LS Open Loop Vector Motor 4H42, 4H71, 4H72 Manual Supplement

Yale® SHAW-BOX®

Part Number: C11879202 REV AA
August 2022

Contents

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1 General notes

1.1 Using these instructions

These instructions are part of the product and contain important information on proper and safe testing, troubleshooting and maintenance. The listed information, safety notes and warning messages, as well as required actions, must be observed. The user must ensure that all people who work on or with the product have fully read and understood these instructions.

The additional information in the enclosed technical documentation must be observed.

These instructions and all further applicable documents must be kept to hand and accessible at all times for later use.

1.2 Copyright notice

The contents of these instructions must be treated as confidential and are intended exclusively for personnel working with the product. It is impermissible to pass these instructions on to third parties without the written consent of the manufacturer.
The information, texts, drawings, figures and other representations contained within them are copyright protected and subject to industrial property rights.

It is prohibited to produce any form of duplicate copy, including excerpts, and to exploit and/or disclose the contents without the written consent of the manufacturer. Infringements will be subject to compensation for damages. Further rights reserved.

1.3 Warranty

These instructions were compiled in accordance with the applicable regulations, are state-of-the-art and based on our many years of knowledge and experience.

The manufacturer accepts no liability for damage in the following cases:

- Failure to follow these instructions and the accompanying further technical documentation
- Prohibited uses of the product
- Use of untrained personnel
- A failure to follow the inspection and maintenance specifications
- Impermissible changes or modifications
- Use of impermissible mounting accessories and impermissible spare parts

The obligations agreed in the delivery contract, the General Terms and Conditions and the terms of delivery of the manufacturer apply, as well as the legal provisions valid at the time of contractual agreement.

1 General notes

1.4 Target audience and responsibilities

These instructions are intended for users, qualified specialist personnel and persons who are competent.

People under the influence of drugs, alcohol or medication that could impair reaction times are not permitted to work on or with the product.

User
The user is anyone who operates the product and uses it, or who allows suitable and instructed personnel to operate it.

Qualified specialist personnel
The product must be operated exclusively by qualified specialist personnel. Persons who work on or with the product must have read and understood these instructions before commencing the work.

Competent person
A competent person is anyone who, due to their professional training, professional experience and recent professional activity, possesses the requisite skills and expertise to test equipment. Competent persons with the authority to undertake work on our products are service technicians of the manufacturer and trained, certified service technicians.

Competent person authorised to test cranes
A competent person qualified to test cranes is a person who, as a result of their professional training, professional experience and recent professional activity has the required specialist knowledge for handling and using cranes and is permitted to release cranes or hoists for operation on the basis of national and local regulations.

1.5 Manufacturer

Columbus McKinnon Corporation
205 Crosspoint Parkway
Getzville, NY 14068
United States
www.columbusmckinnon.com
+1 (716) 689-5400

2 Safety-related information

2.1 Layout of the warning messages

2.1.1 Section warning messages

Section warning messages relate to an entire chapter or a section and are structured as follows.

⚠ SIGNAL WORD

Type and source of danger
Possible consequences if disregarded
➢ Measures to prevent the danger

2.1.2 Embedded warning messages

Embedded warning messages are placed directly before or after a required action and are structured as follows.

⚠ SIGNAL WORD Type and source of danger, possible consequences if disregarded.
➢ Measures to prevent the danger.

2.1.3 Signal words

The following signal words are used in warning messages.

Signal word	Meaning
⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates possible material or environmental damage.

2.1.4 Safety alert symbols

Symbol	Meaning
	General hazard
	Risk of electric shock
	Danger due to falling parts
	Hanging load hazard
	Danger of crushing

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2.1.5 Mandatory action signs

Symbol	Meaning
	General mandatory action sign
	Information in the enclosed technical documentation must be observed.
	Work must be carried out by a competent person
	Work must be carried out by a competent person (qualified electrician)
	Bolted connections must be tightened to the prescribed tightening torques

2.2 Further symbols

Symbol	Meaning
	Important note
➢	Required action
1. 2.	Required actions must be performed in the indicated order
→	Result of a required action
•	List
–	List (2nd level)

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2.3 Safety notes

All products from Columbus McKinnon are constructed in accordance with state-of-the-art engineering and the recognised safety rules. However, during use danger to the life and limb of the user or a third party can arise, or adverse effects can affect the product and other property.

Observe the following:

- The permissible environmental conditions must be observed.
- The work performed must be carried out by authorised personnel only.
- The information in the enclosed technical documentation must be observed.
- The product must only be operated in a satisfactory condition.
- The national and local safety and accident prevention regulations, the occupational safety acts and environmental provisions must be observed.
- All damage and defects on the product must be reported to the supervisor responsible immediately. The product must not be used until the defects have been remedied.
- Signs, labels, or pictograms that are applied to the product must be observed and must not be removed.
- Damaged signs, labels or pictograms must be replaced by new signs, labels or pictograms.

2.3.1 Intended use

The product may only be used for the intended application in accordance with the technical documentation and the information on the rating plate, and any additional stickers present. Intended use also includes proper assembly, electrical installation and maintenance.

For products that are declared as partly completed machinery, commissioning is forbidden until it is determined that the machinery into which this product is installed complies with the provisions of the EC Directives or other national and local regulations.

2.3.2 Prohibited use

The user, and not the manufacturer, is liable for all personal injury and material damage that arises due to prohibited use. Liability on the part of the manufacturer is excluded in this case.

Prohibited uses are:

- A failure to follow the specifications and notes provided in these instructions.
- A failure to follow information on the rating plate, the additional stickers and warning signs that are applied to the product.
- Use of the product in applications for which it is not intended.
- Impermissible changes and modifications.
- Operation in a damaged condition.
- Improperly performed repairs.

2.3.3 User obligations

The user must ensure the following:

- Personnel are qualified and trained regularly.
- All persons who work on or with the product have read and understood the associated instructions.
- Planning, assembly and electrical installation are performed correctly.
- A test is carried out prior to commissioning.
- The satisfactory condition of the product is maintained through maintenance measures.
- In the event of defects relevant to safety, operation is discontinued immediately.
- Only spare parts that are approved by the manufacturer are used.
- Personnel are provided with the prescribed personal protective equipment.

2.3.4 Personal protective equipment

Personal protective equipment must be worn at all times during activities that can cause injuries or endanger health.

To be worn at all times	
	**Work protective clothing** Work clothes with low tear resistance, with narrow sleeves and no protruding parts, to protect against being caught by moving machine parts. Do not wear rings, chains or other jewellery.
	**Safety shoes** For protection against heavy falling parts and slipping on slippery surfaces.
Wear in unusual environmental conditions	
	**Safety eyewear** To protect the eyes from any stray flying parts and splashes of liquid.
	**Hearing protection** To protect against hearing damage.
	**Safety helmet** For protection from falling parts.
	**Safety gloves (only if there is no entanglement hazard)** To protect hands from friction, abrasions, punctures or deep injuries as well as from contact with hot surfaces.
	**Safety harness** It is necessary to provide work rigs or lifting platforms for any maintenance and repair work that cannot be carried out from floor level. Service technicians who work outside lifting platforms must be safe-guarded with a safety harness.

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2.3.5 Changes and modifications

Only carry out changes and modifications to the product with written approval from the manufacturer.

2.3.6 Mounting accessories and spare parts

Impermissible mounting accessories and inadmissible spare parts may impair safety. Only use original mounting accessories and original spare parts from the manufacturer.

2.3.7 Transport and storage

Inspect the delivery immediately upon receipt for completeness and any transport damage. Report any transport damage to the transport company immediately.

The product must be stored as follows until assembly:

- Store in a dry, dust-free environment.
- Do not expose to aggressive media.
- Store within the approved service temperature range.
- Protect from direct sunlight.
- Avoid mechanical vibrations.
- Observe additional information on the product or packaging.

2.3.8 Decommissioning

1. Disconnect the product from the power supply.
2. Dismount the product in reverse order to assembly.

2.3.9 Disposal

Following correct disassembly, the disassembled components of the product must be submitted for recycling in accordance with the locally applicable regulations.

- Metallic parts for scrap metal
- Electronic components for electrical/electronic scrap
- Plastic parts for recycling

Electronic components, lubricants and other auxiliary substances are subject to special waste treatment and shall only be disposed of by approved specialist companies.

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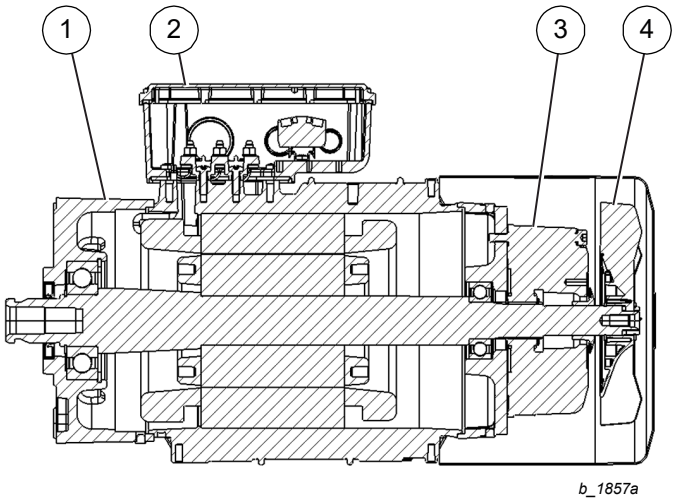
3 Product overview

3.1 Standards and directives

The conformity to the standards and directives can be found in the accompanying technical documentation.

3.2 Design overview



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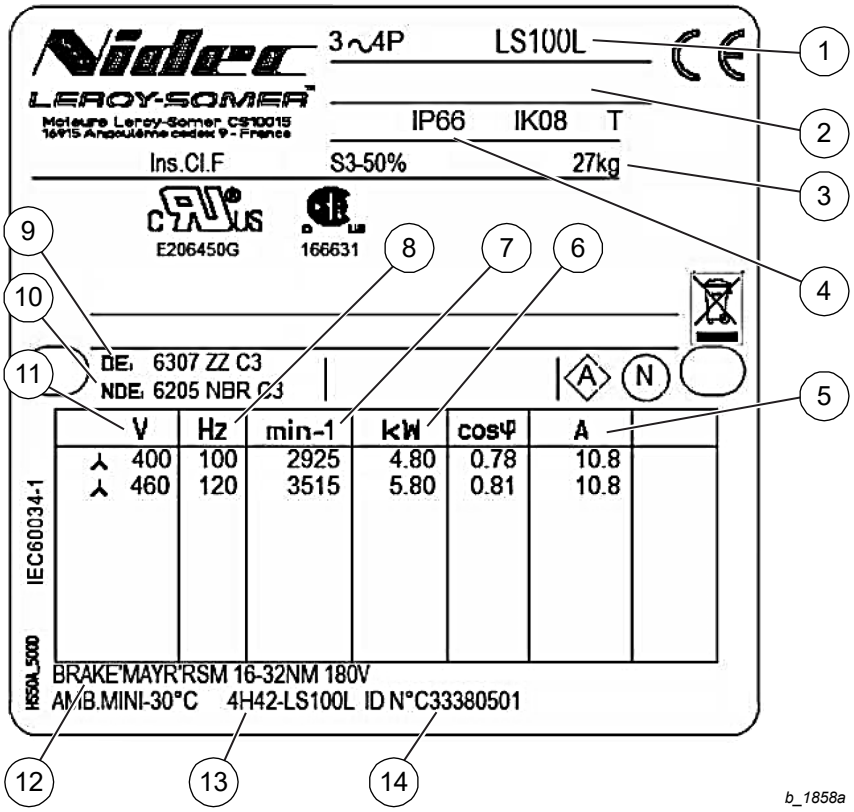
(1) Motor
(2) Terminal box
(3) Hoist motor brake
(4) Fan

3.2.1 Rating plate



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(1) Type
(2) Serial number
(3) Weight
(4) Degree of protection
(5) Current at rated voltage
(6) Power
(7) Speed
(8) Frequency
(9) Bearing type (drive end)
(10) Bearing type (non-drive end)
(11) Rated voltage and winding circuit
(12) Hoist motor brake data
(13) Motor type
(14) Part number

If the motor is operated at a lower power (other gear mechanism group) or in an operating mode specially adapted to the environmental conditions, these values can be found in the following tables or in the special documentation.

These special conditions of use can be:

- Higher ambient temperatures (here the temperature on the hoisting mechanism rating plate is decisive)

4 Troubleshooting

Fault	Possible cause	Measure	see the chapter/section
Wire rope hoist does not start, motor hums	Not all current phases are available	Check the fuses Check supply line Testing control and switching devices	
Wire rope hoist does not start after prolonged downtime or starts with difficulty, motor hums	Hoist motor brake is stuck.	Check the hoist motor brake.	Checking the hoist motor brake.
Loud “clack” noise when switching on	Air gap too great.		

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5 Inspection and maintenance

⚠ WARNING

Danger to life, injury or material damage due to improper inspection or maintenance.

- Ensure that people who perform inspection and maintenance are authorised to carry out this work.
- Observe the national and local safety and accident prevention regulations, the occupational safety acts and environmental provisions.
- Before starting work, disconnect the machinery from the power supply and secure it against an unintentional restart.
- Work on the motor must only be carried out on the unloaded wire rope hoist and with the bottom hook block lowered.
- Use a lifting platform for work that cannot be carried out from the ground. Use a safety harness when performing any work outside of lifting platforms.
- Wear the prescribed personal protective equipment.
- Secure the danger zone.
- Observe inspection and maintenance intervals.
- Document the results and any measures implemented.
- Keep a sufficient safety distance from the product.
- Do not stand under suspended loads.
- Use only original spare parts from the manufacturer.
- Tighten bolted connections to the prescribed tightening torques with a torque wrench.

5 Inspection and maintenance

5.1 Inspection and maintenance intervals

The inspection and maintenance intervals listed apply to normal conditions. If the intervals are found to be too long, for example due to heavy-duty operating conditions, the user must define shorter intervals.

Additional inspections must be carried out on the product in the following cases:

- After special incidents or material damage
- After an extended system standstill (> 1 year)
- When used near the sea

Authorised person	Symbol
Qualified specialist personnel (crane operators)	☐
Competent person	⊙
Service technician of the manufacturer	✖

	Commissioning	Daily before every operation	Monthly	Every 3 months	Annually	After an extended system standstill (> 1 year)	Every 10 years
Technical documentation							
Perform a visual inspection for completeness	⊙						
Plates and stickers							
Perform a visual inspection for completeness and legibility	⊙				⊙		
Hoist motor							
Perform a visual inspection for damage							
Perform a functional test of the hoist motor							
● No speed fluctuations,	⊙				⊙		
● No high noise emissions							
● No strong vibrations							
Electrical connection							
Check for correct connection of the lines and the power supply	⊙				⊙		
Check the insulation resistance of the motor (see the ***Check the insulation resistance*** section)						⊙	
Hoist motor brake							
Check function	⊙	☐			⊙		
Check for wear (see ***Checking the hoist motor brake*** section)					⊙		

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5.2 Check the insulation resistance

A check of the insulation resistance after a longer standstill or storage of the system (> 1 year)! This must be carried out at a winding temperature of +20...+30°C.

Before starting the measurement of the insulation resistance, observe the operating instructions of the insulation meter used.

1. Carry out the insulation resistance measurement. The measured voltage is 500 V DC.
   - Minimum insulation resistance for new, cleaned or repaired windings at a reference temperature of +40°C must be 5 MΩ.
   - The critical specific insulation resistance after long operation time is: 0.5 MΩ/kV.
2. When reaching or falling below the critical insulation resistance.
   - ➢ Remove the rotor and thoroughly clean and dry the windings of the rotor.
   - ➢ Then carry out another check.

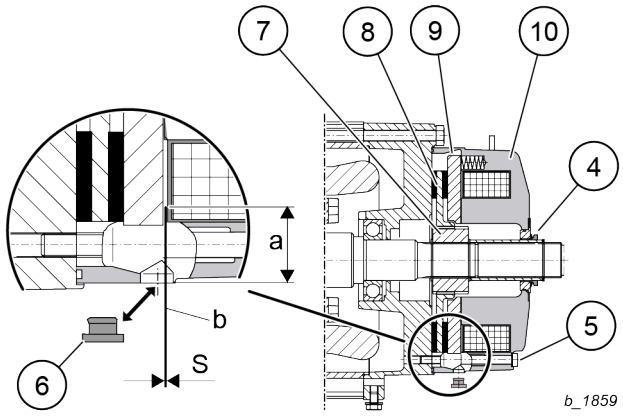
5.3 Checking the hoist motor brake

⚠ WARNING

Danger to life, injury or material damage due to improper inspection of the hoist motor brake.

- ➢ Work on the hoist motor brake must only be carried out on the unloaded wire rope hoist and with the bottom hook block lowered.
- ➢ Switch off the crane-supply-switch and secure against being switched on again.
- ➢ Secure the danger zone.
- ➢ Keep a sufficient safety distance from the product.

(4) Sealing ring
(5) Fastening screws
(6) Stopping plug
(7) Hub
(8) Brake rotor
(9) Anchor plate
(10) Coil carrier



1. Remove the cover and fan.
2. Remove stopping plug (6) with pliers.
3. Measure the air gap “S” with a feeler gauge “b”.
   – When measuring, the feeler gauge “b” must be inserted at least to the insertion depth “a” (see table). The feeler gauge must not get caught on the step. Refer to the table for the maximum permissible air gap “S”.

Hoist motor type	Hoist motor brake	Max. air gap “S”	Insertion depth “a”
		[mm]	
4H42-LS	RSM 16	0.4	25
4H71-LS	RSM 32	0.45	25
4H72-LS	RSM 60	0.8	25

The hoist motor brake is not readjustable. Once the max. permissible air gap “S” has been reached, the brake rotor (10) must be replaced.

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5.4 Replacing the brake rotor

⚠ CAUTION

Brake dust is hazardous to health.

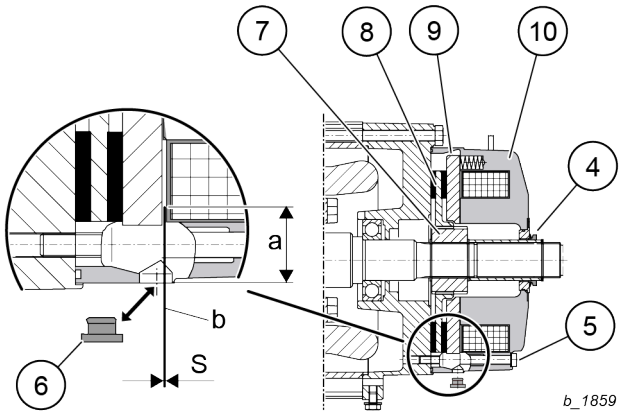
- ➢ Do not clean hoist motor brakes with compressed air, brushes or similar.
- ➢ Use a vacuum system or a damp cloth to remove brake dust.
- ➢ If dust develops, wear safety eyewear and a fine dusk mask.

⚠ WARNING

With an incorrectly assembled brake rotor, the hoist motor brake cannot hold the load and the load will fall. This can result in serious injuries and even death.

- ➢ Ensure that a competent person carries out the replacement work.

The pressure springs of the hoist motor brake must always be replaced at the same time.



(4) Sealing ring
(5) Fastening screws
(6) Stopping plug
(7) Hub
(8) Brake rotor
(9) Anchor plate
(10) Coil carrier

1. Remove the cover and fan.
2. Remove the sealing ring (4) (IP66).
3. Dismount electrical connection of the hoist motor brake.
4. Unscrew the fastening screws (5).
5. Remove coil carrier (10).
6. Take off brake rotor (10).

NOTICE When dampening the cloths, **only use** isopropyl alcohol. The use of brake cleaner is **not** permitted.

→ Ensure sufficient drying time for the cleaned surfaces.

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We cannot recommend cleaning the rotor / friction linings because oil / grease has usually worked into the lining and this can only be removed from the surface area to a limited degree.
Furthermore, it is not possible to fully exclude negative reactions between the cleaning products and the lining. We therefore recommend use of the spare parts kit here.

7. Check friction surfaces for wear and clean with a damp cloth.
8. Slide a new brake rotor (8) onto the hub (7) and check the available clearance.

NOTICE Danger of damage

→ If increased clearance is present in the gearing between the brake rotor (8) and hub (7), remove the hub (7) from the motor shaft and replace it. Be sure to consult the production factory before removing the hub (7).

9. Replace the hoist motor brake pressure springs (see ***Replacing the pressure springs*** section).
10. Check the O-ring of the coil carrier for damage and replace if necessary.
11. Clean coil carrier.
12. Assemble in reverse order (work steps 6 to 1).

→ Make sure that the inspection hole for the air gap measurement is at the bottom.

→ Tighten the fastening screws (5) to the prescribed tightening torque, see table.

→ After tightening the fastening screws (5), mark the fastening screws (5).

Hoist motor brake type	Fastening screw (5) tightening torque
	[Nm]
RSM 16	9.0
RSM 32	
RSM 60	22.0

13. After completing the assembly work, check the hoist motor brake and carry out a conditioning of the friction pairing, see ***Conditioning of the friction pairing*** section.

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5.4.1 Conditioning of the friction pairing

⚠ WARNING

If the friction pairing is not conditioned, the brake cannot hold the load and the load will fall. This can result in serious injuries and even death.

➢ Ensure that a competent person carries out the conditioning of the friction pairing.

Conditioning of the friction pairing must be carried out:

- during disassembly and assembly of the hoist motor brake
- when replacing the hoist motor

Conditioning of the friction pairing

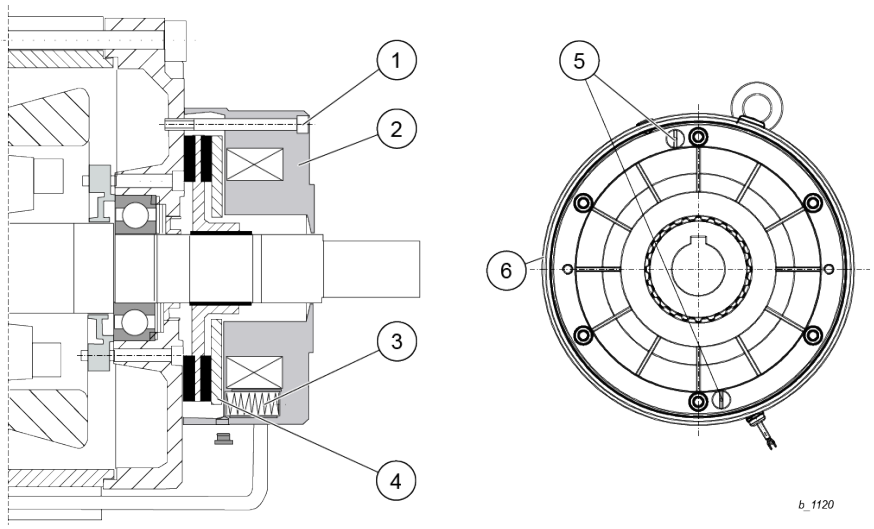
1. Accelerate the hoist motor to max. speed without load.
2. Stop the hoist motor with the emergency stopping switch.
3. Repeat the procedure 5 times.

5.5 Replacing the pressure springs

⚠ CAUTION

Brake dust is hazardous to health.

- ➢ Do not clean hoist motor brakes with compressed air, brushes or similar.
- ➢ Use a vacuum system or a damp cloth to remove brake dust.
- ➢ If dust develops, wear safety eyewear and a fine dusk mask.



(1) Fastening screws
(2) Coil carrier
(3) Pressure spring
(4) Anchor plate
(5) Shoulder screws
(6) O-ring

1. For preparatory tasks, see the ***Replacing the brake rotor*** section.
2. Set the coil carrier (2) down on a clean work surface.

It is recommended to mark the installation position of the anchor plate before disassembly.

⚠ CAUTION The pressure springs push against the anchor plate; injuries can result from incorrect loosening.

- ➢ In order to remove the shoulder screws, press the anchor plate against the coil carrier (with larger sizes use a spindle press if necessary) to avoid sudden relief of the spring pressure. Observe the installation position of the anchor plate.

3. Unscrew both shoulder screws (5) uniformly in turn.
4. Remove and set down the anchor plate (4) and shoulder screws (5).

NOTICE When dampening the cloths, **only use** isopropyl alcohol. The use of brake cleaner is **not** permitted.

- – Ensure sufficient drying time for the cleaned surfaces.

5. Clean the anchor plate (4) with a damp cloth.
6. Remove all old pressure screws (3) from the coil carrier (2).
7. Clean the coil carrier (2) with a damp cloth.

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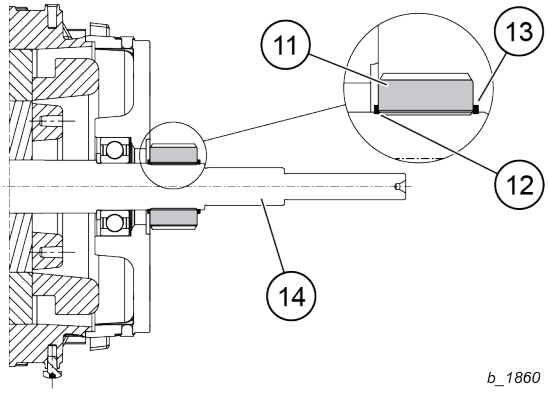
The thickness and number of windings of the pressure screws may vary.
It is therefore essential to symmetrically distribute the pressure springs in the coil carrier.

8. Equip the coil carrier (2) with the correct new pressure spring set.
9. Place the anchor plate (4) on the coil carrier or compression springs, (observe the installation position, with size 16 to 60, use fastening screws (1) as a centring aid if necessary).
10. Press the anchor plate (4) down against the spring force (e.g. with a spindle press) and screw in the shoulder screws with the tightening torque specified in the table.
11. Clean the friction surface of the anchor plate (4) with isopropyl alcohol **so that this is clear of grease.**
12. For final tasks, see the ***Replacing the brake rotor*** section.

Hoist motor brake type	Fastening screw (1) tightening torque	Shoulder screws (5)
	[Nm]	
RSM 16	9.0	2.0
RSM 32		3.5
RSM 60	22.0	

5.6 Replacing the hub

1. Remove the brake rotor, see the ***Replacing the brake rotor*** section.



(11) Hub
(12) Retaining ring
(13) Retaining ring
(14) Motor shaft

2. Remove the retaining ring (13).
3. Pull the hub (11) off the motor shaft (14).
4. Put on a new retaining ring (12). Ensure that the retaining ring engages in the groove.
5. Push the new hub (11) onto the motor shaft (14).
   - The turned side of the hub (11) must point towards the end of the motor shaft.
   - The new hub (11) must rest against the inner retaining ring (12) so that the outer retaining ring (13) can be fitted.
6. Mount the retaining ring (13). Ensure that the retaining ring engages in the groove.
7. Install the brake rotor, see the ***Replacing the brake rotor*** section.

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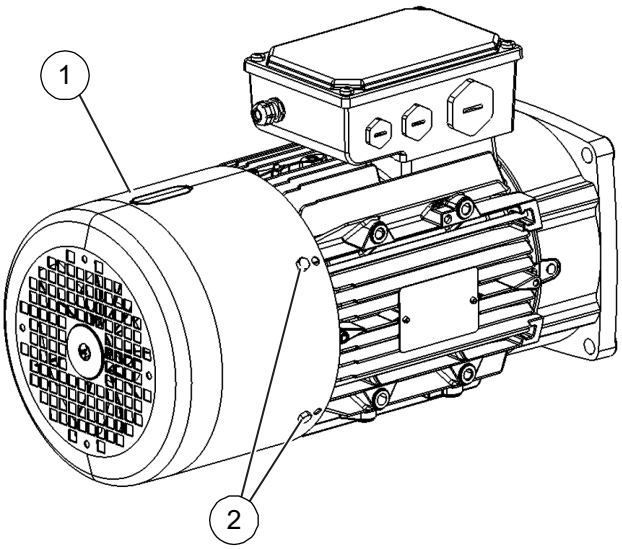
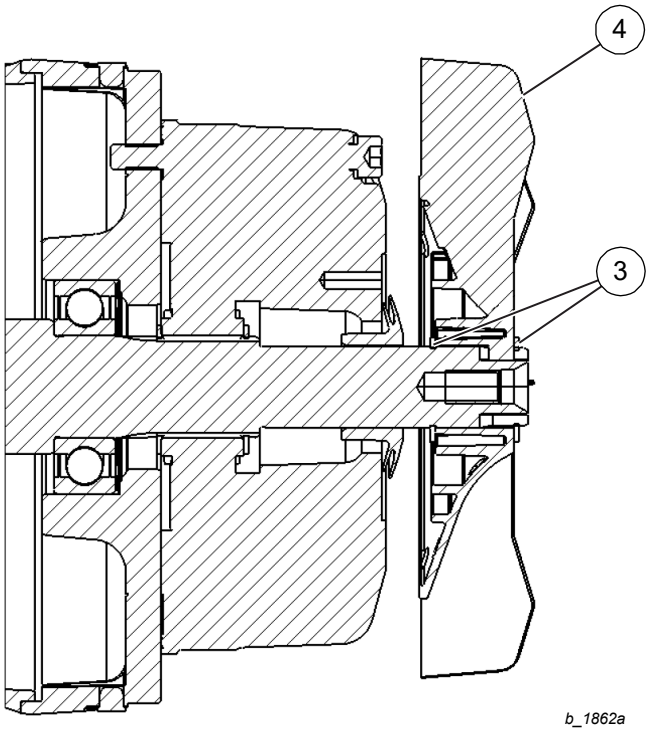
5.7 Remove the cover and fan





(1) Cover
(2) Screw
(3) Snap ring
(4) Fan

1. Remove the screws (2).
2. Pull off the cover.
3. Remove the snap ring (3).
4. Remove the fan.
5. Installation takes place in reverse order.
   - ➢ Tighten the screws (2) to the prescribed tightening torque (5 Nm).

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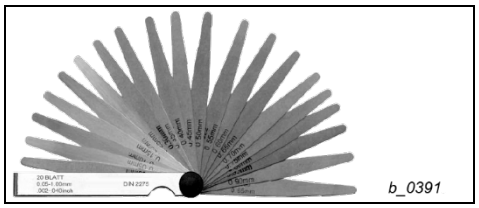
6 Special tools and auxiliary equipment

The following special tools and auxiliary equipment are required for the assembly and maintenance.

6.1 Feeler gauge



Feeler gauge

7 Technical data

Mechanical data	
Weight	See rating plate
General data	
Degree of protection acc. to EN 60529	Standard: IP55 With Heaters: IP66
Ambient temperature range Standard	-20°C to +40°C

7.1 Nominal motor data

The motor data can be found on the motor rating plate.
For more detailed information on the motors, please order the motor type test certificate for the respective motor.

7.1.1 Frequency-controlled hoist motors 4H..-LS 120 Hz

120 Hz							
	Weight	Power P_N	Duration factor for ED	Nominal speed n_N	Nominal current I_N		Power factor
					208 - 230 V	440 - 480 V	
	[kg]	[kW]	[%]	[rpm]	[A]		Cos Φ
4H42-LS	27	5.8	50	3515	23.0	10.8	0.81
4H71-LS	41	11.4	50	3490	42.0	20.0	0.84
4H72-LS	68	18	50	3535	62.0	29.7	0.84

The motors are designed for rated voltage ranges. The voltage tolerance of ±5% and the frequency tolerance of ±2% according to EN 60034 additionally applies to the rated voltage range. The max. current in the rated voltage range is specified.

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7 Technical data

7.2 Main fuses

120 Hz			
Hoist motor	Trolley motor	208 - 230 V	460 V
		Fuse	
		[A]	
4H42	4F18	45	25
4H71	4F18	60	35
4H71	4F38	70	40
4H72	4F38	90	45

7.3 Cable cross-sections and cable lengths

- The maximum permitted cable lengths between the frequency converter and the motor for the standard insulation of the motors (1500 V peak and 3500 V/µs) are 20 m for a nominal motor voltage of up to 480 V.
- For higher nominal voltages and longer cable lengths, install a dU/dt filter or sine filter between the frequency converter and the motor and design the wire cross-sections for a maximum voltage drop of 2.5%.

8 Tightening torques for bolted connections

⚠ WARNING

Danger to life, danger of injury or material damage from falling parts if bolted connections are not tightened according to instructions.

➢ Tighten bolted connections to the prescribed tightening torques with a torque wrench.

Deviating tightening torques are listed in the corresponding chapters and sections of these instructions.

Thread	Tightening torque				
	Property class				
	08.8	8.8	010.9	10.9	VERBUS RIPP® 100
	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]
M5	--	6	--	--	11
M5 [1)]	--	1	--	--	--
M6	8.2	10.3	--	--	19
M8	20	25	28	35	42
M10	39	49	55	69	85
M12	69	86	98	122	130
M14	109	136	152	190	--
M16	170	210	240	300	330
M18	232	290	328	410	--
M20	330	410	472	590	--
M22	448	560	632	790	--
M24	570	710	800	1000	--
M27	832	1040	1168	1460	--
M30	1130	1410	1600	2000	--
M33	1528	1910	2160	2700	--
M36	1970	2460	2800	3500	--

[1)] Electrical plug-in connections

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9 Spare parts

⚠ WARNING

Danger to life, injury or material damage due to incorrect or faulty spare parts.

➢ Use only original spare parts from the manufacturer.

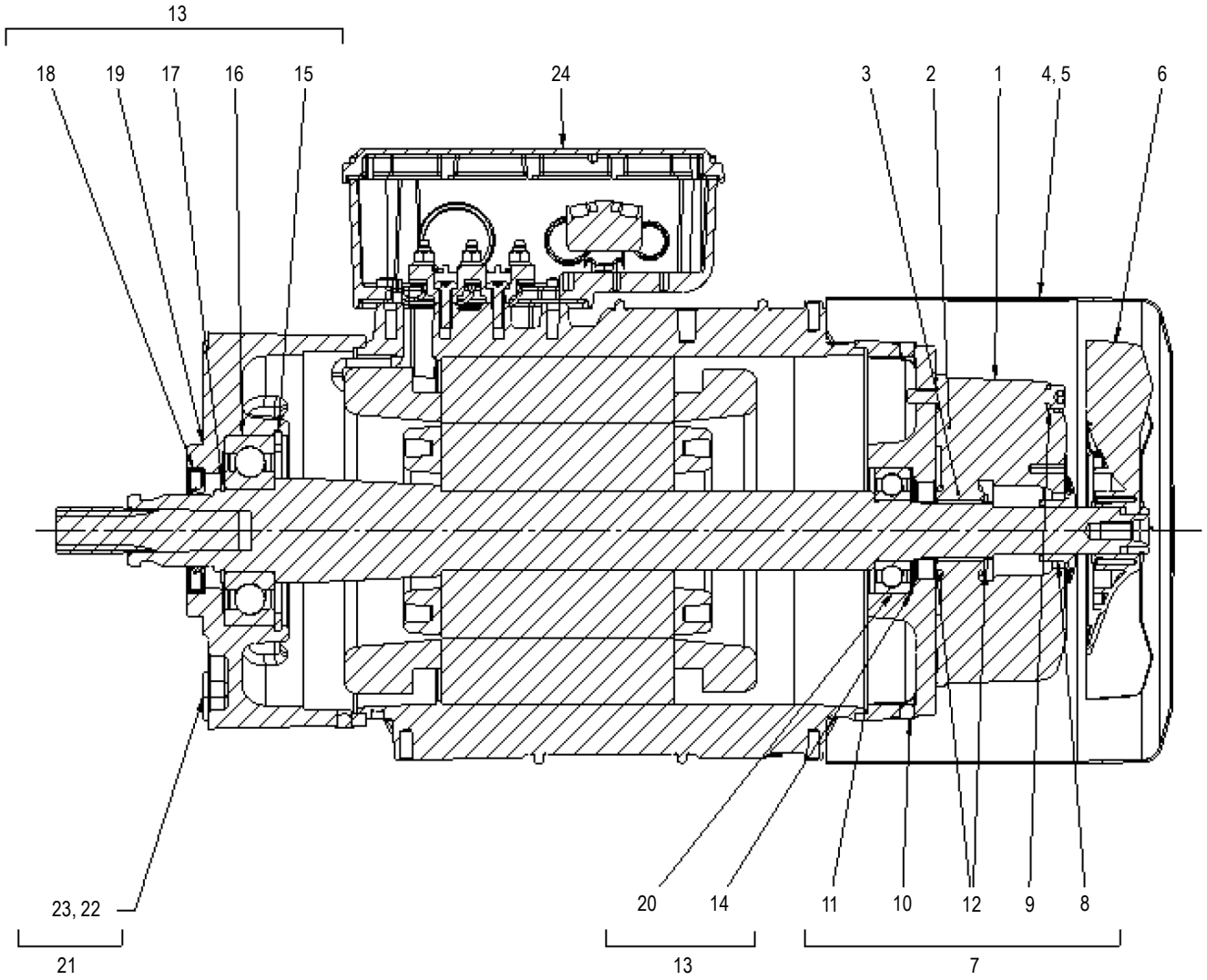
When ordering original spare parts, please always quote the serial number of the hoist.

When ordering, please provide the following information:

- Serial number of the hoist
- Part no.
- Quantity
- Description
- Specification

9 Spare parts

9.1 4H42-LS100L



Item	Part no.	Quantity	Description	Specification	Remark
	C23708201	1	Motor	A frame, SH30..-20, M1.45-Z9, 460V	
	C23708251	1	Motor	A frame, SH30..-20, M1.45-Z9, 460V, Heater	
	C23708211	1	Motor	A frame, SH30..-20, M1.45-Z9, 208V	
	C23708261	1	Motor	A frame, SH30..-20, M1.45-Z9, 208V, Heater	
	C23708221	1	Motor	A frame, SH30..-20, M1.45-Z9, 230V	
	C23708271	1	Motor	A frame, SH30..-20, M1.45-Z9, 230V, Heater	
	C23708201	1	Motor	B frame, SH40..-16, 20, M1.45-Z9, 460V	
	C23708251	1	Motor	B frame, SH40..-16, 20, M1.45-Z9, 460V, Heater	
	C23708211	1	Motor	B frame, SH40..-16, 20, M1.45-Z9, 208V	
	C23708261	1	Motor	B frame, SH40..-16, 20, M1.45-Z9, 208V, Heater	
	C23708221	1	Motor	B frame, SH40..-16, 20, M1.45-Z9, 230V	
	C23708271	1	Motor	B frame, SH40..-16, 20, M1.45-Z9, 230V, Heater	
1	A70070209	1	Brake compl.	104 – 120 V / 230 – 690 V, 50 Hz	
1	A70070210	1	Brake compl.	180 – 207 V / 400 – 440 V, 50 Hz	
1	A70070219	1	Brake compl.	104 – 120 V / 230 – 690 V, 50 Hz HRB	
1	A70070220	1	Brake compl.	180 – 207 V / 400 – 440 V, 50 Hz HRB	

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9 Spare parts

Item	Part no.	Quantity	Description	Specification	Remark
2	A70070233	1	Brake rotor spare part set		
3	A5674830	1	Hub		
4	C333805A0	1	Cover	MTR COV,LS 5280145 FOR 4H42/71	
5	……	4	Screw	M5×8, BN5950	
6	C333805A2	1	Fan	MTR FAN,LS 5026581 FOR 4H42/71	
7	C333805A6	1	Brake Sealing Kit	KT,LS 4146665 BRK SEALING FOR 4H42/71	
8	……	1	Seal	VLS-20	
9	……	3	Sealing washer	D6.7×10×1	
10	……	1	Plug		
11	……	1	Round sealing ring	140×1.5, NM910	
12	……	2	Retaining ring	25×1.2, DIN 471	
13	A70070162	1	Bearing kit		
14	……	2	Bearing shim	42×51×0.5	
15	……	1	Retaining ring	80×2.5, DIN 472	
16	……	1	Rolling bearing	6307-2Z, DIN 625	
17	……	1	Retaining ring	35×1.5, DIN 471	
18	……	1	Shaft seal	AS30×52×7, DIN 3760	
19	……	1	Round sealing ring	70×2, NB70	
20	……	1	Rolling bearing	6205-2RS-PRE, DIN 625	
21	A2327003650	1	Gear motor screws		
22	……	4	Screw	M10×30, ISO 4762	
23	……	4	Safety washer	S10	
24	C333805A4	1	Terminal box kit	KT,LS 5241447 MTR TRMNL BOX FOR 4H42/71	

1) Please state operating voltage, frequency and wire rope hoist type
2) Coil voltage / operating voltage motor
3) Only replaceable at SHF 30 Z≤11, SHF 40 Z≤9

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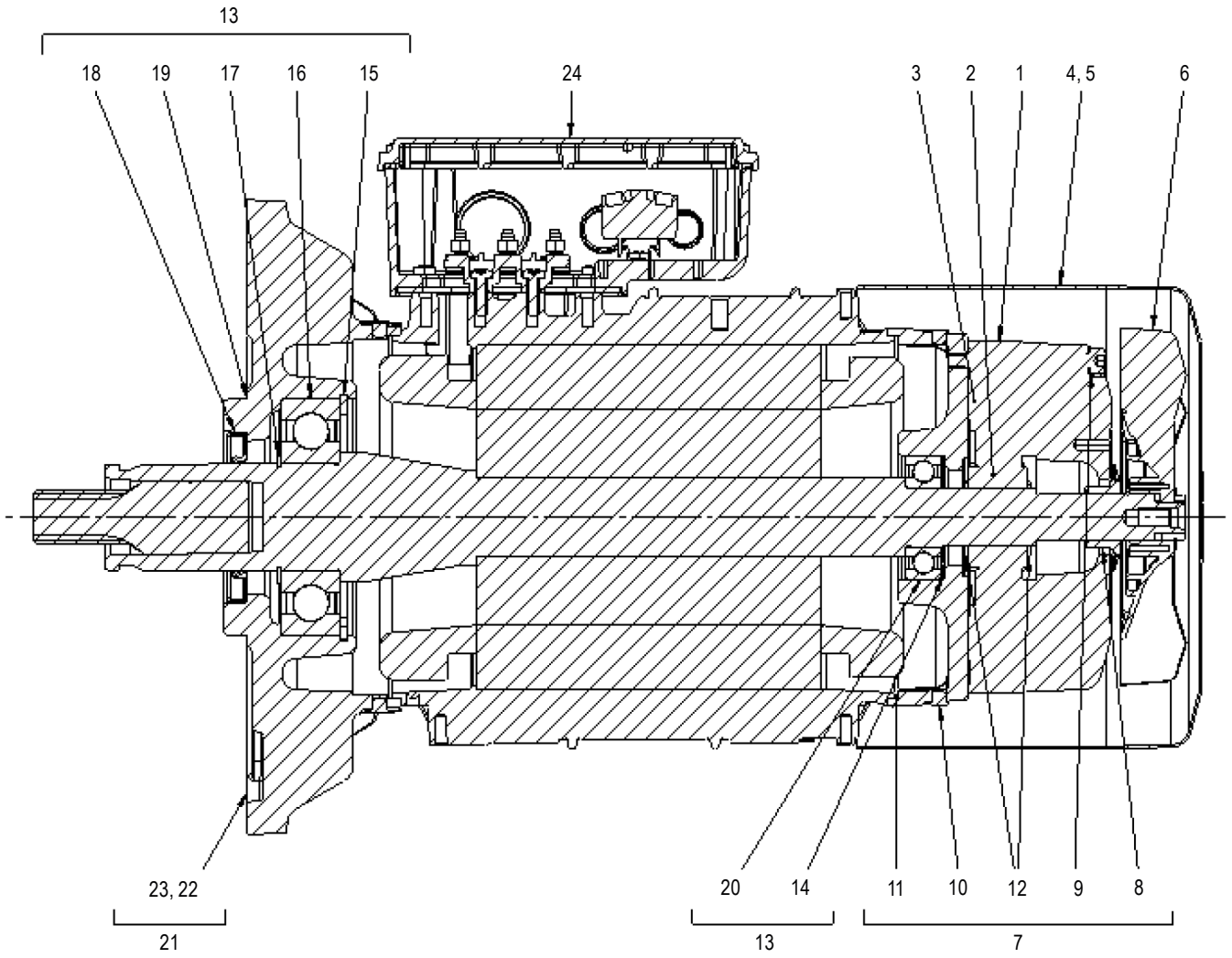
9 Spare parts

9.2 4H71-LS112M



Item	Part no.	Quantity	Description	Specification	Remark
	C23708301	1	Motor	C frame, SH50..-20, M1.45-Z11, 460V	
	C23708351	1	Motor	C frame, SH50..-20, M1.45-Z11, 460V, Heater	
	C23708302	1	Motor	C frame, SH50..-12, M2.1-Z13, 460V	
	C23708352	1	Motor	C frame, SH50..-12, M2.1-Z13, 460V, Heater	
	C23708311	1	Motor	C frame, SH50..-20, M1.45-Z11, 208V	
	C23708361	1	Motor	C frame, SH50..-20, M1.45-Z11, 208V, Heater	
	C23708312	1	Motor	C frame, SH50..-12, M2.1-Z13, 208V	
	C23708362	1	Motor	C frame, SH50..-12, M2.1-Z13, 208V, Heater	
	C23708321	1	Motor	C frame, SH50..-20, M1.45-Z11, 230V	
	C23708371	1	Motor	C frame, SH50..-20, M1.45-Z11, 230V, Heater	
	C23708322	1	Motor	C frame, SH50..-12, M2.1-Z13, 230V	
	C23708372	1	Motor	C frame, SH50..-12, M2.1-Z13, 230V, Heater	
1	A70070211	1	Brake compl.	104 – 120 V / 230 – 690 V, 50 Hz	
1	A70070212	1	Brake compl.	180 – 207 V / 400 – 440 V, 50 Hz	
1	A70070221	1	Brake compl.	104 – 120 V / 230 – 690 V, 50 Hz HRB	
1	A70070222	1	Brake compl.	180 – 207 V / 400 – 440 V, 50 Hz HRB	
2	A70070234	1	Brake rotor spare part set		
3	A5674840	1	Hub		
4	C333805A0	1	Cover	MTR COV,LS 5280145 FOR 4H42/71	
5	……	2	Screw	M5×8, BN5950	
6	C333805A2	1	Fan	MTR FAN,LS 5026581 FOR 4H42/71	

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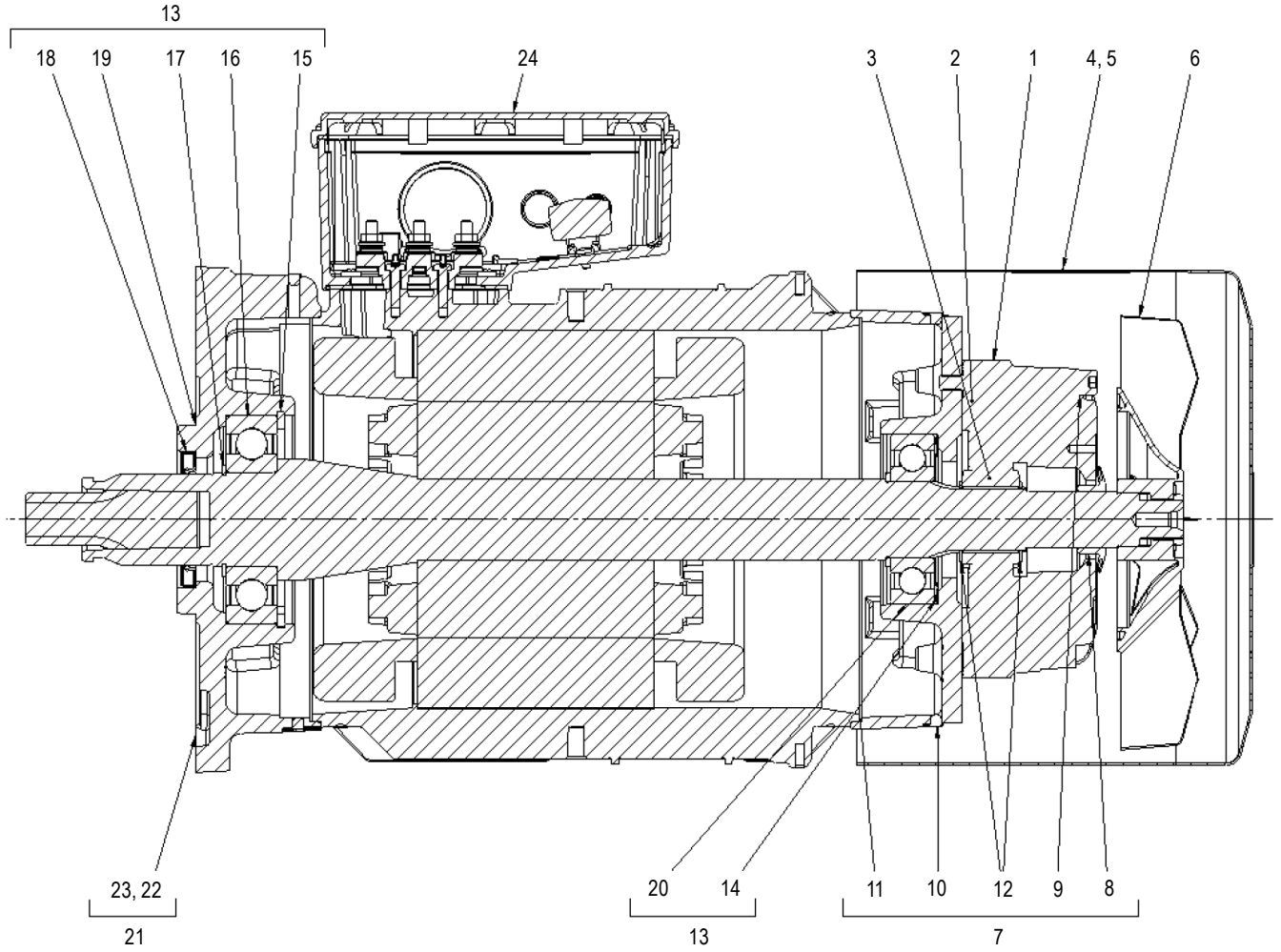
9 Spare parts

Item	Part no.	Quantity	Description	Specification	Remark
7	C333805A6	1	Brake Sealing Kit	KT,LS 4146665 BRK SEALING FOR 4H42/71	
8	……	1	Seal	VLS-20	
9	……	3	Sealing washer	D6.7×10×1	
10	……	1	Plug		
11	……	1	Round sealing ring	122×2, NM910	
12	……	2	Retaining ring	25×1.2, DIN 471	
13	A70070164	1	Bearing kit		
14	……	2	Bearing shim	42×51×0.5	
15	……	1	Retaining ring	100×3, DIN 472	
16	……	1	Rolling bearing	6309-2Z, DIN 625	
17	……	1	Retaining ring	55×1.75, DIN 471	
18	……	1	Shaft seal	AS45×72×8, DIN 3760	
19	……	1	Round sealing ring	95×2, NB70	
20	……	1	Rolling bearing	6205-2RS-PRE, DIN 625	
21	A2727003650	1	Gear motor screws		
22	……	4	Screw	M12×35, ISO 4762	
23	……	4	Safety washer	S12	
24	C333805A4	1	Terminal box kit	KT,LS 5241447 MTR TRMNL BOX FOR 4H42/71	

1) Please state operating voltage, frequency and wire rope hoist type
2) Coil voltage / operating voltage motor
3) Only replaceable at Z≤13

9 Spare parts

9.3 4H72-LS132M



Item	Part no.	Quantity	Description	Specification	Remark
	C23708401	1	Motor	E frame, SH60..-12, 16, M2.1-Z9, 460V	
	C23708451	1	Motor	E frame, SH60..-12, 16, M2.1-Z9, 460V, Heater	
	C23708402	1	Motor	E frame, SH60..-10, M2.1-Z13, 460V	
	C23708452	1	Motor	E frame, SH60..-10, M2.1-Z13, 460V, Heater	
	C23708421	1	Motor	E frame, SH60..-12, 16, M2.1-Z9, 230V	
	C23708471	1	Motor	E frame, SH60..-12, 16, M2.1-Z9, 230V, Heater	
	C23708422	1	Motor	E frame, SH60..-10, M2.1-Z13, 230V	
	C23708472	1	Motor	E frame, SH60..-10, M2.1-Z13, 230V, Heater	
1	A70070213	1	Brake compl.	104 – 120 V / 230 – 690 V, 50 Hz	
1	A70070214	1	Brake compl.	180 – 207 V / 400 – 440 V, 50 Hz	
1	A70070223	1	Brake compl.	104 – 120 V / 230 – 690 V, 50 Hz HRB	
1	A70070224	1	Brake compl.	180 – 207 V / 400 – 440 V, 50 Hz HRB	
2	A70070235	1	Brake rotor spare part set		
3	A5674850	1	Hub		
4	C333805A1	1	Cover	MTR COV,LS 5280149 FOR 4H72	
5	……	2	Screw	M5×8, BN5950	
6	C333805A3	1	Fan	MTR FAN,LS 5106760 FOR 4H72	
7	C333805A7	1	Brake Sealing Kit	KT,LS 4146668 BRK SEALING FOR 4H72	
8	……	1	Seal	VLS-30	
9	……	3	Sealing washer	D8.6×13×1	
10	……	1	Plug		
11	……	1	Round sealing ring	156×2, NM910	

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9 Spare parts

Item	Part no.	Quantity	Description	Specification	Remark
12	……	2	Retaining ring	35×1.5, DIN 471	
13	A70070165	1	Bearing kit		
14	……	2	Bearing shim	79×89×0.6	
15	……	1	Retaining ring	110×4, DIN 472	
16	……	1	Rolling bearing	6310-2Z, DIN 625	
17	……	1	Retaining ring	50×2, DIN 471	
18	……	1	Shaft seal	AS49×72×8, DIN 3760	
19	……	1	Round sealing ring	95×2, NB70	
20	……	1	Rolling bearing	6308-2RS-PRE, DIN 625	
21	A2727003650	1	Gear motor screws		
22	……	4	Screw	M12×35, ISO 4762	
23	……	4	Safety washer	S12	
24	C333805A5	1	Terminal box kit	KT,LS 5241451 MTR TRMNL BOX FOR 4H72	

1) Please state operating voltage, frequency and wire rope hoist type
2) Coil voltage / operating voltage motor
3) Only replaceable at Z≤14

LS Open Loop Vector Motor 4H42, 4H71, 4H72 Manual Supplement

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