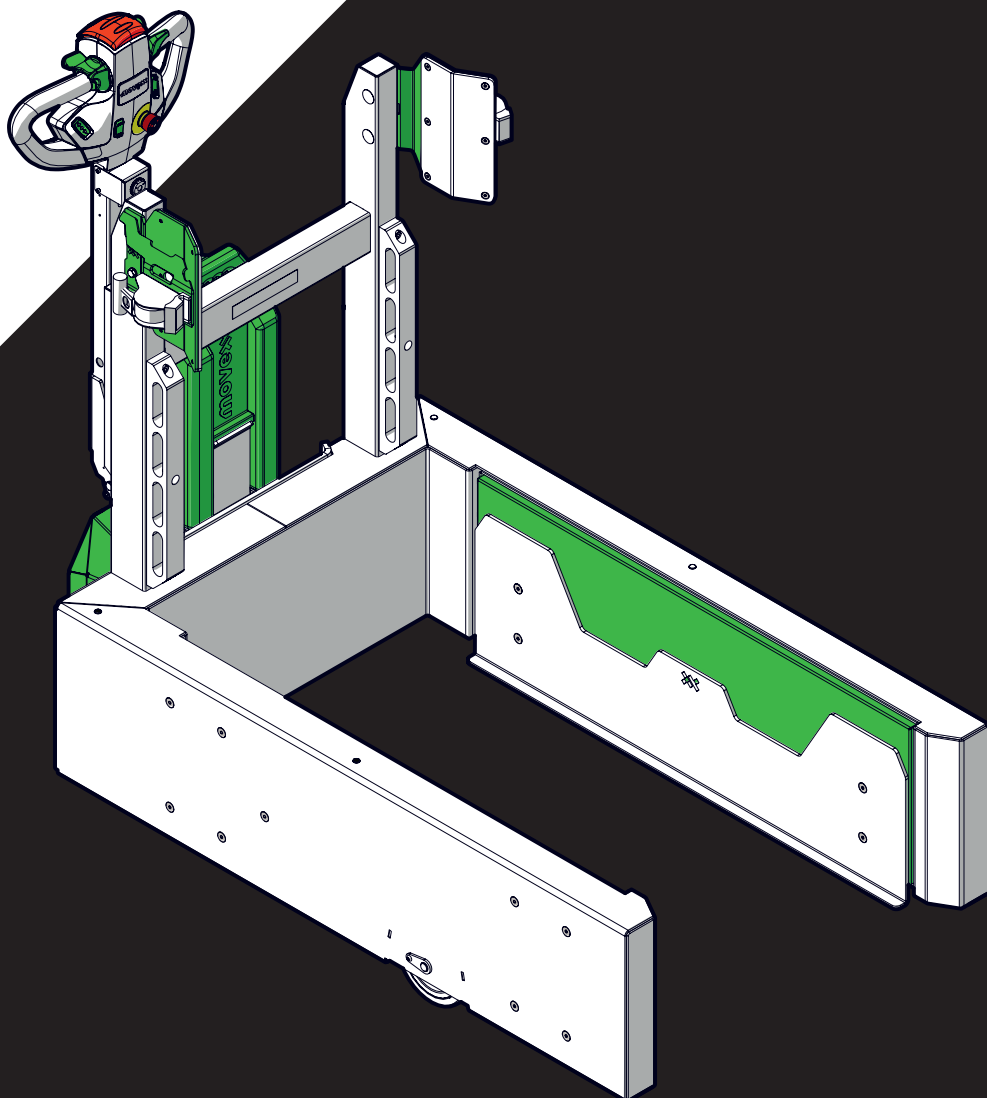
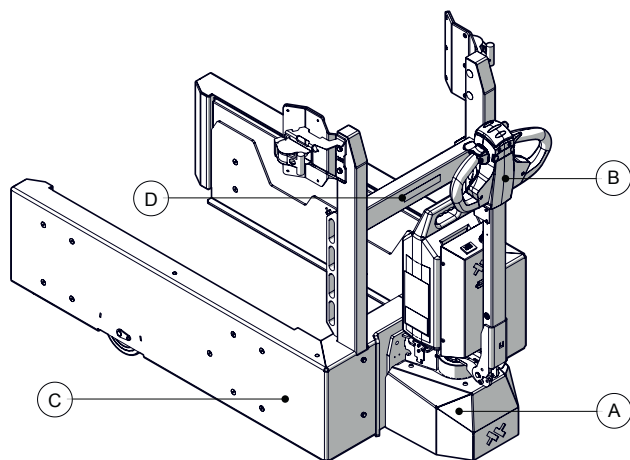




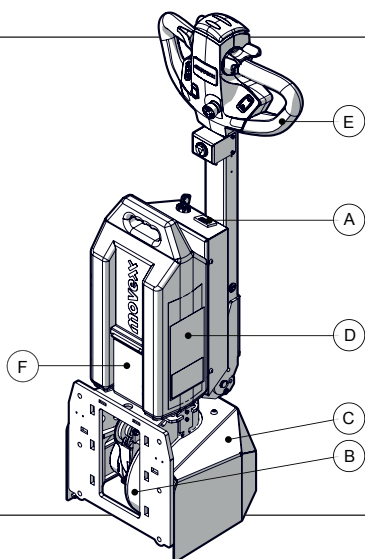
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SR1500-M3

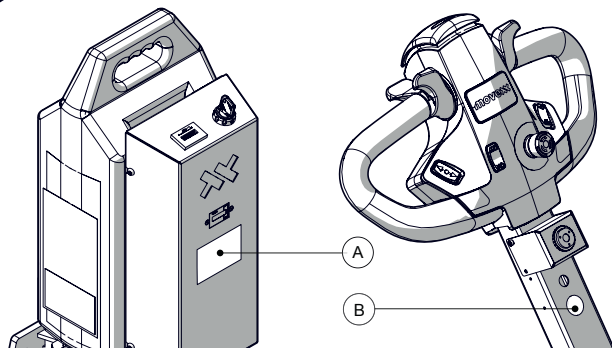
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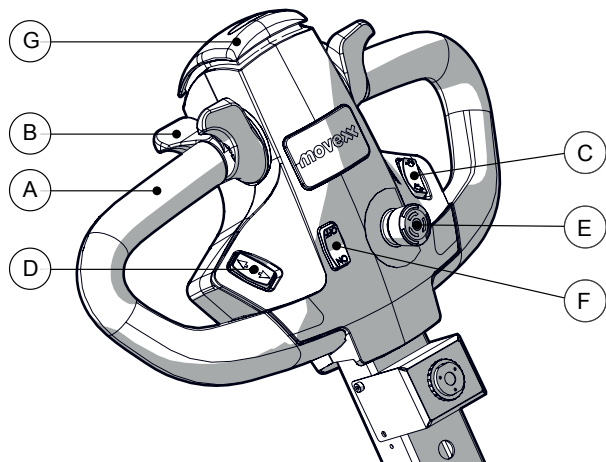
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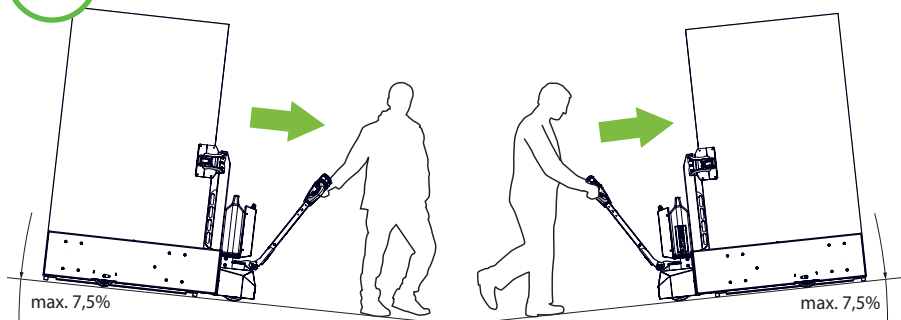
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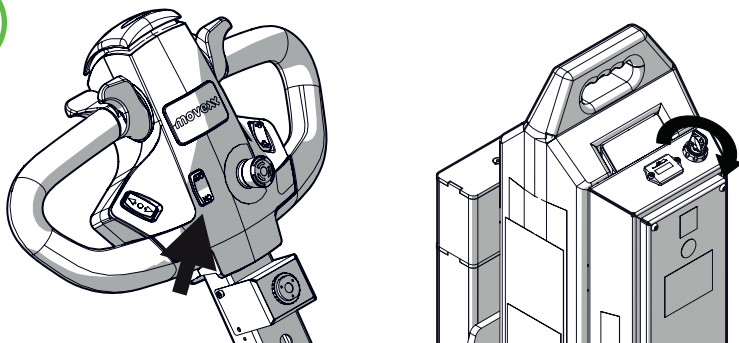
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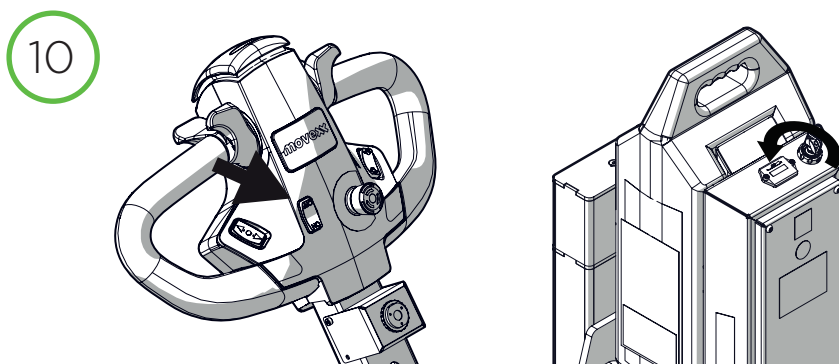
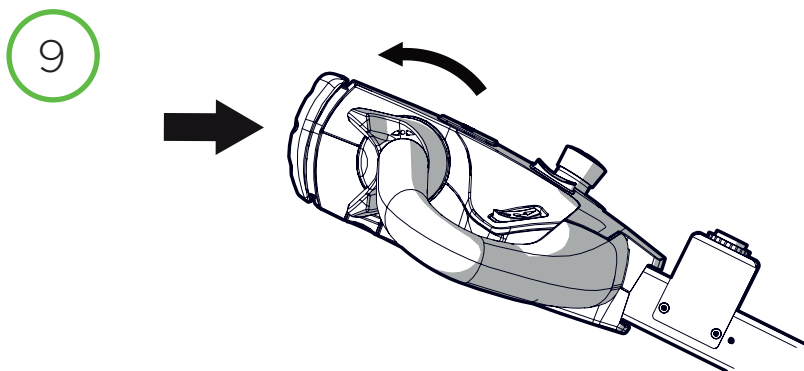
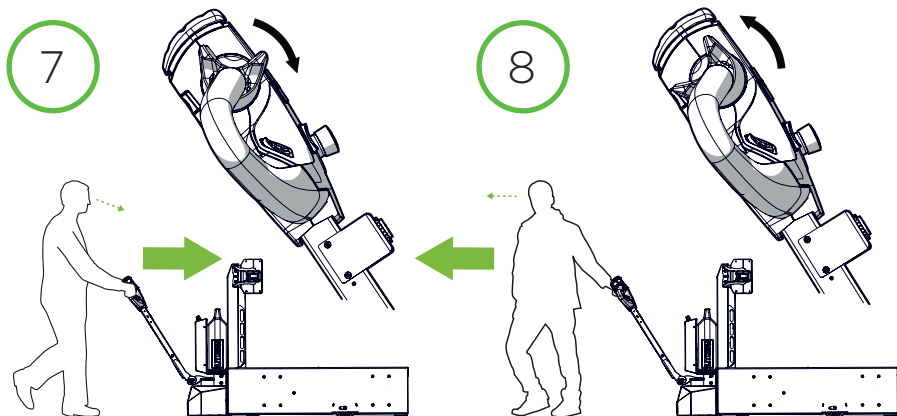


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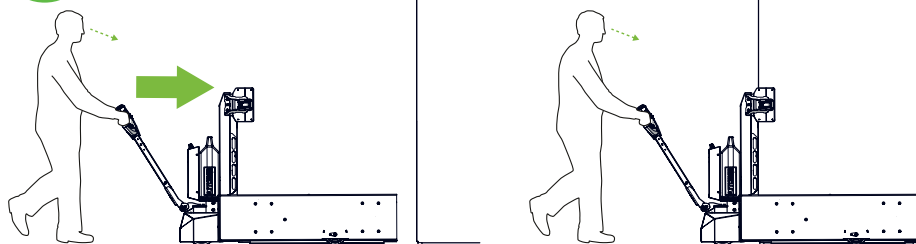


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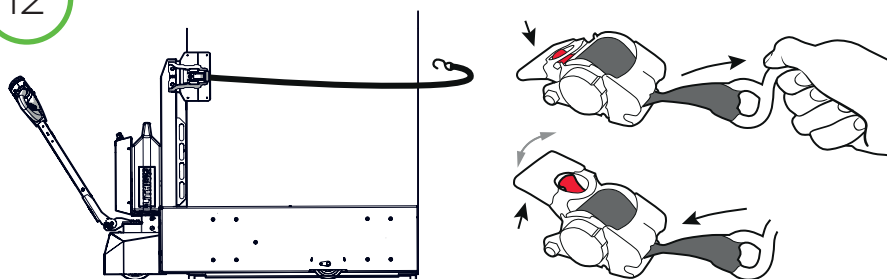




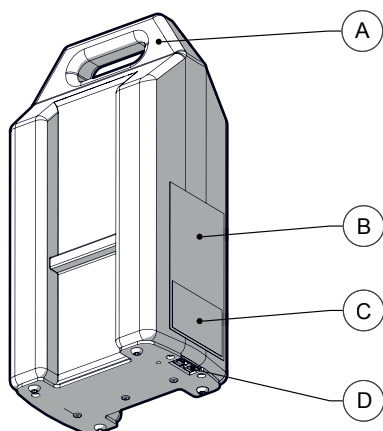
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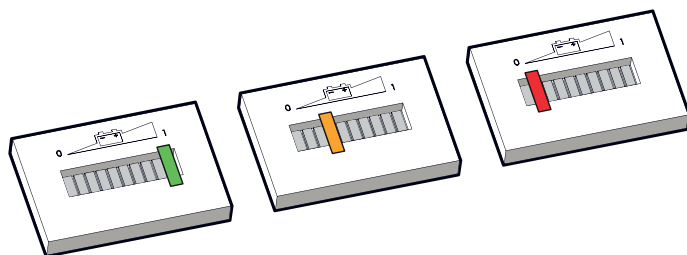
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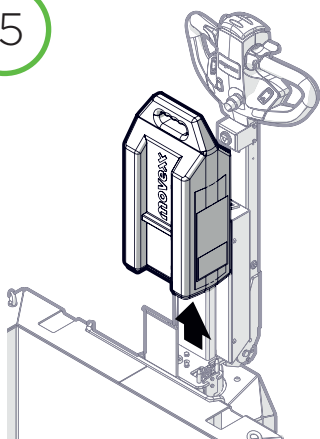
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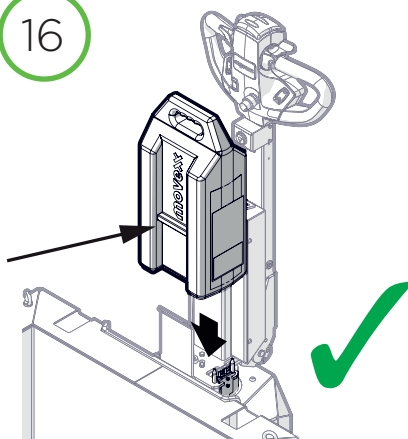
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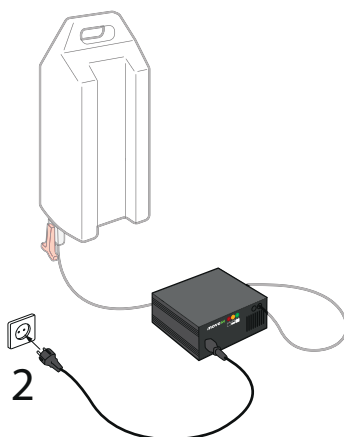
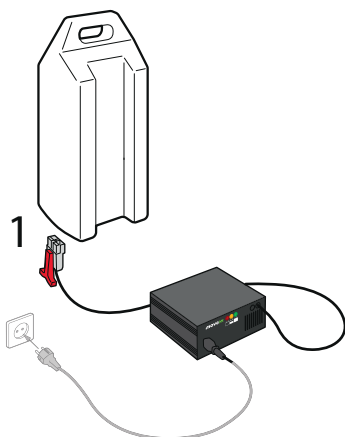
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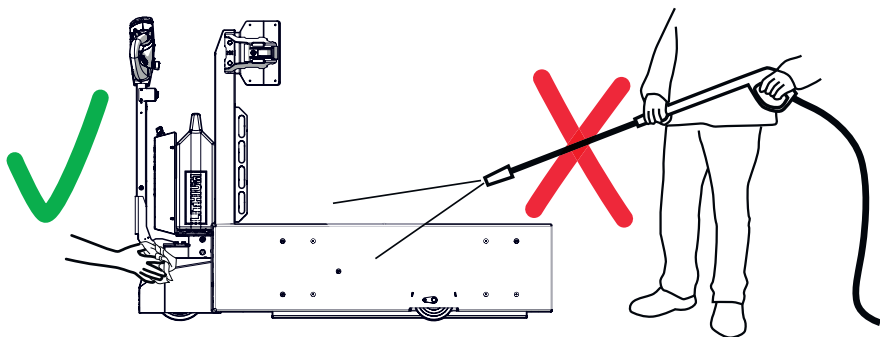
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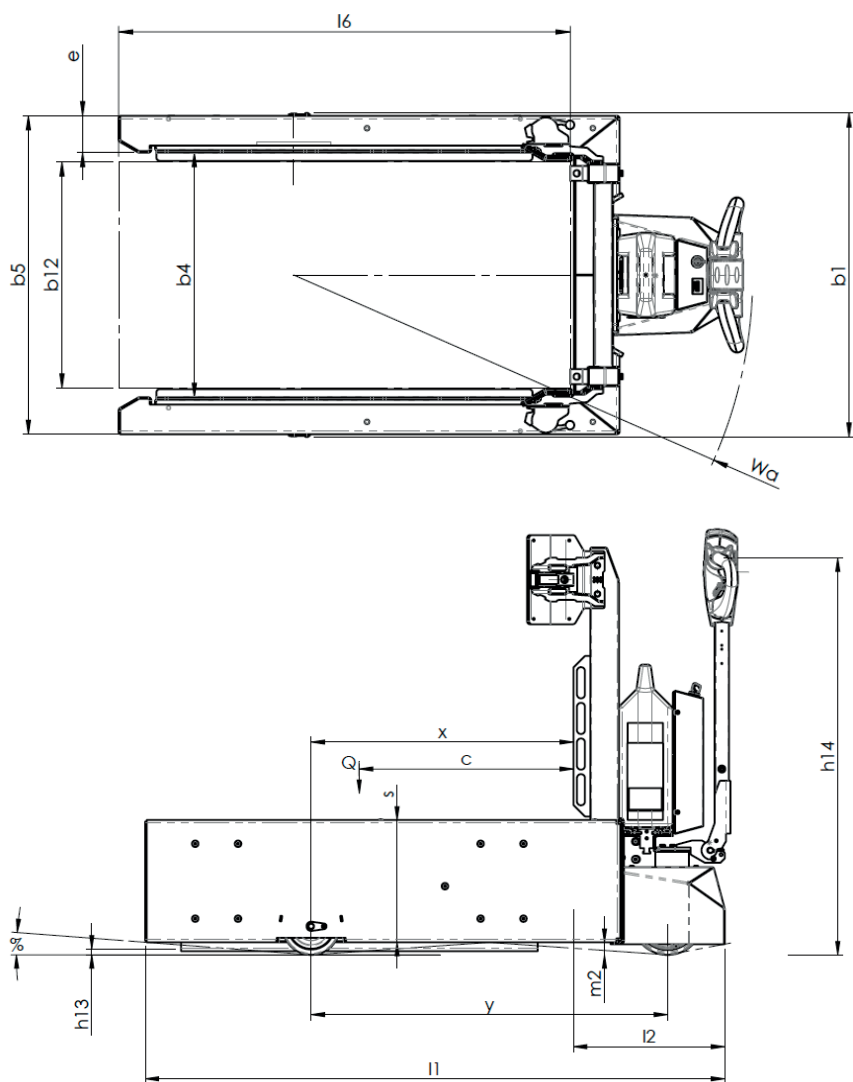


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VDI SR1500-M3

Characteristics	1.1	Manufacturer		Movexx Int. B.V.
	1.2	Manufacturer's type designation		SR1500-M3
	1.3	Power unit		Electric with LiFePo4 battery
	1.4	Operator type		Pedestrian
Wheels	1.5	Load capacity	Q [t]	1.5
	1.7	Load center	c [mm]	600
	1.9	Axle center	x [mm]	735
	1.10	Wheelbase	y [mm]	999
	2.1	Weight incl. battery	kg	275
	2.2	Axle load with load	front/rear	kg 321/1454
	2.3	Axle load without load	front/rear	kg 119/156
	3.1	Tyres, front/rear R=(rubber, PU=(polyurethane)		PU/PU
	3.2	Tyres size	front	mm 200
	3.3	Tyres size	rear	mm 160
Dimensions	3.5	Wheels, number front/rear (x = drive)		1x/2
	4.4	Lift	h3 [mm]	70
	4.9	Tiller height	min./max.	h14 [mm] 775/1138
	4.15	Fork height, lowered		h13 [mm] 16.5
	4.19	Overall length	l1 [mm]	1624
	4.20	Length to fork face	l2 [mm]	424
	4.21	Overall width	b1 [mm]	861
	4.22	Fork dimensions	sxexl	343x98x1200
	4.25	Fork spread	b5 [mm]	846
	4.26	Distance between loading surfaces, open/closed	b4 [mm]	650/610
Performance	4.32	Ground clearance, center of wheelbase	m2 [mm]	35
	4.33	Load dimensions	b12x16 [mm]	600x1200
	4.35	Turning radius	Wa [mm]	1220
	5.1	Travel speeds	with/without load	km/h 4.5/5.5
	5.2	Lifting speed	with/without load	mm/s 8.6/10.6
	5.8	Maximum slope (5 min)	with/without load	% 0/7.5
	5.9	Acceleration	with/without load	s 12/10
	5.10	Service brake		Electromagnetic
	6.1	Drive motor output (S2 = 60 Min)	kW	0.7
	6.2	Lift motor output 20% Max. 4min./16min.	kW	0.3
Others	6.3	Battery acc. to DIN 43531		LiFePo4
	6.4	Battery voltage/rated capacity	V/Ah	24/36
	6.5	Batter weight +/- 5%	kg	12
	8.1	Drive control		DC
	10.7	Sound level at operator's ear	dB(A)	< 74



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Disclaimer

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Additional copies of this manual can be ordered from Movexx International B.V. or from your local Movexx dealer. Always refer to the document number (on the back cover of this manual) when ordering additional copies. The latest version of this manual can be downloaded from the dealer login section on our website www.movexx.com.

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This manual is a translated version of the original dutch version.

Your Movexx dealer;

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Safety Standards

This manual has been written in compliance with the following Standards:

- EN 1175:2020
- EN-ISO 12100:2010
- VDI 3973

This manual has been written in compliance with the following Guidelines:

- Machinery Directive 2016/42/EG
- EMC Directive 2014/30/EU

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Preface

Congratulations on the purchase of this Movexx SR1500 electric tug! This user manual contains all the information needed to operate the SR1500 correctly, efficiently and safely.

The user manual is aimed at operators who will be operating the SR1500 as part of their job.

The SR1500 is not intended for use by:

- children/young people aged under 16;
- people with impaired physical, sensory or mental capacity;
- people who are not able to recognize potential hazards;
- people who are under the influence of alcohol or drugs;
- people who are under the influence of medication that affect their driving ability;
- people who are not familiar with the contents of this user manual;
- Testing of the capability is the responsibility of the purchaser or employer..

Please read the manual carefully before operating the SR1500. Make sure the manual is accessible at all times. If the SR1500 changes ownership, the manual, the Service Log including recent inspection report must be handed over along with the CE documentation.

This manual contains important warnings and notes that identify hazardous situations. These warnings and notes have been categorised and represented as follows:

DANGER

Indicates a hazardous situation that could result in serious injury or death if safety instructions are not followed.

WARNING

Indicates a hazardous situation that could result in serious injury or death and/or serious damage to the product or environment if the safety instructions are not followed.

CAUTION

Indicates a hazardous situation that could result in minor or moderate injury and/or damage to the product or environment if the safety instructions are not followed.

NOTE

Provides information that is considered important but is not injury-related (e.g., information related to property damage).

Definitions

SR1500	This is what the Movexx SR1500 server rack mover is referred to in this manual.
Qualified Skilled	With permission of the owner/employer. The mental, intellectual, and/or physical condition (build, age, and condition) that allows one to operate the SR1500 as it should be operated.
Declaration of Conformity	Manufacturer's signed document containing all Standards and Guidelines applied in the design and testing of the SR1500 (CE Document).
DCL (Drive Control Lever)	The (Green) control handles on both sides of the tiller head, which can be operated to obtain the different driving directions and speeds of the SR1500.
Safety reverse switch	Red button on the tiller head. When this button is operated, the SR1500 will drive in the reverse direction for a few (programmable) seconds to avoid entrapment of the user.
Hook	Connection to cart/roll container.
Inspection Report	Document containing the items to be inspected annually.
Manufacturer Distributor	Movexx International B.V. Veenendaal, Netherlands. By Movexx International B.V. recognized selling party which in most cases also can provide service and maintenance to the Movexx machines. Also called (certified) dealer.
Service-Maintenance Technician	Trained, qualified person with the knowledge to perform maintenance work on the SR1500 in a safe and proper manner.
Drive Controller	Electronic box with the program for speed, acceleration, braking time, etc.
Operator	The person/employee who works with the SR1500.
Tiller head support	Construction between the chassis and the tiller head of the SR1500.
Tiller head	Control console of the SR1500.
Pull Position	Direction of travel with the SR1500 and cart behind the operator.
Pushing Position	Direction of travel with the SR1500 and cart in front of the operator.
Hazard/Risk	The possibility of potential harm to health in various situations.
Server rack	Rack/cabinet specifically designed to hold and organize IT equipment.
PPE	Personal Protective Equipment. For example, safety shoes, safety glasses, gloves.

1. Description of the SR1500

The SR1500 is the ergonomic solution for the safe and efficient moving of server racks. The SR1500 is easy to use and powerful, allowing server racks to be moved by a single operator, even in confined spaces. The SR1500 has been specially designed for handling server racks without the need to have the server racks castor wheels in motion, while handling server racks off and onto a trailer, on dock levellers or industrial flooring. Thanks to the powered drive and lift system, the physical effort of the operator is kept to a minimum.

The SR1500 is an electrically powered transport aid that drives steplessly forward and backward. The server rack is connected between the support legs of the SR1500 by means of lifting and secured in place by an automatic ratchet strap. The steering mechanism is located at the front of the SR1500. It consists of the tiller head which is connected to a steering wheel via the steering shaft. The operator controls the SR1500 while walking along with the SR1500. With the tiller head the operator determines the direction of travel and speed.

The drive wheel is powered by a wheel motor with electromagnetic brake.

The motor and other electrical systems are powered by a removable battery that must be inserted into the battery holder.

The SR1500 is equipped with an automatic brake. When the Drive Control Lever (DCL) on the tiller head is released, the SR1500 brakes until it stops. At standstill, the parking brake automatically engages. The parking brake is a separate electromagnetic brake.

Identification of the SR1500

Each SR1500 has a unique nameplate that contains the following information:

- model
- serial number
- production date
- contact information for Movexx International B.V.

In addition, the SR1500 has an inspection sticker that indicates when the last inspection took place.

The type plate (A) is located on the frame and the inspection sticker (B) is located under the tiller head, see Figure 3 on page 3.

Intended use

The SR1500 is intended solely to move server racks within the given operating conditions, with the appropriate attachments and according to the proper procedures described in this manual. The maximum weights are defined in this manual (see VDI table on page 10).

The SR1500 is not intended for:

- to sit or stand on while using;
- passenger transport;
- towing loads;

- pushing or pulling loads other than the server racks indicated in this manual;
- hoisting loads;
- public road use;
- for use on a slope with more than 7,5 percent incline.

Operating conditions

Transport must take place on a hard floor that is clean, level and suitable for transporting the server racks used. There must be no liquids, dirt or other substances on the floor that could cause slippery conditions.

The SR1500 itself is not sensitive to wind gusts. However, the user must ensure that high or light loads do not endanger the combination in strong winds.

Do not use the SR1500:

- in conditions where visibility is poor (e.g. due to fog or lack of light);
- under potentially explosive or hazardous conditions;
- on slippery surfaces;
- on surfaces which are not solid;
- on uneven surfaces;
- do not exceed the maximum towing capacity. Check the specifications for the maximum permitted towing weight (see VDI table on page 10);
- on a slope, more than 7,5%;
- in conditions where the air humidity is less than 30% or higher than 80%;
- in conditions cooler than -10°C (14°F) or warmer than 40°C (104°F);
- In situations with large temperature fluctuations that can cause condensation.

Components

The SR1500 is a motorized tool with 1 drive wheel and 2 support wheels. The SR1500 contains a drive motor powered by a battery and operated by an operator. The SR1500 is made up of the following components, see Figure 1 on page 3:

- Drive unit
- Tiller head
- Support structure with dual lifting module
- Super structure with automatic ratchet strap

The configuration of modules is intended solely for the specified SR1500 and the server rack it has been designed to move. The SR1500 configuration is supplied by Movexx International B.V. or your distributor. Ask your distributor for information about modules and their application.

A. Drive unit

The polyurethane steering wheel is driven by a motor with an electromagnetic brake. The motor and other electrical systems are powered by a removable battery that must be inserted properly in the battery holder. The drive module always consists of the following components, see Fig. 2 on page 3:

- LED Battery indicator
- Driven steering wheel
- Steel wheel cover
- External battery (Lithium)
- Tiller head
- Battery holder

The drive module can also be supplied with optional accessories (e.g. a horn or external charging connector). Ask your distributor for information about the precise configuration and components of your SR1500.

B. Tiller head

The tiller head is the machine's control unit. Fig. 4 on page 4 shows the following control elements of the tiller head:

- A. Butterfly handlebar;
- B. Drive forwards/backwards with stepless speed control traction switch;
- C. Select the turtle for slow mode or the rabbit for fast mode;
- D. Press Up/Down for raising or lowering lifting module;
- E. Emergency stop
- F. Press On/Off to turn power on or off;
- G. Safety reverse switch.

The SR1500 can be supplied with additional control elements. Consult your distributor for information regarding additional control elements for your SR1500 and their functions.

C. Support structure

The support structure is specific to both the SR1500 and the type of server rack that needs to be transported. The dimensions of the support structure are designed to match the server rack. It consists of 2 support legs with polyurethane load wheels, a dual lift system which is operated by a button on the tiller head with 'hold to run' function. The dual lifting module is equipped with 2 electric actuators that allow the server rack specific gripping plates to be infinitely adjusted in a simultaneous horizontal and vertical movement. The overlapping steel covers on the inside of the legs protect the lift systems and prevent any clamping risks.

The support structure is supplied by Movexx International B.V. or your distributor. Ask your distributor for more information about the support structure and its application.

D. Super structure

The super structure is mounted on top of the support structure to provide extra stability to the server rack being moved. It consists of 2 steel beams fitted with guide plates to centre and retain the server rack. It is equipped with an auto-retract ratchet strap that locks the server rack between the guide plates and thus prevents tilting of the server rack.

The super structure is supplied by Movexx International B.V. or your distributor. Ask your distributor for information about the super structure and its application.

Safety Features

The SR1500 is equipped with the following safety features:

- double DCL (the SR1500 slows down before coming to a stop, if this button is released);
- Safety reverse switch on tiller head; if activated, the SR1500 will automatically drive in the opposite direction for a few seconds (in case the user would get trapped between the SR1500 and an obstacle);
- emergency stop; if this is activated, the SR1500 will stop immediately and

the electrical circuit will be interrupted, thus de-energizing the SR1500. To deactivate the emergency stop the button should be pulled with a twisting motion and the electrical circuit will be supplied with power again.

- electromagnetic parking brake; automatically activated by moving the tiller head to the default position (fully upright).
- overlapping steel cover plates prevent entrapment of limbs between the moving parts of the clamping- and lifting module.
- foot protector; protects operator's feet from being overrun by the SR1500.

Technical specification and Performance

For the complete overview of technical specifications and performance of the SR1500 please see the complete VDI table on page 10.

Acceleration-, travel- and braking speeds are freely programmable by your distributor. Consult your distributor for information on the pre-programmed values of your SR1500.

Do not change pre-programmed values without permission from the manufacturer or your distributor.

2. Safety

General safety guidelines

- The operator of the SR1500 is fully responsible at all times for compliance with locally applicable safety regulations and guidelines.
- The SR1500 must only be operated by competent, trained and authorized personnel.
- The driver of the SR1500 should not use any equipment (e.g. mobile phone) that could create distractions which could lead to dangerous driving behaviour.
- Do not install or mount equipment onto the SR1500 unless it is stipulated or supplied by the manufacturer.
- Keep the SR1500 in good condition to minimize risks, periodic maintenance can ensure operation.
- Carefully read and follow all safety instructions listed on the SR1500.
- Do not park the SR1500 in front of fire extinguishers or emergency exits or where it will block a passageway.
- Do not ride on loose surfaces, stairs, sidewalks, etc..
- Do not use the SR1500 on slopes steeper than 7,5%.
- Do not attempt a turn on a slope.
- When driving at slopes, speed bumps or when making turns, reduce your speed by half.
- Do not exceed the maximum towable load.
- Avoid collisions, as they can affect the entire construction of the SR1500.
- Any defect (squeaking, leaks, etc.) must be promptly reported and/or corrected. If left unattended, this could lead to more serious malfunctions/defects.



WARNING

Do not use the SR1500 if it shows signs of malfunction and/or breakage. This could be potentially hazardous. Stop the SR1500, park the SR1500 and report it to the maintenance manager or person in charge.

Flooring requirements

The floor must be level and free of holes or potholes. Steps/thresholds must have ramps to prevent wheel collisions.



WARNING

Slippery, wet and/or dirty floors can seriously affect the traction of the SR1500.



CAUTION

Any dirt or objects in the path must be cleaned or removed immediately.

Conditions for the driver



WARNING

Drivers and other people near the SR1500 shall not wear loose hanging clothing and/or accessories that could become entangled or trapped in the SR1500. People with long hair should keep it tied or bound behind the neck.

The operator of the SR1500 is fully responsible for compliance with locally applicable safety regulations and guidelines at all times.

The operator may only use the SR1500 within the limits of its performance and in accordance with what is described in this manual. The trained and authorized operator must be familiar with the controls and performances of the SR1500. Any improper use or use other than that intended should be avoided.

The operator must be knowledgeable and familiar with the SR1500, in order to better diagnose any malfunctions and to inform and/or assist maintenance personnel.

WARNING

The driver should not let go of the SR1500 until it has come to a complete stop.

The driver should never generate (additional) traction by pressing on the tiller head.

To operate the SR1500, the operator must:

- have fully read and understood this manual;
- be aged 16 or older;
- be physically, sensory and mentally capable of operating the SR1500;
- not be under the influence of alcohol, drugs and/or medication that affect driving ability;
- check with their doctor or supplier if any medical aids they are using will affect their ability to operate the SR1500;
- wear safety shoes rated in safety class S3.

Using the SR1500

WARNING

Never put an incomplete and/or damaged SR1500 into service. Have it repaired by your distributor.

Do not use the SR1500 if it is likely that people and/or animals may collide with it.

Always make sure the SR1500 is on the low side of the trolley on a slope, see Figure 5 on page 4.

Use the emergency stop only in emergencies.

When operating the SR1500, drivers should always ensure that:

- they have a clear view of the surroundings and the path that the SR1500 will be following;
- there is a second person watching along when the load blocks the view while pushing the load;
- they keep a sufficient distance away from people and objects so that they can brake safely and in sufficient time;
- they drive slowly in curves and through narrow passages. Excessive speeds may cause the SR1500 to tip over;
- the attached load does not tip over or become disconnected in strong winds;

- the attached load does not stick out and is properly secured.
- they wear the appropriate protective equipment applicable in the environment.

Connecting/disconnecting the server rack

WARNING

Only use the SR1500 for the server racks it is intended for. Consult your distributor if you have any doubts.

Verify that the server racks used are in good condition and can be attached at the correct position.

Watch out for your own and others' safety when connecting and disconnecting the server rack.

Beware of clamping hazards with electrically powered equipment such as the SR1500 support structure.

Do not connect loads that are heavier than the maximum allowable towing weight of the SR1500. If in doubt, consult your distributor.

Always check that the server rack is secure inside the superstructure before driving off. Make sure the anti-tilting safety strap is in place, tensioned and locked.

Slow down gradually before driving down a slope. Never park on a slope.

Do not turn on a slope. Always drive slower on a slope. Make sure the slope is clean and not slippery. The surface should be level and clear of obstacles. Never exceed the maximum incline/weight combination as shown in the complete VDI table on page 10.

Battery

DANGER

Do not open, disassemble, puncture, burn or heat the battery.

Do not short-circuit, or get the battery wet.

Smoke, fire, explosion may result from improper use.

Do not use a damaged battery.

WARNING

Charge the battery only with supplied (external) battery charger and original charging cord.

Charge the battery only in a dry area with adequate ventilation and a room temperature between 0°C - 40°C (32°F - 104°F).

NOTE

Always follow the instructions stated on the battery.

Maintenance and repairs

Maintenance and repairs to the SR1500 may only be carried out by qualified maintenance technicians from certified distributors or services centres.

The person in charge of maintenance must have suitable technical knowledge to work on electromechanical vehicles, acquired through training and/or as a result of valid work experience.

The manufacturer recommends that you only perform maintenance or repair work on a SR1500 when the battery is removed or disconnected.

The person performing the maintenance must absolutely not wear necklaces, ties, belts, chains, jewellery or other objects that could get caught in the SR1500 or cause short circuits; furthermore, the person in charge of the maintenance must use:

- safety shoes;
- safety glasses in acid-resistant material;
- protective gloves.

Tools, instruments and workbenches used for maintenance or repairs must be in good condition in accordance with the requirements of the standards on safety and ergonomics. Tools must be electrically insulated to prevent accidental short circuits.

Check with your distributor for suggested periodic maintenance.

Cleaning

An important part of periodic maintenance is cleaning. Before any cleaning process is started, make sure the SR1500 is turned off and (if possible) has its battery removed or disconnected. This to prevent the risk of short circuiting and/or unwanted movement of the SR1500 or its components. Clean the SR1500 with a slightly damp cloth. Do not use high-pressure spray and/or chemicals for cleaning. When cleaning the SR1500 pay immediate attention to things that stand out such as; loose bolts/nuts, damaged cables, wear off the hook and/or wheels.

Residual Risks

The SR1500 has been developed to standards that minimize the risk associated with its use. The operator should observe the guidelines in this manual at all times.

The residual risks associated with the use of the SR1500 are mainly:

- Risks of colliding with people or objects while driving; The operator should exercise extreme caution while driving, avoiding narrow spaces that do not allow the desired manoeuvres to be performed safely. They should also avoid routes where there are other persons or animals.
- Risks of tipping the SR1500 and/or the load if the SR1500 is used on sloping and/or uneven terrain; During operation, the operator must operate the tiller head in such a way as to prevent the loss of control and balance of the SR1500.
- Risks of short circuits due to accidental and significant impacts. In the event of an accident, the operator should stop the SR1500 and verify that the electrical system and battery is still intact.
- Danger of crushing (parts of) the body against an obstacle: danger that exists during reversing and is mainly due to the design of the steering side of the

SR1500. The operator must be extremely attentive when driving in reverse; they should, if possible, avoid performing the movement with behind their back, columns, scaffolding and other obstacles in general.

- Risk of crushing the lower limbs by the wheel: danger which exists when changing direction of travel, starting to reverse or encountering an obstacle of a certain height. The operator must pay particular attention to the movement of the steering wheel cover during use and manoeuvring; they also required to wear appropriate PPE's (safety footwear).
- Risk of crushing that occurs during insertion of the battery and/or closing the lid of the battery compartment. They must work with both feet firmly on the ground and both hands on the relevant handle of the battery or lid; they are required to wear the appropriate work gloves.
- Risk of the tires losing traction. The operator should avoid using the SR1500 on slippery or frozen terrain.
- Risk of operator strain due to vibrations. Vibrations are mainly caused by driving over uneven ground and are transmitted to the operator through contact with the tiller head.

The residual risks associated with commissioning and maintenance are mainly:

- risks of limb crushing associated with work of disassembly and assembly of portions of the SR1500;
- risks of excessive effort in handling the SR1500 and its components;
- risks of electrocution, burning, poisoning, corrosion, fire and explosion associated with battery inspection and repair work.

Residual risks when handling server racks:

When using the SR1500 with a server rack, the operator should pay attention to the risks of traction loss of the drive wheel during acceleration and deceleration, due to the inertia of the load. Use the SR1500 within the limits indicated in the complete VDI table on page 10 and according to the instructions listed in *Using the SR1500* on page 21.

3. Using the SR1500

The use of the SR1500 is permitted only within the limits of its intended use, conditions of use and performance, according to the specifications as indicated in the VDI table on page 10.

Commissioning

It is recommended that the battery is fully charged before the SR1500 is put into operation, also to verify the operation of the battery charger, see section *Charging the Battery* on page 29.

WARNING

Never put an incomplete and/or damaged SR1500 into service. Have it repaired by your distributor.

1. Check that the SR1500 is complete. The following parts must be present:
 - suitable support- and super structure for the SR1500, for the type of server rack that needs to be moved;
 - the equipment supplied and correctly assembled;
 - a Movexx battery in its battery holder;
 - the ignition key (optional);
 - this manual.
2. Check the SR1500 for damage, loose bolts, and other discrepancies.
3. Check that there are no people and/or animals in the immediate vicinity of the SR1500.
4. Check that all operating conditions are met, see section *Operating Conditions* on page 17.

WARNING

An improperly adjusted SR1500 can cause injury. Never adjust the SR1500 while driving.

NOTE

Always allow the SR1500 to acclimate after the SR1500 has been stored for an extended period of time and/or comes from a room with a significantly different climate.

Turning on the SR1500

1. Turn on the SR1500 by switching the 'on/off' button to 'on' (see Figure 6 on page 4). The battery indicator light will indicate the battery charge level.
2. Check the battery charge level and charge the battery if necessary, see section *LCD battery indicator* on page 29.

Testing the SR1500

Test the SR1500 thoroughly before each use by following the steps below. Testing of the SR1500 should be performed in a safe area, spacious and without obstacles or people!

1. Take your position and turn on the machine, see Figure 6 on page 4. The battery indicator light will indicate the battery charge level.
2. Place your hands on the handle of the tiller head.
3. Test if the SR1500 drives away from you: Push the DCL upward with your thumb, see Figure 7 on page 5.
4. Test if SR1500 is braking and stopping correctly: when the DCL is released the SR1500 should now come to a complete stop within a specified (programmable) time.
5. Test if the SR1500 drives towards you: Push the DCL down with your thumb, see Figure 8 on page 5.
6. Check that the SR1500 is steering correctly to the left: Move the tiller head to the left.
7. Check that your SR1500 is steering correctly to the right: Move the tiller head to the right.
8. Test again if the SR1500 is braking and stopping correctly: when the DCL is released the SR1500 should now come to a complete stop within a specified (programmable) time.
9. Press the safety reversing switch (Figure 9 on page 5) and verify that it does indeed turn off driving and briefly reverses the direction of travel such that the SR1500 drives away from the operator.

If the SR1500 fails one or more of the above tests, turn it off and do not use the SR1500. Have the SR1500 checked and if necessary repaired by the manufacturer or your distributor.

Turn off the SR1500 after use

1. Park in a safe, dry and well-ventilated place with a temperature between -10°C / 40°C (14°F / 104°F).
2. Turn off the SR1500 by switching the 'on/off' button to 'off', see Figure 10 on page 5.

Power is automatically turned off after 10 minutes of inactivity and then goes into sleep mode (two red LEDs flash). If this is the case, the SR1500 can be turned on again by switching the 'on/off' button to 'off' and switch it back 'on'. Now the SR1500 is ready for use again.

The electromagnetic parking brake is automatically activated in the absence of power and/or after 2 seconds (programmable) of inactivity of the SR1500. It is automatically released when the operator starts to drive again. The parking brake will also be activated when the emergency stop is pressed.

In case of placing the SR1500 in idle mode for more than a month, it is recommended to connect the battery to the external charger. The trickle charge function will keep the battery continuously charged.

Operating the SR1500

1. Turn on the SR1500, see Figure 6 on page 4.
2. Place your hands on the handle of the tiller head.
3. Operate the SR1500 as follows. When doing so, always look in the direction of travel of the SR1500, see Figure 7, 8 on page 5.

- Using your thumb, push the DCL upward to drive the SR1500 away from you.
- Using your thumb, push the DCL downwards to drive the SR1500 toward you or drive forward with the server rack attached (for the procedure of Coupling/uncoupling a server rack see chapter *Connecting/disconnecting the server rack* on page 27).
- Move the tiller head to the left or right to determine the direction of travel of the SR1500.
- Release the DCL into neutral direction, to make the SR1500 stop. The operator must be aware of the braking distance which may vary in relation to the weight carried and/or the surface on which the SR1500 is used!

Connecting/disconnecting

Connecting/disconnecting should always be done with the SR1500 and server rack on level ground to avoid unwanted movements (of either one). Driving with a connected server rack always causes the braking distance to increase; consequently, the operator should moderate the speed and carry out the starts and stops gradually. The operator should pay close attention to the weight to be pulled, (which must never exceed the limits specified in the VDI table on page 10) but especially on the type of surface (sufficient traction) on which the SR1500 will be used. The operator must at least ensure that the server rack is checked: brake system, the condition of the hitching point, the condition of the wheels and the general condition.

Connecting the server rack

1. Position the SR1500 with the support structure at the front of the server rack to be transported, see figure 11 on page 6.
2. Position the legs of the support structure alongside the server rack.
3. Drive the SR1500 to the server rack until the server rack is fully enclosed by the support structure.
4. Wrap the safety strap around the server rack and connect the hook to the hole in the superstructure (see Figure 12 on page 6). Do not tension it yet.
5. Press the lift button on the tiller head to raise the server rack off the ground.
6. Use the ratchet to apply light tension to the safety strap in order to hold the server rack in place between the guide plates of the super structure.

Disconnecting the server rack

1. Position the server rack in its desired position.
2. Loosen the tension of the safety strap by pressing the button in the middle of the ratchet. Do not unhook it yet.
3. Lower the server rack by pressing the lift button on the tiller head.
4. Undo the safety strap from the server rack. Press the button on the ratchet for automatic winding of the strap inside the ratchet.
5. Drive the SR1500 away from the server rack.

4. Battery

 DANGER

*Do not open, disassemble, puncture, burn or heat the battery.
Do not short-circuit, or get the battery wet.
Smoke, fire, explosion may result from improper use.
Do not use a damaged battery.*

The SR1500 uses an exchangeable battery system which ensures an optimal running time. The battery uses LiFePo4 technology with an integrated Battery Management System. It has an average running time of 8-hours on a single charge. A full charge cycle takes approximately 4 hours.

 NOTE

*Always follow the instructions listed on the battery.
Do not operate the SR1500 while it is charging.*

Technical specification and preformance

Nominal voltage	25,6 V
Nominal capacity	36Ah/921Wh
Internal resistance	≤ 80 mΩ
End of charge voltage	29.2 V
End of charge current	700 mA
End of discharge voltage	20 V (controlled by BMS)
Charge Method	Max 1C, CC/CV
Max. continuous charge current	20 A
Nominal discharge current	50 A
Max. pulse discharge current	100 A / 10 sec
Discharge temp.	-20° / 55° C (-4° - 131° F)
Charging temp.	0° / 45° C (32° - 113° F)
Storage temp.	-10° / 45° C (-14° - 113° F)
Cycle life	>1.500 x
Warranty	12 Months
Declarations for dangerous goods	Yes (SDS and MSDS available)
Total discharge	Yes, is possible
Housing material	PE
Inner frame	Galvanised steel, bottom: Stainless steel
Battery control	Internal build-in battery management system

Charge/discharge connector	Anderson SB50
Weight	12 kg
Safety test for the cell	CE

The battery consists of the following parts (see Figure 13 on page 6):

- A. Handle
- B. Instructions
- C. Type plate
- D. Connector for recharging

LCD battery indicator (see Figure 14 on page 7)

Indication	Meaning	What you should do
Green, continuous	Battery is charged	Use the machine
Orange, continuous	Battery is nearly discharged	Drive to a charging point and charge/replace the battery
Red, continuous	Battery is discharged	Charge/replace the battery on the spot

Removing/inserting the battery

When removing the battery, ensure that you lift the battery (vertically) upward from the battery holder (see Figure 15 on page 7).

WARNING

Do not drop the battery into the battery holder, handle with care

Always slide the battery back in the battery holder with the raised horizontal edge towards the hook (see Figure 16 on page 7).

Charging the battery

WARNING

Charge battery only with the original supplied external battery charger. Check the cable for damage at each use.

Only charge the battery in a dry area with adequate ventilation, separated from areas where other activities are carried out, which does not contain flammable and/or explosive substances and a ambient temperature between 0°C - 40°C (32°F - 104°F).

For charging, use only a suitable electrical outlet, grounded and protected by a fuse.

In case the SR1500 has been in idle mode for more than 1 month it is recommended to connect the battery to the charger. The charger will keep the battery in optimal condition.

If the battery is fully charged and the charger remains connected, the charger and the cooling fan stop working and a trickle charge function starts automatically.

The charging time depends on the charge level of the battery. If the battery is completely empty, the charging process may take from 2 to $\pm 3,5$ hours. If the charge level after charging is lower than 100% or if the battery gets drained very quickly, it is advisable to check the battery and replace it if necessary.

Follow the steps below to charge the battery with the external battery charger:

1. Lift the battery (vertically) upward from the battery holder and insert the charger's charging plug into the socket on the underside of the battery (see Figure 17/1 on page 7).
2. Insert the charger's power supply plug into the power outlet (see Figure 17/2 on page 7).
3. Wait until you see a (continuous) green light on the LCD indicator on the battery charger. This indicates that the battery is fully charged.
4. Remove the charger's power plug from the power socket. This is important as the charger needs to reset after each charging cycle.
5. Take the charger's charging plug out of the socket of the battery.

When the capacity of the battery is getting less and the SR1500 can only be used for a short period of time, the battery is at the end of their service life. The battery should be replaced. Please consult your distributor.

Recycle

Batteries must always be recycled.

The battery must be dismantled and disassembled safely and in an environmentally friendly manner, in accordance with the regulations established by the national authorities. Never dismantle yourself, but offer the battery to a specialized recycling company.

5. Regular maintenance

The SR1500 should be cleaned regularly (depending on usage and the environment), to prevent the formation of deposits or residues, which could lead to reduced performance or even damage to the SR1500.

For cleaning the electrical system and the motor, we recommend the use of filtered and dehumidified compressed air.

Keep the battery clean and dry. Dirt and water can cause a loss of current which reduces the capacity of the battery. After cleaning, lubricate the battery pins with a small amount of acid-free petroleum jelly.

Wipe dry dirt on metal parts and frame parts with a dry soft cloth. Wipe mud and other wet dirt with a damp cloth. Then dry the parts using a dry soft cloth.

Never use abrasive or aggressive cleaning agents. These may scratch or stain the SR1500. Do not use organic solvents such as paint thinner, benzene or white spirit. Be careful with water in connection with the electronic components.



WARNING

Do not use a pressure washer, water jet, or similar to clean the SR1500 (see Figure 19 on page 8).

EN

General visual inspection

After/during a thorough cleaning of the SR1500, visually examine each section of the SR1500 to detect any damage, deformation, loose bolts, wear or any other abnormality.

On a thorough visual inspection, the tires must not show cuts and/or tears; the tire thickness must not be less than 5 mm.

As far as is visible, the electric cables must not show any cuts, abrasions or burns. As for the electrical contacts or terminals, they must be tightened securely and show no signs of oxidation.

Maintenance table

With the exception of the control checks which can only be performed with the SR1500 activated, the SR1500 must be de-activated before carrying out any other interventions of maintenance, by carrying out the following steps:

- relocation of the SR1500 to the maintenance site.
- disable the SR1500 by removing the ignition key (optional) or turning off the on/off switch.
- remove the battery from the SR1500.

Have the SR1500 checked once a year or, in case of intensive use, once every six months by the manufacturer/distributor. The table below shows the maintenance that you can perform yourself.

Whole SR1500	See <i>General visual inspection</i> on page 31.
Safety reverse switch (if available)	Visual inspection + operation check by pressing the safety reversing switch while driving.
Emergency stop	Visual inspection + operation check by pressing the emergency stop while driving.
Battery charger	Visual inspection + operation check + in case of long-term storage of the SR1500, the battery must be charged at least 1x per month.
Battery indicator	Visual inspection + operation check.
Condition of the super structure	Visual and functional inspection of the tension belt and ratchet
Condition of the support structure	Visual and functional inspection
Condition of the gripping plates	Visual inspection + operation check.

Technical Support

Questions about support and spare parts can be directed to Movexx International B.V., your distributor or an authorized service centre. They are always happy to help you.

For any question about your SR1500, please have the following information available:

- Model;
- SR1500- and battery serial number;
- Production date;
- Part number or send a picture of the desired part to your distributor.

You can find this information on the identification plate of the SR1500 and the battery. Also see section *Identification of the SR1500* on page 16.

6. Transport, storage and recycling

Transport



NOTE

The SR1500 must be adequately protected against the effects of the weather and the environment during transport.

When moving the packaged SR1500, always observe the locally applicable safety regulations and guidelines.

Use a suitable transport/lifting device with sufficient load capacity to move the packed SR1500. The weight is indicated on the outside of the packaging. When moving the packaging and/or the SR1500 on a means of transport, there is a risk of injury to the personnel responsible for the work and to third parties, as well as risks of damage to objects, mainly due to dangers of falling, bumping and/or tilting of the load associated with this work.

Please note! The centre of gravity will not always be in the middle of the transport box. Always transport and set down the packaged SR1500 in an upright position.

For transport, in a special transport crate/box

1. Drive the SR1500 into the crate/box.
2. Switch off the SR1500 and, if present, remove the key and attach it to the tiller head with a tie wrap.
3. Place the tiller head in its upright position.
4. Secure the SR1500 in the crate/box.
5. Close the crate/box and attach the necessary transport documents.

When transported in a lorry/trailer

1. Place the SR1500 against a side wall or against the front bulkhead.
2. Switch off the SR1500 and, if present, remove the key.
3. Tightly secure the SR1500.

Storage

When storing a regularly used SR1500 for a longer period ($\geq$ one month):

1. make sure the SR1500 is switched off;
2. charge the battery at least once a month or leave the charging cable connected so that the trickle charge function remains active. This prevents the battery from being deeply discharged and failing;
3. store the SR1500 in a dry, safe and frost-free place.

NOTE

For prolonged storage > 1 month, provide adequate grease on all uncoated steel parts.

For prolonged storage > 3 months, place the SR1500 on stands so that it is not resting on its wheels

If, after delivery to the dealer or user, the SR1500 must remain packaged in storage for a long period, the corresponding packaging must be stored in a sheltered, dry and well-ventilated place, protected from direct sunlight and with a temperature of between -10°C / 40°C (14°F / 104°F). The batteries should also be recharged periodically as indicated in the *LCD battery indicator* section on page 29.

Unboxing

Unboxing the SR1500 should be carried out in a protected, spacious, unobstructed area and separated from areas where other activities are carried out, according to the following procedure:

1. put the crate/box in the chosen location for unboxing, in accordance with the previously mentioned requirements;
2. cut loose the plastic straps that are wrapped around the crate/box;
3. remove any items placed on the crate/box of the SR1500;
4. proceed to take the manual and, after consulting it, further remove the SR1500 from the crate/box;
5. due to shipping requirements, the SR1500 can be shipped partially assembled; the necessary assembly work is part of the commissioning, which must be carried out by Movexx International B.V. or an authorized dealer.

Disassembly/Recycling

Disassembly/recycling of the SR1500 should be done in an environmentally friendly and safe manner, according to nationally applicable regulations. If you are unable to do so yourself, please offer the SR1500 to a specialized recycling company.

7. Liability

The manufacturer is not responsible for damage and/or injury resulting from:

- applying non-original parts;
- incorrectly assembled parts;
- applying attachments that are not suitable for the SR1500 and/or the server rack.
- damages resulting from work performed by third parties.
- failure to observe the use and maintenance instructions.
- other usage than specified in this manual.
- wear and tear, negligence, collateral damage due to neglect of previous symptoms, overload, third-party accidents.

8. Warranty

If problems arise within the warranty period that can be traced back to material and/or production faults of the machine, it will be repaired or replaced under warranty. In order to take advantage of the warranty, all safety and operating instructions provided by the manufacturer must be followed.

The modification of (parts of) the SR1500 is not allowed, unless express written permission is granted by Movexx International B.V.. In the event of unauthorized modifications, the warranty of the SR1500 and the liability of Movexx will be voided.

When not observing the use and maintenance instructions, other uses than indicated in this manual, usage wear, negligence, collateral damage due to neglect of previous symptoms and overloading, no claim can be made for warranty.

The latest version of the Movexx warranty terms can be downloaded from our website www.movexx.com.

Drive unit	1 year
Lithium battery	1 year
Support structure	1 year
Superstructure	1 year

9. Declaration of Conformity

Declaration of Conformity

(2016/42/EC; 2014/30/EU)



We,
Manufacturer

Movexx International B.V.

Generatorstraat 17-19
3903 LH Veenendaal
The Netherlands

herewith declare, that our product:

Product designation electric pull assistant
Model SR1500-M3
Type Pedestrian

which this declaration refers to, is in accordance with the following Directives:

Machinery Directive 2016/42/EC
EMC-Directive 2014/30/EU

By which following standards are used:

EN 1175:2020 - Safety of industrial trucks - Electrical/Electronic requirements

EN-ISO 12100:2010 - Safety of machinery - General principles for design - Risk assessment and risk reduction

VDI 3973 - Industrial trucks - Tractors with non-braked trailers

Veenendaal, The Netherlands, 06-12-2021

Iris van Ravenswaaij-van Vlastuin, CEO

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