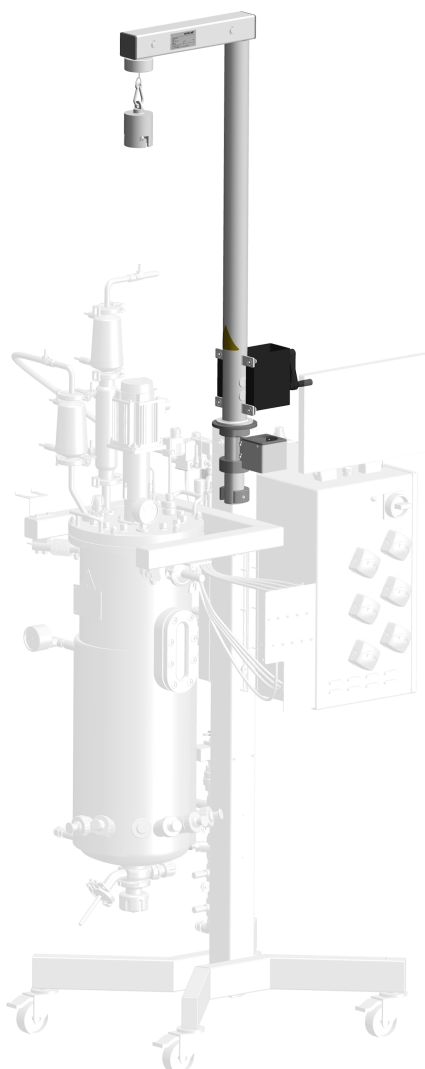


Lifting Device

Operating manual



Lifting Device

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More information about the product is
available online at:
www.infors-ht.com



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Supplemental directives

About this Manual



This manual enables the safe and efficient handling of the device. All the information and instructions in this operating manual comply with the current standards, legal regulations and the latest technological developments.

This operating manual is a component part of the device. It must be kept near the device unit and be accessible to staff at all times. All persons working on or with the device must read the operating manual thoroughly and fully understand its contents before beginning any work. Adhering to all the safety notes and operating instructions in this manual is essential to ensure that work is carried out safely.

The scope of delivery may differ from the explanations, descriptions and figures in this operating manual due to special designs, additional options specified on ordering and the latest technical/mechanical modifications.

This manual contains illustrations to aid general understanding. These may differ from the actual device as supplied.

Customer Service and Services

The customer service of the manufacturer or the local licensed dealer is at your disposal for technical advice and specialist enquiries (contact details see ➡ <https://www.infors-ht.com/en/contact/>). Due to their familiarity with the potential applications of the device, the Customer Service team is able to provide information on whether the unit can be used for a specific application or modified to handle the planned process.

Declaration of Incorporation

The device corresponds to partly completed machinery within the sense of the Machinery Directive 2006/42/EC Article 2.

The device must not be put into service until it has been established that the bioreactor in which the device is to be incorporated complies with the terms of all relevant directives.

The declaration of incorporation as defined in the Machinery Directive, Annex II 1 B is included in the overall documentation of the device.

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Safety and Responsibility

1 Safety and Responsibility

This chapter contains general information on safety when using the device. In the remaining chapters, warning messages are used only to highlight particular hazards directly arising from the actions being described.



It is essential to read the operating manual carefully – especially this chapter and the warning messages in the text – and to follow the instructions therein.

This chapter also refers to areas that are the responsibility of the provider due to certain risks arising from particular applications for which the device is used deliberately and with full awareness of the associated risks.

1.1 Explanation of Special Displays

1.1.1 Warning Messages

Warning messages in this manual are indicated by a colored bar and begin with a signal word that signifies the degree of the hazard.



WARNING

The signal word “WARNING” indicates a potentially dangerous situation that may result in severe or fatal injuries if not avoided.



CAUTION

The signal word “CAUTION” indicates a potentially dangerous situation that may result in minor injuries if not avoided.



NOTICE

The word “NOTICE” on a blue bar indicates a situation that may result in significant damage to property if not avoided.

1.1.2 Other Messages



Texts that are marked in this way provide useful tips and recommendations for ensuring efficient, fault-free operation of the device.

1.2 Intended Use, Incorrect Use and Misuse

Intended Use

The lifting device is designed exclusively for lifting and lowering vessel top plates of the Techfors-S bioreactor from device release 2.1.



WARNING

The device is designed and built exclusively for the intended use described above.

Each instance of non-conventional use of the device is considered incorrect use and may lead to dangerous situations.

Intended use also includes following all the instructions in this manual, especially those relating to:

- The installation site
- Personnel qualifications
- Correct operation and maintenance

Incorrect Use/Misuse

Any failure to observe the requirements specified in this manual will be deemed incorrect use.

Any use of the lifting device outside the scope of the intended use as described above will be deemed misuse. This also applies to applications for which the lifting device is not designed. In particular, lifting and lowering any loads other than the ones specified above is deemed misuse.

To use the lifting device for special applications not covered by conventional, intended use, the device must be modified and certified accordingly by the manufacturer.

1.3 Qualified Personnel

1.3.1 Operator

The operator operates the device in the context of the intended use. Only persons who have been trained for working in a biotechnology laboratory can be considered for the role of operator. These include, for example:

- Process technicians in the fields of biotechnology and chemistry
- Biotechnologists (biotechnicians)
- Chemists with a specialization in biochemistry; chemists in the field of organic chemistry or biochemistry

Safety and Responsibility

- Life scientists (biologists) with special education in cytology, bacteriology, molecular biology, genetics, etc.
- Lab assistants (lab technicians) from various fields

To be allowed to operate the device, the operator must have received thorough training and have read and understood the operating manual.

The operator must be informed in a training session provided by the provider of the tasks delegated to the operator and the potential risks of improper conduct. Tasks that go beyond the scope of operation under normal conditions may only be performed by the operator if this is specified in the manual and the provider has explicitly entrusted said tasks to the operator.

Persons who are undergoing training or apprenticeships are only permitted to use the device under supervision and in accordance with the instructions of a trained and qualified technician.

1.3.2 Technician

The technician is an individual who, by virtue of their relevant professional education, training and/or experience, is competent to identify risks and prevent hazards arising from the use of the device. The technician is familiar with the environment in which they are operating and knows the relevant standards and regulations.

Technicians include, for example, the following groups of people:

- Qualified electricians
- Decontamination specialists
- Disassembly, disposal and recycling specialists

1.3.3 INFORS HT Service Technician or Licensed Dealer

Certain work may only be performed by the manufacturer's skilled personnel or by skilled personnel authorized by a licensed dealer. Other persons are not authorized to perform this work.

1.4 Unauthorized Persons

The term "unauthorized persons" applies to all persons who can access the work area but are not qualified to use the device in accordance with the aforementioned requirements.

Unauthorized persons are not permitted to operate the device or use it in any other way.

1.5 Responsibility of the Provider

Provider

The term “provider” applies to all persons who are responsible for making the device and the necessary infrastructure available. The provider bears a special level of responsibility with regard to the processes and the qualification and safety of the operators.

Provider Obligations

The device is used for industrial and scientific purposes. As such, the provider of the device is individually liable with regard to the legal requirements relating to occupational health and safety in a biotechnology laboratory. In particular:

- The provider is responsible for ensuring that the work and environmental regulations applicable in a biotechnology laboratory are observed.
- The provider must ensure that the device remains in safe and proper working condition throughout its entire term of use.
- The provider must ensure that all safety devices are fully functional and not disabled.
- The provider must ensure that the device is only operated by qualified personnel, and that said personnel receive sufficient training.
- The provider must ensure that the protective equipment required for working with the device is available and worn.
- The provider must ensure that this operating manual remains in the immediate vicinity of the device throughout its entire term of use.

1.6 Residual Risks

This chapter covers residual risks that are always present when using the device in accordance with normal, intended use.

Suspended Loads



Risk of injury due to suspended loads. When lifting the vessel top plate, there is a risk of parts falling or swinging out of control. Therefore, never step under the raised top plate or carry out work below the top plate. Observe the description of the intended attachment points.

Property Damage due to Improper Operation



If the lifting device is used improperly, there is a risk of damaging built-in parts or the vessel. Therefore, when lifting or lowering the vessel top plate, proceed carefully and observe the instructions and warning messages in the relevant chapters.

Safety and Responsibility

Accessories and Spare Parts



Incorrect spare parts, imitations or spare parts that have not been authorized by the manufacturer and unauthorized accessories represent a significant safety risk. As such, we recommend procuring all spare parts and accessories from a licensed dealer or directly from the manufacturer.

1.7 Warning Symbols on the Device

The following warning symbols (stickers) are placed on the device:

Warning symbol	Position	Meaning
	On the vertical tube of the lifting device	Risk of injury due to suspended load



WARNING

Illegible or missing warning symbols on the device will lead to the personnel being exposed to risks that the warning symbols in question were designed to make them aware of.

It is the provider's responsibility to ensure that all the stickers with warning symbols on the device are always intact.

1.8 Declaration of Decontamination

When returning the device for repair, disassembly or disposal, a legally compliant declaration of decontamination is required for the safety of all involved and due to legal requirements. The following must be observed if this is the case:

- The device, component or accessory which is to be repaired must be entirely decontaminated before being sent to the manufacturer.
- The provider is therefore required to completely and truthfully fill out a declaration of decontamination, and have it signed by the person responsible.
- The declaration of decontamination must be affixed on the outer packaging in which the device is sent back.
- These forms can be obtained from the licensed dealer or the manufacturer.

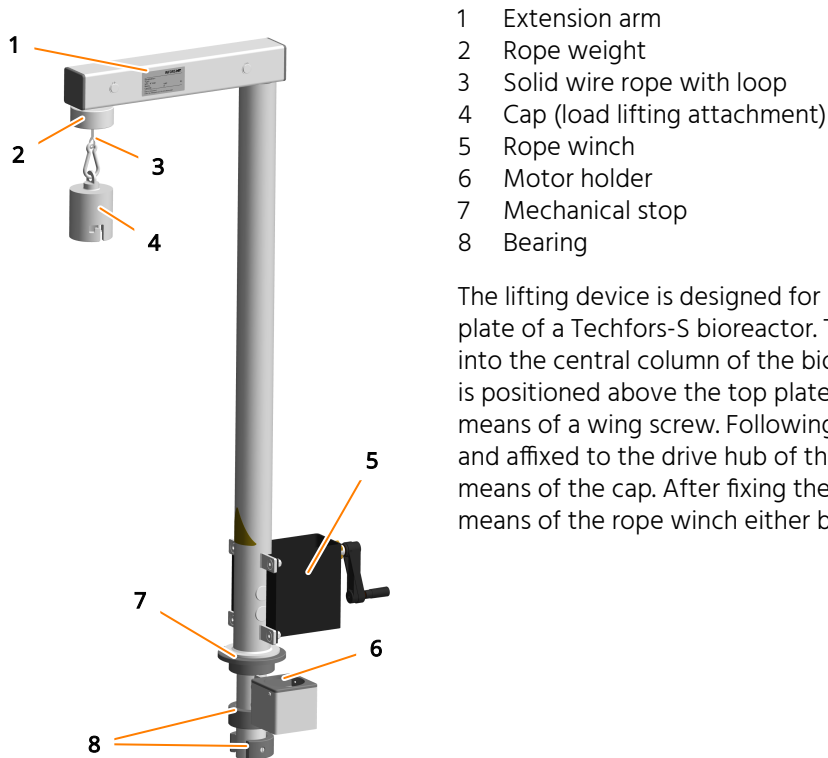


If the return shipment is not accompanied by a signed and complete declaration of decontamination or it is not affixed to the outer packaging, the shipment will be returned unopened to the sender at their expense (see also T&C).

Setup and Function

2 Setup and Function

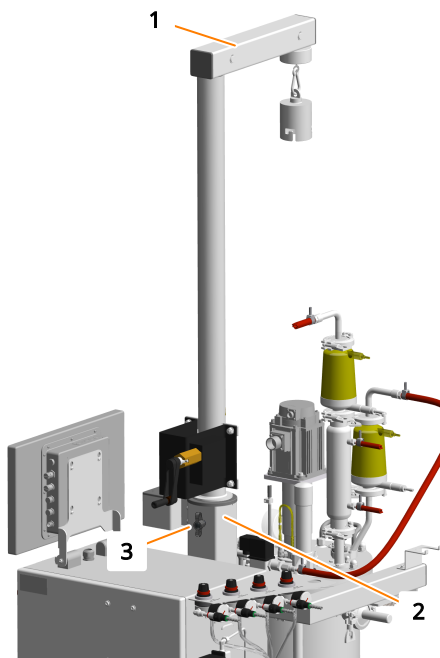
2.1 Overview of the Lifting Device



The lifting device is designed for lifting and lowering the vessel top plate of a Techfors-S bioreactor. To do so, the lifting device is inserted into the central column of the bioreactor. The movable extension arm is positioned above the top plate and secured in this position by means of a wing screw. Following that, the solid wire rope is lowered and affixed to the drive hub of the motor on the vessel top plate by means of the cap. After fixing the load, it can be lifted or lowered by means of the rope winch either by hand or using a cordless drill.

2.2 Components

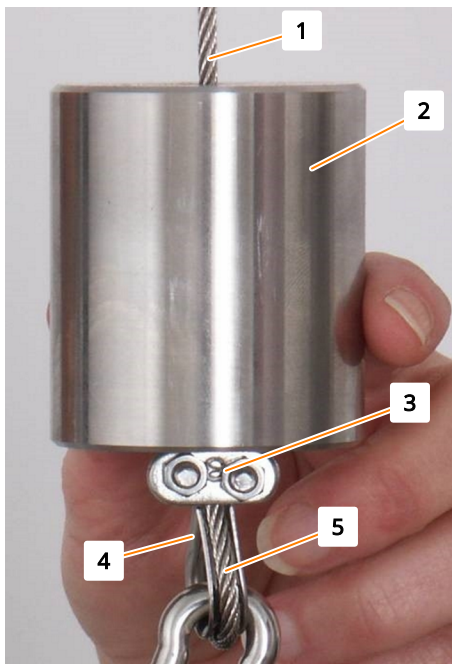
2.2.1 Extension Arm and Wing Screw



- 1 Extension arm
- 2 Central column Techfors-S
- 3 Wing screw

The wing screw is used to fix the lifting device in the central column of the bioreactor. By slightly loosening the wing screw (turning counter-clockwise), the lifting device becomes movable and the extension arm can be positioned correctly. By turning the wing screw clockwise, the lifting device is fixed again.

2.2.2 Rope Weight and Solid Wire Rope

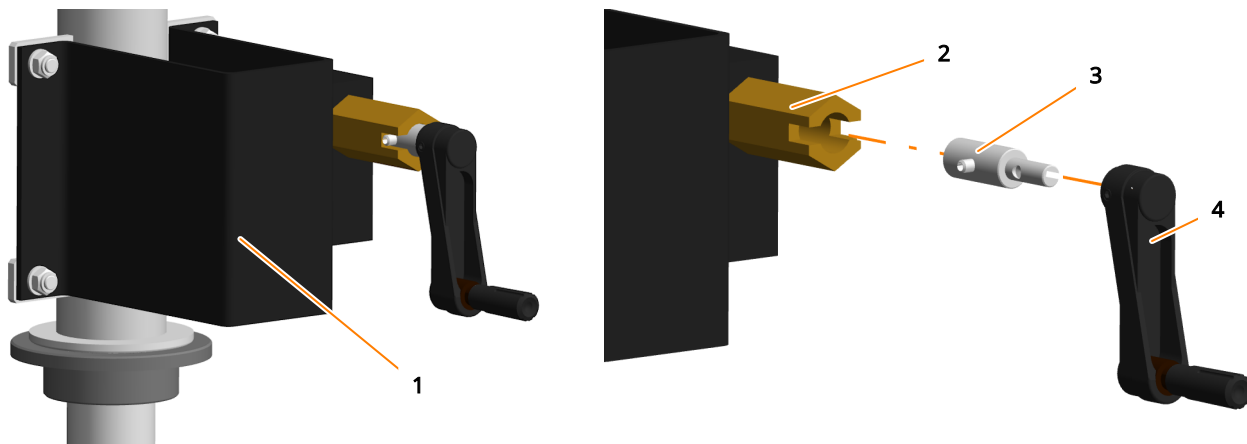


- 1 Solid wire rope
- 2 Rope weight
- 3 Rope clamp
- 4 Wire rope thimble
- 5 Loop

The solid wire rope guided by the rope weight forms a loop around the wire rope thimble and is compressed with a rope clamp. The loop serves as the attachment point for the the load lifting attachment.

Setup and Function

2.2.3 Rope Winch



- 1 Rope winch
- 2 Crankshaft port
- 3 Crankshaft with spring pin
- 4 Crank handle

The rope winch with removable crank handle is located on the lower end of the lifting device. The rope winch can be operated by hand using the crank handle or with a cordless drill.

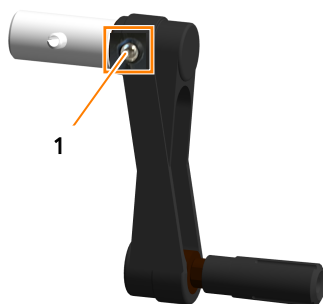
Manual Operation

In manual operation, the load is lifted or lowered by turning the crank handle.

- Lower load / crank down the rope: turn the crank handle counter-clockwise.
- Lift load / crank up rope: turn the crank handle clockwise.

When the crank handle is released or removed, the top plate is held securely in any position.

Operation with a Cordless Drill



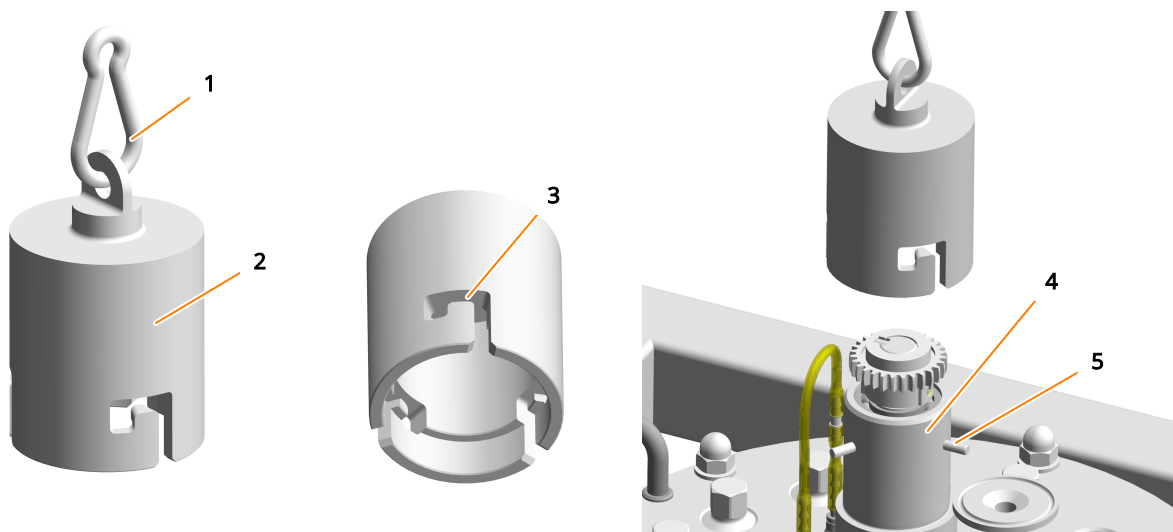
For operation with a cordless drill, the crank handle has to be removed first. To do this, the grub screw M6 that fixes the crank handle has to be removed using a hex key. Following that, the crank handle can be removed.

The crankshaft is then fitted into the chuck of the cordless drill.



To enable a slow and controlled lifting process, use only cordless drills with rotation speed control.

2.2.4 Load Lifting Attachment

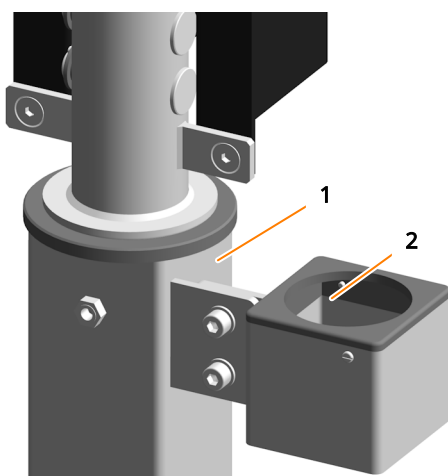


- 1 Carabiner hook
- 2 Cap
- 3 Groove (3 x)
- 4 Drive hub
- 5 Pin (3 x)

A cap with a carabiner hook serve as the load lifting attachment. The carabiner hook is the connecting piece between the wire rope loop and the cap. The cap has three grooves to accommodate the three pins on the drive hub on the Techfors-S vessel top plate.

The cap is placed on the drive hub and rotated until the pins are engaged in the grooves. Due to the weight of the load, the pins lock into place when the vessel top plate is lifted.

2.2.5 Motor Holder



- 1 Central column Techfors-S
- 2 Motor holder

The holder for the motor of the bioreactor Techfors-S is screwed onto the central column of the device stand. While the lifting device is in use, the motor is inserted there.

Setup and Function

2.3 Identification Plate

Content

INFORS HT		
Designation:		
Type:		
S/N & Year:		
Mains:	VAC	Hz
Current:	A	
Made in Switzerland		
Infors AG, Rittergasse 27, CH-4103 Bottmingen		

The identification plate is designed to allow clear identification of the device. It contains the following information:

- Manufacturer's name and address
- Designation = category of device
- Type = device type (name)
- S/N = serial number
- Year = year of manufacture
- Mains = nominal voltage and frequency (not applicable)
- Current = power consumption (not applicable)

3 Storage

- Decontaminate, thoroughly clean and dry the device every time before placing it in storage.
- Store the device and its components clean, dry and protected against dust, dirt and liquids.
- Store the device and its components in a cool place with low humidity but protected against frost.
 - Storage temperature: 5 °C to 55 °C
 - Relative humidity, non-condensing: 10 % to 95 %
- Protect the device from aggressive media, direct sunlight and vibrations.

Installation Location and Mounting

4 Installation Location and Mounting

4.1 Location Requirements for Installation

General Information

The following requirements must be met for the location and use of the lifting device:

- The lifting device must only be used in connection with the use of the Techfors-S bioreactor (device release 2.1). The device must only be used inside buildings.
- Any other type of installation is prohibited.
- The installation surface must be level, sufficiently stable and able to bear loads.
- The room height must be at least 3.10 m (➔ Chapter 8.1 'Dimensions' on page 28).
- Ensure there is sufficient lighting in the workplace.
- All requirements applicable to the location of the Techfors-S bioreactor also apply to the lifting device (see separate operating manual of the Techfors-S bioreactor).

Minimum Distances

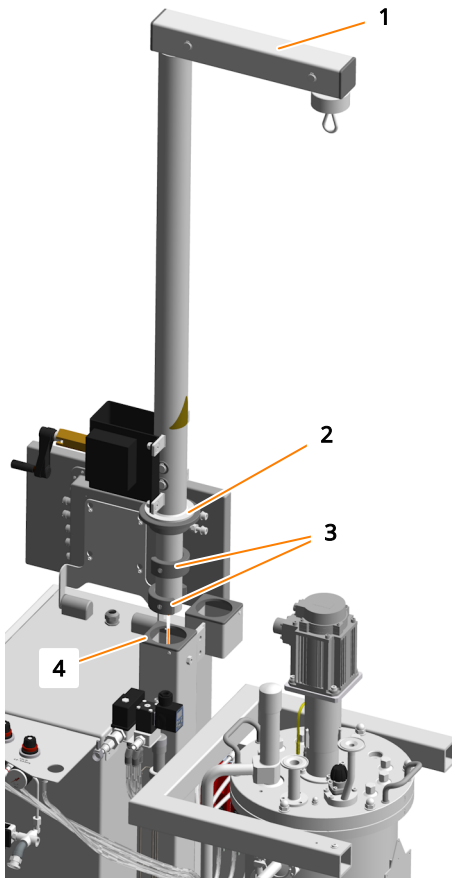
Operation of the lifting device requires a minimum distance of 1.50 m to walls, other equipment or persons and a minimum distance of 0.3 m to ceilings (➔ Chapter 8.1 'Dimensions' on page 28).

When lifting or lowering the vessel top plate by means of the lifting device, make sure that there is no obstacle and no person other than the operator and the second person to assist in the work area.

4.2 Mounting the Lifting Device

Before beginning, ensure that the brakes of the swivel casters on the device stand of the Techfors-S are locked.

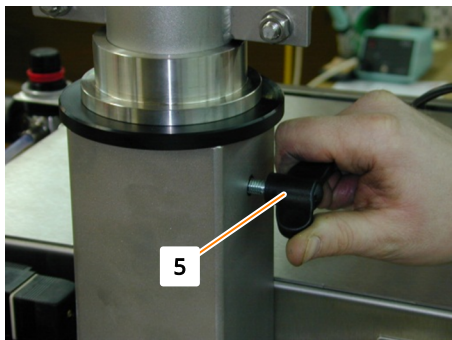
Installation Location and Mounting



1. → Insert the lifting device vertically into the central column (4), rotating it back and forth to fit the bearing (3) into the column.

The lifting device must be inserted in the central column of the bioreactor up to the mechanical stop (2).

2. → Align the extension arm (1) with the centre of the vessel top plate.



3. → **CAUTION**

An insufficiently tightened wing screw of the lifting device can lead to uncontrolled movement deflections of the vessel top plate during the lifting and lowering process and poses a risk of injury.

Screw the wing screw (5) into the hole of the column clockwise until the lifting device is immobile and stable in the aligned position.

Operation

5 Operation

5.1 Preparing the Bioreactor



The exact handling and description of accessories of the bioreactor such as motor, exit gas cooler, filter, sensors, etc. are described in the operating manual of the bioreactor.



WARNING

The vessel must not be pressurised during operation.

Removing built-in-parts or the vessel top plate may result in liquid splashing out or leaking and/or gases escaping. This can lead to severe burns, burns or poisoning.

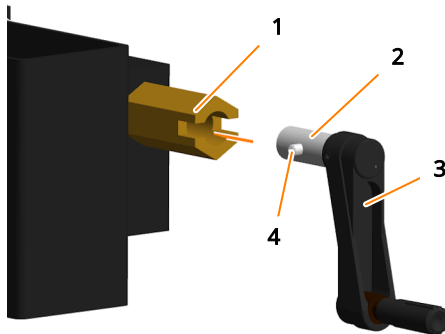
Always make sure that the vessel is free of pressure before manipulating built-in-parts and the vessel top plate.

Before removing the vessel top plate, ensure that the following items are performed in accordance with the operating manual of the bioreactor:

No.	Activity	☒
1	The bioreactor is stable at its position and cannot roll away. The brakes of the swivel castors are locked.	☐
2	The bioreactor is stopped, the system is shut down and the device is switched off at the main switch.	☐
3	The vessel is de-pressurised.	☐
4	All cables and hose connections between the vessel top plate and the basic unit or instrumentation cabinet have been disconnected.	☐
5	The motor has been disconnected and inserted in the holder provided for this purpose on the central column.	☐
6	All components (e.g. exit gas cooler, filter, sensors etc.) which are connected to the vessel top plate and the device have been removed.	☐
7	The cap nuts of the vessel top plate have been loosened and removed.	☐

5.2 Preparing the Rope Winch

Operating the Rope Winch Manually



1. Insert the crank shaft (2) with fixated crank handle (3) into the port (1) on the rope winch.
2. Engage the spring pin (4).
3. Turn the crank handle counter-clockwise until the rope is cranked down to the desired height.

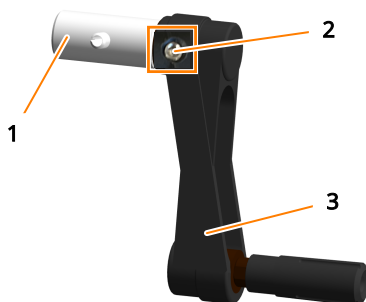
Operating the Rope Winch with a Cordless Drill



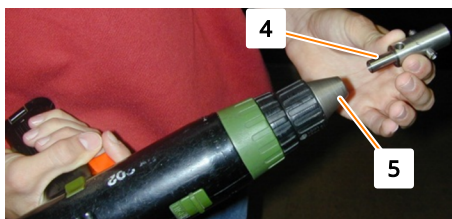
WARNING

When using a cordless drill without rotation speed control, slow, controlled lifting or lowering of the vessel top plate is not possible. This carries a risk of injury and risk of property damage.

Use only cordless drills with rotation speed control.



1. Unscrew the grub screw (2) and remove it along with the crank handle (3) from the crank shaft (1).



2. Fit the pin (4) of the crank shaft into the drill chuck (5) of the cordless drill.
3. Insert the crank shaft into the port of the rope winch and engage the spring pin.

Operation



4. ➔ Using the cordless drill, turn the crank counter-clockwise until the rope is cranked down to the desired height.

5.3 Attaching the Vessel Top Plate

Safety Notes



! WARNING

If the solid wire rope clamp is not tightened sufficiently, the loop of the solid wire rope may come loose and the vessel top plate may fall down. This can cause serious injuries.

Before each use of the lifting device, check the fastening of the solid wire rope clamp (➔ Chapter 6.2 'Maintenance Plan' on page 25).

! NOTICE

If built-in-parts hit the inside of the vessel, this can result in micro scratches. In this case, the specified surface roughness on the inside of the vessel can no longer be guaranteed.

! NOTICE

The stirrer shaft is sensitive and can be bent by impact. This causes an imbalance during operation, which can damage the mechanical seal and the bearings in the stirrer shaft hub.

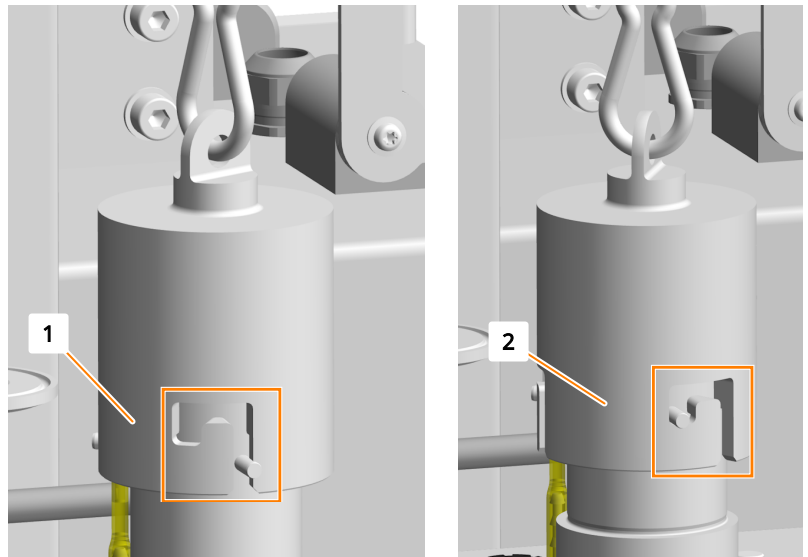
Personnel

Only qualified personnel may operate the lifting device. To ensure safe and controlled lifting and lowering of the vessel top plate, a second person must always assist. This manually ensures that the top plate is moved as smoothly as possible during the swivelling, lifting and lowering process.

Securing the Vessel Top Plate

Once the bioreactor and rope winch have been prepared, the vessel top plate can be attached:

1. ➔ **Person A:** Attach the cap with the carabiner hook to the loop on the rope weight.



2. → **Person A:** Place the cap with its grooves aligned with the pins onto the drive hub (1) and turn it so that the pins are engaged (2).

3. → **Person A:** Hold the cap in this position.

Person B: Slowly crank up the rope until the rope is taut and the pins lock into place due to the weight of the vessel top plate.

Lifting the Vessel Top Plate

Once the vessel top plate is attached, the lifting procedure can begin:

1. → **Person B:** Turn the crank handle clockwise (or alternatively use a cordless drill with rotation speed control), until the vessel top plate has been lifted to the desired height.

Person A: Make sure that the vessel top plate is pulled up vertically and that no built-in-parts touch the vessel wall. If necessary, guide the vessel top plate by hand using the top plate handles.

2. → **Person B:** Turn the wing screw counter-clockwise until the lifting device can be moved.

3. → **Person B:** Manually align the lifting device until the extension arm is in the desired position.

4. →  **CAUTION**

An insufficiently tightened wing screw of the lifting device can lead to uncontrolled movement deflections of the vessel top plate during the lifting and lowering process and poses a risk of injury.

Person B: Turn the wing screw clockwise until the lifting device is immobile and stable in the aligned position.

Operation

5. ➤ Person B: Turn the crank handle counter-clockwise (or alternatively use a cordless drill with rotation speed control) until the vessel top plate is lowered to the desired height.

Person A: Ensure that the vessel top plate is lowered vertically. If necessary, guide the vessel top plate by hand using the top plate handles.

6. ➤ Both persons: If necessary, lower the vessel top plate until it can be placed on the prepared work surface. When doing so, ensure the following:

- The stirrer shaft and sparger are not subjected to any load.
- The vessel top plate cannot roll away or fall down.

7. ➤ Person A: If the vessel top plate was placed on a work surface: loosen the carabiner hook of the cap from the loop on the rope weight.

6 Cleaning and Maintenance

6.1 Cleaning



CAUTION

Using spray bottles with ethanol can result in explosive mists being created!

All cleaning operations with ethanol must be carried out in an environment that is separate from the device, well ventilated and meets internal safety regulations.

- Clean the lifting device with water or ethanol as required.
- Immediately decontaminate components that have come into contact with hazardous chemicals or other substances that are hazardous to health.

6.2 Maintenance Plan



WARNING

Failure to observe the maintenance plan bears a significant risk.

Users are responsible for compliance with the maintenance plan; failure to comply with it will result in exclusion of liability (see GTC).

The following sections describe the maintenance work that is required for optimal and fault-free operation.

If increased wear is detected during regular checks, the required maintenance intervals must be shortened in accordance with the actual signs of wear. Contact the manufacturer if you have questions about maintenance work and intervals.

Cleaning and Maintenance

Interval	Maintenance work	Personnel
Prior to each use	Check if the screws of the solid wire ropes sit tight and tighten if necessary.	Operator
	Check the rope winch according to the manufacturer's operating manual.	Operator
Every 3 months	Perform the quarterly maintenance of the rope winch according to the manufacturer's operating manual.	Technician
Annually	Perform the annual maintenance of the rope winch according to the manufacturer's operating manual. In particular, the rope winch must be inspected by a competent person as part of the annual maintenance.	Technician

The rope winch operating manual is attached (➔ Appendix A 'Rope Winch Operating Manual' on page 30).

7 Disposal

Once the end of use has been reached, the device must be dismantled and disposed of in an environmentally friendly manner. The materials must be disposed of in accordance with national and local legislation. The local municipal authority or specialist waste disposal companies can provide information on environmentally friendly disposal.

If no special return arrangements have been agreed, INFORS HT devices can be returned to the manufacturer or licenced dealer for disposal with the required declaration of decontamination (➔ Chapter 1.8 'Declaration of Decontamination' on page 11).

Technical Data

8 Technical Data

8.1 Dimensions

Data	Value	Unit
Total height of the lifting device, installed	2533	mm
Minimum room height for installation	2800	mm
Work radius	350	mm

8.2 Weight

Data	Value	Unit
Total weight of the lifting device	11	kg

8.3 Load-bearing Capacity

Data	Value	Unit
Maximum load-bearing capacity	60	kg

Appendix

Rope Winch Operating Manual

A Rope Winch Operating Manual

MEILI OPERATING INSTRUCTIONS

(Translation)



Spare wheel winch			
Type	468.0,25 / K / A	462.0,25	4680.0,25
	4687.0,25	4821.0,25	4862.0,25
Rope winch			
Type	4751.0,4	4185.0,5	

1. USER GROUPS

	Duties	Qualifications
Operator	Operation, visual inspection	Instruction by means of the operating instructions; Authorised person
Specialist personnel	Assembly, disassembly, repair, maintenance	Mechanic
	Tests	Authorised person per TRBS-1203 (Technical expert)

2. SAFETY INSTRUCTIONS

Appropriate use

Operate the equipment in accordance with the information in these operating instructions.

- Only use to lift, lower and pull freely-movable loads.
- Only use when in perfect working order.
- Only allow to be operated by personnel instructed on how to do so.

Safety-conscious work

- First read the operating instructions.
- Always be conscious of safety and hazards when working.
- Observe lifting device and load during all movements.
- Immediately report any damage or defects to the person in charge.
- Repair equipment first before continuing work!
- Do not leave the load suspended without supervision.
- Transport device protected against impacts and shocks, falling over or toppling.

The following are not allowed:

- Overload (→ technical data, type plate, payload plate)
- Mechanical propulsion.
- Impacts, blows.

Use exclusions

- Not suitable for permanent operation and vibration stress.
- Not approved for use as builders' hoist (DGUV-R 100-500-2.30).
- Not approved for use on stages or in studios (DGUV-V 17).
- Not approved for use as a retractable transportation device for personnel (DGUV-R 101-005).
- Not approved for use in explosive areas/environments.
- Not suitable for aggressive environments.
- Not suitable for lifting hazardous loads.

Organisational measures

- Ensure that these operating instructions are always at hand.
- Ensure that only trained personnel work with the equipment.
- Check at regular intervals whether it is being used in a safety and hazard conscious manner.

Installation, service and repair

Only by specialist personnel!

Only use original spare parts for repairs.

Do not modify or alter safety-relevant parts!

Additional attachments must not impact safety.

Further regulations to be observed are

- German Industrial Health and Safety Ordinance (BetrSichV).
- Country-specific regulations.
- German Accident prevention regulations (DGUV-V 54).

Load

- Do not leave suspended without supervision.
- Do not allow to swing.
- Do allow to fall in the rope.

3. TECHNICAL DATA

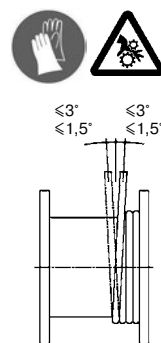
Type		468.0,25	462.0,25	4680.0,25	4687.0,25	4821.0,25	4821.0,25	4862.0,25	4751.0,4	4185.0,5
Order no.		213150 213151 213158	200230	213310	213157	203733	210759 230034	213161	200045	200046
Permitted load first rope layer	t	0,25	0,16	0,25	0,25	0,25	0,25	0,25	0,4	0,5
Crank force	N	66	100	66	66	10,6 Nm	10,6 Nm	66	180	138
Lift per crank turn	mm	5,5	235	5,8	5,8	5,8	5,8	5,8	7,5	14
Total rope capacity (steel)	m	4,3	5,9	3,3	3,3	3,3	1,2	3,3	3,5	14,9
Total rope capacity (polyamid)	m	1,1	–	0,8	0,8	–	–	0,8	–	–
Rope diameter (Polyamid rope with loop DIN 83307-K-8)*	mm	ø 8	–	ø 8	ø 8	–	–	ø 8	–	–
Rope diameter (Wire rope)	mm	ø 4	ø 4	ø 4	ø 4	ø 4	ø 5	ø 4	ø 6	ø 6
Min. rope breaking force	kN	8	8	8	8	8	8	8	12,8	16
Weight without rope	kg	3	5,3	4,1	2,5	1,7	1,7	4,1	6	12

Modifications of the design and execution reserved. Special design! Pay attention to the serial number plate and the drawing.

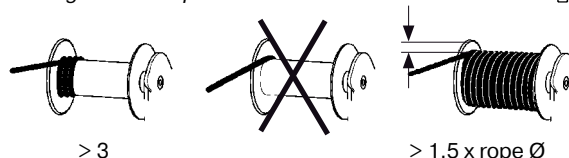
* Polyamide rope only admissible for spare wheel winch. Detiating from DGUV-V 54.

Rope

- Compliant with EN 12385-1 and EN 12385-4 and the technical data
- Maintain rope deviation angle non-rotating rope $\leq 3^\circ$ (standard) rotation-resistant rope $\leq 1.5^\circ$
- Use a rotation-resistant rope for unguided loads. This can reduce the resting period of the rope (drive mechanism group).
- Wind up the wire rope under pretension, e.g. fully wind up the rope and adjust the rope length to the lift.

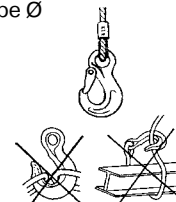


The length of the rope is correct if:



Lifting equipment

- Ensure sufficient load-bearing capacity.
- Only use load hooks with a safety flap.
- Use the approved load hooks with rope thimbles and rope clip.
- Attach the load properly.
- Do not use the winch rope to secure the load.



4. CONSTRUCTION

The winches are equipped with worm gear and maintenance-free sleeve bearings.

The type 462 is equipped with a ratchet crank.

5. INSTALLATION

For safety reasons the winch should be installed with 4 screws, washers and nuts.

Type 4821.0,25

2 x screws size M8 min. 8.8.

Type 462.0,25, 468.0,25 / K / A, 4185.0,5, 4680.0,25, 4751.0,4, 4862.0,25
4 x screws size M10 min. 8.8.

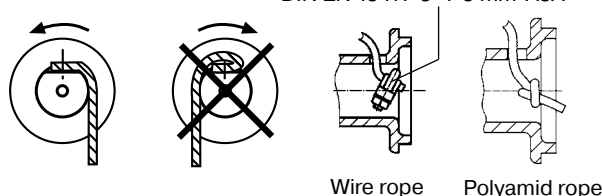
6. ROPE INSTALLATION

Wire rope

When the crank is turned clockwise the cable must coil up on the drum **anti-clockwise** or, for models 462.0,25, **clockwise**.

Hard solder the end of the cable prior to clamping to drum.

DIN EN 13411-5-4-5 mm-A3A



Wire rope Polyamid rope

7. OPERATION

Unfold the crank handle.

Lift the load: Turn crank clockwise.

Secure the spare wheel after lifting!

Lower the load: Turn crank anti-clockwise.

If the crank is not turned the load is suspended safely.

When lifting a load, do not wind rope beyond the point where at least 1,5 x rope diameter is left free on drum flanges above outermost layer.

When loaded, at least 3 turns of the rope must remain on the drum. The capacity of the first layer corresponds to the nominal capacity of the winch. This means that the capacity decreases with every further layer (refer to type-/ capacity number plate for capacity of first and last layer).

8. INSPECTION

The equipment must be inspected in accordance with the conditions of use and the operating conditions at least once per year by an authorised person per TRBS 1203 (Technical expert) (testing per BetrSichV, § 10, sect.2 represents implementation of EC Directives 89/391/EEC and 2009/104/EC and the annual occupational safety inspection per DGVV-V 54, §23, sect. 2 and DGVV-G 309-007).

These inspections must be documented:

- Before commissioning.
- After significant alterations before recommissioning.
- At least once per year.
- In the event of unusual occurrences arising that could have detrimental effects on the safety of the winch (extraordinary tests, e.g. after a long period of inactivity, accidents, natural events).
- After repair works that could have an influence on the safety of the winch.

Technical experts are persons, who have sufficient knowledge based on their specialist training and experience, in the areas of winches, lift and pull systems and the relevant official occupational health and safety rules, accident prevention regulations, guidelines and generally accepted engineering rules (e.g. EN standards), to evaluate the operational safety of winches, and lift and pull systems.

Technical experts are to be nominated by the operator of the equipment. Performance of the annual occupational safety inspection as well as the training required to obtain the aforementioned knowledge and skills can be provided by MEILI.

9. MAINTENANCE RECOMMENDATION

The operator determines the intervals themselves based on frequency of use and the operating conditions.

- Regular cleaning, no steam jets!
- General overhaul by the manufacturer after 10 years at the latest.



CAUTION!

Only perform inspection, maintenance and repair work on an unloaded hoist. Only allow work on brakes and locks to be performed by qualified specialist personnel.

Maintenance and inspection work	Intervals
Visual check of the rope hooks (load carrier)	Before every use
Function of the winch	
Condition of the rope and lifting equipment	
Brake function under load	
Grease bearing of drive pinion	Quarterly Annually
Check rope for wear acc. to DIN ISO 4309 and service	
Check fastening bolts for secure seating	
Check all parts of the winch and crank for wear, if applicable, replace defective parts and lubricate.	Annually
Check type plate for legibility	
Have an inspection performed by an expert	

Lubricant recommendations: Multi-purpose grease per DIN 51502 K3K-20

10. SPARE PARTS

When ordering spare parts it is essential to quote:

- The type and serial number of the equipment / item and part number

11. DISASSEMBLY, DISPOSAL

- Make sure to observe the safety instructions.
- Dispose of the equipment and the substances within it in an environmentally responsible manner.

Konformitätserklärung

entsprechend Anhang II, Maschinenrichtlinie 2006/42/EG
(Maschinenverordnung)

Hiermit erklärt die

L. Meili & Co. AG, Zehntenhausstrasse 63, CH-8046 Zürich

dass das unten aufgeführte Produkt mit den Bestimmungen der Maschinenrichtlinie 2006/42/EG konform ist.
Handseilwinde 468A / 462

Dokumentationsbevollmächtigter:

Roland Meili, Zehntenhausstrasse 63, CH-8046 Zürich

Declaration of conformity

according to the Machinery Directive 2006/42/EC annex II
(ordinance on machinery)

We hereby declare

L. Meili & Co. AG, Zehntenhausstrasse 63, CH-8046 Zürich

that the machinery mentioned below fulfills all the relevant provisions of the machinery directive 2006/42/EC
Manual Rope Winch 468A / 462

Person authorized to compile the technical file:

Roland Meili, Zehntenhausstrasse 63, CH-8046 Zürich

Déclaration de conformité

selon la directive relative aux machines 2006/42/CE annexe II
(Ordonnance sur les machines)

Par la présente, nous déclarons

L. Meili & Co. SA, Zehntenhausstrasse 63, CH-8046 Zurich

que la machine indiquée ci-dessous satisfait à l'ensemble des dispositions pertinentes de la directive relative aux machines 2006/42/CE.

Treuil à câble 468A / 462

Personne autorisée à constituer le dossier technique:

Roland Meili, Zehntenhausstrasse 63, CH-8046 Zurich

Zürich, 19. April 2018

L. Meili & Co. AG



Roland Meili
(Geschäftsführer)

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