# **DualLift GmbH**

Original Operating and Installation Instructions DualLift Manriding hoists DualLift Material Hoists DualLift OSL / ISL Safety Devices



These operating instructions are to be kept available for users at all times! Last updated: January 2022

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# **Revision History**

Date	Chapter	Comment
2017-03	4.6.9	input parameters of current monitoring relay updated
	6.1	table columns renamed, nominal diameter updated
	11.1.1	rope change requirements updated
2017-08	4.8	text added and figures actualised
	6.1	rope diameter of Tractel rope corrected
	11.1.1	rope change criterion of Tractel rope changed
		remarks regarding rope diameter measurement added
	11.2	reason for annual inspection added
	11.3	reason for general overhaul added
	12	remarks regarding product disposal added
2018-02	6.1	rope color lines added
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	6.1, 6.2	- table ropes updated
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	11.1; 11.5	
2019-05	4.5; 6.2	Payload, max. rope length SP408 updated
	11; 11.3	Maintenance instruction updated (General Overhaul service)
2019-08	4.4; 4.5;	SP408CE9/18 hoist added, VFD Hoists added
	9.5.1	Self-locking at manual descent
	<b>.</b> .	Back cover – managers updated
2019-10	Several	Hoist type SP508 added
2019-12	4.5	ASME content updated
2019-12	Appendix	CE Declaration OSL CCV updated (12.12.19)
2021-06	Several	Updates for new type approval
2022-01	11	Service intervals updated

# Notes on these Operating and Installation Instructions

DualLift GmbH owns the copyright to these operating and installation instructions.

Technical changes may take place at any time. The system operator should regularly ask DualLift GmbH to inform them of any changes that take/have taken place. Users of the system must have read and understood these operating instructions and potential customer specific supplements and addons. The latest maintenance instructions are to be requested from DualLift GmbH prior to performing any maintenance.

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#### 1.1 Terms and Abbreviations

**Systems** refer to facilities into which the components described in these operating instructions are installed, e.g. service cabins, suspended access equipment, material handling equipment, etc.

**(Systems') manufacturer** (of suspended access equipment in terms of the EC Machinery Directive) refers to the entity that assembles a manriding hoisting device from individual components.

The system operator is to appoint a **supervisor** who is responsible for the correct operation of the system on site. The supervisor is also authorized to issue instructions.

The **operator** is an individual appointed by the system operator who has received instructions concerning the tasks entrusted to him and the potential hazards of incorrect operation. The operator's knowledge and practical experience puts him in a position to perform operations safely using the requisite information. If the work is performed using SAE, this person must be appropriately trained in working at heights.

The system operator is the person/company responsible for correct operation.

The **cold climate version (CCV)** of a system can be operated at temperatures of up to -35°C.

#### SAE - Suspended Access Equipment

**Users** are operators and manufacturers

Personnel Access Equipment (PAE) is part of an SAE system that lifts persons and loads.

A **qualified person** is an appointed and appropriately trained person whose knowledge and practical experience puts them in the position to be able to perform specific work safely based on the requisite instructions. The qualified person must be familiar with the relevant national industrial safety regulations, accident prevention regulations, guidelines and generally accepted rules of engineering to the extent that they can appraise the safe working condition of the machine.

**Temporary Suspended Access Equipment (TSAE)** is SAE mounted onto a building or structure for a temporary period.

A **VFD hoist** is equipped with a control unit, which is equipped with a variable frequency drive.

#### **1.2 Notes for Manufacturers**

DualLift manriding hoists and material hoists and their associated safety devices and accessory parts are designed for Group A3 SAE constructions and tested for safety in accordance with the specifications of type M4 SAE.

#### 1.2.1 Note for Manufacturers of Suspended Personnel Access Equipment

Manufacturers who install DualLift manriding hoists and/or DualLift safety devices into variable-height access equipment such as service lifts, platforms, cradles or work seats, are obliged to include all the instructions for safe assembly and operation in this manual at the appropriate points in their own instructions for personnel suspended access equipment! Simply including this instruction manual in delivery does not meet the requirements of the EC Machinery Directive and the relevant standards!

Equipment used for lifting persons or persons and goods that are subject to Annex IV No. 17 of Directive 2006/42/EC, must be subjected to a conformity assessment procedure in accordance with Article 12, Sections 3 or 4 of Directive 2006/42/EC by the manufacturer of the entire system.

#### 1.2.2 Note for Manufacturers of Material Handling Equipment

Manufacturers that install DualLift material hoists and/or DualLift safety devices into systems, such as material hoists, assembly aids or cranes, are obliged to include all the instructions concerning safe assembly and operation in these operating instructions at the appropriate points in their own system instructions!

Simply including these operating instructions in delivery does not meet the requirements of the EC Machinery Directive and the relevant standards!

# **1.3 Explanation of the Symbols Used in these Operating Instructions**

Symbol	Meaning of the Symbol
ĺ	Important information on using the equipment
ф	Danger of material damage to the hoist caused by a hazardous situation
	Danger of injury or material damage caused by a hazardous situation
A	Danger of injury or death due to high voltage
STOP	Danger of injury or death

# 2 Important Safety Regulations

- a) The installation and maintenance of DualLift manriding hoists and material hoists or DualLift safety devices is only allowed to be carried out by persons who are familiar with the equipment and who the system operator has entrusted with its installation and maintenance.
- b) These persons must be familiar with the relevant accident prevention regulations, e.g. "Hoists, Lifting and Hoisting Equipment) (DGUV Regulation 54), "Safety requirements of suspended access equipment (EN 1808)" or for material hoists, "Cranes - Power driven winches and hoists (DIN EN 14492-1)" and have received appropriate training and read and understood the operating and installation instructions created by the manufacturer.
- c) If more than one person is entrusted with installation and/or maintenance, the manufacturer of the suspended access equipment in accordance with EN 1808/a material-handling system must appoint a supervisor who is authorized to issue instructions.
- d) DualLift manriding hoists and safety devices are designed for installation into "suspended access equipment" only, in accordance with EN 1808, and are approved exclusively for this purpose. All other forms of use need to be agreed with the manufacturer and, where applicable, with the regulatory authorities.
- e) When working at heights, falling objects may cause hazards, and involves the risk of persons falling. There is also a risk of getting caught between the building structure and carriage. The manufacturer is to take appropriate measures to prevent these hazards.
- f) DualLift material hoists are designed for material handling only and are exclusively approved for this purpose. All other forms of use need to be agreed with the manufacturer and, where applicable, with the regulatory authorities.
- g) DualLift manriding hoists and material hoists and DualLift safety devices are not suitable for the following applications:
  - Operation in difficult and exceptional circumstances, such as extreme weather conditions, corrosive surroundings and in the direct area of influence of strong magnetic fields
  - In explosive environments and close to live electrical overhead lines
  - Transporting passengers from one level to another
  - Handling loads that could result in dangerous situations arising (e.g. molten metal, acids/bases, radioactive substances)
  - On work platforms suspended from cranes
  - For silo entry equipment
  - For SAE designed for underground installation
  - For SAE to be used in shafts
- h) The use of DualLift manriding hoists and material hoists or DualLift safety devices is only allowed to take place in ambient temperatures of between -30°C and +70°C. The minimum permitted temperature can be reduced to -35°C if a special CCV model is used.
- i) Prior to commencing installation, all parts are to be checked for completeness and ensured they are free from errors or defects.
- j) Only DualLift manriding hoists and material hoists and DualLift safety devices, ropes, electrical wire ropes and slings that are in a perfect condition may be used.
- k) Only wire ropes approved by DualLift that are in a proper, torsion-free condition may be used.
- I) (removed)

- m) DualLift manriding hoists and material hoists and DualLift safety devices are only allowed to be attached to the mounting holes provided for this purpose.
- n) DualLift manriding hoists and material hoists or DualLift safety devices need to be attached in such a way that the support or safety rope under a load is vertical from all directions when it enters and exits.
- o) In addition to the DualLift hoist, the suspended access equipment should also be fitted with a safety device (e.g. a DualLift safety device including the associated rope, see Section 5).
- p) Any excessive loading of DualLift manriding hoists and material hoists and DualLift safety devices is prohibited.
- q) The manufacturer of the suspended access equipment/material handling system is responsible for installing the limit switches (Section 4.6.6).
- r) Electrical connection of DualLift manriding hoists and material hoists and electrical accessories needs to be carried out by qualified electricians in accordance with DIN EN 60204-1 and -32. Inspections, tests, checks or repairs to the electrical system need to be performed by qualified electricians or a hoist workshop authorized by the manufacturer.
- s) All other inspections, tests, checks or repairs must be performed by DualLift GmbH or a workshop authorized by DualLift GmbH.
- t) DualLift hoists with a control unit fitted directly to the hoist may only be used for temporary access systems, because they only have <u>one</u> input for the limit switch UP.
- u) DualLift equipment is to be stored indoors at all times. Long-term storage can take place at ambient temperatures between -40°C and +70°C. Temperature fluctuations above 30°C over the course of one day are to be avoided. The equipment is also not allowed to be packed airtight and the relative humidity is not allowed to exceed a value of 60%. Protection against dust and dirt must be guaranteed.
- v) During longer periods of standstill or storage, the motor brake may become corroded by salty air (e.g. near the coast) or in rooms containing corrosive vapors. As a result of this, the functionality of the hoist cannot be guaranteed. Use and storage under such conditions is therefore not permitted.
- w) Using the products described in these operating instructions under the permanent influence of the weather (rain, dust, temperature fluctuations (see Section u), etc.) requires the prior written agreement of DualLift GmbH.

# 3 Warranty and Liability

The DualLift terms and conditions are applied. Claims are excluded, if based on at least one of the following reasons.

- Improper use of the product
- Improper assembling, commissioning, operating or service of the product
- Using the Product with defective Safety Equipment
- Non-observing the Notes regarding Transportation, Storing Operating and service.
- Unauthorized changes at the product
- Unauthorized changes of the product properties
- Insufficient observation of wear parts
- Usage of inadequate ropes
- Improper repairs
- Disaster events caused by external forces or force majeure
- Using non-approved excipients
- Exceeding the maximum permitted rope length (refer to chapter 6.2)

# 4 Description of the DualLift Hoist

#### 4.1 Intended Use

DualLift type SP408, SP508, P508, SP608, SP609, P809 and P1010 manriding hoists (P-hoists) are electrical hoists designed exclusively for lifting and lowering "suspended access equipment" in accordance with EN 1808. Type M508, M809, M1009 and M1310 DualLift material hoists (M-hoists) are electrical hoists designed for lifting and lowering loads in accordance with DIN EN 14492–1.



To ensure trouble-free and safe working with DualLift hoists, the hoists and safety devices (Section 5) are only permitted to be used with suitable rope (Section 6) that has been released and approved by DualLift GmbH. Unapproved ropes can lead to a loss in traction or rope breakage and can damage the hoist.

Equipment used for lifting persons or persons and goods that are subject to Annex IV No. 17 of Directive 2006/42/EC must be subjected to a conformity assessment procedure by the manufacturer of the entire system in accordance with Article 12, Sections 3 or 4 of Directive 2006/42/EC.

Intended use includes the compliance with all instructions and warnings stated in these operating instructions. DualLift GmbH accepts no liability for damage caused by improper use (also see Section 7.4 "Foreseeable Misapplications").

#### Notification of Residual Risks

A possibility of residual risks exists, which DualLift GmbH is incapable of covering in the construction design. General residual risks when operating manriding hoists and material hoists can never be ruled out. For this reason, only appropriately trained persons (operators) should be assigned to operate the hoists. If no sufficient experience is available in handling and operating DualLift hoists or safety devices, a training course on handling the equipment needs to be completed at DualLift GmbH. These are offered on a continuous basis.

#### 4.2 Components and Operating Elements

<u>Hoist</u>

- Wire rope drive
- 1b) Motor

a)

- 1c) Gear mechanism
- 1d) Control unit connection cable
- 1e) Control box/Terminal box
- 1f) Hand lever for manual brake venting
- 1g) Operating hours counter
- 2a) Upward movement button
- 2b) Selection switch for the hoists
- 2c) EMERGENCY stop button
- 2d) Plug connection to the hoist
- 2e) Connector to the limit switch
- 2f) Mains connection
- 2g) Overload buzzer
- 2h) Emergency stop warning light

Pendant station/Radio remote control (optional)

- 3a) Transmitter
- 3b) Radio receiver
- 3c) Connection to the control unit
- Control unit (optional)
  - 2i) Downward movement button
  - 2k) Connection for the pendant station
  - 2m) Connections for external sensors (optional)
  - 2o) Socket (optional)
  - 2p) Bypass rope-end detection (option)
  - 2q) Speed selection switch with under voltage signal lamp (VFD option)
  - 2r) Fault warning light





Figure 1: DualLift hoist without control unit



Figure 3: DualLift central control unit

Figure 2: DualLift hoist control unit



Figure 4: pendant control and remote control

#### Attention:

Customer specific components are not considered here. Those are described in customer specific attachment.

#### 4.3 Functioning of the Hoist

DualLift P- and M- hoists are electrically operated hoists for personnel and material transport.

The wire rope is not stored in the DualLift hoist, but transported through it at a constant speed by the hoist. For this reason, the wire rope length, i.e. the lifting height, is virtually unlimited (see Section 6.2) length).

All DualLift manriding hoists have an overload detection device in accordance with EN 1808 built into the hoist. Type M508, M808 and M1009 DualLift hoists can also have an overload detection device integrated as an option.

#### 4.4 Technical Data

(pictures may differ slightly - subject to change without notice)

Overview of the dimensions for manriding hoists and material hoists<sup>1</sup>



Figure 5: SP408/508 with control unit







Figure 6: P508-1010/SP608 with terminal box

Figure 7: P508-1010/SP608 with control unit

D: 630 mm

E: 352 mm

F: 268 mm

weight<sup>2</sup> [kg]

45

44

47

44

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38 45

54

44 47

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65

			with	out contro	ol unit		wit	vith control unit		
	S	A:470 mm	A:550 mm	A: 540 mm	A: 570 mm	A: 635 mm	D: 505 mm	D: 568 mm	D:	
	usio	B:255 mm	B:300 mm	B: 300 mm	B: 300 mm	B: 300 mm	E: 340 mm	E: 337 mm	E:	
	dime	C:230 mm	C:265 mm	C: 266 mm	C: 266 mm	C: 246 mm	F: 257 mm	F: 259 mm	F:	
CE-approval	UL/CSA							<u> </u>		
SP408 CE9	SP408 ULCS10								Γ	
SP408 CE18	SP408 ULCS20								-	
SP408CE9/18	SP508 I II CS10		<u> </u>						-	
SP508 CE18	SP508 ULCS20									
SP508CE9/18										
SP608 CE9	SP608 ULCS10									
SP609 CE9 SP608 CE18	SP609 ULCS10 SP608 ULCS20									
SP609 CE18	SP609 ULCS20									
P508 CE9	P508 ULCS10									
P508 CE18	P508 ULCS20									
P509 CE9	P509 ULCS10									
P509 CE18	P509 ULCS20									
P809 CE9	P809 ULCS10									
P809 CE18	P809 ULCS20									
P1010 CE9	P1010 ULCS10									
P1010 CE18	P1010 ULCS20									
P1010 CE9/18	P1010 ULCS10/20									
			•							
M508 CE9	M508 ULCS10									
M508 CE18	M508 ULCS20									
M508 CE9/18	M508 ULCS10/20									
M808 CE9	M808 ULCS10									
M808 CE18	M808 ULCS20									
M1009 CE9	M1009 ULCS10									
M1009 CE18	M1009 ULCS20		1							
M1009 CE9/18	M1009 ULCS10/20		1						F	
M1310 CE9/18	M1310 ULCS10/20		1						t	

Manriding hoists

Material hoists

<sup>&</sup>lt;sup>1</sup>maximum dimensions

 $<sup>^{\</sup>rm 2}$  Hoists with control unit are approximately 8kg heavier than stated.

	CE Approval/ ULCS Approval	CE payload	UL payload	CSA payload	Wire rope diameter	CE speed	UL speed	CSA speed	CE voltage (50Hz)	UL/CS voltage (60Hz)	Power consumption (50 Hz)	Power output (50 Hz)	A-weighted emission sound pressure level at 1m distance
		[kg]	[lbs]	[kg]	[mm]	[m/min]	[fpm]	[m/min]	[V]	[V]	[A]	[kW]	dB(A)
	SP408 CE9 SP408 ULCS10	400	850	400	8	9	35	10	400	460	2,1	0,75	75
	SP408 CE18 SP408 ULCS20	400	850	400	8	18	70	20	400	460	3,5	1,5	75
	SP408 CE9/18 SP408 ULCS10/20	400	850	400	8	9/18	35/70	10/20	400	460	2,8/5,0	0,9/1,8	75
	SP508 CE9	500			8	9			400		2,1	0,75	75
	SP508 CE18	500			8	18			400		3,5	1,5	75
	SP508 CE9/18	500			8	9/18			400		2,8/5,0	0,9/1,8	75
	SP608 CE9 SP608 ULCS10	600	1100	500	8	9	35	10	400	460	2,8	1,1	75
	SP608 CE18 SP608 ULCS20	600	1100	500	8	18	70	20	400	460	4,5	2,2	75
Ś	SP609 CE9 SP609 ULCS10	600	1100	500	9	9	35	10	400	460	2,8	1,1	75
oist	SP609 CE18 SP609 ULCS20	600	1100	500	9	18	70	20	400	460	4,5	2,2	75
Ĕ	P508 CE9 P508 ULCS10	600	1100	500	8	9	35	10	400	460	3,2	1,1	75
bu	P508 CE18 P508 ULCS20	600	1100	500	8	18	70	20	400	460	4,5	2,2	75
<u>io</u>	P508 CE18 *	560	-	-	8	20	-	-	400	400	5,5	2,5	75
nr	P508 ULCS10/20	-	1100	500	8	-	35/70	10/20	-	460	4,8/8,5	2,0 / 3,6	75
ma	P509 CE9 P509 ULCS10	600	1100	500	9	9	35	10	400	460	3,2	1,1	75
	P509 CE18 P509 ULCS20	600	1100	500	9	18	70	20	400	460	4,5	2,2	75
	P809 CE9 P809 ULCS10	800	1400	650	9	9	35	10	400	460	4,5	1,8	75
	P809 CE18 P809 ULCS20	800	1400	650	9	18	70	20	400	460	8,3	3,6	75
	P1010 CE9 P1010 CE9 VFD P1010 ULCS10	1000	1750	800	10	9 5-9	35	10	400V 3~ 230V 1~	460	4,5 16	1,8 2,2	75
	P1010 CE18 P1010 CE18 VFD P1010 CE18 VFD P1010 ULCS20	1000	1750	800	10	18 5-18 5-18 18	70	20	400V 3~ 400V 3~ 230V 3~	460	8,3	3,6 3,6 3,6	75
	P1010 CE9/18 P1010 ULCS 10/20	1000	1750	800	10	9/18	35/70	10/20	400	460	4,8/8,5	2,0/3,6	75
	M508 CE9	600	1200	600	8	9	35	10	400	460	3,2	1,1	75
ts	M508 CE18	600	1200	600	8	18	70	20	400	460	4,5	2,2	75
ois	M508 CE9/18	600	1200	600	8	9/18	35/70	10/20	400	460	4,8/8,5	2,0/3,6	75
Å	M808 CE9	800	1600	800	8	9	35	10	400	460	4,5	1,8	75
a	M808 CE18	800	1600	800	8	18	70	20	400	460	8,3	3,6	75
eri	M1009 CE9	980	2000	980	9	9	35	10	400	460	4,5	1,8	75
ati	M1009 CE18	980	2000	980	9	18	70	20	400	460	8,3	3,6	75
Ε	M1009 CE9/18	980	2000	980	9	9/18	35/70	10/20	400	460	4,8/8,5	2,0/3,6	75
	M1310 CE9/18	1300	2600	1300	10	9/18	35/70	10/20	400	460	5,0/10,5	2,2/4,5	75

# manriding hoists

#### 4.5 Technical Data Sheet

#### 4.6 Safety Devices

The following components exist to ensure the safety of DualLift hoists:

<u>Component</u>	Application Area	Supplied By	<u>Details in</u> Section		
EMERGENCY stop	control unit	Equipment manufacturer*	4.6.1		
Motor brake	hoist	DualLift GmbH	4.6.2		
Manual descent	hoist	DualLift GmbH	4.6.3		
Hand wheel	hoist	DualLift GmbH	4.6.4		
Machanical averland	hoist	DualLift GmbH	4.6.5		
device	control unit	Equipment manufacturer*	4.6.5		
Hoist limit switch	external component	Equipment manufacturer*	4.6.6		
Phase sequence monitor	control unit	Equipment manufacturer*	4.6.7		
Power surge protection	mains voltage	Equipment manufacturer	4.6.8		
Electronic lifting power limiter	control unit	Equipment manufacturer*	4.6.9		
	Hoist	DualLift GmbH	4.6.10		
Inductive rope-cut-off	control unit	Equipment manufacturer*	4.6.10		

\* Can be performed by DualLift GmbH at the request of the customer following consultation (in parts) (e.g. by using a control hoist)

The manufacturer of a control system for an SAE needs to be aware of the requirements regarding the Performance Level according to Table 14 of the EN 1808.

#### 4.6.1 EMERGENCY Stop

Pressing the emergency stop button shuts down the entire control unit in the event of an emergency. The button can be released again by rotating it in the direction of the arrow and pulling it outwards.

#### 4.6.2 Motor Brake

All DualLift hoists are fitted with an electro-magnetically vented spring pressure brake which closes automatically when you release the UP and DOWN buttons and in the event of a power failure.

#### 4.6.3 Manual Descent

In an emergency, for example in the case of fire or a power failure, the load can be lowered manually. Also see Section 9.5.1.

#### 4.6.4 Hand Wheel

In emergencies, such as in the event of a power failure, the hoist can be lifted manually. See Section 9.5.2.

#### 4.6.5 Mechanical Overload Device

The mechanical overload device is integrated into all manriding hoists and in Material Hoist type M1310 (in all other material hoists it is optional). In the event of an overload, a micro switch is mechanically actuated, which makes it necessary to cancel any UPWARD movement. Only downward movement is then allowed. At the same time, a warning signal (buzzer) should trigger, which only shuts off once the cause of the overload has been rectified. Pressing the emergency stop button and then unlocking it should reactivate the upward movement if the load has been sufficiently reduced in the meantime. With VFD

hoists, the emergency stop button must be kept pressed until the warning signal subsides (this may take several seconds).

#### 4.6.6 Hoist Limit Switch

Depending on the area of application of the DualLift hoist, different hoist limit switches need to be provided for. The following table shows which limit switches are needed for which application:

	limit switch UP	Lower limit switch	Lift emergency limit switch
BMU	Required	Required	Required
TSAE	Required	Required*	Optional

\*Not required if the TSAE is mounted on the ground

The system manufacturer needs to mount at least one limit switch at the top of the support frame or mounting bracket on a PAE for each DualLift hoist, which immediately stops the upward movement of the PAE when it is tripped.

A stop plate which trips the limit switch UP needs be mounted on the support rope below the rope crimping for this purpose. The distance from the rope suspension point must be at least 1.0 m.

When dangerous protruding components are attached to the building to be traversed, the stop plate needs to be positioned as far down as possible so that the PAE always stops on time.

Furthermore, a "Lower" limit switch needs to be installed for BMUs and TSAEs which descend from their starting point, which stops the downward travel before the rope end switch(es) (see Section 4.6.10) are activated.

An emergency limit switch for lifting is only required for BMUs. This must stop both the upward and downward movement, thus preventing the uppermost point on the support rope being approached. Lifting activities can only be resumed once a qualified person has undertaken corrective measures.

#### 4.6.7 Phase Sequence Monitoring

DualLift contactor control units have a built-in phase monitor, which prevents operation when an incorrect phase sequence occurs, since an incorrect assignment of the UP/DOWN buttons would override the function of the limit switches and the overload device. Each control unit in which an incorrect phase sequence leads to a change in direction needs to be equipped with a phase sequence monitor to prevent this reversal happening.

#### 4.6.8 Power Surge Protection

The main electric power supply, which is used to operate the hoist(s), needs to be protected by overcurrent protection devices and a 30-mA residual current circuit breaker.

#### 4.6.9 Electronic Lifting Power Limiter

Type P809 CE9, P809 CE18, P1010 CE9 and P1010 CE9/18 hoists need to be equipped with an additional, electronic lifting power limiter, which ensures that the hoist shuts down when at the most 2.5 times the rated load is reached.

Controls units supplied by DualLift GmbH realize this by using e.g. a type CM-SRS.22S current transfer relay from the company ABB STOTZ-KONTAKT GmbH, which monitors the current drawn by the motor. If after a delay of 0.5 seconds, the motor current is greater than

9 A (for CE9 and P1010CE9/18 hoists) or

15 A (for CE18 hoists),

the monitoring relay disconnects the power supply. The downshift threshold (hysteresis) is 3%.

#### 4.6.10 Inductive Rope End detection (optional)

Protection against the rope unintentionally exiting the hoist is available as an option for all rope hoists equipped with a control unit. An inductive proximity switch checks for the presence of the rope in the rope outlet pipe. Downward movement is interrupted when the rope end passes the sensor.

The use of a rope-end-cut-off is always necessary when the PAE or material transport device is descended from the initial position (e.g. hoist units on roofs) and the rope length is insufficient to reach solid ground.

To be able to extend the rope out of the hoist, the control unit needs to be fitted with an appropriate bridging function. Simultaneously pressing the bridging switch and the downward movement button allows the drive rope to be extended out of the hoist.

#### 4.7 Scope of Delivery

The scope of delivery may vary depending on the order specifications. The following list details the objects contained in each delivery:

- Wire rope hoist in accordance with the order specifications
- Original operating and installation instructions
- Connection diagram (hoists without control units) / circuit diagram (hoists with control units)
- Inspection certificates
- Wire rope certificates (if ropes are in scope of delivery)
- CE declaration of conformity

If a delivery does not contain the items listed, please contact DualLift GmbH.

Optionally, the delivery can contain controls, operating elements and the accessories described in Section 7.5 as well as customized accessories.

#### 4.8 Name Plates

The name plates contain the following information about the DualLift Products:

- product type
- rated load
- rope diameter to use (rounded)
- serial number
- product date (month/year)
- certification
- traveling speed (hoists only)
- power supply (hoists only)
- tripping speed (OSL only)

The name plates displayed in Figure 8, Figure 9, and Figure 10 are exemplary. The name plate of your specific product might therefore differ.





Nutzlast Capacity charge utile 1.000 kg Ø10mm Drahtseil nur von DuaiLift freigegebenes Se Betriebsanleitun nden, sieh Wire Rope able d'acie wed Rope only, refer to Manual! Use DualLift acc Serial-No. CE Vor Gebrauch Betriebsanleitung lesen! Read Manual before use! Lecture instruction d'emploi avant usage Hersteller / Manufacturer / Fabricant: DualLift DualLift GmbH Edisonstrasse 22 27711 Osterholz Jz-Scharmbeck Deutschland / Germany / Allemagne

Figure 9: Hoist model plate

Figure 10: ISL model plate

# 5 DualLift Safety Devices

#### 5.1 Intended Use

DualLift model series ISL508, ISL809, ISL1010, OSL508, OSL809 and OSL1010 safety devices comprise rope capturing devices for lifting and lowering "suspended access equipment" in accordance with BS EN 1808 in combination with an original DualLift rope.

Every hoistable PAE always needs to be equipped with a rope capturing device in accordance with BS EN 1808, which secures the load on a safety rope, separate to the support rope, to prevent it from falling. Depending on the application, DualLift type OSL or ISL safety devices can be used for this purpose. DualLift safety devices are generally attached directly to the PAE, and, for example, moves up and down a rope hanging in front of a building facade.

The use of rope approved by DualLift GmbH is mandatory for safe, problem-free working with DualLift safety devices.

Service lifts and lifts, etc., which are operated using at least two hoists, need be secured against impermissible tilting. Type ISL safety devices are suitable for this purpose, which detect an inclined position on the PAE even when unpowered.

The following installation scenarios are not permitted:

- Using the device to secure a load that exceeds the specified operating load for the safety devices
- Using the safety devices on non-tensioned wire ropes (for information on tensioning wire ropes see Section 8.1 and 8.6.2)
- Using a safety device on the drive rope if this is the only safety device used

#### 5.2 Overspeed Safety Lock (OSL)

The OSL is a safety device for detecting overspeed. All OSLs are identical in size and only differ in terms of the pulleys and jaws that are adjusted to the rope diameter and the permissible rated load.

#### 5.2.1 Operating Principle

On the OSL, a follower roller continually scans the speed of the continuous safety rope.

If the maximum permissible speed of 30 m/min is exceeded, the clamping mechanism closes automatically, which then closes tightly around the safety rope.

The system can only be manually reactivated with the hand lever once the safety rope has been discharged (e.g. by the hoist briefly ascending).

The OSL secures the PAE against:

- 1) Breakage on the support wire rope
- 2) The hoist failing
- 3) Overspeed because of catching/touching down during downward travel when the support wire rope is no longer taut

If the load capacity of the hoist has been increased in line with the pulley principle, the safety wire rope on the OSL also needs to be reeved to ensure the same overall load capacity as the hoist.

#### 5.2.2 Components and Operating Elements

- a. Tripping lever (LOCK)
- b. Release lever (UNLOCK)
- c. Wire rope inlet
- d. Wire rope outlet
- e. Mounting holes Ø 12.5 mm
- f. Sight glass



Figure 11: DualLift OSL components

b

The following equipment exist to ensure the safety of the OSL:

#### A) Tripping lever

Rotating the tripping lever to the right (anti-clockwise) manually actuates the clamping mechanism to stop downward movement (e.g. if the hoist motor fails or starts to creep) or to additionally secure the PAE.

To subsequently unlock the clamping mechanism, you need to rotate the release lever a quarter turn to the left (anti-clockwise) until the mechanism clicks into the open position. Quite a large amount of force needs to be applied to do this, because it is pre-tensioned by a strong spring.

#### B) Sight glass for checking the movement of the centrifugal weight

The round sight glasses on the front and bottom of the OSL (see Figure 11) serve to check the movement of the centrifugal weight, which is to be checked every time the PAE moves. If the centrifugal weight fails to rotate, stop the PAE







С

immediately and send the OSL to DualLift GmbH for inspection. This is the responsibility of the system operator.

OSL (EN 1808)	OSL (ASME A 17.7)	CE payload	Payload CSA (UL)	Rope nominal diameter		Maximum nominal rope speed	Tripping speed	Tripping angle	Weight without wire rope	Din	nensi	ons
DualLift equipment	DualLift equipment type	kg	kg (lbs)	mm	n	m/min		0	kg	Height mm	Width mm	Depth mm
туре			500		CE	ASME						
OSL508 CE	OSL508 ULCS	600	(1100)	8	18	20	30	-	7	317	139	115
OSL809 CE	OSL809 ULCS	800	650 (1400)	9	18	20	30	-	7	317	139	115
OSL1010 CE	OSL1010 ULCS	1.000	800 (1750)	10	18	20	30	-	7	317	139	115

#### 5.2.3 Technical Data

#### 5.2.4 Options

#### A) With electrical switch contact

The OSL is also available with an electric switch contact (the model description is appended with an "E", for example, OSL508 CE-E). Tripping the OSL can be integrated into a control unit with this switch contact to switch off the hoist motor.

The standard version of the OSL with an electric switch contact is delivered fitted with a type CA 3 LS plug from Belden Deutschland GmbH. Figure 12 shows the corresponding wiring diagram. Delivery in a different design is possible following consultation with DualLift GmbH. A different connection configuration can be sourced from the wiring diagram included in delivery.



Figure 12: OSL default wiring diagram with electrical shutdown

#### B) Cold Climate Version (CCV)

The OSL is available in a special CCV (Cold Climate Version), therefore making it suitable for ambient temperatures to -35°C. The CCV OSL is equipped with an insulated silicone heating mat (230 V, 170W) and a temperature sensor (PT100) (see Figure 13). A separate heatable control unit is required for the CCV OSL, which first releases the system once the OSL has reached a specific preheating temperature. The brake rectifier is installed in the control unit. Please consult DualLift GmbH on more information on this subject.



The CCV OSL is only allowed to be used in combination with a special control unit, which also meets the requirements of the extended temperature range.

#### 5.3 Inclination Safety Lock (ISL)

The ISL is a safety device that is suitable for detecting inclinations (tilt) and slack ropes.

#### 5.3.1 Operating Principle

While the safety rope passes through the clamping mechanism in the ISL508, ISL809 and ISL1010, the probe arm rests supported on the loaded support rope, which keeps it in the 'open' position.

The ISL must be securely attached to the platform, so that if the platform tilts the clamping mechanism closes automatically.

The ISL508, ISL 809 and ISL1010 secure the PAE against:

- 1) Breakage on the support rope
- 2) The hoist failing
- 3) Catching/Touching down during downward travel leading to the support wire rope no longer being taut
- 4) Inclines greater than the maximum allowable 14° (on work platforms with hoists mounted at the ends)

#### 5.3.2 Components and Operating Elements

- a) Follower roller
- b) Probe arm, spring-loaded
- c) Safety wire rope
- d) Support wire rope for the hoist
- e) Wire rope inlet
- f) Wire rope outlet
- g) Mounting holes (Ø 12.5mm)



Figure 14: DualLift ISL components

#### 5.3.3 Technical Data

ISL (EN 1808)	ISL (ASME A17.7)	CE payload	Payload CSA (UL)	Nominal rope diameter		Maximum nominal rope speed	Tripping speed	Tripping angle	Weight without wire rope	Dim	ensio	ons
DualLift Equipment type	DualLift equipment type	kg	kg (lbs)	mm	r	n/min	m/min	o	kg	Height mm	Width mm	Depth mm
					CE	ASME						
ISL508 CE	ISL508 ULCS	600	-	8	18	20	-	3-8°	6	350	238	90
ISL809 CE	ISL809 ULCS	800	-	9	18	20	-	3-8°	6	350	238	90
ISL1010 CE	ISL1010 ULCS	1,000	-	10	18	20	-	3-8°	6	350	238	90

# 6 Wire Ropes

Hoists and safety devices are only allowed to be operated using the wire ropes approved by DualLift GmbH listed in Section 6.1.

#### 6.1 Rope Types

The following table shows all permissible rope types that can be used in combination with DualLift hoists. Use of a rope with a diameter that is too large or too small (for permitted values see Section 11.1.1) leads to an impairment of the hoist function and can result in the load falling from a height.

DualLift type series	Rope	Nominal Rope Ø	Manufacturer	<b>Коре Туре</b>	Rope tag (colored line)
SP408/ SP508/P508		8.4 mm	Pfeifer-Drako	5 x K19S SFC 1960 B sZ	blue
/ SP608 / M808 /	8	8.4 mm	DWH-Taurus	5 x K19S SFC 1960 B sZ	green
OSL508 / ISL508		8.4 mm	Vornbäumen	5 x K19S SFC 1960 B sZ	green
OSL508	8	8.3 mm	Tractel	5 x 19 - FE	red
P509 / P809 /		9.0 mm	Pfeifer-Drako	4 x K26WS SFC 2160 B sZ	blue
M1009 / OSL809 / ISL809	9	9.0 mm	DWH-Taurus	4 x K26WS SFC 1960 B sZ	green
SP609	9	9.0 mm	Pfeifer-Drako	4 x K26WS SFC 2160 B sZ	blue
D1010/M1210/		10.2 mm	Pfeifer-Drako	5 x K26WS SFC 2160 B sZ	blue
CSI 1010/191310/	10	10.2 mm	DWH-Taurus	5 x K26WS SFC 2160 B sZ	green
0321010/1321010		10.2 mm	Vornbäumen	5 x K26WS SFC 2160 B	green

#### 6.2 Maximum Wire Rope Length

The following table shows the maximum single wire rope lengths for operation with the respective hoists. For meeting the requirements regarding maximum permitted rope length, the system operator of the hoist/system is responsible!

Hoist type	WLL [kg] (EN1808)	nominal Ø	Manufacturer	MBF Rope [kN]	Specific wire rope weight [kg/m]	Maximum, single wire rope length
	400	0	Pfeifer-Drako	55.0	0.27	1.060 m
3F400 CE	400	0	DWH	56.8	0.31	1.000 m
	500	0	Pfeifer-Drako	55.0	0.27	690 m
3F300 CE	500	0	DWH	56.8	0.31	675 m
			Pfeifer-Drako	55.0	0.27	320 m
	600	8	DWH	56.8	0.31	350 m
3P008 CE			Vornbäumen	55.0	0.27	320 m
	600	0	Pfeifer-Drako	65.7	0.35	630 m
P309 CE	P309 CE 600	9	DWH	66.4	0.38	605 m
SP609 CE	600	9	Pfeifer-Drako	65.7	0.35	630 m
	800	0	Pfeifer-Drako	65.7	0.35	60 m
	000	9	DWH	66.4	0.38	75 m
		10	Pfeifer-Drako	86.0	0.41	180 m
P1010 CE	1.000		DWH	100.0	0.46	540 m
			Vornbäumen	86.0	0.40	185 m

#### Remark:

These exemplary results in the table above are valid for single rope length in case the full WLL of the Hoist is used. The specific weight of the rope is considered. – the adjustment of the overload device, rope tension weights and the weight of the hoist wasn't considered here.

In case the maximum WLL of the Suspended Access Equipment (SAE) is less than WLL of the hoist, this will lead to different maximum permitted rope length. In this case, the overload of the hoist must be adjusted accordingly.

The Manufacturer of the System must perform a separate calculation related to the specific application – according to the terms of the EN1808, chapter 6.7!

# 7 Examples of Applications and Foreseeable Misapplications

Several applications exist for DualLift hoists and safety devices. The following sections present a selection of some of these possibilities. DualLift GmbH will gladly assist you in configuring a corresponding application.

#### 7.1 Types of Suspension

Figure 15, Figure 16 and Figure 17 show three applications for DualLift hoists in schematic form. For the examples shown here, you should note that **additional type OSL safety devices are always required** if the hoist is to be used for transporting people.



Figure 15: 1-to-1 suspension

Figure 16: 1-to-1 suspension overhead

Figure 17: 2-to-1 suspension

Figure 18 shows a detailed illustration of 1-to-1 suspension overhead. The rope which exits the hoist is articulated downward by a rope pulley and held under tension by a rope tension weight. In addition, the hoist is fitted with a limit switch UP that stops any upward movement as soon as the end of the rope is reached. If the connection between the ceiling and the hoist should fail, the hoist is secured by an additional energy absorber. Since with 1-to-1 suspension overhead, control of the hoist over a pendant station cannot be guaranteed in some cases, it is also equipped with an additional remote control.



Figure 18: Overhead hoists with a variety of accessories

#### 7.2 Work Platforms

A typical example of an application for DualLift hoist and ISL safety devices are work platforms and facade lifts (BMU - Building Maintenance Units). The example illustrated in Figure 19 shows a work platform that can be moved along two drive ropes in a vertical direction. The work platform is secured against tilting and falling by two ISLs. Both hoists are connected to a central control unit, which drives the hoists.



Figure 19: Work platform with central control unit

#### 7.3 Stability and Working Positions

Figure 20 to Figure 22 show the positions in which the hoists can be stored and transported with adequate stability. If the hoist is integrated into a system, assembly and disassembly can be also be carried out in these positions. Basically, there is no position that can lead to damage to the hoist, provided this position is temporary. Nevertheless, it must be considered, that the motor fan cover may not be strained.

Operation of the hoist is only permitted in the positions shown in Figure 20 and Figure 22 and suspended as illustrated in Figure 18. If the hoist is operated in a standing or suspended

position, this can also take place at an inclination of 25° at all levels. The restrictions of Chapter 8.2.2 must be considered in addition.

A minimum distance of 20 cm from the ground and any sidewalls and other obstacles always needs to be maintained with regard to the wire rope outlet (also see Figure 25) to prevent the rope backing up. The cabinet door also needs to be left open for maintenance purposes on control unit hoists even after installation.



#### 7.4 Foreseeable Misapplications

DualLift GmbH provides no warranty, accepts no liability and the warranty becomes void in the event of physical injury or damage caused by the following misapplications of the hoists and safety devices:

- Improper use of the product and its related attachments and accessories
- Use of the product outside the operating range (e.g. overloading)
- Use of unauthorized, dirty, defective or worn out wire ropes
- Use of defective or unauthorized attachments and accessories
- Ignoring the safety notices listed in Section 2
- Use of non-original parts
- Conversion or changes to the devices supplied by DualLift GmbH
- Using the hoist/safety device after maintenance deadlines have been exceeded
- Improper installation, commissioning, operation and maintenance
- Manipulation of operating devices
- Improper or unauthorized repair
- Restarting operations after safety devices have been actuated without subsequent repair
- Use of the manual brake opening for downward movement (emergencies excepted, see Section 9.5)
- Introduction of the wire rope into the wire rope outlet instead of the wire rope inlet
- Improper handling (dragging the hoist along the floor, dropping the hoist)
- Blocking the wire rope outlet (see comments in Section 7.3)
- Using a material hoist to transport people
- Disregarding the maximum permitted rope length, see Chapter 6.2.

#### 7.5 Optional Accessories

DualLift GmbH offers a range of different accessories for DualLift wire rope hoists. We briefly introduce some of them in the following sections. Please find out more by consulting DualLift GmbH when configuring your system.

#### safety ropes need to be deflected. The figures in Section 7.1 illustrate examples of this. In

7.5.2 Pulleys

addition to the standard pulleys illustrated in Figure 23, rollers for two to four-ton load ranges

are also available. Some of these pulleys allow up to two wire ropes to be deflected.

7.5.1 Radio Remote Control

refer to the radio remote control manual supplied.

The DualLift control unit on the hoist is also available with radio remote control (see Figure 4). Operation takes place using a radio push-button. The suitability of the radio remote control is to be established by the manufacturer of the overall system in the context of the conformity assessment procedure in accordance with Article 12 of Directive 2006/42/EC. With suspended access equipment, the controls need to be located on the PAE. The controls must be secured against loss. For more details, please

#### 7.5.3 Emergency Limit Switch UP on the Hoist

Pulleys can be used for various applications where the drive and

In combination with an additional carrying handle, an emergency limit switch can be attached directly to the hoist so that the manufacturer does not have to supply one additionally.

#### 7.5.4 Adapters

A variety of adapters is available, so that the right connection can be made to the system into which the DualLift hoist is installed.

### 8 Commissioning the DualLift Hoist and Safety Devices

The manufacturer of the system is responsible for ensuring that all applicable regulations and national laws are met.

On PAEs equipped with two or more hoists, safety devices fitted with an inclination safety lock (ISL) must always be used.

On PAEs equipped with one hoist, it needs to be ensured that the OSL is accessible for manual operation in an emergency.

#### 8.1 Required Components

- a) DualLift man/material hoist(s) with sufficient payload capacity
- b) For transporting people: DualLift safety devices with at least the same payload capacity as the DualLift hoist(s)
- c) A sufficiently long wire rope, which is approved by DualLift GmbH, with a diameter that matches the corresponding hoist(s) and safety device(s), and a 10-kg wire rope weight on the drive and safety wire rope
- d) A sufficiently long connection cable
- e) Pulleys and cocks with a sufficient payload for redirecting/reeving the rope

Figure 23: 3t pulley

Figure 24: Emergency limit switch on the hoist



#### lapters

#### 8.2 Mounting the DualLift Hoist

DualLift hoists need to be attached to the system by either screwing in bolts through the holes provided, or by using load pins.

#### 8.2.1 Mounting Material

Type 408, 508, 509, 608, 609, 809 and 1010 DualLift manriding hoists and material hoists can be used with at least two M10 screws (use at least two of the four  $\emptyset$  10.5 mm holes which are not diagonal to each other!) and secured using self-locking nuts (see Figure 25 – Mounting using at least two M10 screws). The screws must be of sufficient length, i.e. they should never bear weight on the thread, but only on the shaft (if necessary, use longer screws with spacers).

The property class must be 8.8. Higher property classes are not permitted, as these types of screws tend to be brittle, particularly when galvanized.

Instead of M10 screws, bolts of at least the same strength can be used.

A 16-mm diameter load pin is supplied in the delivery with all hoists and can also be ordered from DualLift GmbH if it should get lost. This is needed for mounting the hoist through the hole illustrated in Figure 25.

Instead of the load pin a M16 Screw with shaft (grade 8.8) according to a public norm may be used to attach the Hoist. The shaft length shall be at least 60mm to prevent damaging the Gearbox while the screw is assembled. To tighten the Screw, a self-locking nut must be used. The Nut must be tightened with 40Nm. The Connection must be protected against loosening.

#### 8.2.2 Mounting the DualLift Hoist

The DualLift hoist is to be mounted in such a way that the support rope under a load is always vertical from all directions when it enters the hoist (see Figure 25)!

We recommend consulting DualLift GmbH when planning mounting the hoist.



Figure 25: Mounting the hoist, wire rope inlet and wire rope outlet



In any case, the structure for suspending the support and safety rope and the component to which the hoist and safety device are attached must demonstrate

the load capacity specified under BS EN 1808: 2015 Section 6 compared to the hoist and safety device payloads.

#### 8.3 Connecting the DualLift Hoist

Basically, there are three different ways of connecting and thus controlling DualLift hoists:

- Using a control unit developed by a manufacturer in consultation with DualLift GmbH
- Using an external central control unit provided by DualLift GmbH
- Using a control unit mounted onto the hoist by DualLift GmbH

#### 8.3.1 DualLift Control unit Directly on the Hoist

- 1) Insert the plug on the pendant station in the corresponding socket on the control unit.
- 2) Connecting the power supply should always be the last step! The instructions in Section 8.4 must always be observed here.

#### 8.3.2 DualLift Hoists with a Connection to a Central Control Unit

- 1) Insert the plug on the hoist(s) into the corresponding sockets(s) on the control unit and bolt the lock.
- 2) Insert the plug on the EMERGENCY limit switch(es) into the appropriate socket(s) on the control unit and tighten the screw.
- 3) Connect any further sensors present.
- 4) Connecting the power supply should always be the last step! The instructions in Section 8.4 must always be observed here.

#### 8.4 Power Supply

The manufacturer of the system is responsible for connecting DualLift manriding hoists and material hoists. The circuit diagrams supplied in delivery are always to be complied with when connecting the hoists.

When using a central control unit, the power supply to the hoists and the control is usually made via a 10-pin connector or according to customer requirements. This is pre-configured accordingly by DualLift GmbH or can be configured in accordance with customer requirements.

Electrical connection of the hoists is to take place in accordance with EN 60204-1/-32. Always unplug the power supply before opening the control unit.

 Always check that the power supply voltage and motor voltage match. Three-phase: Europe: 400V (3P+N+PE), 50 Hz USA/Canada: 460V (3P+N+PE), 60 Hz

with 16 A CEE plug

Some DualLift Controls don't rely on the neutral wire of the power supply. The proper function of the hoist does not state a proper power supply.

2) Always comply with the minimum cross-section figures for the supply cable in following table! Otherwise, correct operation of the hoist cannot be guaranteed, particularly when the distance to the mains supply/generator becomes larger.





			Minimu for cab	m cable o le length	cross section up to	on [mm²]
	DualLift Device		25 m	50 m	100 m	200 m
1x SP408 CE9 1x SP508 CE9		1x SM408 CE9 1x SM508 CE9	1,5	1,5	1,5	2,5
1x SP408 CE18 1x SP508 CE18 1x SP408 CE9/18 1x SP508 CE9/18		1x SM408 CE18 1x SM508 CE18 1x SM408 CE9/18 1x SM508 CE9/18	1,5	1,5	1,5	2,5
1x P508/P509 CE9 1x SP608/609 CE9	1x P508/P509 ULCS10	1x M508 CE9	1.5	1.5	1.5	2.5
2x P508/P509 CE9	2x P508/P509 ULCS10	2x M508 CE9	1.5	1.5	2.5	2.5
1x P508/P509 CE18 1x SP608/609 CE18	1x P508/P509 ULCS20	1x M508 CE18	1.5	1.5	2.5	2.5
2x P508/P509 CE18	2x P508/P509 ULCS20	2x M508 CE18	2.5	2.5	4.0	6.0
1x P809 CE9	1x P809 ULCS10	1x M808 CE9	1.5	1.5	2.5	2.5
2x P809 CE9	2x P809 ULCS10	2x M808 CE9	2.5	2.5	4.0	6.0
1x P809 CE18	1x P809 ULCS20	1x M808 CE18	2.5	2.5	2.5	4.0
2x P809 CE18	2x P809 ULCS20	2x M808 CE18	2.5	2.5	4.0	10.0
1x P1010 CE9	1x P1010 ULCS10	1x M1009 CE9	1.5	1.5	2.5	2.5
2x P1010 CE9	2x P1010 ULCS10	2x M1009 CE9	2.5	2.5	2.5	4.0
1x P1010 CE18 1x P1010 CE9/18	1x P1010 ULCS20 1x P1010 ULCS10/20	1x M1009 CE18 1x M1009 CE9/18	2.5	2.5	2.5	4.0
2x P1010 CE18 2x P1010 CE9/18	2x P1010 ULCS20 2x P1010 ULCS10/20	2x M1009 CE18 2x M1009 CE9/18	2.5	2.5	4.0	10.0
		1x M1310 ULCS10/20	2.5	2.5	4.0	6.0
		2x M1310 ULCS10/20	10.0	10.0	10.0	16.0

- 3) Heavy rubber cables of the type H07RN-F 5G are always to be used. Other, better wire ropes are only allowed to be used after consultation with DualLift GmbH.
- 4) The maximum length of suspended cables is 50m (without strain relief!).
- 5) Suspended cables need to be secured with cable strain reliefs every 50m at least.
- 6) Attaching any other suspended wire ropes need to be approved by DualLift GmbH.
- 7) If you intend to use a generator to supply power, it must have a minimum of three times the nominal power of the hoist motor.

#### 8.5 Safety Devices

DualLift safety devices type ISL508, ISL809, ISL1010, OSL508, OSL809 and OSL1010 need to be secured with two M12 screws (horizontal hole distance 77 mm) using self-locking nuts. Customized fastenings are possible according to customer specification. Please observe the criteria in Section 8.2.1 when selecting the fastening material.

DualLift safety devices are to be mounted in such a way that the safety rope always enters the safety device vertically seen from all directions! A deflection of a maximum of 2° to the vertical is permitted as with the hoists (see Figure 25). The rope must always be tensioned, so make sure you use rope weights (see Figure 25, Section 8.6.2)! In addition, for type ISL, the distance between the support and safety rope must be exactly 110 mm (see Figure 26). This value must remain constant over the whole distance travelled. For type OSL, the distance between the support and safety rope in terms of possible oscillations by the platform must be as small as possible in construction terms.

The structure for suspending the safety rope and the component to which the safety device is attached should withstand the loads and comply with the standards in accordance with EN 1808:2015 B.1.4 for safety gear which is available as a separate unit on the market. According to EN 1808:2015 the permitted coefficient of impact for separate units is 5. When the OSL is used as a part of an SAE the permitted coefficient of impact is 3. The manufacturer of the SAE must proof himself, that a corresponding coefficient of impact can be achieved.



Figure 26: ISL dimensions

Figure 27: OSL dimensions

#### 8.6 Wire Ropes

#### 8.6.1 Preparation

Be careful when handling wire rope. Make sure you always wear protective gloves.



- 1) Only use wire rope approved by DualLift GmbH.
  - Make sure that the wire rope has the right thickness and is of a sufficient length (see Section 6.1 and Section 11.1.1).
- 2) Always wind the wire rope up neatly without twisting it (by turning the reel/wire rope drum at the same time), as otherwise loops may make the wire rope unusable.
- 3) Check the condition of the wire rope:
  - a. Is the wire rope eye stiffener/pressing undamaged?
  - b. For wire ropes fitted with a hook: is the safety flap intact? Is the hook unbent?
  - c. Does the wire rope have an apparently undamaged and proper wire rope tip along the entire wire rope length? A proper wire rope tip has an approximate parabolic shape as shown in Figure 28. The use of a wire rope with a wire rope tip at the end whose diameter is about 0.25 times the wire rope diameter is not permitted.



Figure 28: Rope tip

- d. Is the rope in good condition without any visible damage? Have the discard criteria been fulfilled (see Section 11.1.1)?
- 4) Never use the pulling wire rope for fastening the load! Make sure the rope can exit the hoist freely (see Figure 25)! Never pull the rope over edges!
- 5) (removed)

#### 8.6.2 Installing the Support and Safety Rope

First, the support and, where appropriate, the safety rope is to be attached to the respective attachment points. You should make sure that the support and safety rope do not have the same point of contact on the ground. A typical contact scenario is shown in Figure 29.

If a safety device is used with a type ISL inclination safety lock, the support rope needs to be introduced from above between the roller and the lift-off protection on the probe arm before you can continue with the following steps!

- a) Insert the wire rope tip as far as possible into the wire rope inlet sleeve on the DualLift hoist (also see Figure 30).
- b) Press the UP button to advance the rope until it is transported on its own and exits the bottom of the hoist.

If the rope is inserted using the DOWN button, it stops the lifting power limiter functioning. In such a case, the rope should immediately be extended again and the phase inverter rotated through 180° in the plug or two phases reversed in the plug.

- c) If the rope does not enter, check whether the tip is in order (see Section 8.6.1) and the ON button has been pressed.
- d) Suspend the safety rope so that it hangs freely at the correct distance (see Figure 26) next to the suspension rope.
- e) Open the DualLift safety device:
  - Model ISL508/809/1010 (Inclination Safety Lock)
     Push up the probe arm manually if the tensioned suspension rope has not already done so
  - Model OSL508/809/1010 (Overspeed Safety Lock)
     Pull up the release lever until it clicks into place
- f) Introduce the safety rope from above into the DualLift safety device.
- g) Pull the rope tight and attach a 10-kg tensioning weight to the safety rope about 20 cm above the ground!

#### 8.6.3 Loose Rope End

- a) The rope that exits must always be able to move freely (see Figure 25)! The loose end of the rope must hang free so that it can untwist itself or be stored properly. No loops!
- b) To ensure that the wire rope that is not under a load does not get damaged, mount a deflection pulley or another suitable rope pulley!

# 9 Operating the DualLift Hoist and Safety Devices

Before using DualLift hoists and safety devices, a series of safety checks need to be performed, which may need to be repeated regularly depending on the type of check. Details of these checks are explained in more detail in Sections 9.2 and 9.3.



Figure 29: Wire rope suspension



Figure 30: Introducing the rope

#### 9.1 Logbook

The system operator is obliged to keep and organize the upkeep of a logbook in accordance with EN 1808:2015 Section 14.2.5. It must be possible to source at least the following information from the logbook:

- Name of the qualified person responsible for the system/SAE
- Name(s) of the operator(s) and the date of use
- Serial number of the hoist and the safety devices used
- Every instance of operating the system, hoist(s) and safety device(s)
- Wire rope specifications and their respective hours of use
- Reportable incidents and actions taken
- Date and results
  - o Of safety checks prior to first use
  - Of weekly checks
  - Of annual checks
  - Of general overhauls
  - Of repairs

If there is a change in system ownership, the logbook is to be handed to the successor, who should maintain it. It is for the successor to decide to continue the original logbook or start a new one. The latter must contain a reference to the original logbook.

#### 9.2 Safety Check Prior to Initial Use by a Qualified Person

Prior to initial use of the system, a qualified person must:

- a) Perform the checks described in Sections 9.3 and 11.1
- b) Perform a test run with the maximum PAE payload or perform a trial operation of the system for material transport
- c) Actuate the EMERGENCY STOP button during the test run or trial operation
  - ⇒ The system must stop immediately. Rotate the EMERGENCY STOP knob to the right to reactivate it. Continue with operation and test the lifting limit switches:



- d) During UPWARD travel press the operating lever down by hand:
  - $\Rightarrow$  The system should stop immediately.

#### 9.3 Checks to be Performed by the Operator before each Use

- a) Check that the DualLift hoist is correctly attached to the system (see Section 8.2.2).
- b) Check the condition of all moving wire ropes, limit switches, PAE construction parts and wire ropes (See section 8.6.1) and exclude any defects.
- c) Make sure that any objects that protrude into the path do not come into contact with the PAE or carriage.
- d) Also check manriding hoists systems for the correct installation of the security device(s).
- e) Check the functioning of the UP and DOWN buttons and the emergency stop button.
- f) Check the functioning of the limit switch(es): During upward travel actuate the switches individually by hand.
  - $\Rightarrow$  The system must stop immediately.
- g) No persons are permitted to remain underneath the PAE or the load during operation.
- h) Check the safety device (See Section 9.3.1 and 9.3.2)
- i) Also make sure
  - ⇒ That the operating load does not exceed the maximum permitted Working Load Limit (WLL) stated on the type plate
  - ⇒ That no counterweights have been removed

- ⇒ That the wire rope enters the hoist(s) and safety device(s) vertically
- ⇒ That no snow, ice, debris or other excess material has gathered on the PAE/the material hoist
- ⇒ That the wire ropes are not dirty, or covered in ice, frost or other frozen substances
- j) If a control unit supplied by DualLift GmbH is used, check the functionality as follows:
  - ⇒ The hoist and control unit are to put into an operational state.
  - $\Rightarrow$  The emergency stop button is to be actuated.
  - $\Rightarrow$  The red "Fault" lamp must light up.

If one of the tests listed above leads to a negative result that could compromise safety, the operator should inform the supervisor immediately!

On finishing work, the system is to be secured against unauthorized use and disconnected from the power supply. A check is also to be made as to whether all relevant logbook entries have been made.

#### 9.3.1 Testing the ISL

The ISL closes automatically when the support rope is not under a load, e.g. when the PAE has been set down. If the safety rope can still be lifted, the ISL should be replaced and sent to DualLift GmbH for inspection.

#### 9.3.2 Testing the OSL

- 1. Lift the load with the hoist.
- 2. Close the OSL by rotating the release lever anticlockwise.
- 3. Remove the load from the hoist by actuating the brake release leaver (see Section 9.5.1).
  - ⇒ If the load slips along the safety rope, the OSL is to be replaced immediately and sent to DualLift GmbH for inspection. Work is to be stopped immediately.
- 4. After releasing and stowing the brake release lever, open the OSL again by rotating the release lever in a clockwise direction.
- 5. Jerk the safety rope UPWARD sharply. The OSL should close automatically. If the OSL does close automatically it can be reopened again by actuating the release lever.

⇒ If the OSL does not close automatically, replace it immediately and send it to DualLift GmbH for inspection. Work is to be stopped immediately.

6. If the tripping or release lever can be moved without resistance, replace the OSL immediately and send it for inspection to DualLift GmbH. Work is to be stopped immediately. The SAE must be blocked and secured against unauthorized entering.





Figure 31: Testing the OSL

#### 9.4 Drive Operation

DualLift hoists allow drive operation in two directions. The following sections describe how movement is initiated and then stopped again.

#### 9.4.1 Stop and EMERGENCY STOP

- a) To stop the hoist, release the UP or DOWN button. If the hoist fails to stop:
- b) Press the EMERGENCY STOP button => The system should come to an immediate halt.

If the hoist still fails to stop:

c) Disconnect the power supply!

#### 9.4.2 UP/DOWN operation

- a) To turn the control unit on, rotate the red EMERGENCY STOP button on the central control or pendant station to the right until it pops out.
- b) To move UPWARD, press the UP button and to move DOWNWARD, press the DOWN button. To stop, release the respective button. With two-speed hoists, the respective speed during upward/downward movement is defined by the pressure point on the button. First pressure point (press button lightly) = slow speed; second pressure point (press button firmly) = Fast speed. Always initiate movement at slow speed.
- c) The motor brake on the hoist stops the load safely at any position.

If damage to one of safety devices, its mounting, the electrical supply cable or the safety rope occurs during operation, you should stop work immediately and inform the supervisor. All safety-related damage is to be reported to the system operator and the appropriate logbook entries made.

The system is only allowed to be put back into operation once the damage has been repaired. This is the responsibility of the system operator!

Never move the system UPWARD when the DualLift safety device is closed, because the safety rope will not be tensioned between the suspension bracket and the safety device, which can prevent the safety device from functioning correctly.



With type OSL safety devices, you should never use the release lever to stop the PAE during normal drive operations.

During operation, communication between the operator and a competent person must always be ensured. This is the responsibility of the system operator.

#### 9.4.3 Notes on the Overload device

Possible causes of a shutdown:

- A hoist or the PAE is overloaded
  - e.g. Owing to taking up too high a load
  - o e.g. Owing to an unfavorable load distribution
- The PAE/load has become caught up during UPWARD travel

After shutting down the system, either reduce the amount of the load or redistribute it until it is no longer overloaded or move the system downward until the access equipment is freed from the obstacle. Remove the obstacle before continuing travel.



Whenever overloading has been tripped, DOWNWARD movement is only ever allowed in order to free up a load that has been caught up in an obstacle because of an upward movement. Regular operation of the hoist once overloading has been detected is not permitted. During downward travel, systemic vibrations may cause an overload to be detected when travel is stopped although the load carried by the hoist does not exceed the rated load. Perform a short upward movement during which the overload device is not allowed to respond to ensure that the rated load capacity is not exceeded. If this is the case, perform a repeat test with the same parameters while reducing the load to the point that the overload device is no longer active during the upward movement.

Exception case: When using short rope lengths (PAE is a maximum of 10 m distance meters from the suspension point) when the hoist is operated with approximately the same rated load (load  $\ge$  0.9 times the rated load), the overload device can trip during the upward movement, although the actual load does not exceed the rated load. In such cases, you can make a second upward movement for test purposes after confirming the overload. The load should only be reduced when overloading is detected during this second test run.

#### 9.5 Emergency Operation

In emergency situations (e.g. power failure, fire) the hoist can also be lifted purely mechanically. The manual descent function can be used for the descent and the hand wheel for the ascent.

#### 9.5.1 Manual Descent

By manually opening the hoist motor brake, the load can be lowered under its own weight. This process is referred to as manual descent and **is only allowed to be used for lowering the load in an emergency.** Manual descent needs to be interrupted for five minutes following a descent of approx. 30 m if such interruptions do not give rise to a hazard.

In case the manual descent does not start while the manual descent lever is actuated (for example not enough load applied), the descent must be initiated by turning the secured hand wheel while the brake lever is lifted. After initiating the descent, the hand wheel must be removed immediately!

Using the Manual Descent must be noted inside the logbook! After performing 10 manual descents (with interruptions as described above) the hoists shall be serviced by an authorized service provider.

After performing an **emergency descent**, (without interruptions), the hoist must be serviced immediately!

In both cases the hoist must not be put back into operation prior the service is performed.

To prepare for manual descent, remove the brake release lever from the handle on the back of the hoist or the device specially designed for this purpose and push it through the opening in the motor guard onto the bracket on the brake (also see Figure 32). If the hoist is equipped with a brake release lever extension (see Figure 33), you need to remove the safety pin on the brake release lever extension prior to use.

Once the brake release lever/brake release lever extension is pushed upward, the load begins to descend in a controlled manner. A centrifugal brake integrated into the hoist ensures that the speed of descent is limited. You can stop the descent by releasing the brake release lever.



Figure 32: opening the motor brake

![](_page_37_Figure_2.jpeg)

Figure 33: Hand wheel and brake release lever extension

On systems with more than one hoist, the brakes are to be opened on all devices simultaneously if possible.

If only one person operates the system, the brakes on the hoists are to be opened alternately, so that no impermissible tilt results.

After use, return the manual descent lever to its original position, or, in the case of a brake release lever extension, replace the safety pin.

![](_page_37_Picture_7.jpeg)

Manual descent in case of overloading is prohibited! Manual descent as an alternative to electrical descent is prohibited and results in increased wear on the centrifugal brake and increases the risk of brake failure!

Once you have made sure that the load-carrying support rope does not descend as a result, the manual descent function can also be used to perform a functional check on the safety gear (see Section 9.3.2) to relax the load on the support rope.

#### 9.5.2 Hand Wheel

During a power failure, the hoist can be lifted with the hand wheel (see Figure 33) while simultaneously releasing the brake release lever. To do this, the steps illustrated below in Figure 34 are to be performed:

- 1. Remove the plastic cover from the motor hood.
- 2. Place the hand wheel on the motor shaft from above and insert the release lever through the side opening in the motor hood onto the bracket on the brake.
- 3. Hold the hand wheel and do not let it go.
- 4. Push the brake release lever UPWARD.
- 5. Rotate the hand wheel in an anti-clockwise direction.

If you want to complete the lifting operation, then release the break release lever. You can also release the hand wheel afterwards. Now stow the hand wheel and brake release lever back in their original storage location and replace the plastic cover over the motor hood.

![](_page_38_Figure_0.jpeg)

Figure 34: Schematic representation of using the hand wheel

As an option, the hand wheel can also be attached to the bottom of the gear shaft. Make sure that the bottom cover is closed again afterwards.

#### 9.6 Action to be taken when an Incident occurs with a Safety Device

Safety devices are to be replaced at all times and sent to DualLift GmbH for inspection following a safety incident! The renewed use of safety devices after an incident may lead to malfunctioning and therefore constitute a risk to life! This is the responsibility of the system operator!

![](_page_38_Picture_5.jpeg)

A safety inspection is also to be performed by a qualified person to check whether the safety device and safety rope are attached correctly, and to check the safety rope itself.

#### 9.6.1 Hoist Failure or Breakage on the Support Rope

The PAE is to be evacuated of all people if as a safety device collapses because of a breakage on the support rope or a hoist failure. The safety device is to be replaced as mandatory prior to recommencing operations. Afterwards, the new safety device is to be subjected to a safety check in acc. with Section 9.2, because in the event the safety device becomes caught up, suspending the safety rope and the connection between the safety devices and the PAE is subject to massive dynamic loads.

#### 9.6.2 Manual Actuation

On an OSL, which is closed manually by pressing the release lever (lettering: LOCK), relax the safety rope by lifting the PAE and then manually open the OSL by actuating the hand lever (lettering: UNLOCK).

Make sure you check the functioning of the safety device(s) in accordance with Section 9.3.2 when the PAE or the load is back on the ground!

Manual tripping of the safety device to stop movement is only permitted in an emergency! Tripping in such as case is considered a safety event.

#### 9.6.3 Inclination

Where there is an inclination of more than 8° on suspended access equipment in accordance with EN1808, only the end that is lower is to be raised. The tensioned support rope will cause the ISL to open again automatically as a result.

#### 9.7 Decommissioning the System

- a) Secure the system against movement:
  - Set the system down on the ground with the wire ropes tensioned
  - Tie the system to the ground.
- b) Cut the power supply, so that no unauthorized use can take place:
  - Unplug the supply cable from the mains and turn the main switch to "0" and lock it if necessary.

# **10Troubleshooting**

![](_page_39_Picture_1.jpeg)

Always take a calm and considered approach to faults to avoid any serious injury:

1) Inspections and repairs to the electrical system should only be performed by qualified electricians or workshops authorized by DualLift GmbH! The documentation for the DualLift hoist contains the requisite circuit diagrams. Always disconnect the power supply before accessing the electrical box on the hoist or the control unit!

2) Repairs to DualLift hoists and safety devices are only permitted to be carried out by DualLift GmbH or a hoist workshop authorized by DualLift GmbH!

Problem	Possible Cause	Solution
System neither travels upward nor downward, and the motor simply rotates when you press	In no circumstances show	uld you continue using the hoist!
the UP/DOWN button	<ul> <li>A) Wire rope blockage on the hoist</li> <li>Damaged/Incorrect wire rope or wire rope cannot exit</li> </ul>	Stop work immediately and request help from the hoist manufacturer or supplier)
	<ul> <li>B) The safety device (only for PAEs) has been tripped and stops the PAE owing to breakage on the support wire rope or damage to the hoist on the safety wire rope</li> </ul>	Evacuate the PAE immediately! Comply with Section 9.6
	C) The system has become caught up (in an obstacle, for example).	Free up or untangle the system, check for safety and notify the supervisor.
System only travels Downward, but not UPWARD, and the motor simply rotates	Only continue when ther	e is no security risk!
when you press the UP button	<ul> <li>D) The system is caught up (in an obstacle, for example).</li> </ul>	Remove the obstacle, check the system for safety and the notify the supervisor
	<ul> <li>E) Overloading on the hoist, the load-limiting device has switched off the hoist.</li> </ul>	Reduce the load or redistribute the load more evenly.
	<ul> <li>F) Error in the control unit's ON current circuit.</li> </ul>	Check the contacts and wiring and repair if necessary.
	G) Outage on a phase.	Check the supply cable and fuses.
	H) Brake rectifier defective	Replace the brake rectifier
System only travels upward, but not downward, and the motor simply rotates	Only continue when there	is no further security risk!
when you press the DOWN button	<ol> <li>The system is blocked by an obstacle or caught up in an obstacle.</li> </ol>	Check that the drive wire rope is tensioned. If not, tighten it up by moving the system UPWARD. Remove the obstacle, check the system for safety and notify the supervisor.

Problem	Possible Cause	Solution
	J) Safety device (only for PAEs) stops the PAE on the safety wire rope	a) Mayo unward until the
	a) Catching/Touching down of the PAE with ISL	a) Move upward until the support rope under a load opens the ISL
	b) Inclination of the PAE with ISL	<ul> <li>b) Raise the side of the PAE that is lower until the suspension wire rope that is under a load opens the ISL</li> </ul>
	c) Hoist speed too high with OSL	c) Replace the hoist affected and have it inspected
	<ul> <li>d) Tripping speed too low on the OSL</li> </ul>	d) Replace the OSL and send for inspection.
	e) Load descends slowly without the OSL tripping	e) Trip the OSL manually using the "LOCK" lever.
	STOP Defective safety devices need to be replaced imm	are a safety hazard and therefore ediately!
, but motor does not rotate when you press the Down button	<ul> <li>K) Error in the Down circuit on the control unit</li> </ul>	If necessary, actuate the manual release (cf. Section 9.5.1). Check the contactors and wiring and repair if necessary.
The motor does not run!	<ul><li>L) No power supply</li><li>a) Control unit has shut down</li></ul>	a) Rotate emergency stop button clockwise until it pops out
	<ul> <li>b) No power supply to the network</li> </ul>	b) Clarify the cause and wait until the current starts to flow again.
	<ul> <li>c) The phase sequence relay is blocking the control unit</li> </ul>	c) Rotate the phase inverter in the plug for the controls through 180°
	<ul> <li>d) Supply cable between the mains connection and the control unit disconnected</li> </ul>	<ul> <li>d) Check the supply and control cables, fuses and connections or wiring on the control unit and repair if necessary.</li> </ul>
	M) Incorrect connection, e.g. neutral conductor missing	Compare the connection and wiring diagram and have DualLift GmbH perform a conversion if necessary
	N) Protective shutdown due to overheating	
	<ul><li>a) One of the phases is missing</li><li>b) Engine cooling deficient</li></ul>	<ul> <li>a) Check/Repair the fuses, leads and terminals</li> <li>b) Clean the motor hood and check for damage that</li> </ul>
	c) Over or undervoltage	c) Measure voltage and power

Problem	Possible Cause	Solution
		consumption on the motor when subject to a load and increase the number of wire rope cross-sections if necessary
	<ul> <li>O) Brake does not open (no apparent click when powering up/down)</li> <li>a) Defect on the power line, coil or brake rectifier</li> <li>b) Worn brake rotor</li> </ul>	<ul> <li>a) Have an electrician check the supply cable, brake coil and rectifier, and repair or replace if necessary.</li> <li>b) Send the hoist for repair</li> </ul>
Motor hums loudly or the rope drive makes a grinding sound,	P) Overheating	For individual causes and how to troubleshoot them, see Item N).
although both upward and downward travel is possible.	Q) Dirt in the rope drive: Continued travel may cause damage to the rope and rope drive	Replace the hoist immediately and have it inspected/repaired by DualLift GmbH or an authorized hoist service/repair shop
System continues running for more than 20 cm after releasing	<ul> <li>R) Brake defective/worn</li> <li>a) Brake rotor worn</li> <li>b) Air gap wrongly set</li> </ul>	<ul> <li>a) Send hoist for repair</li> <li>b) Adjust air gap correctly</li> </ul>
the DOWN button	S) Brake wet/Aquaplaning	Make sure the brake is dry and clean (you can remove the guard if necessary). Only continue if the brake functions correctly.
Red "Fault" indicator light is active	T) Pendant station is not connected.	Connect pendant station
	U) Emergency stop button actuated	Acknowledge emergency stop if the situation permits.
	<ul> <li>V) The thermal switch on the motor has been tripped due to overheating.</li> </ul>	Allow the motor to cool down for about 15 minutes.

If the before mentioned steps do not result in clarification and rectification of the cause, please call DualLift GmbH or a hoist service authorized by DualLift GmbH.

# **11 Repairs and Tests, Checks and Inspections**

Date/Operator	Regulations	Object of the Test/Check/Inspection	Description	
Each working day	DGUV Regulation	Mounting parts	In Section 9.3	
by the	54 (Hoists, Lifting	DualLift hoist	In Section 9.3	
system operator	and Hoisting Equipment)	DualLift safety devices	In Section 9.3	
Every working week	ISO 4309	Wire rope	In Section 11.1.1	
by the system operator		Power line	In Section 11.1.2	
At least once a year	DGUV Regulation 54 (Hoists, Lifting and Hoisting Equipment)	DualLift hoist	In Section 11.2 and DualLift	
qualified person	DGUV Regulation 54 (Hoists, Lifting and Hoisting Equipment)	DualLift safety devices	Service Instruction I	
in closed Wind Turbines: latest every 200 operating hours other Applications: Hoists: at least every 10 years or 200 operating hours, whichever comes first! Safety devices at least every 4 years or 200 operating hours, whichever comes first! by DualLift GmbH or a service partner authorized by DualLift	Operating safety ordinance DGUV Regulation 54 (Hoists, Lifting and Hoisting Equipment)	General overhaul of the DualLift hoist and safety devices	In Section 11.3 and DualLift Service Instruction II	

The system operator is responsible for ensuring that all applicable regulations and national laws are complied with regarding repairs, tests, checks and inspections.

In Germany, the industrial safety ordinance and accident prevention regulations for hoists, lifting and hoisting equipment (DGUV Regulation 54) are relevant in relation.

In addition, the system operator is responsible for ensuring that the tests, checks and inspections detailed in Sections 11.1 to 11.3 are performed to deadline, unless they conflict with the applicable regulations and national laws.

#### 11.1 Tests, Checks and Inspections to be Performed Weekly by the System Operator

Check whether the security seals on the setting members on the mechanical load limiting device and the safety devices are intact. If this is not the case, the respective hoist/safety device needs to be repaired (see Section 11.4).

Since defective wire ropes are a danger to operational safety, support and safety wire ropes should be inspected for damage on a weekly basis and replaced if necessary (refer to Section 11.1.1 in relation).

To prolong the service life of components and wire ropes, always makes sure they are clean. Supply and control wire ropes are to be inspected regularly and replaced if necessary.

![](_page_43_Picture_2.jpeg)

If defects occur during operation, stop work immediately, secure suspended access equipment in accordance with EN 1808/secure the material handling system in accordance with Section 9.7 and repair the defects immediately. This is the responsibility of the system operator.

All type plates and signs must be present and legible. Non-existent or illegible type plates and signs must be replaced immediately!

#### 11.1.1 Wire Rope

Wire ropes need be replaced immediately if a defect in accordance with ISO 4309 is identified during the weekly inspection:

More than 5 wire breaks over a length of 24 cm (for wire ropes with an 8-mm diameter)/27 cm (Ø 9 mm)/30 cm (Ø 10 mm)

![](_page_43_Picture_8.jpeg)

Figure 35: Wire breaks

- Rusting of any kind on the surface or inside of the wire ropes
- Heat damage, recognizable in the form of tarnishing
- When the wire rope diameter is too small according to the following table

Rope	Manufacturer	Rope Туре	Ø (new)	Main Rope Change-Ø	Secondary Rope Change-Ø
	Pfeifer Drako	5xK19S SFC 1960 B sZ	8.1 - 8.4 mm	7.8 mm	8.1 mm
o	DWH	5xK19S SFC 1960 B sZ	8.4 - 8.6 mm	8.2 mm	8.4 mm
0	Vornbäumen	5xK19S SFC 1960 B sZ	8.4 - 8.7 mm	8.2 mm	8.4 mm
	Tractel	5x19 FE	8.3 mm	-	8.3 mm
0	Pfeifer Drako	4xK26WS SFC 2160 B sZ	8.7 - 9.0 mm	8.5 mm	8.7 mm
9	DWH	4xK26WS SFC 2160 B sZ	9.0 - 9.2 mm	8.8 mm	9.0 mm
	Pfeifer Drako	5xK26WS SFC 2160 B sZ	9.9 - 10.2 mm	9.7 mm	9.9 mm
10	DWH	5xK26WS SFC 2160 B sZ	10.2 - 10.5 mm	10.0 mm	10.2 mm
	Vornbäumen	5xK26WS SFC 2160 B sZ	10.2 - 10.5 mm	10.0 mm	10.2 mm

![](_page_43_Picture_14.jpeg)

Figure 36: Measurement of rope diameter

- Damage occurs such as that shown in Figure 37 to Figure 42.
- An undocked support wire rope is not allowed to be used as a safety wire rope.

The system operator is responsible for replacing defective wire ropes. The wire rope certificates for the undocked wire rope needs to be retained.

Extract from the ISO 4309: Illustration of the most common form of external damage to wire ropes:

![](_page_44_Picture_4.jpeg)

Figure 37: Wire rope with corkscrew-like deformation

![](_page_44_Picture_6.jpeg)

Figure 38: Wire rope with caging

![](_page_44_Picture_8.jpeg)

Figure 39: Wire rope with looping

![](_page_44_Picture_10.jpeg)

![](_page_44_Picture_11.jpeg)

Figure 41: Wire rope with fraying

![](_page_44_Picture_13.jpeg)

![](_page_44_Picture_14.jpeg)

Figure 42: Wire rope with a kink

If damage to the insulation or cable connections is found during the weekly inspection of the electrical cable, the supply and control cables should be replaced or repaired immediately! This is the responsibility of the system operator. This work is only allowed to be performed by skilled professionals trained in the field of electrical engineering. The wiring diagram provided in delivery should be complied with at all times.

#### 11.2 Annual Inspection by a Qualified Person

In order to ensure the safe use of the equipment an annual safety review of DualLift hoists safety devices must be performed at least once a year by qualified person authorized by DualLift GmbH. We recommend performing safety reviews at the DualLift GmbH plant. The deadline for performing the review starts when the review report is created by DualLift GmbH on delivery, or for the general overhaul (Section 11.3), or on completion of the preceding annual review. The contents of this review are to be sourced from the service instructions.

Before performing the service, source the latest service plan from DualLift GmbH. The system operator is responsible for complying with the annual service requirement.

If the system is used in special operating conditions, it may be necessary to perform a safety inspection and test in line with the accident prevention regulations for hoists, lifting and hoisting equipment (DGUV Regulation 54) and the standard "Safety requirements of suspended access equipment" (EN 1808). This is to be agreed upon in advance with DualLift GmbH in line with the application!

All the results of the annual inspection need to be entered into the logbook. This is the responsibility of the system operator.

#### 11.3 General Overhaul

In order to ensure the safe use of the equipment until the next inspection the DualLift manriding hoists or material hoists and safety devices need to be overhauled according to the table at the beginning of this Chapter. Determining to this period is the date on the last (general overhaul) test report. The system operator has to lock the hoist or the safety devices for operation until the overhaul is completed.

The overhaul is to take place in the plant where the hoist/ safety device was manufactured, or in a trained and authorized workshop.

The General Overhaul needs to be documented in the logbook.

#### 11.4 Repairing Hoists

All repairs to DualLift hoists and safety devices are only allowed to be performed by DualLift GmbH or one of its authorized hoist workshops using DualLift original replacement parts only. Please refer to the service instructions for the information required for performing the repair. Each repair is to be recorded in the logbook.

When refilling or replacing gear oil, only use the gear oil referred to in the amended version of the service instructions!

#### 11.5 Maintenance and Upkeep

The hoists and safety devices are virtually maintenance free. Please note the information concerning hoist and safety devices storage in Section 2.

![](_page_45_Picture_11.jpeg)

For Relubricating the components, please use standard multi-purpose oil or grease. Do not use lubricants that contain molybdenum disulfide (MoS2) or PTFE!

#### 11.5.1 Wire Rope for Hoists/Safety Devices

- a) Make sure the surroundings are clean, i.e. do not place any parts or components on dusty floors or in dirty surroundings.
- b) Never use wire ropes for attaching a load.
- c) Always wind and unwind wire ropes properly onto reels.
- d) Never pull wire ropes over edges. Instead, use pulleys or other protective measures in consultation with DualLift GmbH.

#### 11.5.2 Motor Hood

The electric motor on the hoist is maintenance-free. The motor hood is only to be cleaned when it is very dirty, so that the motor receives a sufficient air supply.

## 12 Disposal

The packing material needs to be recycled or if not possible disposed. It needs to be ensured all applicable regulations and national laws are compiled to.

The disposal of the products described in this manual has to be done according to the EU-Directive 2008/98/EC or corresponding national regulations. For the electrical components the EU-Directive 2012/19/EC or corresponding national regulations apply.

# Appendix

# EC Declaration of Conformity in Accordance with Annex IIA of Machinery Directive 2006/42/EC

![](_page_48_Picture_1.jpeg)

Dok.-No./ Month Year: CE-P508-1010 / 05 2021

Manufacturer:	DualLift GmbH
	Edisonstraße 22
	27711 Osterholz-Scharmbeck
	Germany

We hereby declare that the product produced in series described in detail in the following:

Description:	Material hoist
Model:	M508, M808, M1009, M1010, M1310
Serial number:	200001 - 299500

complies with all the relevant requirements of Machinery Directive 2006/42/EC, Directive 2014/30/EU, and any amendments valid at the time of this declaration.

Harmonized standards applied:

EN 14492-1:2010	Cranes - Power driven hoists and hoists - Part 1:
EN 60204-32:2009	Safety of machinery - Electrical equipment of machines, Part 32.

We hereby declare that the product produced in series described in detail in the following:

Description:	Manriding-hoist
Model:	P508, P509, P809, P1010
Serial number:	200001 – 299500

complies with all the relevant requirements of Machinery Directive 2006/42/EC, Directive 2014/30/EU, and any amendments valid at the time of this declaration.

Harmonized standards applied:

EN 1808:2015-08Safety requirements for suspended access equipmentEN 60204-32: 2009Safety of machinery - Electrical equipment of machines, Part 32

The product complies with the type-tested model that was tested and certified in a type test performed by the notified body with the ID No. **0400** (Liftinstituut B.V.), Certificate No: **NL-21-400-1001-204-07** 

Authorized representative for compiling technical documents: Nils Scharbius, Design Engineer

Town/Date: Name: Function: Osterholz-Scharmbeck, 31. May 2021 Eike Rulfs Head of Engineering, DualLift GmbH

authorized Signature

Eh pulp

# EC Declaration of Conformity in Accordance with Annex IIA of Machinery Directive 2006/42/EC

![](_page_49_Picture_1.jpeg)

Dok.-No./ Month Year: CE-S408-609 / 10 2019

Manufacturer:	DualLift GmbH
	Edisonstraße 22
	27711 Osterholz-Scharmbeck
	Germany

We hereby declare that the product produced in series described in detail in the following:

Description:	Manriding-hoist
Model:	SP408, SP508
Serial number:	500.000 - 549.000

complies with all the relevant requirements of Machinery Directive 2006/42/EC, Directive 2014/30/EU, and any amendments valid at the time of this declaration.

Harmonized standards applied:

EN 1808:2015-08	Safety requirements for suspended access equipment
EN 60204-32: 2009	Safety of machinery - Electrical equipment of machines, Part 32

We hereby declare that the product produced in series described in detail in the following:

Description:	Manriding-hoist
Model:	SP608, SP609
Serial number:	551.000 - 599.000

complies with all the relevant requirements of Machinery Directive 2006/42/EC, Directive 2014/30/EU, and any amendments valid at the time of this declaration.

Harmonized standards applied:

EN 1808:2015-08Safety requirements for suspended access equipmentEN 60204-32: 2009Safety of machinery - Electrical equipment of machines, Part 32

Authorized representative for compiling the technical documents: Nils Scharbius, Design Engineer

Town/Date:	Osterholz-Scharmbeck, 24, October 2019
Name:	Eike Rulfs
Function:	Head of Engineering, DualLift GmbH

authorized Signature:

Ehe pulp

# EC Declaration of Conformity in Accordance with Annex IIA of Machinery Directive 2006/42/EC

![](_page_50_Picture_1.jpeg)

Dok.-No./ Month Year: CE-O508-1010 / 05 2021

Manufacturer: DualLift GmbH Edisonstraße 22 27711 Osterholz-Scharmbeck Germany

We hereby declare that the product produced in series described in detail in the following complies with all relevant requirements of Machinery Directive 2006/42/EC and any amendments valid at the time of this declaration.

Applied harmonized standards:

EN1808:2015-08	Safety requirements of suspended access equipment
Description:	Fall stop, with overspeed shutdown
Model:	OSL508 CE, OSL809 CE, OSL1010 CE
Serial number:	700000–995000
Description:	Fall stop with inclination shutdown
Model:	ISL508, ISL809, ISL1010
Serial number:	700000–995000
Description: Model:	Fall stop with overspeed shutdown and additional CCV equipment OSL508 CE, OSL809 CE, OSL1010 CE

Serial number: CCV 700000–995000

The product complies with the type-tested model that was tested and certified in a type test performed by the notified body with the ID No. **0400** (Liftinstituut B.V.), Certificate No: **NL19-400-1001-204-05**.

Authorized representative for compiling the technical documents: Nils Scharbius, Design Engineer

Town/Date: Name: Function: Osterholz-Scharmbeck, 31, May 2021 Eike Rulfs Head of Engineering, DualLift GmbH

authorized Signature:

Eh pulp

![](_page_51_Picture_0.jpeg)

# **DualLift GmbH**

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CEO: Jozef van Eyndt DualLift is a registered trademark.

Commercial Register: HR Walsrode, B201091