the short lifting arms towards the front of the vehicle in its direction of travel. Fit a retaining ring to every lifting-arm pivot pin. Before use, always check that the locating teeth at the ends of the lifting arms engage. Adjust the bolts of the fixed half-gears to obtain correct engagement. Lubricate the lifting-arm and carriage components during assembly so that the arms move freely.) (See Figure 9 and Figure 10.)

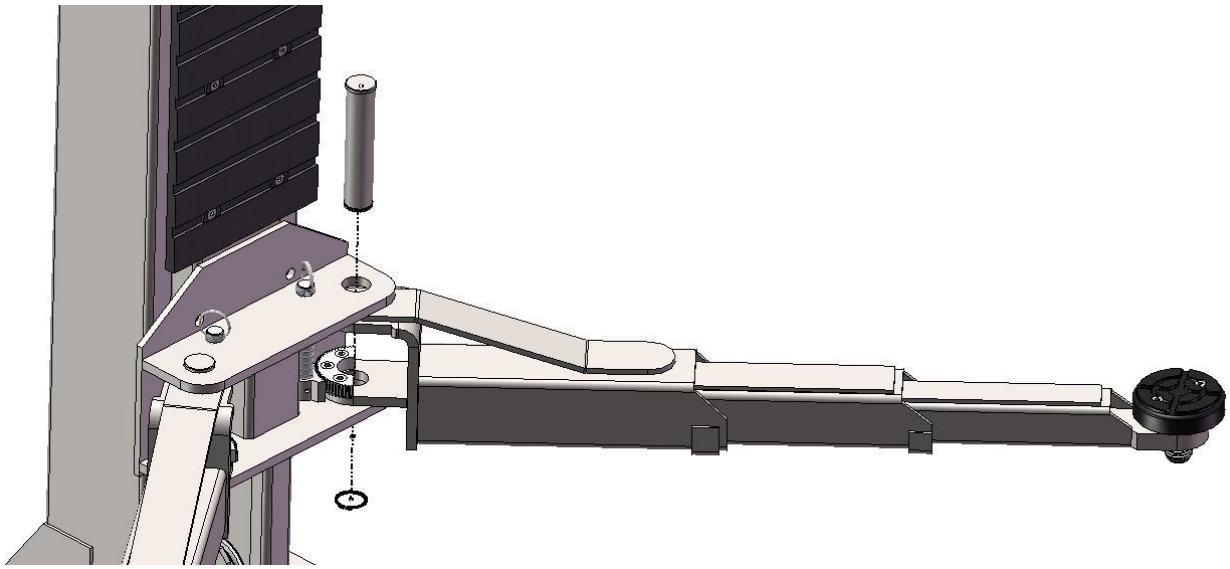


Figure 9: Installing the lifting arms

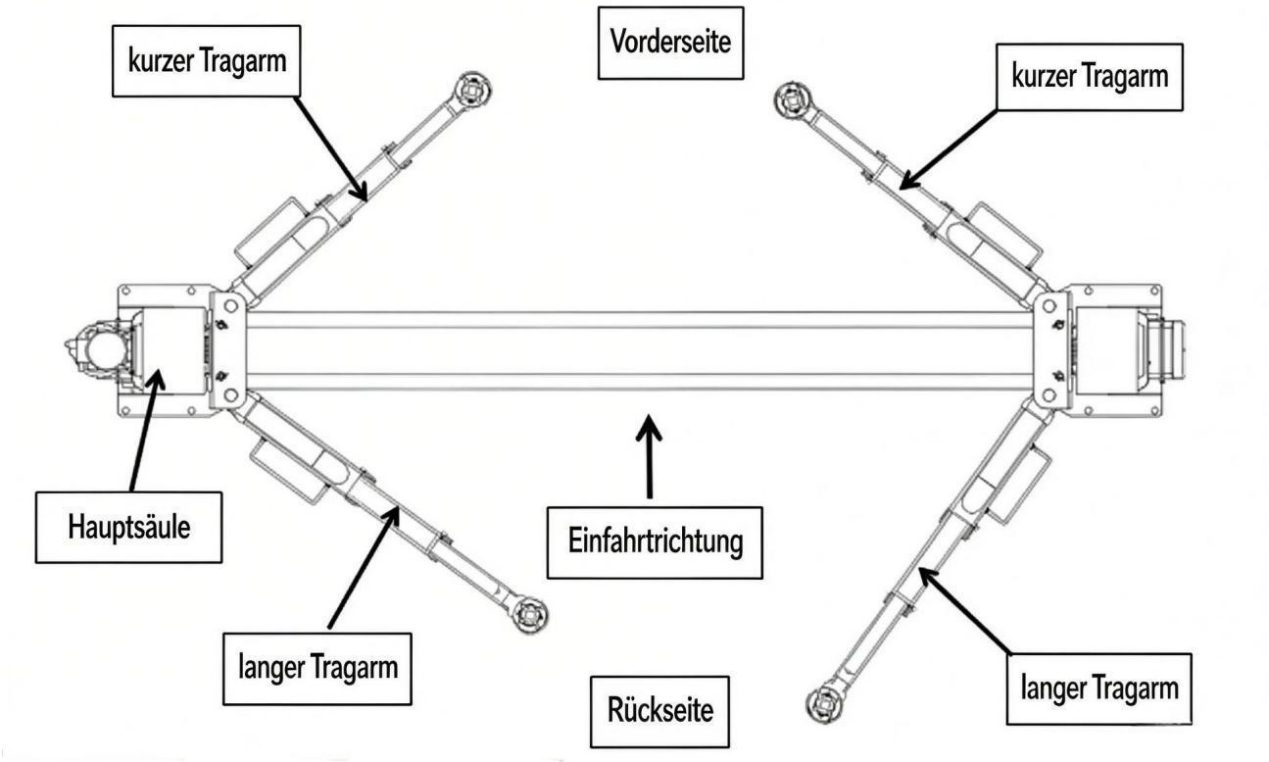


Figure 10: Lifting-arm arrangement

Illustration labels

Original label	Translation
kurzer Tragarm	Short lifting arm
Vorderseite	Front
Hauptsäule	Main post
Einfahrtrichtung	Vehicle entry direction
langer Tragarm	Long lifting arm
Rückseite	Rear

Note: Do not install the lifting arms until the posts have been secured with expansion anchors.

7.8 Installing the power unit and control boxes: Mount the power unit and main control box on the main post, and the secondary control box on the secondary post. Secure them with bolts and nuts (Figures 11 and 12). Fit the electromagnets and locking plates to both posts (Figure 13) and the limit switch to the main post (Figure 14). A qualified electrician must connect the wiring according to the appropriate circuit diagram: Figure 17 for 400 V three-phase, Figure 18 for 230 V single-phase. Figure 19 shows the electrical connection overview.

During initial installation and commissioning of the lift's power unit, check that the motor rotates clockwise when wiring it. Prolonged operation with incorrect motor rotation can damage the gear pump.

Site mains supply requirements: Minimum conductor cross-section is 2.5 mm² for the 400 V three-phase version and 4.0 mm² for the 230 V single-phase version.

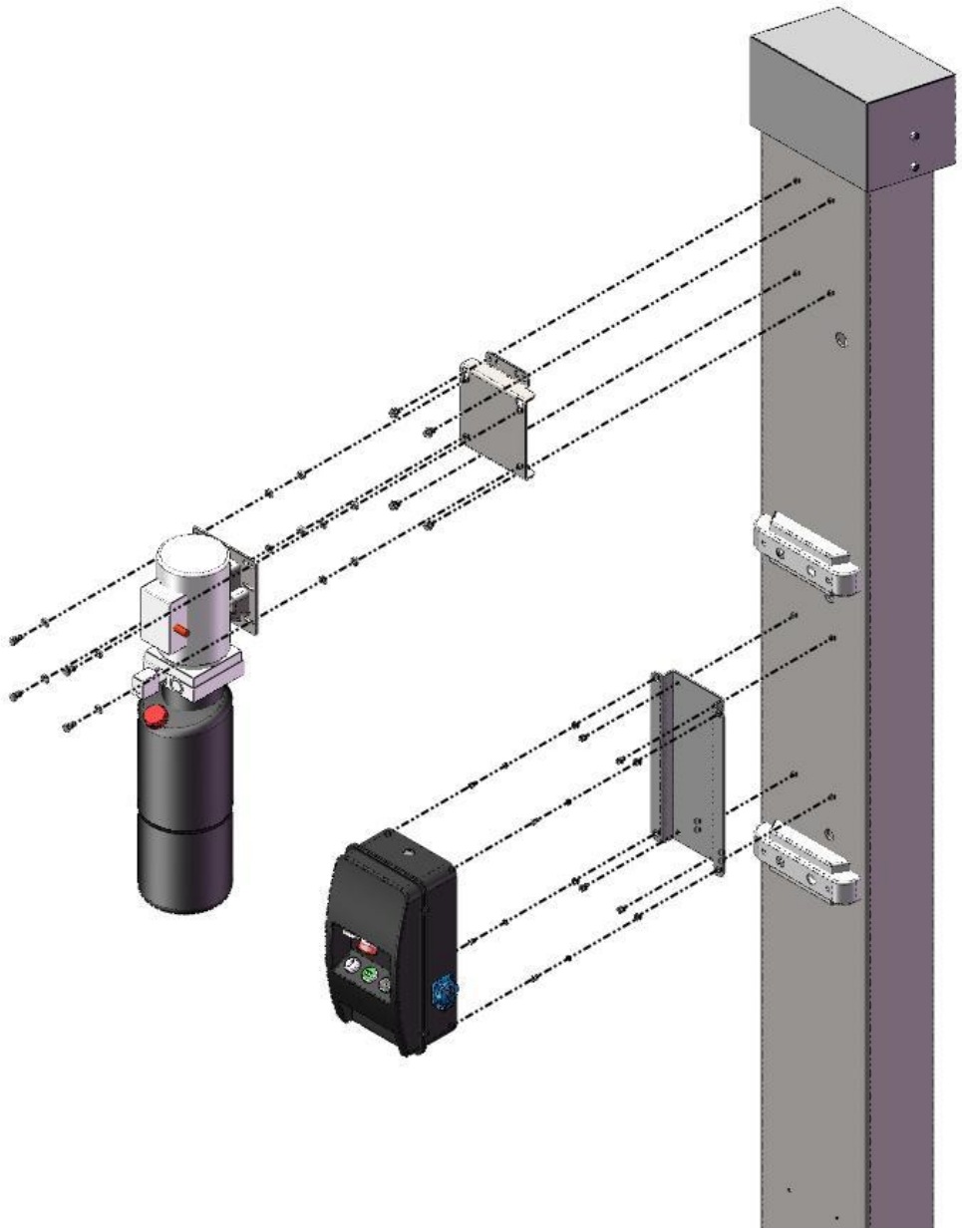


Figure 11: Installing the power unit and main control box on the main post

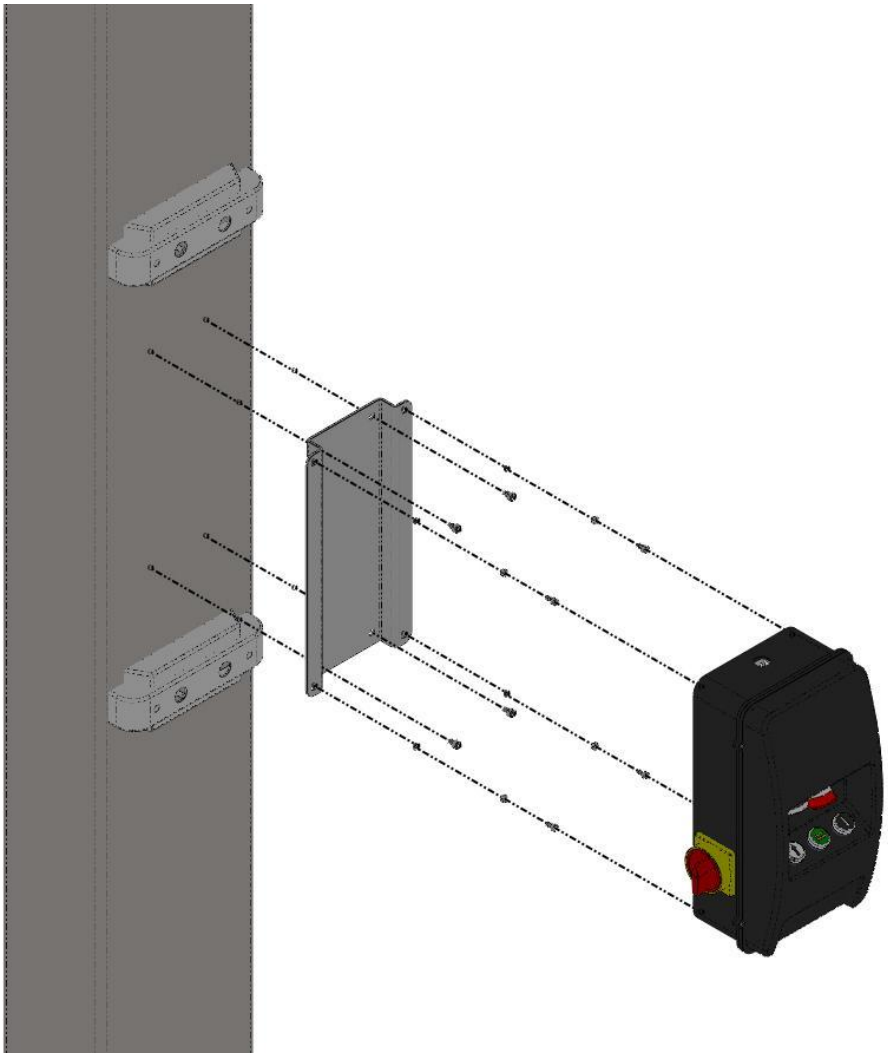


Figure 12: Installing the secondary control box on the secondary post



Figure 13



Figure 14: Installing the limit switch

Illustration labels

Original label	Translation
Sicherheitsplatte	Safety locking plate
Elektromagnet	Electromagnet

7.9 Hydraulic connections

Unscrew the reservoir cap and fill with 10 L of ISO VG 46 anti-wear hydraulic oil. The maximum oil level is approximately 10 mm below the top of the reservoir; the minimum level is 30 mm below the top. Check the level with the dipstick in the reservoir breather cap when the lift is fully lowered. Fill carefully to prevent dust or other contaminants from entering the oil. ISO VG 46 anti-wear hydraulic oil is preferred. At temperatures below 10 °C, ISO VG 32 anti-wear hydraulic oil may be considered.

Note: Do not mix hydraulic oils of different brands or types.

Connect the hydraulic hoses according to the hydraulic connection diagram in Figure 15. The relief valve adjusts the system pressure (factory-set), which changes the lifting force. Never set the pressure above the rated pressure. Lowering is controlled electrically using the DOWN button; see Section 8.2.5.

Notes:

• Protect the hose fittings while routing the hydraulic hoses. Keep sand and dirt out of the hydraulic circuit.

• If a hose passes through a post, make sure it does not touch moving components.

• After installing the lift's hoses, align and secure them inside the posts. Prevent friction between the hoses and the carriages, cables or pulleys.

• A newly installed hydraulic system may contain air and must be bled. Keep the hydraulic cylinders fully lowered when connecting the pipes to minimise the air space. Then run several complete raising and lowering cycles without a load to bleed the system.

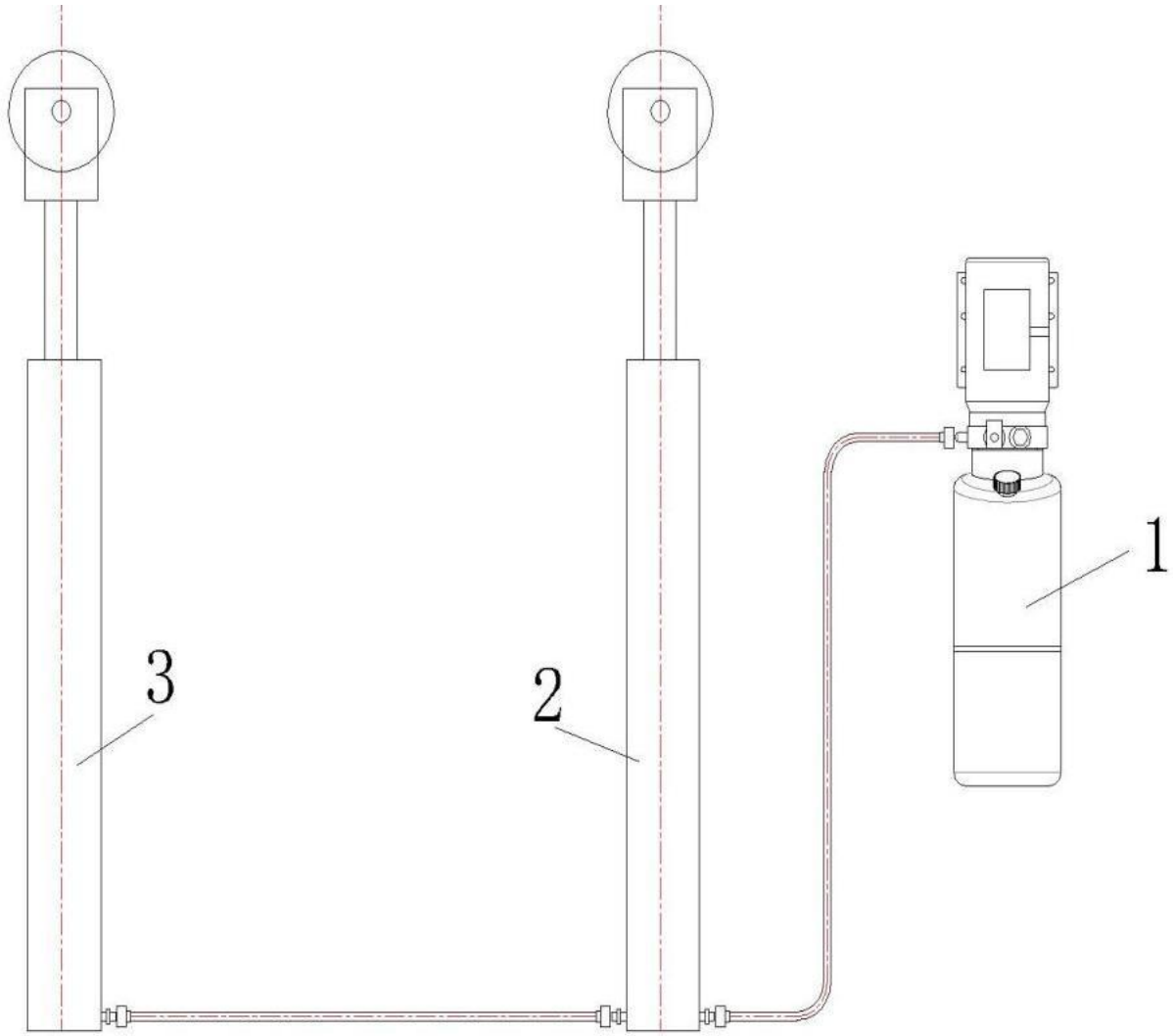


Figure 15: Hydraulic system connection diagram

Parts list for the lift's hydraulic system

No.	Description	Quantity
1	Hydraulic power unit	1
2	Main-post cylinder	1
3	Secondary-post cylinder	1

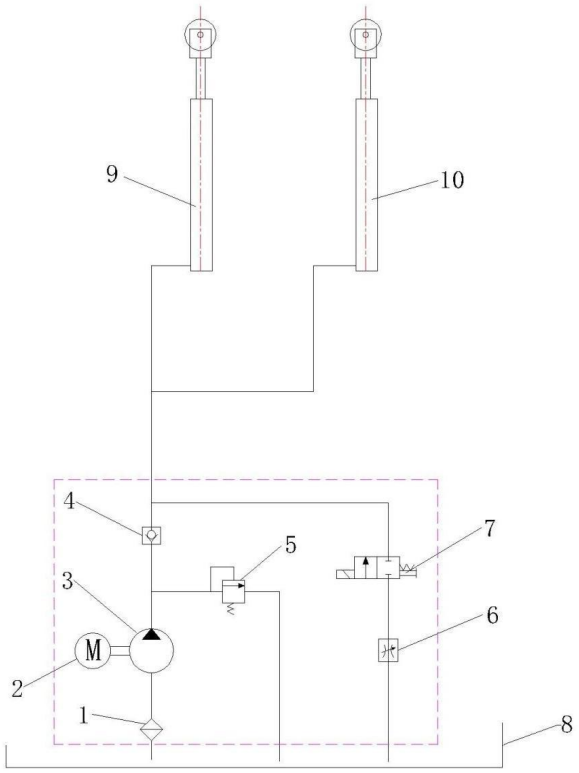


Figure 16: Hydraulic circuit diagram

No.	Description	Quantity
1	Oil filter	1
2	Gear pump	1
3	Electric motor	1
4	Non-return valve	1
5	Relief valve	1
6	Throttle valve	1
7	Electric lowering valve	1
8	Oil reservoir	1
9	Main-post cylinder	1
10	Secondary-post cylinder	1

Figure 17: 400 V three-phase electrical circuit diagram

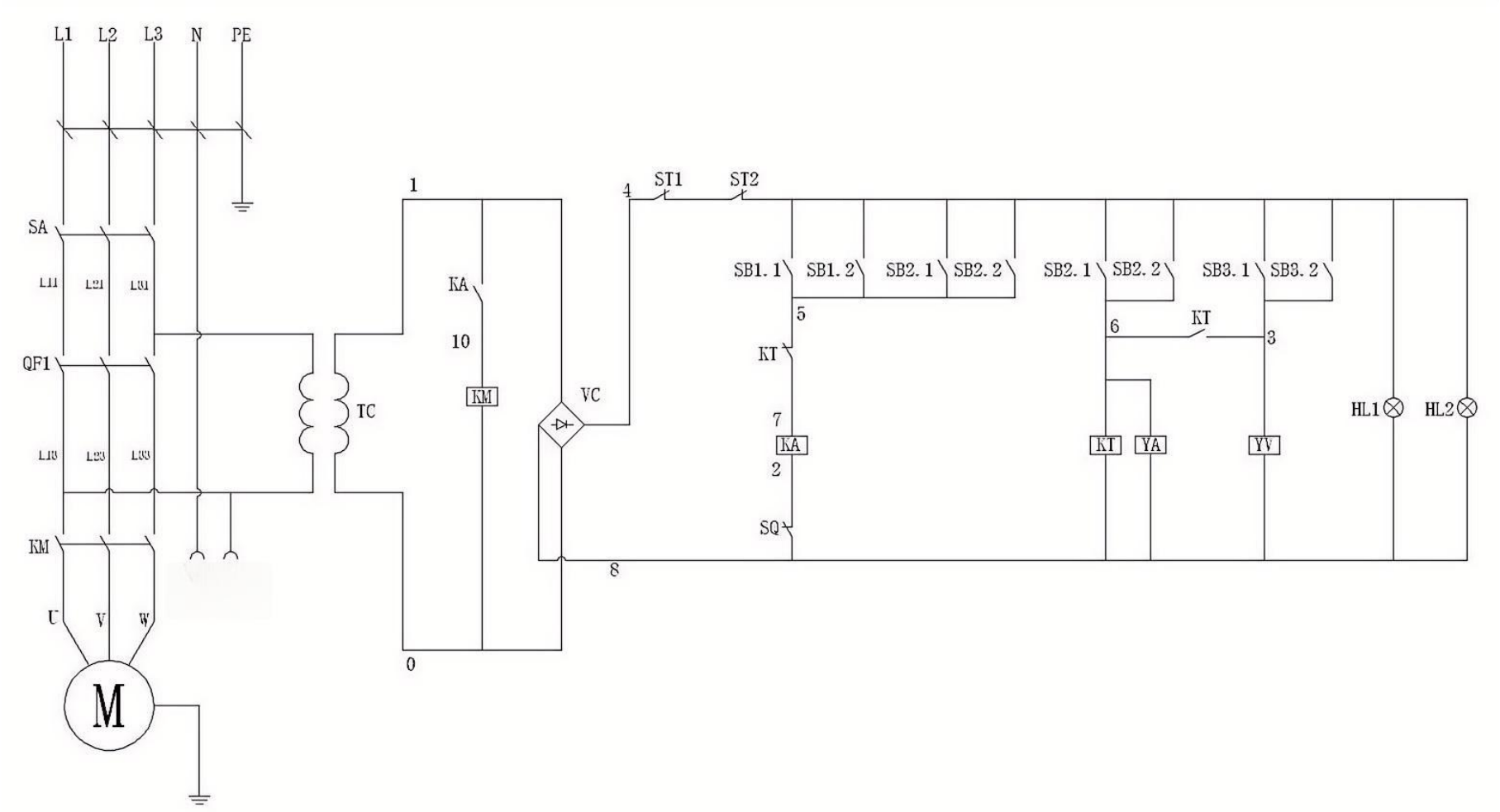
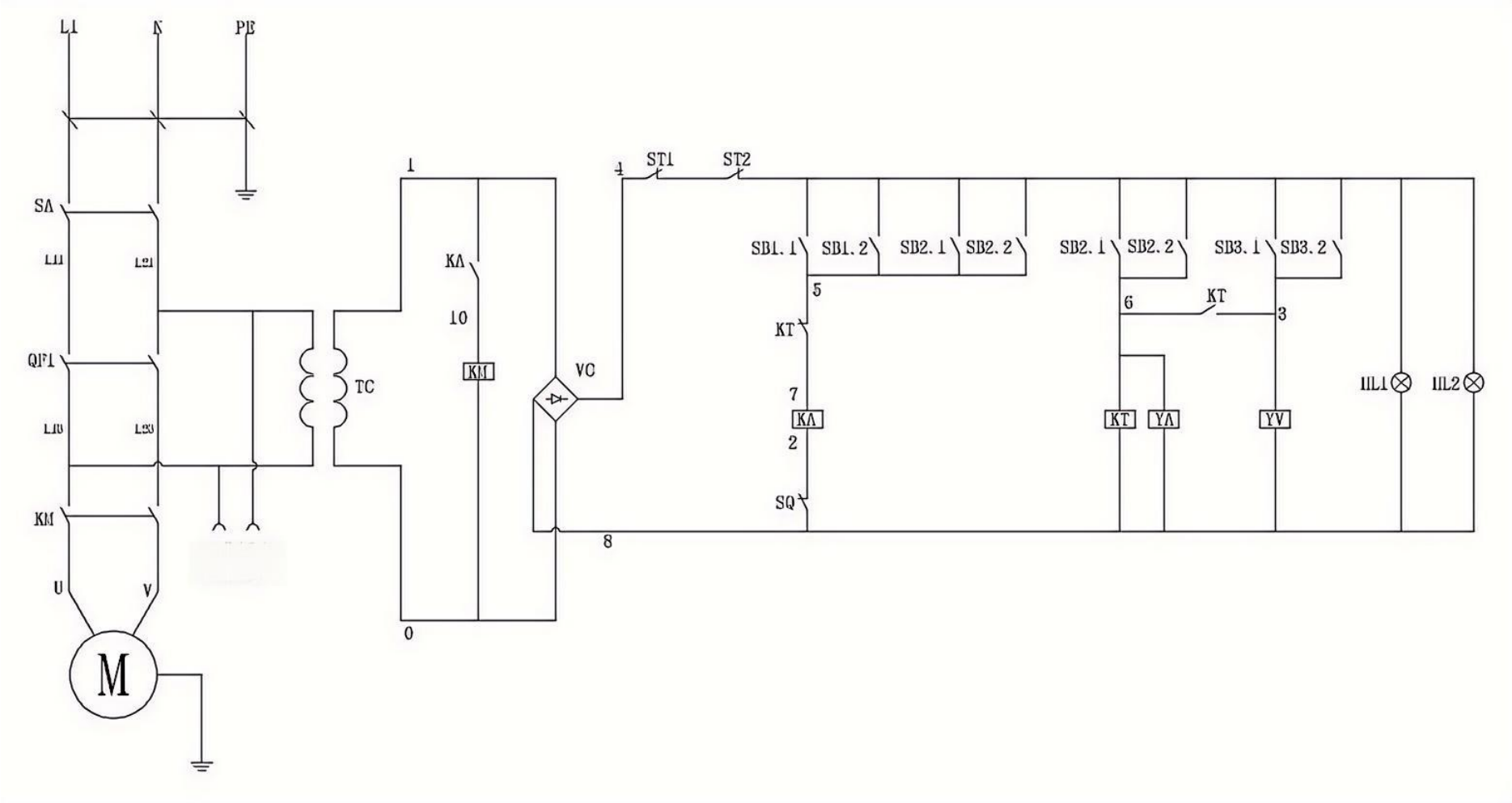


Figure 18: 230 V single-phase electrical circuit diagram



SB1	UP button	2	YA	Electromagnet	1
SB2	DOWN button	2	YV	Solenoid valve	1
SB3	LOCK button	2	HL	Indicator lamp	2
SQ	Limit switch	1	SA	Mains switch	1
ST	Emergency-stop button	2	QF	Circuit breaker	1
KM	Contactor	1	TC	Transformer	1
KA	Auxiliary relay	1	VC	Rectifier	1
KT	Timer relay	1			

Note: Connect the external mains supply directly to the circuit breaker; do not use a socket connection. Remove the cover of the electrical box on the hydraulic power unit and wire it according to the electrical circuit diagram. Provide a main switch beside the lift to disconnect the power during maintenance and emergencies. Make sure there is oil in the reservoir. Never run the hydraulic power unit without oil. Test by pressing the UP button. If the motor does not run, makes unusual noises or overheats, switch the machine off immediately and check the electrical connections.

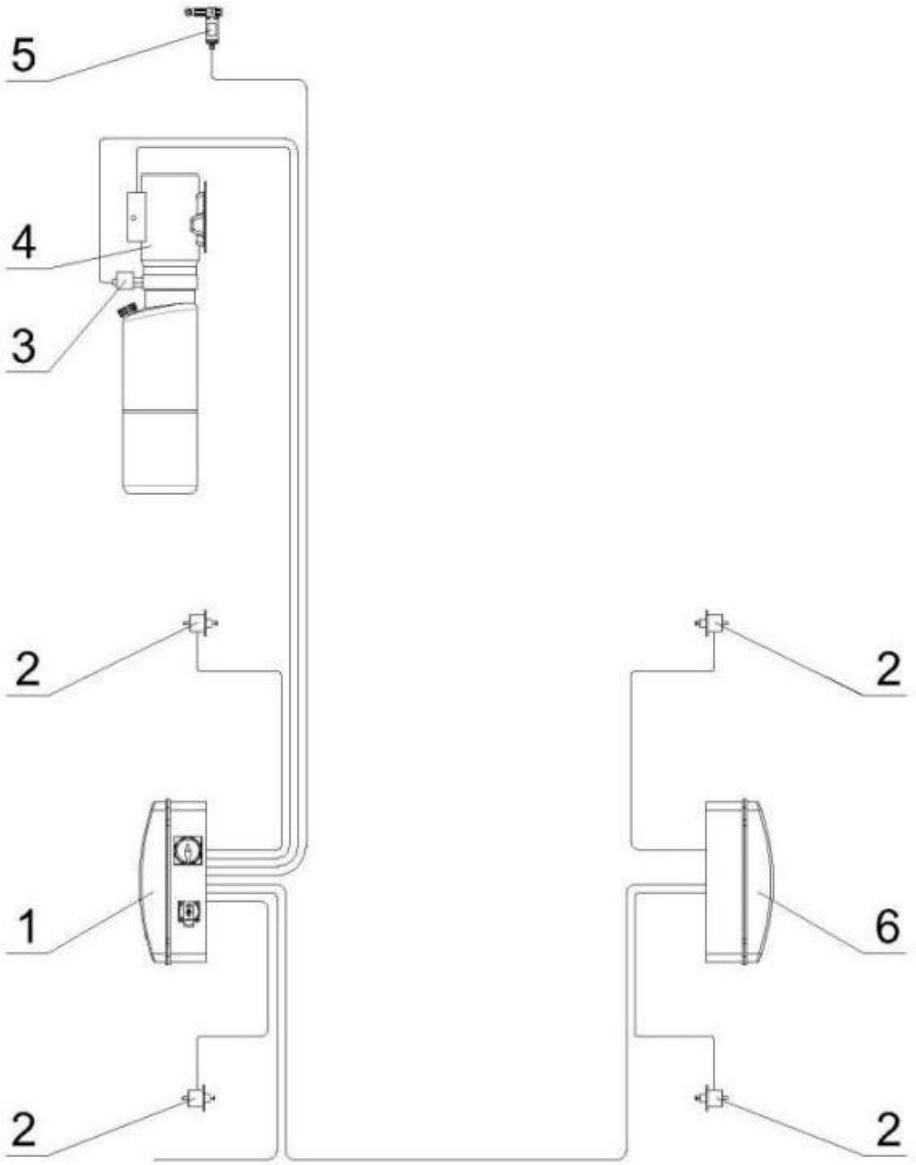


Figure 19: Electrical connection overview

No.	Name	Quantity
1	Main-post control box	1
2	Electromagnet	4
3	Electric lowering valve	1
4	Power-unit motor	1
5	Main-post limit switch	1
6	Secondary-post control box	1

7.10 Adjusting the leaf chain: Adjust the installation so that the lifting arms swing freely without scraping the floor when fully lowered. This is factory-set, but may be readjusted after electrical and hydraulic installation.

Adjustment procedure: Raise and lock the carriages, lower for 2 seconds, adjust the adjusting nut, then release the locks and test (Figure 20).

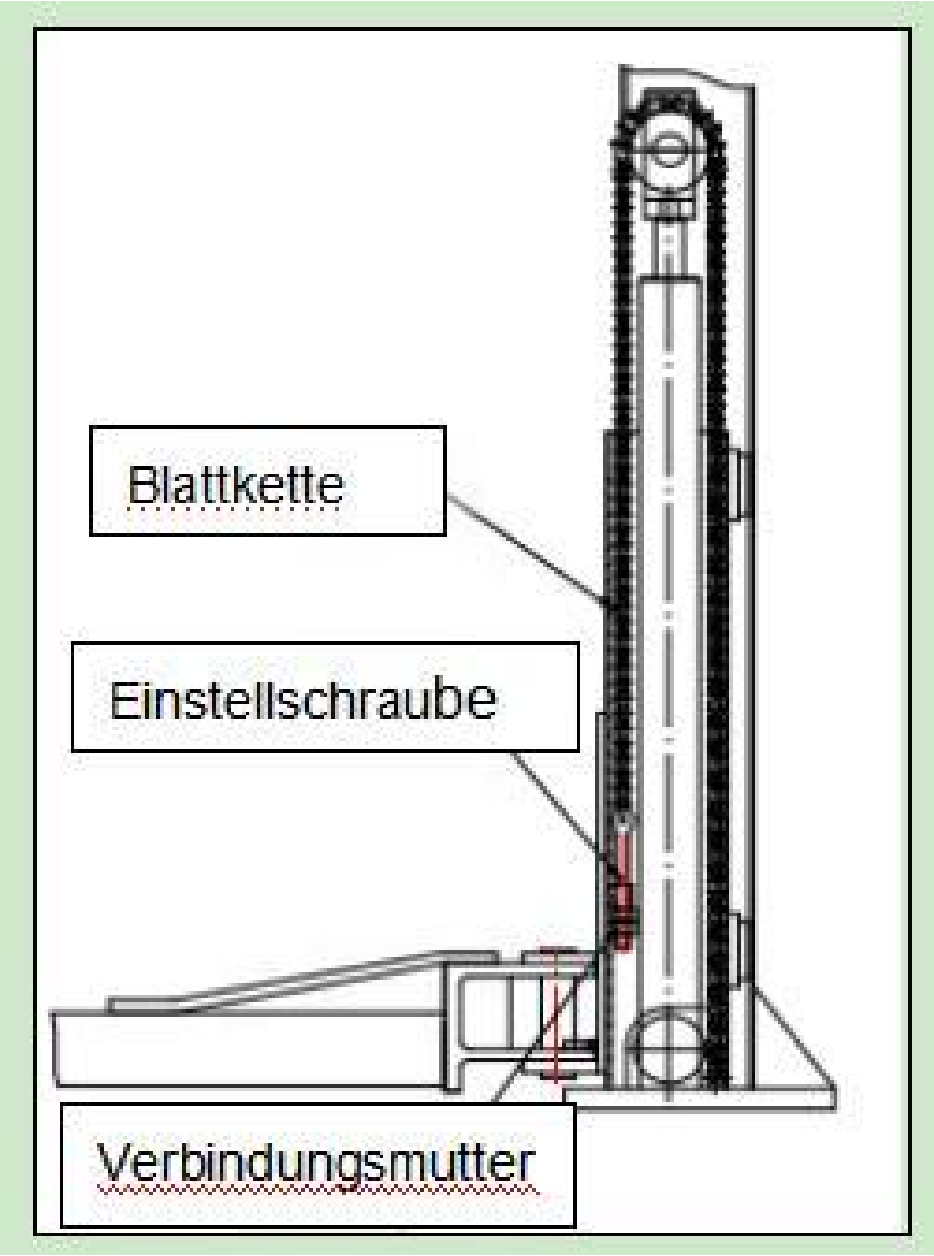


Figure 20: Leaf-chain installation diagram

Illustration labels

Original label	Translation
Blattkette	Leaf chain
Einstellschraube	Adjusting screw
Verbindungsmutter	Connecting nut

7.11 Fit the floor plate as shown in Figure 1 to cover the hoses and cables between the posts. Also fit the rubber carriage impact protectors.

7.12 No-load testing and adjustment

• Clean the work area and remove any oil from the floor.

Keep the lift unloaded and apply commercially available lithium grease evenly to all sliding carriage contact surfaces from top to bottom.

• Switch on the power and press UP to raise the carriages. Stop at any position and then press the locking button. Make sure both the left and right carriages engage the same safety-lock level.

• Tighten the equalising-cable nuts so that both cables have the same tension.

• Press DOWN to lower the carriages fully.

• Press UP for a complete lifting stroke. At the upper end position the motor stops, the relief valve opens and the hydraulic oil returns, stopping the lifting movement. Check that the left and right carriage arms remain synchronised during raising. Adjust the equalising-cable nuts to eliminate any difference until both carriages move synchronously.

• Newly installed systems may contain air that must be bled out. During the no-load test, raise and lower the lift several times to bleed the system.

7.13 Load testing and adjustment: Lower the carriages fully. Retract all four lifting arms to their shortest length and swing them fully clear of the drive-through area.

Drive the vehicle onto the lift and centre it left to right relative to the line between the posts. For front-wheel-drive vehicles, the front-to-rear length ratio is approximately 2:3. For vehicles weighing more than 3.5 t, position the vehicle slightly further back.

Rotate the lifting-arm pads into position at the vehicle chassis lifting points.

Press UP to raise the arms and check that all four arm locks engage fully.

Continue raising with short button presses. If one rubber pad already touches the chassis, stop and adjust the remaining pads so that they all make even contact.

Raise the vehicle slowly. Stop as soon as the tyres leave the floor. Push gently against the rear of the vehicle to check that it is supported correctly.

Make sure the vehicle is stable and all lifting-arm locks are properly engaged.

Continue raising and check the vehicle's fore-and-aft and side-to-side attitude. Stop when the carriages reach the third or fourth safety-lock position and press the locking button. The hydraulic power unit opens the return flow and the carriages settle into the mechanical locks. Check again that the vehicle is level.

If there is a significant height difference between the two sides, adjust the equalising-cable nuts.

Raise to the highest locking position and stop. Press the locking button again to return oil and engage the locks. Check that the lift operates evenly without shaking.

Press DOWN: The carriages first rise slightly and then lower. Release DOWN at any intermediate position. The safety pawls engage automatically, locking the carriages and stopping the descent. Repeat this complete operating cycle at least three times to check that the mechanical safety locks function correctly.

While raising the vehicle, listen for unusual noises and make sure the steel cables do not touch or obstruct other components.

After several raising and lowering cycles, hydraulic oil may need to be topped up. The maximum oil level is approximately 10 mm below the reservoir rim and the minimum level approximately 30 mm below it. Check with the dipstick in the reservoir breather cap.

8. Operating instructions

8.1 Operating precautions

8.1.1 The vehicle's centre of gravity varies by vehicle type. Position it close to the line between the posts. Support the vehicle only at the lifting points specified by its manufacturer.

8.1.2 Ensure adequate clearance above the vehicle roof to avoid hitting ceiling beams.

8.1.3 The hydraulic valves are factory-set and must not be adjusted by the operator. The user is responsible for any resulting damage.
8.1.4 Parameters may be adapted to the application.

8.1.5 Do not operate the lift with damaged cables or missing parts.

8.1.6 Before operation, check the toothed locks, inspect the cables for broken wires and check for deformed rubber support pads.

8.1.7 Always use all four lifting arms to raise the vehicle.

8.1.8 Check all pipe connections for oil leaks before raising. Take the lift out of service if there are any leaks.

8.1.9 If heavy vehicle components are subsequently loaded or removed, provide additional support for the vehicle with a jack.

8.1.10 Always switch off the mains supply when the lift is not in use.

8.1.11 The lift is designed solely to raise complete vehicles. Any other use is prohibited.

8.1.12 Clear all obstructions beneath and above the lift before operation.

8.1.13 Perform a complete no-load lifting cycle before lifting a vehicle to check correct operation.

8.1.14 The operator must continuously observe the entire lifting process.

8.1.15 Work beneath a raised vehicle only when the safety locks are engaged.

8.1.16 Avoid excessive rocking of the raised vehicle.

8.1.17 Do not climb onto the raised vehicle or the lift structure.

8.1.18 Only authorised personnel may enter the lifting area.

8.1.19 No one may remain in the working area during lifting.

8.1.20 Do not lift excessively wide or long vehicles.

8.1.21 Removing, modifying or tampering with safety devices is prohibited.

Note: This list cannot cover every possible situation. Operating personnel must have sufficient safety awareness.

8.2 Operating sequence (trained personnel only)

8.2.1 Positioning the vehicle

• Drive the vehicle slowly onto the lift, park centrally, apply the handbrake and chock the rear wheels.

8.2.2 Adjusting the lifting arms

• Fit suitable rubber pads and position the arms at the lifting points specified by the vehicle manufacturer.

8.2.3 Test lift: Raise until the wheels are 10-15 cm above the floor. Check vehicle stability by gently rocking it and check the support points.

8.2.4 Full lift: Continue raising to the working height. Make sure the safety locks are engaged.

8.2.5 Lowering: Remove tools and objects from beneath the lift. Press DOWN. The carriages first rise slightly, the safety locks are released electrically and the carriages then lower. Release DOWN as soon as the lifting arms are unloaded; descent stops. Swing the arms into the parked position.

Emergency procedures: Stop operation immediately if unusual noises occur.

If hydraulic oil leaks, switch off the power and report the damage for repair.

9. Maintenance and care

9.1 Cleaning: With the power switched off, clean the lift with a dry cloth. Sweep the work area regularly. High dust levels accelerate wear of all moving parts.

9.2 Daily checks: Inspect hydraulic connections, hoses and cylinders for oil leaks and damage. Check electrical wiring. Replace excessively worn parts promptly. Clean oil from the rubber pads and inspect them for wear. Test the safety locks. Check cable attachments and pretension. Check leaf-chain and carriage nuts for looseness. Check that the lifting-arm locks engage securely.

9.3 Monthly maintenance: Regrease the post slideways and lubricate the pulleys and gears. Retighten the anchor nuts. Lubricate chains and cables. Replace worn hydraulic lines and retighten all foundation bolts. If a bolt is defective, stop using the lift until it has been replaced.

9.4 Six-monthly inspection: Readjust the equalising cables for synchronous movement. Inspect all moving parts for wear and interference. Check that the posts remain vertical. Lubricate the pulley bearings if they do not run freely.

9.5 Hydraulic maintenance: Change the oil and clean the reservoir after the first 6 months of operation. Thereafter, change the oil and filter annually. Change the oil immediately if it turns black or the reservoir becomes contaminated.

9.6 Replace cables if any of the following defects are found (Figure 21):

9.6.1 Complete strand breakage

9.6.2 At least 9 broken individual wires within 80 mm, or at least 20 within 350 mm of cable length.
9.6.3 Cable diameter reduced by more than 15% due to wear

9.6.4 Several wire breaks concentrated in a small area

9.6.5 Severe corrosion

9.6.6 Twisted cable

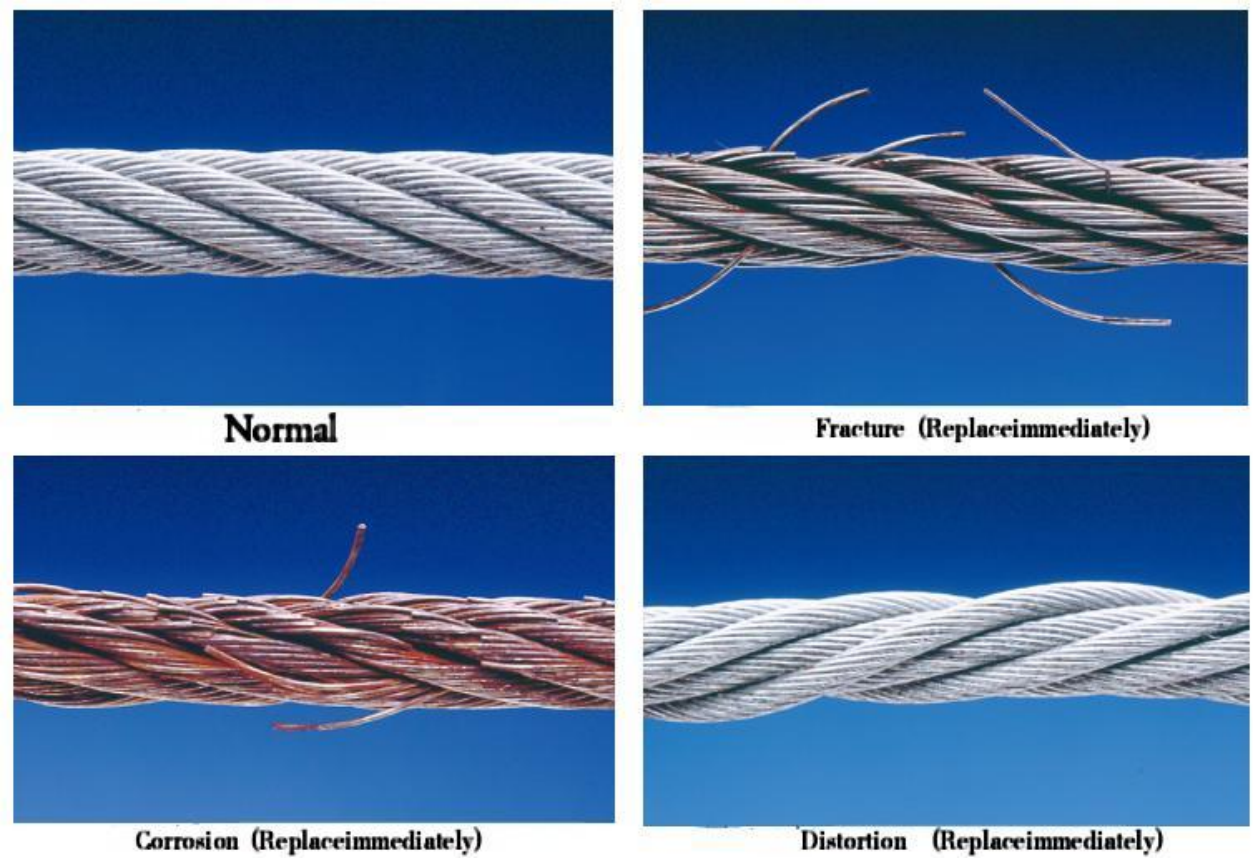


Figure 21: Replacement of steel cables

10. Noise information

The lift's operating noise level is below 80 dB(A).

11. Exploded views and parts lists

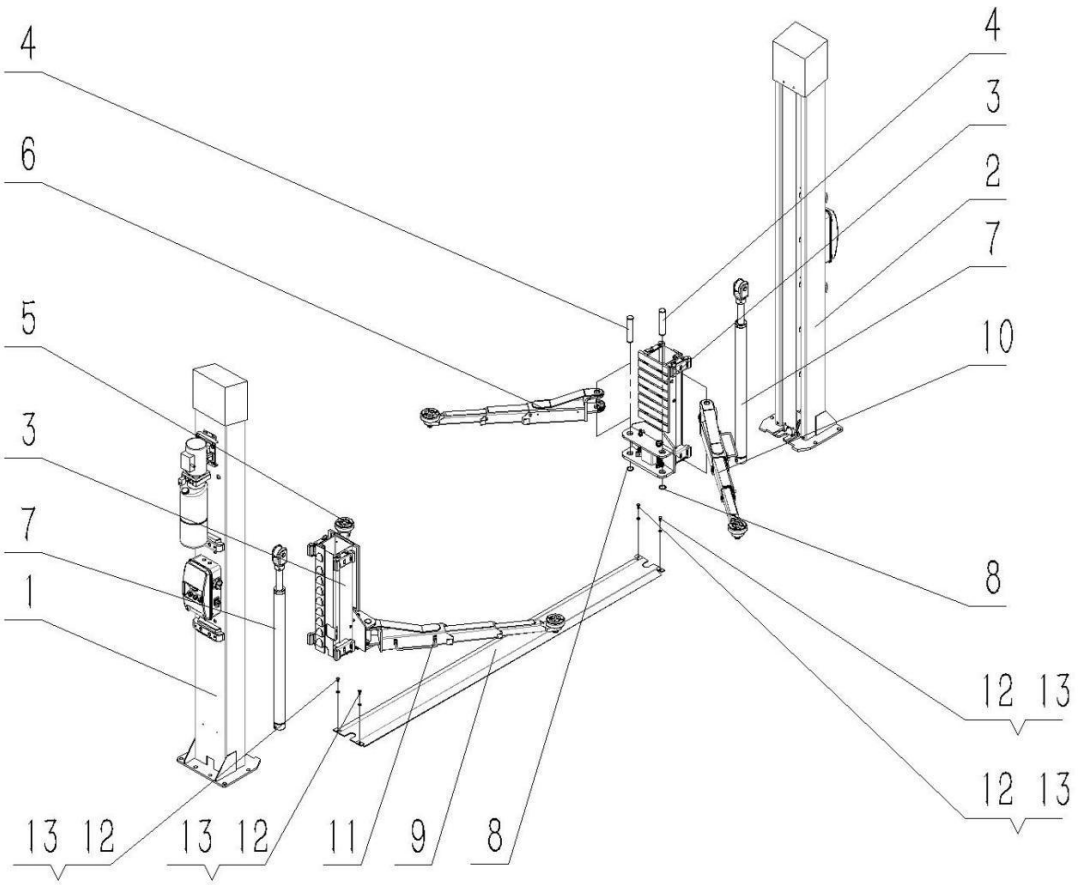


Figure 22: Overall exploded view of the lift

Lift parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Main-post assembly	1
2		Secondary-post assembly	1
3		Carriage assembly	2
4		Lifting-arm pivot pin	2

Lift parts list			
No.	**Illustration**	**Name**	**Quantity**
5		Three-stage short lifting-arm assembly [A]	4
6		Three-stage short lifting-arm assembly [B]	2
7		Hydraulic cylinder	2
8		Shaft retaining ring, size 38	4
9		Welded assembly: post connecting floor plate	1
10		Three-stage long lifting-arm assembly [C]	1
11		Three-stage long lifting-arm assembly [D]	1
12		Fully threaded hexagon bolt M10×20	4
13		Flat washer Ø10	4

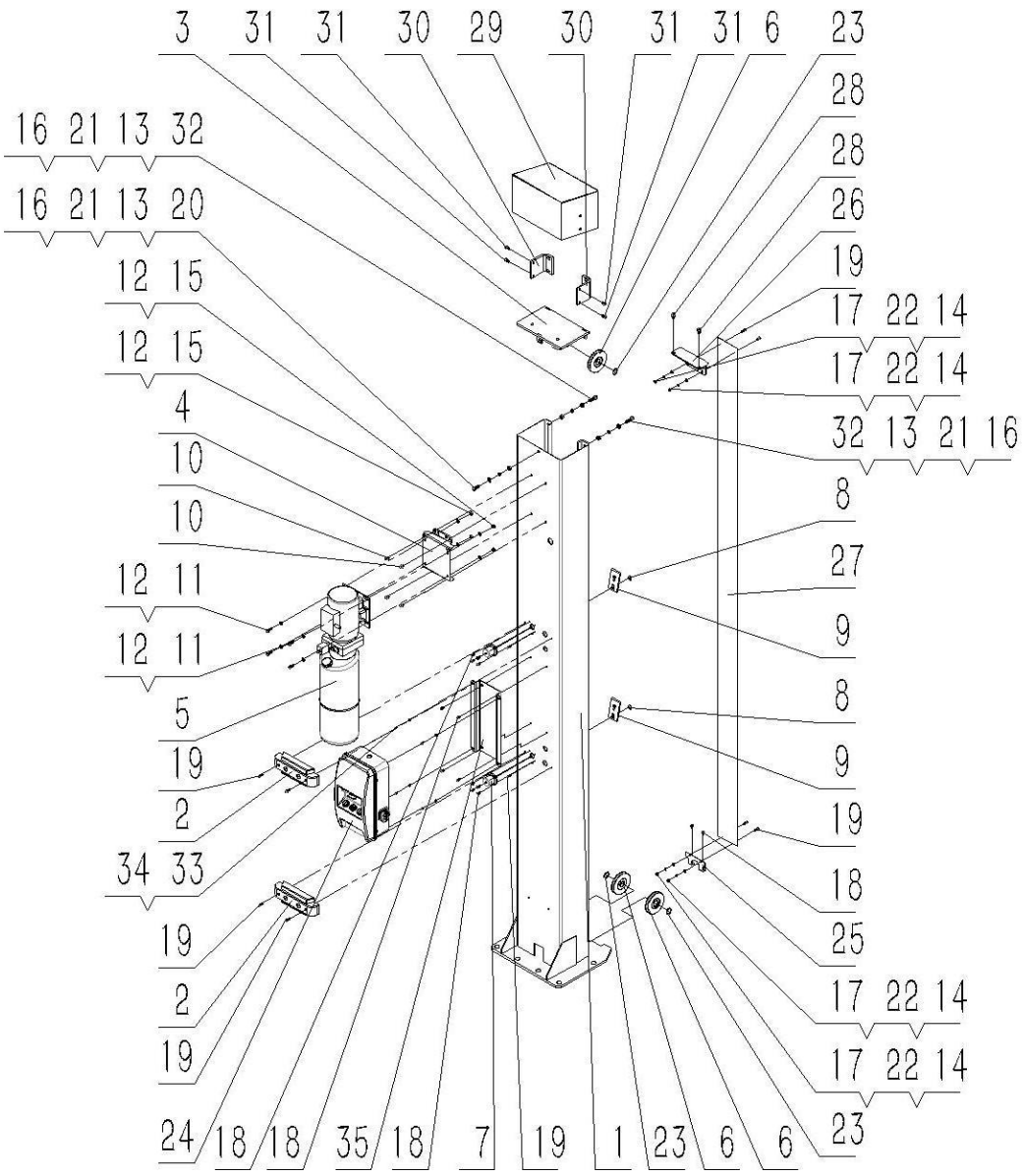
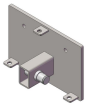
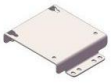
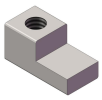
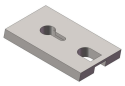
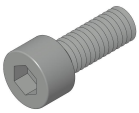
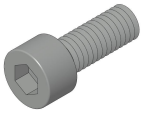
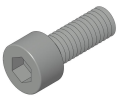
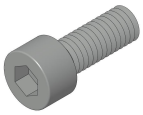
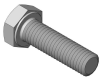
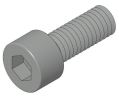
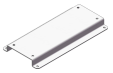


Figure 23: Exploded view of the main post

Main-post parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Main-post weldment	1
2		Solenoid cover	2
3		Post top cover (weldment)	1

Main-post parts list			
No.	**Illustration**	**Name**	**Quantity**
4		Power-unit mounting bracket	1
5		Hydraulic power unit	1
6		Cable pulley	3
7		Cylindrical solenoid [stroke 15]	2
8		Locking-plate support block	2
9		Locking plate	2
10		Hexagon flange bolt M8×10	4
11		Fully threaded hexagon bolt M8×20	4
12		Flat washer 8	8
13		Flat washer 10	3
14		Flat washer 6	4
15		Hexagon nut M8	4
16		Hexagon nut M10	3

Main-post parts list			
No.	**Illustration**	**Name**	**Quantity**
17		Hexagon nut M6	4
18		Hexagon socket screw M6×10	10
19		Hexagon socket screw M6×16	10
20		Fully threaded hexagon bolt M10×25	1
21		Spring washer 10	3
22		Spring washer 6	4
23		Shaft retaining ring 25	3
24		Control box	1
25		Post-base dust-guard bracket	1
26		Post-top dust-guard bracket	1
27		Dust curtain	1
28		Hexagon socket screw M10×12	2

Main-post parts list			
No.	**Illustration**	**Name**	**Quantity**
29		Post cap	1
30		Post-cap connecting plate	2
31		Hexagon socket screw M8×12	4
32		Fully threaded hexagon bolt M10×35	2
33		Hexagon socket head cap screw M5×10	4
34		Hexagon nut, grade A, M5	4
35		Control-box mounting bracket	1

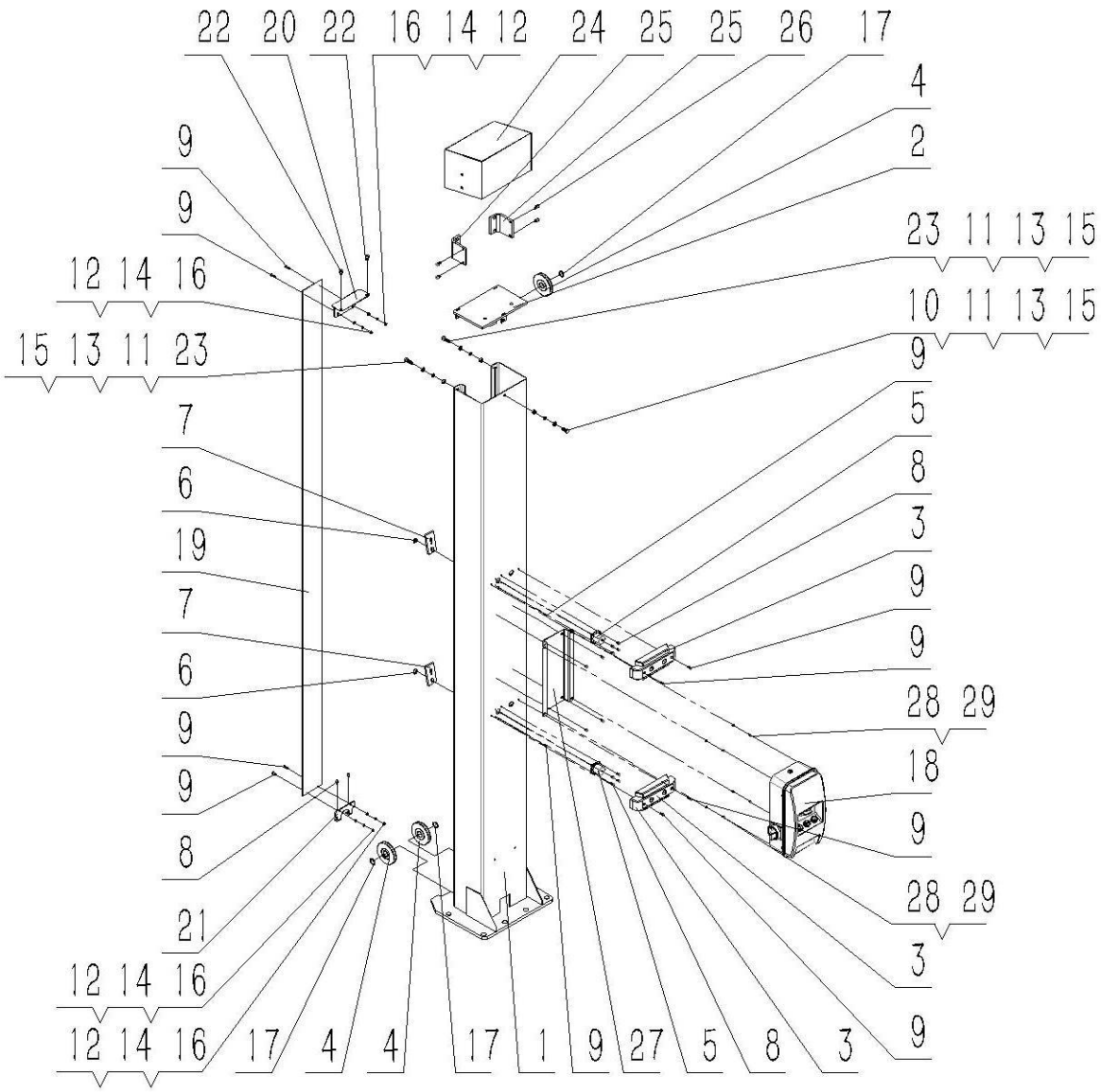
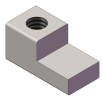
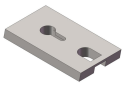
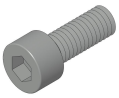
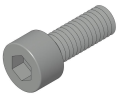
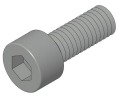
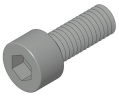


Figure 24: Exploded view of the secondary post

Secondary-post parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Secondary-post weldment	1
2		Post top cover (weldment)	1
3		Solenoid cover	2

Secondary-post parts list			
No.	**Illustration**	**Name**	**Quantity**
4		Cable pulley	3
5		Cylindrical solenoid [stroke 15]	2
6		Locking-plate support block	2
7		Locking plate	2
8		Hexagon socket screw M6×10	10
9		Hexagon socket screw M6×16	10
10		Fully threaded hexagon bolt M10×25	1
11		Flat washer 10	3
12		Flat washer 6	4
13		Spring washer 10	3
14		Spring washer 6	4
15		Hexagon nut M10	3

Secondary-post parts list			
No.	**Illustration**	**Name**	**Quantity**
16		Hexagon nut M6	4
17		Shaft retaining ring 25	3
18		Control box	1
19		Dust curtain	1
20		Post-base dust-guard bracket	1
21		Post-top dust-guard bracket	1
22		Hexagon socket screw M10×12	2
23		Fully threaded hexagon bolt M10×35	2
24		Post cap	1
25		Post-cap connecting plate	2
26		Hexagon socket screw M8×12	4
27		Control-box mounting bracket	1
28		Hexagon socket screw M5×10	4

Secondary-post parts list			
No.	**Illustration**	**Name**	**Quantity**
29		Hexagon nut M5, grade A	4

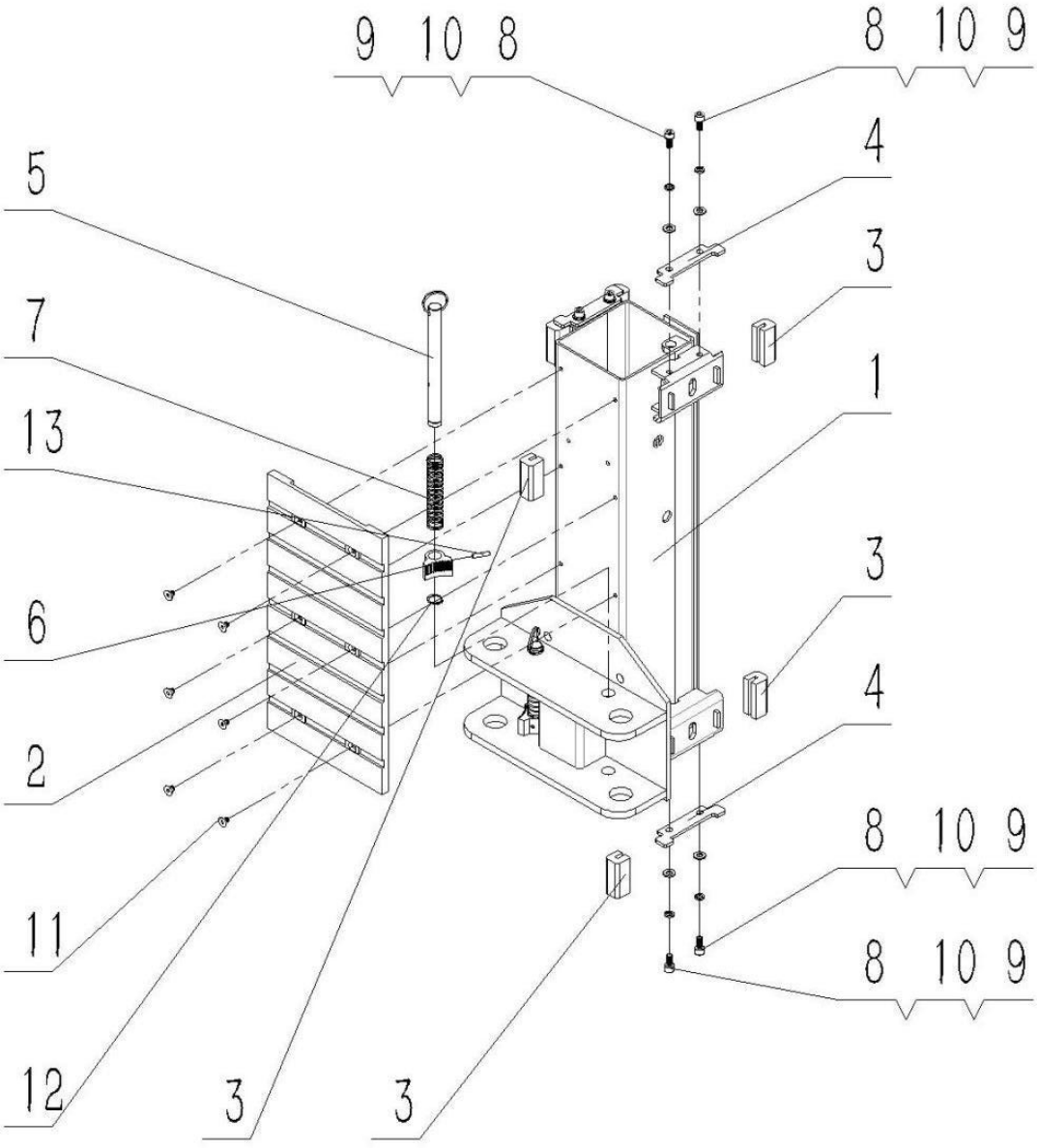
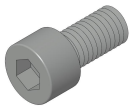


Figure 25: Exploded view of the carriage

Carriage parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Carriage weldment	1

Carriage parts list			
No.	**Illustration**	**Name**	**Quantity**
2		Carriage spacer / carriage impact-protection strip	1
3		Sliding block	8
4		Sliding-frame pressure plate	4
5		Carriage release-shaft assembly	2
6		Small carriage toothed block	2
7		Compression spring for carriage release shaft	2
8		Hexagon socket screw M10×20	8
9		Flat washer 10	8
10		Spring washer 10	8
11		Cross-recessed countersunk screw M8×12	6
12		Shaft retaining ring 22	2
13		Spring pin 6×30	2

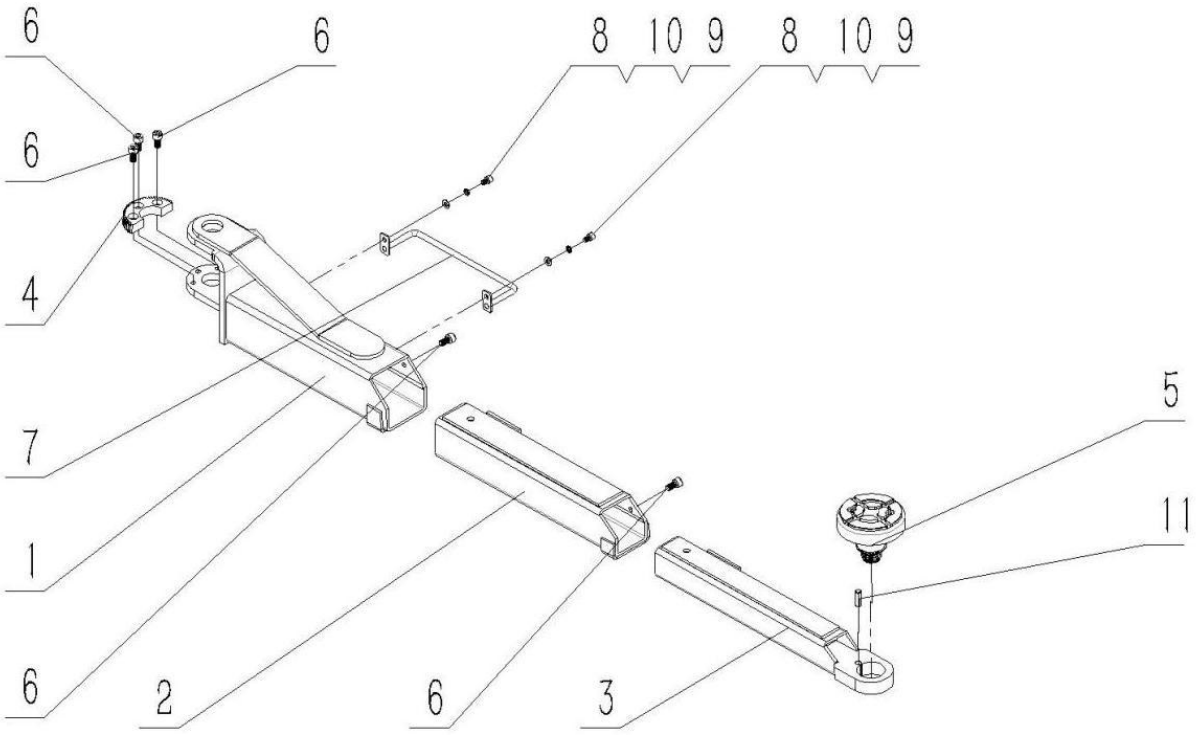
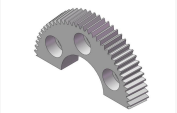
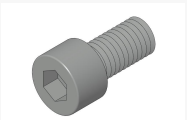
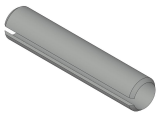


Figure 26: Exploded view of the three-stage short lifting arm

Three-stage short lifting-arm parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Short lifting arm, first section	1
2		Short lifting arm, second section	1
3		Short lifting arm, third section	1
4		Lifting-arm locking gear	1
5		Lifting-pad assembly	1
6		Hexagon socket screw M10×20	5

Three-stage short lifting-arm parts list			
No.	**Illustration**	**Name**	**Quantity**
7		Welded handle	1
8		Hexagon socket screw M8×12	2
9		Flat washer 8	2
10		Spring washer 8	2
11		Spring pin	1

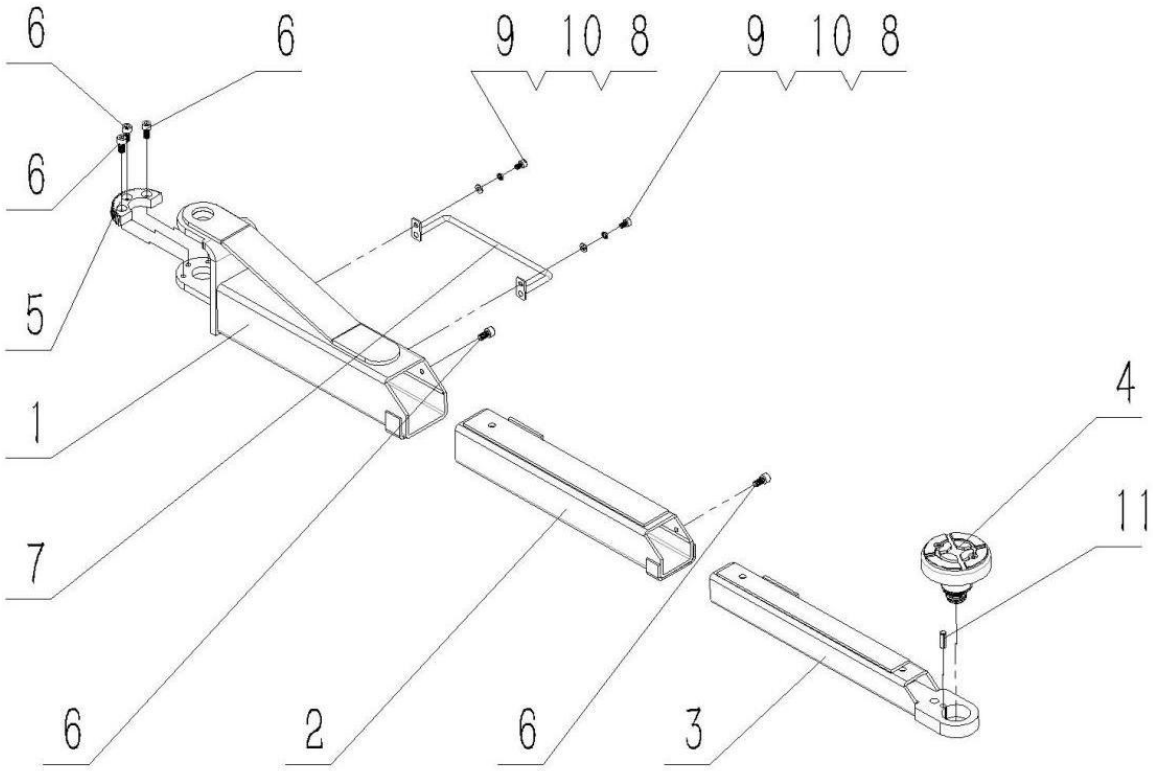
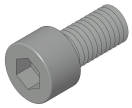
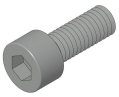
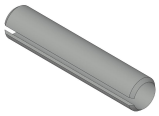


Figure 27: Exploded view of the three-stage long lifting arm

Three-stage long lifting-arm parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Long lifting arm, first section	1
2		Long lifting arm, second section	1
3		Long lifting arm, third section	1
4		Lifting-pad assembly	1
5		Lifting-arm locking gear	1
6		Hexagon socket screw M10×20	6
7		Welded handle	1
8		Flat washer 8	2
9		Hexagon socket screw M8×12	2
10		Spring washer 8	2
11		Spring pin	1

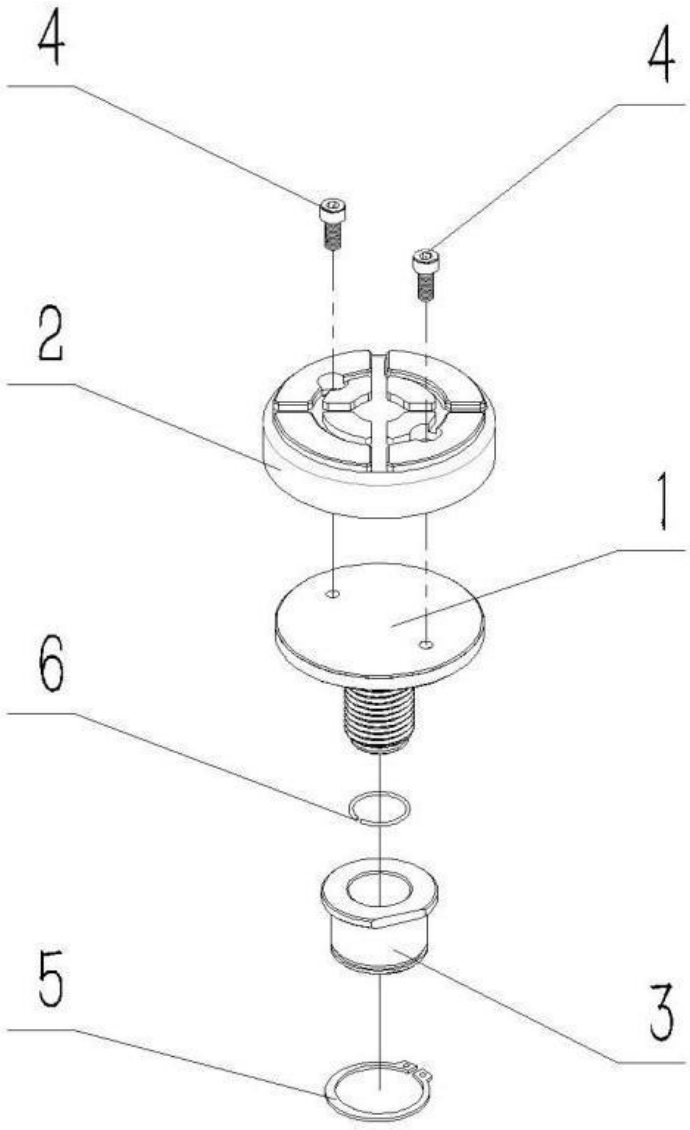


Figure 28: Exploded view of the lifting-pad assembly

Lifting-pad assembly parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Lifting-pad weldment	1
2		Lifting-pad rubber	1
3		Upper lifting-pad nut	1

Lifting-pad assembly parts list			
No.	**Illustration**	**Name**	**Quantity**
4		Hexagon socket screw M8×20	2
5		Shaft retaining ring 50	1
6		Wire retaining ring for shaft 30	1

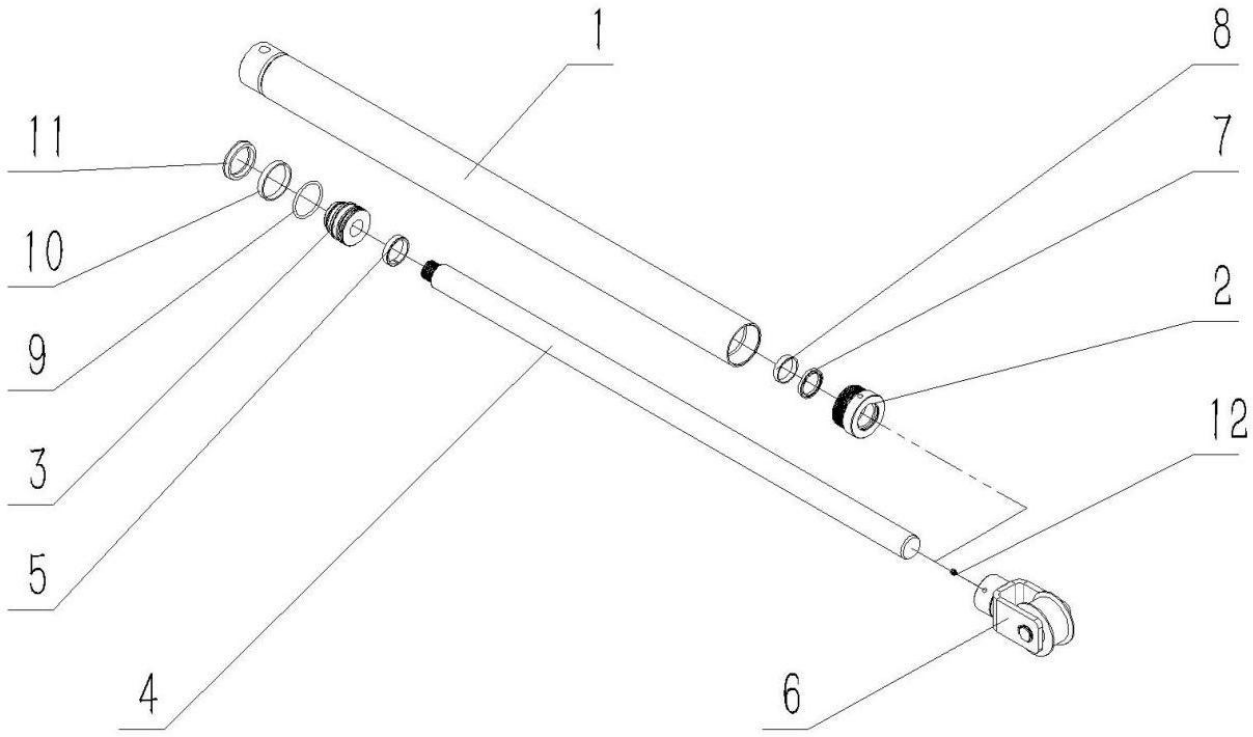


Figure 29: Exploded view of the hydraulic cylinder

Hydraulic-cylinder parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Cylinder barrel	1
2		Guide bush	1

Hydraulic-cylinder parts list			
No.	**Illustration**	**Name**	**Quantity**
3		Piston	1
4		Piston rod	1
5		Cylinder spacer	1
6		Sprocket-frame assembly	1
7		Dust seal DH48-40-5-6	1
8		Guide ring 44-40-9.5	1
9		O-ring D63×4	1
10		Guide ring 63-58-9.5	1
11		Seal UN63-48-10	1
12		Hexagon socket cone-point screw M8×10	1

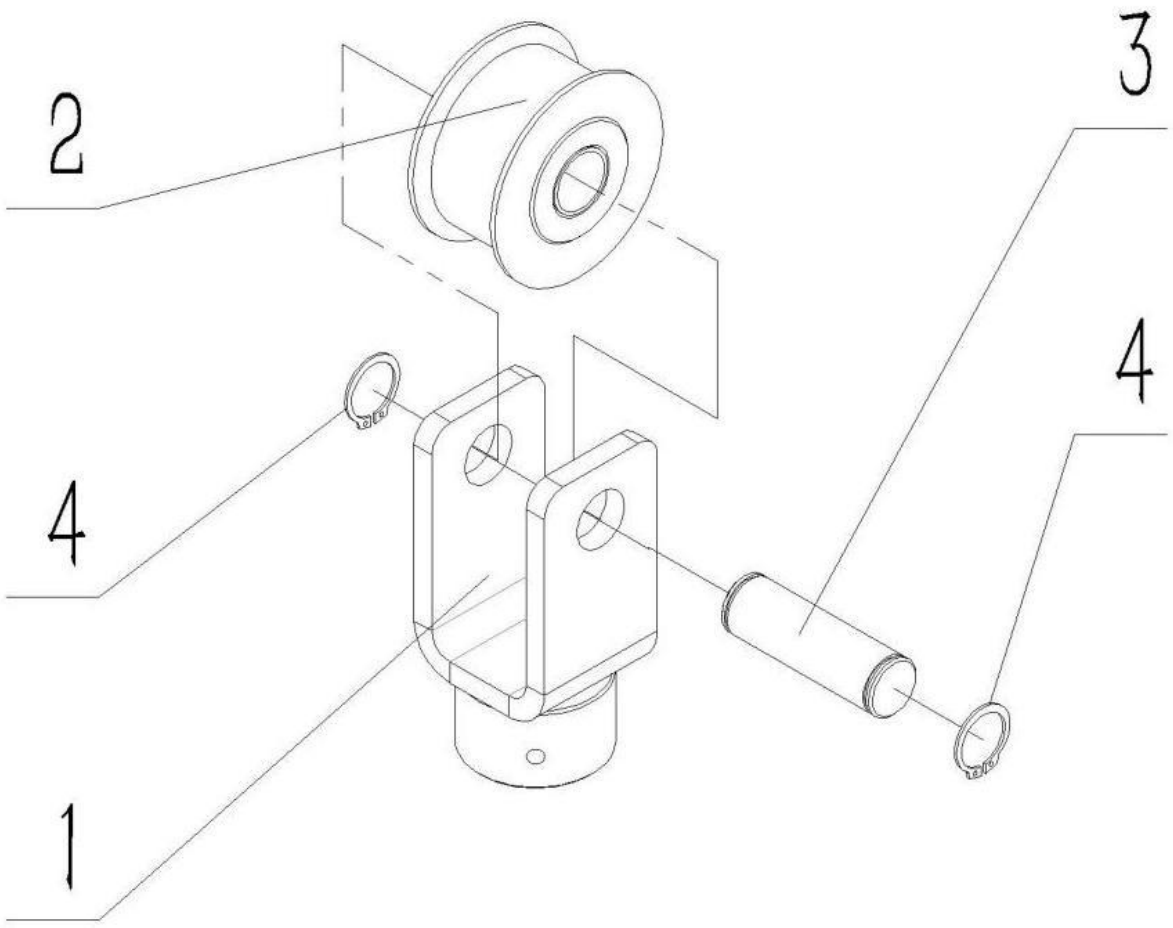


Figure 30: Exploded view of the sprocket frame

Sprocket-frame parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Sprocket-frame weldment	1
2		Sprocket	1
3		Sprocket-holder shaft	1
4		Shaft retaining ring 25	2

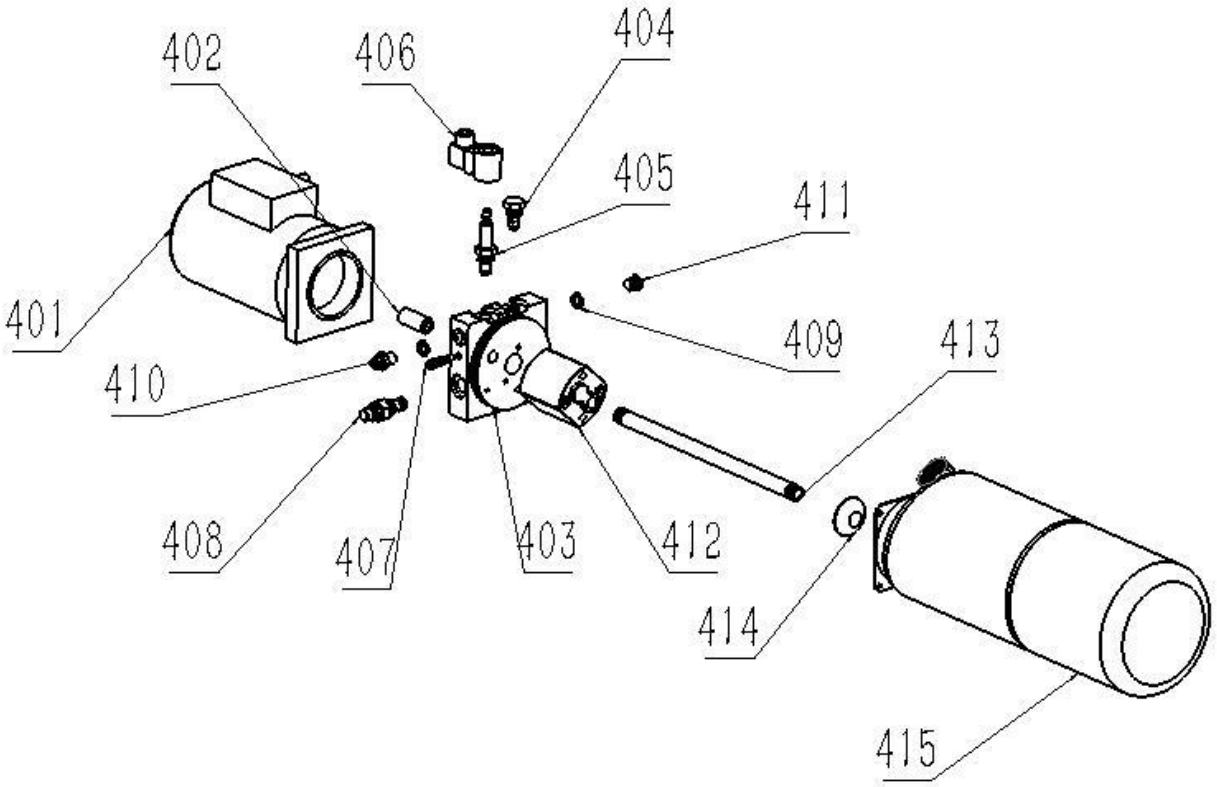


Figure 31: Exploded view of the power unit

Power-unit parts list			
No.	**Illustration**	**Name**	**Quantity**
401		Motor	1
402		Coupling shaft	1
403		Valve block (column-shaped)	1
404		Non-return valve	1
405		Solenoid-operated release valve	1

Power-unit parts list			
No.	**Illustration**	**Name**	**Quantity**
406		Solenoid coil for release valve	1
407		Throttle valve	1
408		Relief valve	1
409		Bonded seal Φ14	1
410		Pressure bonded-seal connection M16×1.5 to M14×1.5 (straight fitting)	1
411		Screw plug M14×1.5	1
412		Gear pump	1
413		Suction pipe	1
414		Filter screen	1
415		Oil reservoir	1

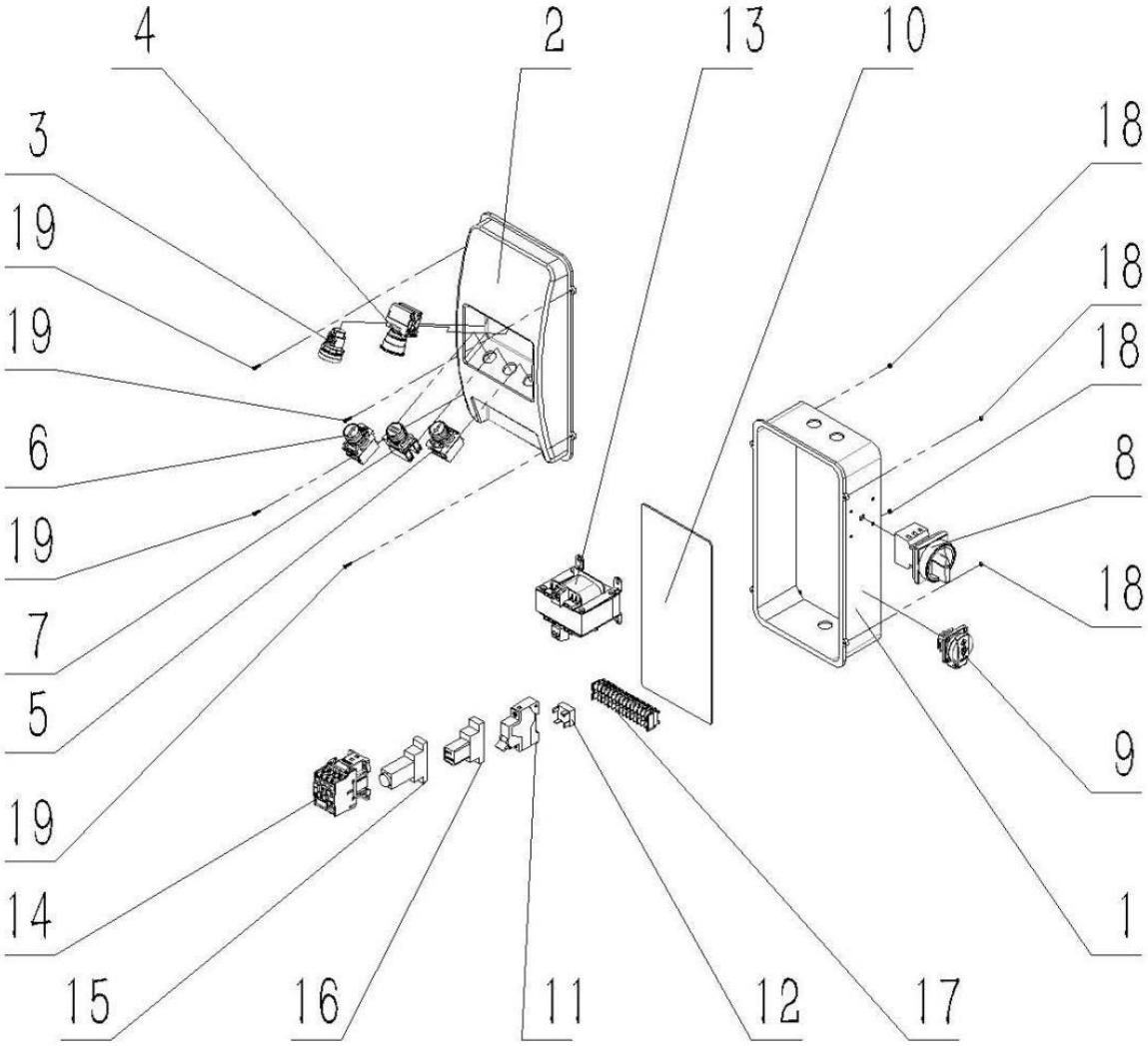


Figure 32: Exploded view of the control box

Control-box parts list			
No.	**Illustration**	**Name**	**Quantity**
1		Control-box base	1
2		Control-box top cover	1
3		Power indicator lamp	1
4		Emergency-stop button	1

Control-box parts list			
No.	**Illustration**	**Name**	**Quantity**
5		DOWN button	1
6		UP button	1
7		LOCK button	1
8		Main switch	1
9		Industrial socket	1
10		Control-box back panel	1
11		Circuit breaker	1
12		Bridge rectifier	1
13		Control transformer	1
14		AC contactor	1
15		Timer relay	1
16		Intermediate relay	1
17		Terminal block	1

Control-box parts list			
No.	**Illustration**	**Name**	**Quantity**
18		Hexagon nut M3	4
19		Cross-recessed pan-head screw M3×12	4

12. Troubleshooting and repair

Fault	Cause	Remedy
Motor does not run when UP is pressed	1. Push-button wiring fault 2. Open-circuit contactor coil	1. Check the push-button wiring 2. Check the contactor circuit
Motor hums but does not start	One phase is missing on the 400 V three-phase version	Switch off immediately; have a qualified electrician check the supply cable for phase failure
Motor runs but the lift does not rise	1. Incorrect motor rotation 2. Insufficient hydraulic oil 3. Air trapped in the pump 4. Faulty relief valve 5. Dirt blocking the lowering valve 6. Defective pump-outlet seal 7. Heavily contaminated filter	1. On the 400 V three-phase version only: a qualified electrician may swap two phases to correct motor rotation. On the 230 V single-phase version, have a qualified electrician check the motor connections against the appropriate diagram; do not swap L and N. 2. Top up the oil 3. Open the non-return valve, bleed and refit it 4. Clean the valve/replace its seal 5. Clean the valve coil 6. Remove the pump and replace the seal 7. Clean the filter
Lift rises too slowly	Pump-outlet seal leaking	Follow the measures above
Severe vibration during operation	1. Air in the hydraulic circuit 2. Suction-line leak 3. Blocked filter	1. Raise and lower repeatedly to bleed the system 2. Seal the suction-line connection 3. Clean the filter