

mats.



User Manual

mats. The recumbent tricycle that grows with you.




schuchmann®

Many thanks.



Dear Customer

At this point we would like to thank you for placing your trust in our company and for purchasing our product. We ask you to read through the Instructions for use carefully prior to initial commissioning of the product, and to observe them. Please note that guidelines and representations in these Instructions for use may deviate from your product due to differing equipment. We reserve the right to make technical modifications.

Important information!

Ensure that these Instructions for use remain with the product.

Your **schuchmann** Team



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1. Preparation.

1.1 Delivery

On receiving the product, please check it for completeness, lack of faults and any transport damage. Inspect the goods in the presence of your forwarder. Should transport damage have occurred, please arrange for an inventory (determination of the faults) to be made in the presence of the forwarder. Please send a complaint in writing to the specialist dealer responsible.

1.2 Safety measures prior to use

The correct use of the product requires a detailed and careful instruction of the user or the accompanying person. We ask you to read through the Instructions for use carefully prior to initial commissioning of the product, and to observe them. It is possible that product parts that get in contact with the skin may heat up in the sun. Depending on the duration and intensity of solar radiation, the surfaces of individual parts can heat up to over 41°C and thus lead to slight burns in the event of direct skin contact. Therefore cover these areas or protect the device from direct sunlight.

1.3 Safe disposal

In order to preserve and protect the environment, to prevent environmental pollution and to improve the recycling of raw materials, please note the disposal instructions in **points 1.3.1 and 1.3.2.**

1.3.1 Packaging

The packaging of the product should be kept for any future transport that might be required. Should you have to return the product for repairs or in case of a guarantee claim, please if possible use the original box so that the product is optimally packaged. Otherwise, separate the packaging materials for recycling according to their classification.



Do not leave packaging materials unattended, as they are a possible source of danger.

1.3.2 Product

At the end of the product life cycle, recycle the raw materials used in the product according to their nature (see material information under **point 2.1**).

1. Preparation.

1.4 Where to store the Instructions for use

Please store these Instructions for use carefully and ensure that these instructions for use remain with the product in case of re-use. Should you lose the instructions, you can always download an updated version at www.schuchmann.de.

2. Product description.

2.1 Material information

All base frames are made of aluminium, which is non-corroding and powder-coated. The seat is upholstered with Evazote (elastic) and the cover is made of bi-elastic mesh and hard-wearing fabric. All other materials used are protected against corrosion through the use of stainless steel, aluminium, plastic, KTL or powder coating.

2.2 Handling and transport

All important parts, such as the seat, handlebars or also the pedals, can be individually adapted to the individual requirements. Thanks to additional special accessories (see **Point 5**), users can be largely positioned e.g. at the torso or in the torso area / foot area. Recumbent tricycle **mats.** has a disc brake. It is not intended to be carried as it is equipped with wheels. Should you have to carry the equipment due to obstacles, ensure that all moving parts are tightened. Then two people stand at the front and rear of the recumbent tricycle, hold the front wheel and the carrying handles on the rear axle and carry it to the desired location. To transport the recumbent tricycle, reduce all adjustments to their most compact size (seat height, handlebar height, remove accessories etc.).

2.3 Application areas, use according to the intended purpose

The **mats.** recumbent tricycle is a medical product of risk class 1 and designed for outdoor use children and youths who cannot sit or stand unaided, however whose limited torso posture does not require permanent sitting in a seat pan. Users with little strength in their legs can cover relevant distances independently with the recumbent tricycle and achieve an adequate speed. The physiotherapeutic treatment is supported and support and balance reactions as well as movement coordination are trained. Any other use or use over and above this purpose shall be considered not in accordance with the intended purpose.



2. Product description.

2.3.1 Indications

The recumbent tricycle **mats.** is suited for users with balance disorders, weakness of postural control in the thorax and/or deformities in the pelvic area or spine, who cannot use standard bicycles or vehicles, even with commercial support wheels, due to their disabilities. To ensure mobility in outdoor areas and participation in social life (integration in a group of persons of the same age) and/or to improve the support movement coordination within the scope of physiotherapeutic treatment (regular measures of physical therapy).

The recumbent tricycle **mats.** is suitable for users with acquired or congenital disabilities who suffer from the results of indications/diagnoses:

- Diseases of the central nervous system (e.g. cerebral palsy in spastic, dyskinetic or atacttic form, GMFCS 2-4, caused by malformations or pre-, peri- or postnatal influences, for example) **(1)**
- Diseases of the peripheral nervous system (such as spina bifida or paraplegia) **(2)**
- Neurodegenerative diseases (e.g. muscular dystrophies or atrophies caused by metabolic defects) **(3)**
- Genetic diseases (e.g. trisomy 21, Rett syndrome, Kabuki syndrome, Cornelia de Lange syndrome, ...) **(4)**
- Orthopaedic clinical pictures and resulting deformities (e.g. rheumatism or consequences of trauma to the bone apparatus) **(5)**
- Psychological diseases that influence movement behaviour (e.g. from the autistic spectrum) **(6)**

This list includes common indications for which treatment with the recumbent tricycle **mats.** can be beneficial. It does not exclude rare diseases and expressly points out that in individual cases, regardless of the indication or diagnosis, a prescription may also be appropriate on the basis of a different clinical picture and the resulting symptoms.

These symptoms include restricted postural control **(7)**, restricted range of motion **(8)**, deformities in the bone apparatus (e.g. spine and/or pelvis) **(9)**, restricted cardio-respiratory system **(10)**, restricted balance and equilibrium **(11)**, restricted strength and endurance **(12)**, uncontrollable range of motion **(13)**. To ensure mobility in outdoor areas **(14)** and participation in social life (integration in a group of persons of the same age) **(15)** and/or to improve the support and balance reaction/movement coordination within the scope of physiotherapeutic treatment (regular measures of physical therapy) **(16)**.

2. Product description

2.3.2 Contraindications

In general, the indication should be accompanied by a doctor/orthopaedist. It should therefore be clarified prior to procurement whether contraindications exist for the patient. Any danger to the user or others through the use of a recumbent tricycle should be excluded. In general, any type of pain represents a contraindication.



2.4 Use not in accordance with the intended purpose / warning guidelines

- Correct usage of the product requires precise and careful training of the accompanying person.
- Replace bent handlebars and handlebar stems immediately! Breakage may occur in the event of continued use or repairs.
- The vehicle may only be used on tarmac roads and cycle paths, as well as on paths surfaced with sand, gravel or similar materials. Use on unpaved terrain or on mountain bike trails is not permitted.
- Please observe the "Technical data" in these instructions for use for the maximum permitted patient weight. **Please also observe the warning stickers on the rear axle carriers.**
- Always wear light-coloured and distinctive clothing!
- Always be ready to brake, in particular in steep terrain and sections which are not easy to assess!
- Show consideration for other people who are walking or hiking!
- Do not hang loads on the handlebars and front wheel; this compromises the travel safety.
- If available: Disc brakes must be run in, the full braking effect is only achieved after a few kilometres/braking cycles.
- Test the fastenings for the seat, pedal cranks, pedals and, if applicable, the wheels regularly.
- For your own safety, we recommend that you always use your vehicle with a helmet. Please ensure in particular that the helmet is of good quality. It should accord at least with the legal regulations or recommendations (standard: EN 1078 or ANSI)!
- Check that the brakes, lights and bell function properly prior to each journey!
- Ensure that your vehicle accords with the legal requirements!
- Only ride if the bicycle is in proper condition!
- Do not use headphones so that you can remain aware of warning sounds.
- In wet conditions, the braking distance of your bicycle will become longer. Therefore, always ensure that your speed remains such that you can stop at any time.
- Although both rear wheels are fitted with grip protection on the inside, there is still a risk of getting your hands caught in the spokes from the outside while riding.



2. Product description.

- Before every journey, make sure that the seat is locked and that all screws, especially those for adjusting the seat position, are firmly tightened.

Please also observe the warning stickers on the rear axle carriers.

- Adjustments to the seat (e.g. height, angle, backrest angle adjustment) may only be made when the seat is unloaded.
- The bike may only be used and stored within a temperature range of -10°C to 45°C (10°C to 25°C for electric drives). At excessive temperatures: 1. hydraulic brakes work poorly or not at all, 2. there is a risk of burns from skin contact with the seat ..., 3. bearing and chain greases run off, which leads to loss of function and environmental damage, 4. there is a risk of damage to the battery (see **Point 7.2**).

2.5 Equipment in accordance with StVZO

For roadworthy tricycles, the following components are specified in accordance with the German Road Traffic Regulations:

- Two brakes functioning independently of one another
- A bicycle bell with a clear ring
- Headlamps, rear lamp with reflectors, large-area reflectors, pedal reflectors, 2 yellow spoke reflectors or white reflecting rings on each wheel, and front reflectors in the design tested for the construction type.

2.6 Equipment for basic model

- Asymmetrical frame design for easier transfer
- Depth-, angle- and height-adjustable seat, with integrated side guide and angle-adjustable backrest
- Adjustable wheelbase
- 2-point strap
- Aluminium frame with extra-low access point
- Disc brake
- Grip width-adjustable brake lever
- Integrated parking brake
- Light system according to StVZO incl. parking light and reflectors
- Hub dynamo in the front wheel
- Standard pedals
- Triple-adjustable pedal cranks
- Grip protection on the rear wheels
- Removable pennant
- Bell
- Rain cape

2. Product description.

2.7 Accessories

- Headrest
- 4-point strap
- Thorax pelotte pads
- Upper handlebars
- Wide seat
- Seat insert
- Trailer function
- Hand positioning aids
- Hydraulic brakes
- Foot positioning pedals
- Foot pans
- Foot pans with (dynamic) leg guidance
- Ergotec pedals
- Bag
- Grip protection
- Double changeover (rigid gear/neutral)
- 8-gear freewheel brake hub with differential
- Triple changeover (rigid gear/neutral/8-gear with differential)
- E-drive

2.8 Product overview

The Fig. below is intended to show you the designation of the most important components as well as the terms which you will find in these Instructions for use.

Removable pennant

for better safety and visibility.

Lower handlebars

for relayed yet precise steering.

Location

with integrated side guide and angle-adjustable backrest as well as height and seat angle adjustment.

Rear axle
with disc brake.

Integrated grip protection inside

for optimum safety during travel.

Optimal cornering

due to the special frame geometry and low seating position.

Lighting

acc. German Road Traffic Act Regulations.

20" front wheel
with E-drive (optional).

Wheelbase

can be adapted to the body size.

Frame

made from lightweight, highly robust Aluminium with low access level as standard.



2. Product description.

2.8.1 Pennant

The pennant (A) shown above is for better visibility of the **mats.** recumbent tricycle and therefore obviously also of the user. The pennant together with the plastic rod (about 160 cm long) is attached to the rear axle.

For easy handling, the pennant can be removed and can easily be re-inserted into the rear axle mount (B), which is already mounted on delivery.



2.9 Drive possibilities

The **mats.** recumbent tricycle can be equipped with the following drives:

- Rigid sprocket
- Double changeover (rigid gear/neutral)
- 8-gear freewheel brake
- Triple changeover (rigid gear/neutral/8-gear)

All drive types allow the recumbent tricycle to be ridden in reverse.

2.9.1 Rigid sprocket

The rigid sprocket enables easy pedaling and overcoming the so-called 'dead centre' (apex of the pedaling cycle) thanks to the direct power transmission, and therefore independent and effective riding. This means that braking can take place by actively using the muscles against the pedal movement and therefore cannot be jerky.

2.9.2 Double changeover (rigid gear/neutral)

In addition to the functions of the rigid sprocket, the drive can be uncoupled and thus the passive pedaling can be interrupted, for example for transfer distances.

2.9.3 8-gear freewheel brake hub

The user can stop and start pedaling at will with the 8-gear freewheel hub. The user-friendly 8-gear hub gear system permits switching of gears at a standstill. Switching takes place using the twist grip shifter on the handlebars. The differential is integrated in the 8-gear freewheel brake hub as standard.

2.9.4 Differential

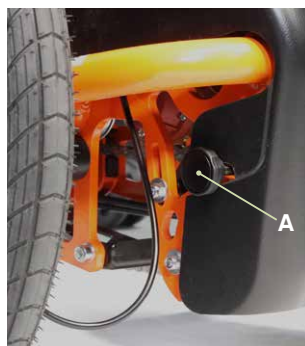
There are two rear wheels on the recumbent tricycle. When the recumbent tricycle turns a corner, the outer wheel turns faster than the inner wheel. This means that the two wheels cannot be directly connected to each other.

2. Product description.

There are two ways to drive the recumbent tricycle: Either you drive only one wheel and the second simply turns with it, without a connection to the drive. Or you can use a differential and drive both rear wheels equally. This gives you a smooth drive, which is not only an advantage when cornering and accelerating, but also works better on slippery roads.

2.9.5 Triple changeover (rigid gear/neutral/8-gear)

This option combines the functions of the above-mentioned drives. Using a switch lever (**A**), it is possible to select between a rigid sprocket, idling hub and the 8-gear freewheel brake hub with reverse option. To do this, pull the level (**A**) out of the recess and allow it to engage in the required position in order to select between the different drive versions. Turned all the way out (to the left) is the setting for the fixed sprocket, the centre position operates the neutral gear and turned all the way to the right activates the 8-gear free-wheel brake hub with reverse option.



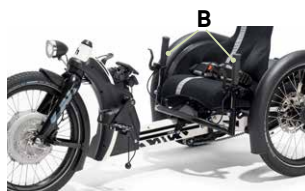
2.10 Driving, steering and braking

The recumbent tricycle **mats.** is propelled by the user in a seated position by pedaling. The seat can be individually adjusted for optimal positioning of the user (see **Point 4.1.2**).

The recumbent tricycle is steered using the lower handlebars (**B**) by pulling one steering tube towards you and pushing the other away from you at the same time. Optionally, you can also steer using the top handlebars (see **Point 4.1.1**), similar to a standard bicycle.

mats. is equipped with disc brakes (see **Point 4.2**) on the rear wheels as standard. The rear

wheels must be braked using brake handles on the upper and lower handlebars. The recumbent wheel can be braked for transfer and to prevent it from rolling away unintentionally using the parking brake (see **Point 4.2.1**).



2. Product description.

2.10.1 The initial riding attempts

Please remember that, prior to using **mats.** for the first time, you must first practice with an accompanying escort in order to learn corner and brake on the tricycle, as this is where the risk of accidents is greatest. Always ride around curves as slowly as possible. Please also remember that the widest part of your recumbent tricycle is behind you. Therefore, practice using appropriate obstacles so that you learn to estimate the width of your recumbent tricycle better.



Disc brakes must be run in, the full braking effect is only achieved after a few kilometres/braking cycles.

2.11 Transfer

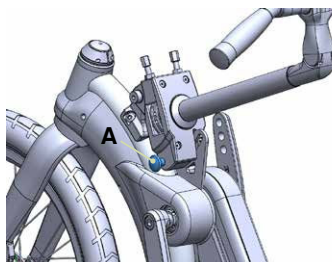
The frame geometry is optimised for transfer thanks to the asymmetry and low access point. Please note the following procedures and instructions for the different steering variants (see **Point 4.1.1**).

2.11.1 For use of the lower handlebars

- Upright positioning in front of the seat edge from the left vehicle side
- Simple seated movement in the recumbent tricycle seat
- Lift right leg over the frame
- Position the feet on the pedals
- Hands on the lower handlebar

2.11.2 Use of the upper handlebars

- Release the steering bar at the front lock (**A**) and fold it forwards and upwards
- Upright positioning in front of the seat edge from the left vehicle side
- Simple seated movement in the recumbent tricycle seat
- Lift right leg over the frame
- Return the steering bar to its original position and ensure that it engages correctly
- Position the feet on the pedals
- Hands on the handlebars

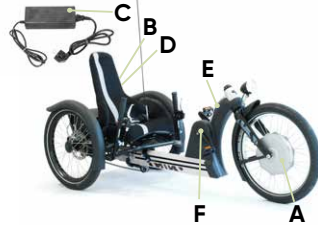


3. E-drive

3.1 Components

3.1.1 Motor

The **mats.** recumbent tricycle is optionally equipped with a brushless electric motor (**A**) as a power source. This provides both a strong torque in continuous operation as well as considerable peak torques (for example when starting). Mechanical losses are negligible because the motor is designed without a gearbox.



3.1.2 Battery pack and charger

The battery pack (**B**) serves as the power source of the drive system "DirectPower". The high capacity offers maximum riding performance and range. A suitable charger (**C**) for charging the battery pack from the electrical mains is included in the scope of delivery of the **mats.**



3.1.3 Control housing and control

The electronic control is effectively the brain of the drive system. Its task is to evaluate all signals and to control the motor, taking into account the set parameters, so that it achieves the appropriate force. The control housing (**D**) made of plastic reliably protects the controller against wetness and moisture as well as against shocks and similar influences.

3.1.4 Display

The display (**E**) together with the operating unit is the control centre of the drive system. For example, you can select the level of assistance or recovery and make all other settings. In addition, you will receive all the required information about the operating status of the system, the distance and the range. When using the top handlebars, the display is attached to the upper handlebar. When using the lower handlebars, the display is mounted on the frame in front of the user.

3.1.5 Torque sensor

The torque sensor (**F**) is combined with the bottom bracket and is completely integrated. It supplies the signals of the pedaling torque, the pedaling frequency and the direction of rotation of pedaling to the control. The torque sensor is completely maintenance-free and requires no adjustment.



3. E-drive

3.2 Lithium ion battery pack

The battery pack is very light, but with very high charging capacity. Proper charging and protection against deep discharge and overheating will significantly increase the service life. A corresponding charge controller, which takes into account all these requirements, is therefore already integrated in the supplied charger. This ensures an optimum and safe function. Therefore only this charger may be used to charge the battery pack.



Danger of fire and blazes

Improper charging and use of the battery pack can lead to excessive heating of the battery pack. A fire or blaze is a possible consequence.

- Only the supplied charger may be used to charge the battery pack. The charger is intended for indoor use only.
- Before connecting the charger to the mains, be sure to check that the mains voltage matches the voltage of the charger. The charging voltage of the charger is indicated on the rating plate on the back of the device.
- Only charge the battery pack in a dry and non-flammable environment and, if possible, do not leave it unattended.

Mechanical damage to the battery pack or charger may cause malfunction and short circuiting. A fire or blaze is a possible consequence!

- Any manipulation of the battery pack case or charger is prohibited.
- Replace damaged parts such as the battery pack, charger or control unit immediately and dispose of them in an orderly manner.



Danger of electric shock

A charger with a damaged power plug or power cable may cause an electric shock.

- Never connect damaged mains plugs or power cables to the electrical mains.
- Immediately replaced damaged electrical assemblies and cables.
- Ingress of water and moisture into the charger must be avoided in all cases. If water has penetrated, disconnect the charger immediately from the mains and have it checked by your specialist dealer.
- If the temperature changes suddenly from cold to warm, condensation may form on the charger. In such a case, wait until it has reached the

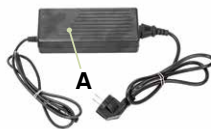


3. E-drive.

temperature of the warm room by connecting the appliance to the electrical mains. Keep the charger in the place where it is operated. The charger may only be used to charge the supplied rechargeable batteries. Any other use of the charger is not permitted.

3.2.1 Charging

The battery pack should be charged first before using it for the first time. Use the supplied charger (A) with integrated charge controller. Charging can take place both on the tricycle and separately with the battery pack removed. When the charging finishes, the charge controller automatically switches to trickle charging. The battery pack can thus remain indefinitely on the charger. This has the advantage that the battery pack is always fully charged. The battery pack can be used with the drive at any time, even if the charging has not been fully completed. However, then the range is not achieved, which is possible with fully charged battery pack.



To ensure the correct polarity when charging, the charging socket has a groove. The corresponding engagement pin of the charging plug must slide into the groove. This is the only way of ensuring the correct polarity. Never try to plug the charging plug forcibly into the charging socket the wrong way round!

The following ambient temperatures must be observed for proper functioning of the battery pack:

Operating mode	Operation	Charging	Storage
Temperature range	-10°C - 45°C	10°C - 35°C	-10°C - 45°C

Remarks

- The lithium-ion battery pack has, in contrast to other batteries, no "memory effect". This means it does not need to be fully drained before recharging. It even has a positive effect on the life of the battery pack if charging cycles are flat (always recharged immediately after use).
- The ambient temperature during charging should not be lower than 10°C and not higher than 35°C. Charging outside this temperature range reduces the available battery pack capacity and therefore the range. In frosty outdoor temperatures, it is advisable to charge the battery pack in a heated room. Direct sunlight and proximity to sources of heat must be avoided.
- Before prolonged breaks, e.g. in winter, the battery pack must be fully charged and then stored dry. First, fully recharge the battery pack



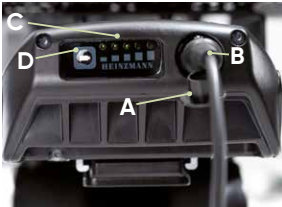
3. E-drive.

- before recommissioning.
- The battery pack has its maximum performance at room temperature. Therefore, the temperature of the battery pack should not be below 10°C and not higher than 25°C when starting off.
 - For longer trips with high motor power, the battery pack can become very hot. A temperature monitor inside prevents charging at an excessive temperature. In such a case, the charger may remain connected. Charging starts automatically when the battery pack has cooled down sufficiently. For example,. after a long uphill ride cooling can take up to an hour.

Charging process

To charge the battery pack, please follow these steps:

- First remove the dust cap (A) from the charging socket.
- Then connect the charger to the electrical mains and then insert the charging plug (B) into the charging socket of the battery pack.
- The LEDs of the charge level indicator (C) start flashing.



Battery pack charging status when charging:

LED status	Battery pack status
All 5 LEDs flash one after the other and go off together again	Battery pack is being charged, the number of consecutively lit LEDs corresponds to the already charged capacity
All LEDs are permanently off	End of charging reached, battery pack is 100% charged

LED status	●●●●●	●●●●○	●●●○○	●●○○○	●○○○○
Battery pack status	≤ 100 %	< 80 %	< 60 %	< 40 %	< 20 %

The battery pack charge status can also be read directly at any time outside of the charging process. To do this, press the button (D) to the left of the display LEDs. According to the respective charge status, a number of LEDs light up.



3. E-drive.

Charge status display

LED on the charger lights up red	Battery pack being charged
LED on the charger lights up green	End of charging reached, trickle charge active

If the battery pack is charged on the tricycle, the current charge status can also be read on the display.

Charging duration:

Fully charging a drained battery pack takes approx. 5.5 hours.

3.2.2 Insertion and removal

To insert the battery pack, insert it from the top of the sliding rail into the mount, which is fixed on the rear axle support, until it audibly clicks into place in the lock.



Always remove the key before setting off.

To remove the battery pack, turn the key (A) clockwise as far as it goes and hold it in this position. This unlocks the lock. Now you can release the battery pack on the rear handle bar from the connection and pull it out of the mount to the top.



Danger due to unforeseen motor activity

The motor can start to move unexpectedly when the drive system remains switched on when working on the recumbent tricycle. This can result in injuries.

- Only insert the battery pack again once the system has been fully mounted.
- When restarting the recumbent tricycle after assembly or repair, position the tricycle so that the drive wheel can rotate freely.

3.2.3 Service life

The manufacturer of the drive system, HEINZMANN, guarantees a minimum of 600 charging cycles for the battery pack. Appropriate handling/storage and initial loading increases its service life.

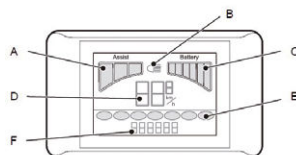


3. E-drive.

3.3 Display and operation

The display contains the following display elements

A	Assistance level
B	Lighting
C	Battery pack charging status
D	Current speed
E	Function display
F	Display line



For upper handlebars: The control unit is located on the handlebar with the three MODE (A), arrow up (B) and arrow down (C) buttons. All settings are made using these buttons. There are no other setting options. For lower handlebars: Above the bottom bracket, there is a separate holder with display and buttons.



3.3.1 Switch on

Press the MODE (A) button for at least 3 seconds until the display becomes active. Then release the button again. Pushing and holding the button serves to protect against unintentional switching on. The system is now ready to ride.



Caution

When switching on, the pedals must not be loaded so that the drive is not unintentionally taken into operation! Please proceed as follows:

- First get on the recumbent tricycle and put both feet on the ground.
- Then switch the drive system on.
- Now you can set off.

3.3.2 Switch off

Press the MODE (A) button for at least 3 seconds until the display goes out. Then release the button again. The drive system is now switched off.

For information

The system switches itself off if no riding activity has taken place for more than approx. 10 minutes. Before further use, the drive system must then be switched on again by pressing the MODE (A) button.



3. E-drive.

3.3.3 Start-up assistance

The start-up assistance is an optional function of the drive system. It allows starting with electrical assistance without pedaling up to a speed of max. 6 km/h. The starting behaviour is generally more powerful and direct with the push button. It is easier to apply correctly with the twist grip. In general, the starting behaviour depends on the assistance level set (see **Point 3.3.4**). Fine tuning can be carried out here, especially with the twist grip version, if the starting behaviour is too weak.

Using the button

To activate the start-up assistance, press the arrow up **(A)** button. Motor assistance is started again after approx. one second. To end the assistance, release the button **(A)**.

Using the twist grip

For upper handlebars: To activate the start-up assistance, turn the twist grip **(B)** towards the body.

For lower handlebars: the twist grip **(B)** is fitted on the side and left of the seat and is turned in a clockwise direction.

Motor assistance starts immediately depending on how much the handle has been rotated. To stop the assistance, release the twist grip **(B)**.



3. E-drive.

3.3.4 Setting the assistance level or recovery level

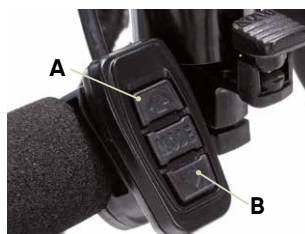
The drive system provides three different degrees of assistance for operation.

Support	Eco	Standard	Power
Start-up behaviour	● ○ ○	● ● ○	● ● ●
Range	● ● ●	● ● ○	● ○ ○

To select a higher level of assistance, press the arrow up (A) button once.

To select a lower level of assistance, press the arrow down (B) button once.

At the top left of the display (C) the assistance levels are shown as display segments under "Assist".



For information

At assistance level "0", the drive system is active but does not provide assistance.

In addition, the system can be used in **recovery operation**. The motor is operated in this case as a generator and feeds electrical energy back into the battery pack. This can be useful as additional braking operation on longer downhill runs. Again, there are three different recovery levels available.



You can enter the recovery mode by briefly pressing the arrow down (B) button in the support level "0". Here, too, there are three different levels of recovery available. At the top left of the display (C) the assistance levels are shown as display segments under "Assist". To distinguish it from the assistance mode, the segments flash in recovery mode. To leave the recovery mode, press the arrow up button (A) until no more segments flash.

For information

When a brake lever (D) is actuated, the assistance of the electric drive is stopped. At the same time, the recovery mode is activated and the tricycle is additionally braked. As soon as both brake levers are released, recovery mode is deactivated again and the support is activated at the same time.



3. E-drive.

3.3.5 Charge status display

The display on the top right (A) under "battery pack" constantly shows the battery pack charge status. Depending on the charge level, up to six display segments are illuminated.



Number of segments in the display	Status of the rechargeable battery pack
6	Battery pack fully charged
1 (flashing)	Battery pack almost discharged
No display	Battery pack drained, drive system will soon switch off

The last individual segment starts to be flash when the battery pack is almost drained. The battery pack has a limited reserve capacity. Once this has also be used up, the drive system automatically switches off. This is done to prevent a deep discharge of the battery pack.

After such an automatic shutdown, the drive system no longer provides assistance. No more commands are accepted by pressing the buttons. The lighting goes out.

The drive system is only operational again when the battery pack is charged or an already charged battery pack is inserted.

3.3.6 Functions

In operation, the drive system offers the following various functions:

- Total kilometres (Dist)
- Driven distance (Trip)
- Driven time (Time)
- Average trip speed (AVG)
- Expected remaining time of assistance (EstT)
- Expected remaining range (EstD)
- PIN (PIN)
- Bicycle lighting



The required function is selected by repeatedly pressing the MODE button (B).



3. E-drive.

The active function is represented by an oval symbol (A) above the display line.

- **Dist - Total kilometre counter**

All driven kilometre distances are totaled.

- **Trip - Driven trip**

All kilometres driven since the last deletion are totaled. See **Point 3.3.7** to delete this counter reading.

- **Time - Driven time**

The time driven since the last deletion are totaled. The display is shown in hours and minutes. See **Point 3.3.7** to delete this counter reading.

- **AVG - Average trip speed**

Display shows the average speed travelled since the last deletion in kilometres per hour. See **Point 3.3.7** to delete this counter reading.

- **EstT - Expected remaining time of assistance**

Display shows the expected remaining time for which the drive system can still assist the user. The value is determined by the control system from the operating values since the last charge of the battery pack. The counter reading cannot be deleted by the user.

- **EstD - Expected remaining range**

Display shows the expected remaining range for which the drive system can still assist the user. The value is determined by the control system from the operating values since the last charge of the battery pack. The counter reading cannot be deleted by the user.

- **PIN**

Editing menu for registering a PIN (see **Point 3.3.10**).

- **Lighting**

When the light is on, this is indicated by a lamp symbol in the display. To switch the lighting on and off refer to **Point 3.3.9**.



3. E-drive.

3.3.7 Deleting counter readings

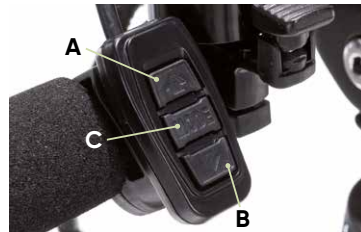
The following counter readings on the display can be deleted by the user:

- Driven kilometres (trip)
- Driven time (Time)
- Average trip speed (AVG)

These meter readings can not be deleted individually, but only together all at once.

The setting mode is entered by simultaneously pressing the two arrow up (**A**) and down arrow (**B**) buttons while the drive system is switched on. The display first shows the display for entering a PIN.

Press the button (**A**) for at least 3 seconds until the display shows the word **CLEAR**. The counter readings are now reset to zero.



The entry mode is accessed by pressing the MODE (**C**) button.

3.3.8 Brightness switching

The display illuminates after switch on. The lighting level can be changed to adapt to the ambient conditions.

The setting mode is entered by simultaneously pressing the two buttons (**A + B**) while the drive system is switched on. The display first shows the display for entering a PIN.

Adjustment of the lighting level is reached by pressing the button (**B**). There is a choice between seven different levels. Repeated pressing of the button (**B**) will set them in sequence. The respective level is shown in the display line.

The entry mode is accessed by pressing the MODE (**C**) button.

Level	Display	Lighting level
1	BL-off	No lighting
2	BL-AT1	Indicator lights up after switching on the system or after pressing one of the buttons for approx. 4 seconds
3	BL-AT2	
4	BL-AT3	
5	BL-on-1	Constant illumination
6	BL-on-2	
7	BL-on-3	



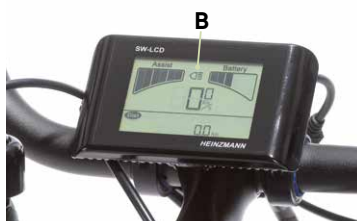
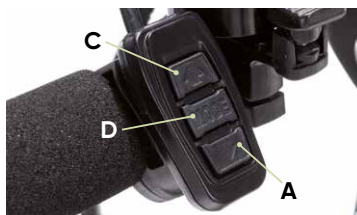
3. E-drive.

3.3.9 Switching the lighting on and off

This function makes it possible to operate the lighting with the battery pack of the drive system.

To switch on the lighting, keep the button **(A)** pressed. The lighting will be switched on after approx. one hour. This function is indicated by a lamp symbol **(B)** in the display.

Keep button **(A)** pressed down against to switch the light off. The lighting will be switched off again after approx. one hour.



3.3.10 Registering a PIN

If the user has registered a PIN, the drive system will first ask for this PIN after switching on. The system is only ready to operate after full and correct entry of this PIN.

For information

In the delivery state, no PIN is defined and the system is ready for use immediately after switching on.

The setting mode is entered by simultaneously pressing the two buttons **(A + C)** while the drive system is switched on. The display first shows the display for entering a PIN.

The entry mode is accessed by pressing the MODE **(D)** button. Four digits are shown, of which the first one flashes.

By pressing one of the two buttons **(A + C)**, the respective position is increased or decreased by one number. The preferred number is confirmed by pressing the MODE **(D)** button and the next digit starts flashing.

Simultaneously press both buttons **(A + C)** when all digits have been defined. This saves the registered PIN.

Then switch the drive system off. After switching on again and every time the drive system is switched on, the PIN is now requested. The PIN can be changed at any time when the drive system is switched on.



4. Settings.

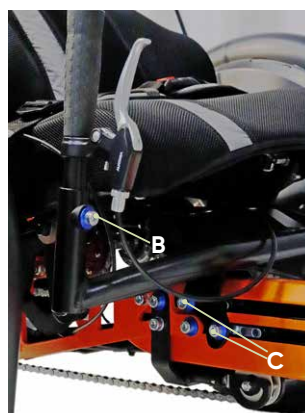
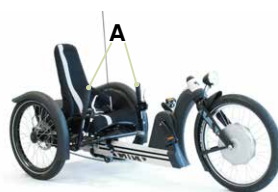
Settings and adjustments to the product or accessories may only be made by people who have been given the necessary instructions by a medical product advisor. Please ensure that none of the user's extremities are in the respective area when making adjustments of any kind to minimise the risk of injury. All adjustments can be made with standard tools (e.g. Allen key, screwdriver or spanner).

4.1 Presets

The **mats.** recumbent tricycle is supplied completely assembled. Before using for the first time, fit the pennant (see **Point 2.8.1**) and make the following presetting.

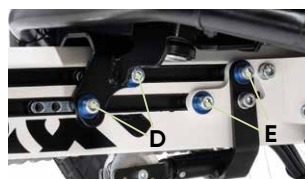
4.1.1 Steering

The **mats.** recumbent tricycle is equipped with lower handlebars (**A**) in the basic model. This can be individually adjusted in distance, height and angle. To adjust the height of the steering handles, loosen the screw (**B**), move the handles to the desired position and then retighten the screw. To adjust the angle and distance to the seat, loosen the screws (**C**) on both sides of the lower handlebar slide and tilt the lower handlebars to the desired position. To adjust the distance between the seat and the lower handlebars, pull the lower link on the frame to the appropriate position. Then tighten the screws again.



4.1.2 Wheelbase / leg length adjustment

The recumbent tricycle **mats.** can be individually adjusted to the user's height to achieve the optimum distance from the seat to the pedals. Loosen the bolts (**D**) of the rear axle carrier and the bolts (**E**) of the lower handlebar slide on both sides. The step with the screws is not required for the upper handlebars (**D**). The length can now be shortened or extended by pedaling forwards or backwards by hand. Then re-tighten the screws again. The infinitely variable adjustment of the leg length makes it possible to customise the power transmission for the user. Depending on which hip, knee or ankle



4. Settings.

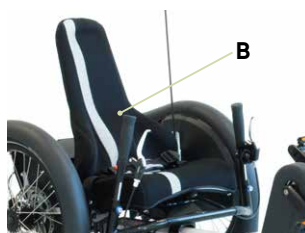
joint angle (**1, 2, 3, 4, 5, 8, 9, 10** – see **Point 2.3.1**) supports the best possible power transmission for the condition in question, the distance from the seat to the pedals can be adjusted. If an individual adjustment of the leg length is necessary due to e.g. knee contractures of the user or differences in leg length, this can be generated by screwing the pedals into the 3 mounts (125/105/85 mm) of the pedal crank (**A**).



Please note that contractures in the user's knees must be taken into account.

4.1.3 Seat

The seat (**B**) included in the basic equipment consists of a bi-elastic mesh fabric with padded areas, which cushions any bumps. Due to the shape and the attachment to the seat construction, my seat adapts to the user's thorax. This achieves customised lateral guidance that does not restrict the mobility required for cycling (arm room for steering, leg room for pedaling), but still provides guidance and limitation. This is particularly important for indications **1, 3, 4** and **5** (see **Point 2.3.1**), but can also be relevant for other diagnoses. The various adjustment options for the seat and the significance for the user's indications are explained in detail below. Before making any adjustments, first check the user's sitting position by sitting down.



When adjusting the seat, it is important that the seat is unloaded during adjustment.



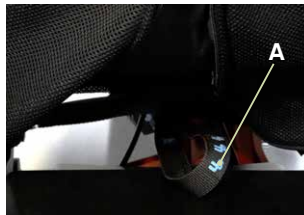
The seat may only be used again when all screws have been tightened after adjustment and the seat and backrest angle catches are fully engaged!

4. Settings.

When adjusting the seat, please proceed step by step and make changes to the seat tilt, backrest angle and seat height separately.

seat tilt angle

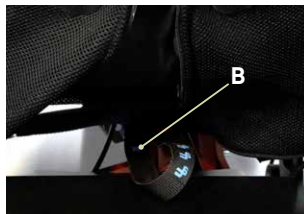
Pull the tension strap **(A)**. If you pull on the side of the loop on which 3 "mannis." are visible, you activate the seat tilt. Now tilt the seat to the desired angle and let the seat lock into place by releasing the loop. Changing the seat tilt has an effect on the force applied when pedaling. The higher the front edge of the seat, the more support the thigh has during hip flexion as a traction phase in the pedaling cycle. This enables smooth pedaling even with reduced hip flexion **(8** – see **Point 2.3.1**), reduced muscle strength and endurance **(12, 13** – see **Point 2.3.1**), reduced cardio-respiratory function **(10** – see **Point 2.3.1**), etc. The movement activates the hip and lower leg muscles and makes them elastic, thus supporting physiotherapeutic treatment to prevent and/or stop contractures **(9** – see **Point 2.3.1**).



When adjusting the seat, it is important that the seat is unloaded during adjustment.

Backrest angle

Pull the cord/loop **(B)**. If you pull on the side of the loop on which 1 "manni." is visible, you activate the backrest angle adjustment. Now adjust the backrest to the desired angle and snap the backrest back into place by releasing the loop. By adjusting the backrest angle, the sitting position can be adapted to a hip flexion contracture **(1, 2, 3, 5, 8, 9** – see **Point 2.3.1**). This provides the best possible strength assistance during pedaling with the remaining extent of movement **(12** – see **Point 2.3.1**). The muscles are activated and become elastic due to the movement whilst reducing the weight strain, so that physiotherapeutic treatment of the hip flexion contractures are supported **(16** – see **Point 2.3.1**).



It is important that there is no weight on the seat when adjusting it.



4. Settings.

Seat height

To adjust the seat height, loosen the two screws (A) on both sides, adjust the seat to the desired height and retighten the screws (A). The height of the seat has an effect on the transfer in and out of the recumbent tricycle **mats**. A high seat height is advantageous for balance disorders (11 – see **Point 2.3.1**), limited postural control (7 – see **Point 2.3.1**) and contractures (8 – see **Point 2.3.1**) within the scope of the indications described in 1, 2, 3, 4 and 5 (see **Point 2.3.1**).



Make sure that the screws are secure and firmly tightened!



Please note that contractures in the user's knees must be taken into account.



For optimum road holding and maximum safety, the lowest possible seat height adjustment is recommended for the user.

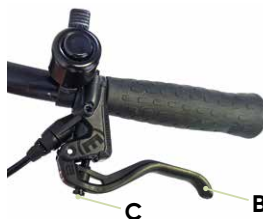
The optimum seating position is checked once the user has taken a seat. The leg extension should not total 0°. If the respective pedal is at the shortest distance from the seat, the knee bend should not exceed 90°.



Then retighten the screws of the rear axle carrier and, if necessary, the lower handlebar slide.

4.2 Brakes

The **mats**. recumbent tricycle is equipped with two mechanical disc brakes on the rear wheels (see **Point 3.2.2**). The recumbent tricycle is equipped with adjustable brake levers (B) for braking the rear wheels. To adjust the grip width, screw the screw (C) in or out to bring the brake lever into the desired position. If the drive is configured accordingly (see **Point 2.9**), a backpedal brake can also be available.



4. Settings.

4.2.1 Parking brake

The parking brake supports the user when getting on and off and also secures the recumbent tricycle against unintentional rolling away. Actuating the lever **(A)** activates or releases the mechanical disc brake on the rear wheel; with a hydraulic disc brake, it is activated on the front wheel. In order to activate the parking brake, push lever **(A)** up. To release the parking brake, press up the lever **(A)** back down. The parking brake is always located on the right-hand side and is mounted either on the rear axle carrier or on the seat.



Always ensure that the brake functions correctly and has been adjusted.

Setting the mechanical disc brakes

Ensure that the brake function is activated immediately when the parking brake lever or brake handles are actuated. Due to the stretching of the Bowden cables, it is necessary to readjust the brakes after a certain time. To do this, loosen the tension adjustment nut **(B)** of the brake unit and turn the tension adjustment screw **(C)** so that the recumbent tricycle cannot roll away unintentionally when the parking brake is activated or the brake handles are actuated.



Leave this work to your specialist dealer in case of any uncertainty (see point 9.4).

4.2.2 Disc brakes on the rear wheels

The disc brakes **(D)** on the rear wheels are activated by pulling the two brake levers on the handlebars. The left brake lever activates the rear left disc brake and the right brake lever activates the rear right disc brake. To achieve the best possible braking effect, always operate both brake levers simultaneously. If the braking performance of the hydraulic disc brake deteriorates, the brake must be vented and the oil topped up or changed.



Leave this work to your specialist dealer in case of any uncertainty (see point 9.5).



4. Settings.



Warning

- Disc brake pads, brake callipers and brake discs become extremely hot during use. Contact with a hot brake can lead to serious injuries. Care should be taken not to touch the brake calliper, brake disc or brake pads when the disc brake is hot. Be sure to allow the brake to cool down before attempting to service it in any way.
- If you have any concerns about any part of maintenance / operation / repair of the disc brake, please seek advice from a specialist dealer (see **Point 9.5**).
- Disc brakes offer a considerable increase in braking performance. Test your disc brake gradually on a flat surface until you have become accustomed to the braking performance.



Caution

If one of the following phenomena occurs when using the disc brake, stop the drive immediately and ask your specialist dealer (see **Point 9.5**) to carry out checks and repairs if necessary.

- Unusual noises can be heard during braking
- The brake force is unusually strong
- The brake force is unusually weak
- Hydraulic disc brakes have a longer braking distance at the lever and slightly poorer braking performance in very cold environmental conditions

4.3 Tyres and hoses

The tyres on the recumbent tricycle must always have sufficient air pressure, otherwise the tyres may puncture and the rims may be damaged, or the riding characteristics negatively influenced. The minimum and maximum tyre pressure is indicated on the casing (**A**). If the tyre tread only depresses slightly on being pressed forcefully with the thumbs, the tyre pressure is correct. For exact values, use a pressure gauge!



Check all tyres regularly and replace them immediately if they are damaged or worn!

4. Settings.

4.4 Light system / dynamo

The recumbent tricycle is equipped with a light system according to STVZO.

Hub dynamo: The hub dynamo (**A**) is integrated into the wheel and is switched on via the switch (**B**) on the headlight.



4. Settings.

4.5 2-point strap

The 2-point strap is used to position the user and can be individually adjusted in length. To do this, pull the sliders (**A**) and the corresponding strap ends and shorten or lengthen the lap belt as required.

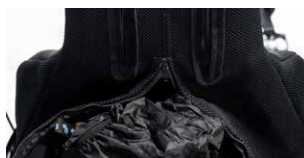
The 2-point strap is equipped with a safety lock (**B**) for closing and opening. The red slider on the safety lock has two positions (locked and unlocked), which must be set manually.

The strap is used to prevent the rider from unintentionally leaving the bike, whether due to involuntary movements (**1** – see **Point 2.3.1**), lack of balance (**1, 2, 3, 4, 5** – see **Point 2.3.1**) or reckless behaviour (**4, 6** – see **Point 2.3.1**). In case of problems with postural control (**7** – see **Point 2.3.1**), strong deflections of movement, such as extensor spasticity (**13** – see **Point 2.3.1**), and deformities (**9** – see **Point 2.3.1**), the use of the 4-point harness is recommended.



4.6 Rain cape

The rain cape protects the recumbent tricycle from the weather and is pulled over the seat of the recumbent tricycle. The bag in which the rain cape is stowed under the seat cover is not removed. For this, open the zip (**C**) on the seat cover slightly until the bag is accessible. Then open the zip (**D**) of the rain cape bag, pull out the rain cape and pull it over the seat.



5. Accessories

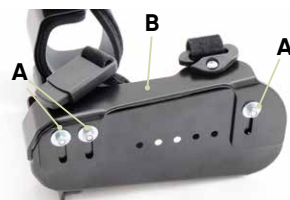
5.1 Foot pans

The foot pan provides lateral guidance and therefore prevents internal or external rotation of the foot. To guarantee this function,

the foot pan is adjustable in width, which can be conducted by loosening the three screws (A) and shifting the side part (B) in the slotted hole. The foot pans are mounted in the centre of the pedals in the factory. To move the pressure point under the foot, it must be moved to three positions. To this end, remove the screws with nuts (C) below the counterplate and move them into the desired position. Then reinsert the counterplate and retighten the screws with nuts (C).

The rotation can be set by undoing the screws with nuts (C) and turning the foot pans on the pedal. In order to secure the user in the foot pan, the foot pans are equipped with straps. These can be closed with the help of magnetic clasps. When you guide the end of the strap (D) towards the fastener, it engages automatically. Press the button (E) to open the straps. For the length adjustment, the hook and loop closure of the strap (F) can be opened on both sides and adjusted in length. To close the strap in the forefoot area, guide it through the opening (G) and close the strap with the hook and loop fastener.

Indications such as **1** or **3** (see **Point 2.3.1**) in their most pronounced or advanced forms are often accompanied by an adduction tendency in the hips and knees and associated internal or external rotation of the feet (**8, 9** – see **Point 2.3.1**). By adjusting the rotation of the pedals with lateral guidance, this symptom can be alleviated to facilitate pedaling in the first place (**8, 16** – see **Point 2.3.1**). On the other hand, corrective action can be taken if the foot is brought into a more physiological starting position and the dysfunctions of the hip and leg muscles (**12** – see **Point 2.3.1**) are positively influenced.



5. Accessories

5.2 Foot pans with leg guidance

For the function and adjustment of the foot pans, see **Point 5.1**. The leg guidance also stabilises the ankle and reduces the internal rotation of the leg. The leg guidance can be adjusted by loosening the nuts (**A**) and shifting them in the slotted hole. The height adjustment should be selected so that the calf clamp lies against the vertex of the calf. The depth of the calf clamp can be adjusted by loosening the nuts (**B**) on the inside of the leg guidance. To prevent contact between the leg guide and the floor when the recumbent tricycle is not in use or during transport, the leg guidance can be fixed to the crank with the hook and loop strap (**C**) to prevent the foot pan with leg guidance from tilting on its own. When using the recumbent tricycle, the hook and loop strap can either be wrapped around the leg guidance for storage or stowed in the pocket (at the back of the seat) of the rain cape.

Indications such as **1** or **3** (see **Point 2.3.1**) in their most pronounced or advanced forms are often accompanied by an adduction tendency in the hips and knees and associated internal or external rotation of the feet (**8, 9** – see **Point 2.3.1**). By adjusting the rotation of the pedals with lateral guidance, this symptom can be alleviated to facilitate pedaling in the first place (**8, 16** – see **Point 2.3.1**). On the other hand, corrective action can be taken if the foot is brought into a more physiological starting position and the dysfunctions of the hip and leg muscles (**12** – see **Point 2.3.1**) are positively influenced.



5. Accessories.

5.3 Foot pans with dynamic leg guidance

For the function and adjustment of the foot pans with leg guidance, see **Point 5.2**.

For the foot pans with dynamic leg guidance, the adjustment options are installed only on the rear foot part and not on the side like for the foot pans with leg guidance. The dynamic leg guidance also permits defined rotation of the leg and thus prevents excessive abduction, in particular of short legs. At the same time, the stabilisation of the foot joint is retained. To adjust the degree of movement of the leg guidance, loosen the cover (**A**) and the nut below it, and screw the elastomer in or out accordingly. Check the leeway of the leg guidance. To prevent contact between the leg guidance and the floor when the



recumbent tricycle is not in use or during transport, the leg guidance can be fixed to the crank with the hook and loop strap (see **Point 5.2**) so that the foot pan with leg guidance cannot tilt on its own. When using the recumbent tricycle, the hook and loop strap can either be wrapped around the leg guidance for storage or stowed in the pocket (at the back of the seat) of the rain cape. Indications such as **1** or **3** (see **Point 2.3.1**) in their developed or advanced form often involve an abduction tilt in the hips and knees and therefore associated with inner and outer rotation positions of the feet (**8, 9** – see **Point 2.3.1**). By adjusting the rotation of the pedals with lateral guidance, this symptom can be alleviated to facilitate pedaling in the first place (**8, 16** – see **Point 2.3.1**). On the other hand, corrective action can be taken if the foot is brought into a more physiological starting position and the dysfunctions of the hip and leg muscles (**12** – see **Point 2.3.1**) are positively influenced.



5. Accessories.

5.4 Ergotec pedals

The Ergotec pedals can be individually adjusted to the user using neoprene hook and loop straps.

To do this, simply open the strap (A) and bring it into the required position. If the user's shoe is too wide, the strap holder can be reversed and refitted by loosening the two screws (B) so that the pedals are no longer restricted on the outside by the user's shoe. The straps have to be removed and threaded back in.



5.5 Foot positioning pedals

The foot positioning pedals are equipped with toe clips (C) to position the feet and prevent them from slipping out unintentionally. The toe clips (C) prevent the toes from slipping through. A heel rubber (D) is attached to the pedal, which is additionally tightened around the heel after the user has placed the foot in the pedal to prevent the foot from sliding out.

For the indications 1, 2, 3, 4, 5 and 6 (see **Point 2.3.1**) and the mild forms of symptoms 8, 9 and 12 (see **Point 2.3.1**), the foot positioning pedals are suitable for keeping the feet in contact with the pedals against the influence of gravity, thereby optimising power transmission (12 - see **Point 2.3.1**). This relieves the coordination of the feet. More pronounced degrees are better treated with pedals that also influence the tendency to adduct (which can be caused by hip muscle dysfunction (12 - see **Point 2.3.1**) or joint misalignment (9 - see **Point 2.3.1**)) and therefore also help with cardio-respiratory functions (10 - see **Point 2.3.1**) and participation (15 - see **Point 2.3.1**).



5.6 Hand positioning aid

The hand positioning aid provides additional security for the user by keeping their hands safely on the handlebars. To do this, simply place the hand into the hand positioning aid and close the hook and loop closures.



5. Accessories.

5.7 Bag

An optional bag is available for the recumbent tricycle. These are fixed with magnets (A) on the drive cover.



5.8 Grip protection

The grip protection is on the outside of the tyres and protects the rider. It prevents limbs from getting caught in the spokes. The grip protection is fixed and cannot be adjusted.

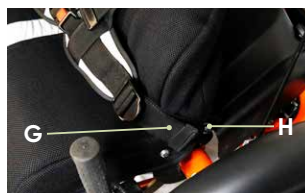


5.9 4-point strap

The 4-point strap ensures correct positioning of the pelvis and also stabilises the upper body. In order to attach the 4-point strap on the seat, the strap guides (B) must be fitted first. To do this, open the lower zip (C) of the seat cover to gain better access to the holder for the strap guide. Place the strap guidance on the recesses for the slotted holes from the outside, place the corresponding sliding blocks behind them from the inside and screw the two cylinder head screws (D) into them. The 4-point strap is fixed with sliders (E) on the strap guide. First place the two upper shoulder straps (F) over the backrest and guide the straps through the existing strap guide slots in the strap guide (B). Then take the two lap belts (G) and place them under the screws (H) that connect the backrest and the seat using the eyelets provided.



The height and width of the shoulder strap mounts can be adjusted to adapt the 4-point strap to the user's height. To do this, loosen the screws (D) and (I), move the strap holder into the desired position and then tighten the screws again.



5. Accessories.

The sliders (**A**) can be used to individually adjust all straps in length.

The 4-point strap is equipped with a safety lock (**B**) for closing and opening. The red slider on the safety lock has two positions (locked and unlocked), which must be set manually.

The 4-point strap supports an upright posture in the event of a lack of postural control in the torso (**1, 2, 3, 4, 5, 6** – see **Point 2.3.1**) through the shoulder straps, which guide the shoulders towards the backrest. The basis for this straightening is the upright pelvis (**8** – see **Point 2.3.1**), which is achieved by the two hip straps. The 4-point can also be used in case of involuntary movement deflections (**1, 6** – see **Point 2.3.1**).



5.9.1 Moving/removing the strap reducer

For users whose shoulders are below the upper edge of the backrest in a sitting position, a strap reducer (**C**) is pre-assembled, which guides the shoulder strap closer to the backrest and therefore provides better support for the upper body. This can be fitted in 2 positions (under the screws (**D**) or screws (**E**)) and is fitted as standard under the screws (**D**) between the strap mount and seat cover. To change the position, the strap guide must be unscrewed from the seat. To do this, loosen the screws (**D**) and (**E**), remove the belt guide, place the strap in the new position and screw the strap guide back on using the screws (**D**) and (**E**).

If the strap reducer is not required, it can be completely removed. To do this, also loosen the screws (**D**) and (**E**), remove the strap guide, remove the ends of the strap reducer and then reattach the strap guide to the seat. Then thread the shoulder straps out of the strap guide slots (**F**), pull the strap reducer off the shoulder straps (**G**) and then thread them back through the guide strap slots.



5. Accessories.

5.10 Headrest

The headrest is used for correct positioning/support of the head and is attached to the upper end of the backrest. It can be adjusted in height, depth and angle. Loosen the cylinder head screw **(A)** with inner hexagon and bring the headrest into the required position. Then retighten the cylinder head screws.

To adjust the depth and angle, loosen the cylinder head screws **B, C** and **D**, bring the headrest into the desired position and then retighten the screws.

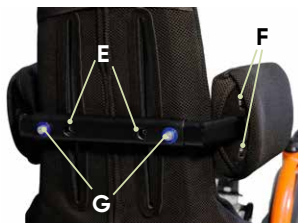
With limited head control (**7** – see **Point 2.3.1**), the backrest serves as a support surface for users up to approx. 120 cm tall.

For users who are taller, the contact surface can be enlarged by the headrest so that the head position is made easier and visual control of the surroundings is possible even in the case of poor head control (**7** – see **Point 2.3.1**), reduced muscle strength and endurance (**12** – see **Point 2.3.1**) and involuntary movements (**13** – see **Point 2.3.1**).



5.11 Thorax pelotte pads

The thorax pelotte pads are used to correctly position the torso. They can be adjusted in height and width. Now loosen the two screws **(E)** to adjust the height of the thorax pelotte pads. You can adjust the height of both thorax pelotte pads at the same time. To adjust the height of the thorax pelotte pads individually, loosen the screws **(F)** on the back of the thorax pelotte pads. To set the width, undo the screws **(G)** and bring the respective pelotte into the desired depth setting.



5. Accessories.

5.12 Seat insert

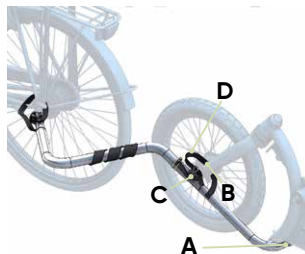
The seat insert is pulled from above over the backrest to the pelvic area where it is aligned. It is used to stabilise the pelvis of slim users.



5.13 Trailer function

The **mats.** recumbent tricycle can be optionally equipped with a trailer function to enable the recumbent tricycle to be towed (except when equipped with a fixed drive.) To do this, hook the rear part of the trailer bar under the **mats.** at the front of the profile (**A**) and swivel it onto the front wheel axle (**B**). Attach the front part and secure it with the hinged splint (**C**).

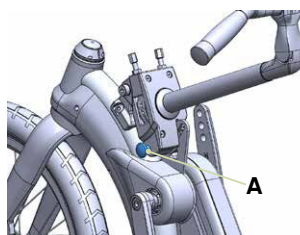
Place the remaining strap (**D**) around the fork and insert the spring pin through the front wheel axle. Then lift the trailer bar at the front and guide it into the bracket on the towing wheel. Guide the safety strap behind the strut of the dropout and insert the splint (**C**), which is secured with the tab on the rubber cap.



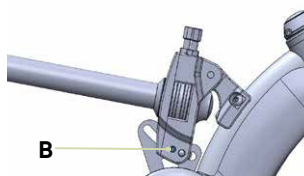
5. Accessories.

5.14 Upper handlebar

Before you get on the **mats**, you must release the steering bar at the front lock (**A**) and fold it forwards and upwards. Once you have taken a seat on the **mats**, the steering bar must be returned to its original position. Please make sure that the lock engages properly.

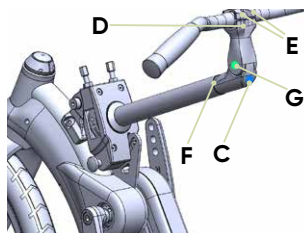


The upper handlebars can be adjusted in angle and height. To adjust the overall angle of the upper handlebars, loosen the Allen screw (**B**), move the upper handlebars to the desired position and retighten the screw.



Height of handlebars

To adjust the height of the handlebars, remove the protective cap from the hexagon socket (**C**), loosen the hexagon socket (**C**) and adjust the stem (**D**) to the required height. By tapping the head of the hexagon socket (**C**) lightly with a hammer, the stem in the fork steerer will loosen. Then re-tighten the hexagon socket.



Ensure that the marking for the minimum insertion depth (F) remains on the stem in the fork steerer and therefore cannot be seen.

Handlebar adjustment

To adjust the handlebar position, loosen the clamping screws (**E**), bring the handlebars into the required position and then firmly re-tighten the clamping screws (**E**). To change the tilt angle on the stem, please loosen the clamping screw (**F**). Then firmly re-tighten the screws again.



After each adjustment, please retighten all screw connections!

After adjustment of the handlebars, there must still be no tension placed on the brake cables. If necessary, extend the cables!



6. Cleaning and maintaining.

6.1 Cleaning and disinfecting

6.1.1 Cleaning

To ensure functional safety and the appearance of the recumbent tricycle, it must be regularly cleaned and cared for. Please observe the following guidelines:

- Never allow dirt to dry onto the bicycle, but always remove it with water and a soft cloth or sponge. Do not use a high-pressure washer for cleaning as otherwise the bearings, the paint or the decorations can get damaged.
- Do not use aggressive cleaning agents. Use a mild detergent solution to clean.
- Repair paintwork damage immediately.

Please also pay attention to our general cleaning and hygiene advice. This can be found at **www.schuchmann.de/mediathek**.



Danger due to rotating parts

- The motor can start to move unexpectedly when the drive system remains switched on when performing cleaning work on the recumbent tricycle.
Remove the E-drive battery before cleaning.



Never use high-pressure cleaners

The use of a steam jet, high-pressure cleaning equipment or a water jet for cleaning is not permitted. The ingress of water into the switch box, motor or electrical connectors can destroy the equipment.

6.1.2 Disinfection

Various products can be used for surface disinfection of metal and plastic parts. Liquid disinfectants are available as ready-to-use solutions that are sprayed on and evenly applied with a soft cloth. Alternatively, wipes pre-soaked with disinfectant can be used to wipe the products over the entire surface. In both cases, care must be taken to ensure complete wetting. Disinfection in fully automatic disinfection systems is also possible and recommended.

The exposure times may vary and can be found in the manufacturer's instructions for the products used.

6. Cleaning and maintaining.

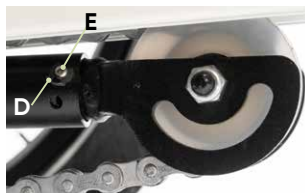
6.1.3 Chain maintenance

Drive chains must be regularly cared for. This is in particular the case after riding in rain. The chain must be lubricated with a commercially available chain oil. Due to the expansion which is a natural result of use, regular inspection of the chain tension of gear unit chains is required. To do this, first remove the cover of the gear unit (A) by loosening the three screws (B) and removing the cover towards the rear. Check the chain tension by testing whether the chain on the gear unit can be pulled max. 10 – 15 mm back. In order to reset the tension of the chains in the drive area, loosen the two nuts (A) on the left and right of the hub. Then pull the hub evenly backwards and retighten all four nuts (C).



Leave this work to your specialist dealer in case of any uncertainty! (see Point 9.5)!

To tension the main chain, pull the locking disc (D) from the locking pin, then pull the pin – the chain tensioner (E) now adjusts the tension itself – reinsert the pin, if necessary push the chain tensioner (E) back slightly – and replace the locking disc (D).



After each adjustment, please retighten all screw connections!



An incorrectly-tensioned chain can lead to increased wear or cause to the chain to come off!

6.2 Servicing / controls

Please carry out a daily visual inspection and check the recumbent tricycle regularly for cracks, breaks, missing parts and malfunctions. In case of a defect or malfunction, please contact the specialist dealer who supplied you with the product (see **Point 9.5**).



6. Cleaning and maintaining.

6.3 Maintenance

For reasons of user safety and to retain product liability, the product must be subjected to maintenance by a specialist dealer at least once a year (see **Point 9.5**). The performed maintenance must be documented in the maintenance plan (see **Point 6.3.2**).

6.3.1 Maintenance specifications

- Check the size adjustment (leg length)
- Check the tyre pressure or check that the tyres are not damaged
- Check the screw connections
- Check that the hydraulic line or hydraulic cylinder is intact and that no hydraulic oil is leaking
- Check the lighting according to StVZO
- Check the chain and chain tension, adjust if necessary, clean and oil (**see Point 6.1.3**).
- Check bottom bracket and lubricate if necessary.
- Lubricate the bottom bracket, check play and replace if necessary.
- Check the hub gear and adjust if necessary.
- Check the brake system for function, adjust if necessary. If the brake is poor, check the hand lever, cable, brake lever and brake pads for their condition, adjust and replace if necessary.
- Degrease bearing points.
- Replace any bent or trapped cables.
- Check the rims for side and upper impacts.
- Check the spoke tension and adjust if necessary.
- Check the tyre profile.
- Check the lighting and signal system.
- Check the 8-gear rear wheel hub and lubricate it if necessary.
- Check frame and fork for damage and replace if necessary.
- Have an annual leakage current measurement carried out on the electric drive.
- Check the fixation of all cables and parts.
- Check the tension on the steering cables and tighten if necessary
- Check the function of the entire electrical system.
- Check the operating safety of the battery pack.



Danger of malfunction in case of improper maintenance

Improper maintenance of the electric drive can lead to damage to essential components. This can lead to a fall.

- Maintenance work may only be performed by your specialist dealer (**see Point 9.5**).

6. Cleaning and maintaining.



Danger due to unforeseen motor activity

The motor can set itself in motion unexpectedly, if the drive system remains switched on when working on the recumbent tricycle.

- Remove the battery before carrying out any work on the recumbent tricycle. When you put the recumbent tricycle back into operation after maintenance, assembly or repair, position the recumbent tricycle so that the drive wheel can rotate freely. Only then insert the battery pack and check the functionality of the drive.

6.3.2 Maintenance plan

Maintenance specifications of the manufacturer (see **Point 6.3.1**) were carried out:

Date	Company	Name	signature



Any defects or damage found must be repaired by the specialist dealer or the manufacturer before reuse.

6.4 Repairs

Repairs to the recumbent tricycle may only be performed by your specialist dealer (**see Point 9.5**).

6.5 Controls

Controls to be performed by the user of the bicycle if necessary:

- Check the chain and chain tension, adjust if necessary, clean and oil.
- Check the chain for wear, oil and replace if necessary.
- Check bottom bracket mounting and repair if necessary.
- Check pedals for clearance.



6. Cleaning and maintaining.

- Gear system – check settings.
- Check the handlebar and handlebar stem for damage and replace if necessary.
- Check the brake system for function and adjust if necessary.
- Check the tyre pressure and profile.
- Check the lighting and signal system.

6.6 Storage

Storage in winter

Before storing the recumbent tricycle in winter in a dry room with a constant temperature, clean it (see **Point 6.1**) and ensure that the tyre pressure is sufficient (see **Point 4.3**).

Inspection in spring

Prior to using the tricycle again in spring, ensure that the tyre air pressure is sufficient (see **Point 6.3**) and that there is no damage to the tricycle.

6.7 Spare parts

Only use accessories and spare parts made by Schuchmann, otherwise you will endanger the user and the warranty becomes void. Please contact the supplying specialist dealer (see **Point 9.2**) to order spare parts stating the serial number of the tricycle (see **Point 9.5**). Necessary spare parts and accessories must only be installed by trained personnel.

6.8 Duration of use and re-use

The expected duration of use of our product, dependent on the usage intensity and amount of re-use, totals up to "8" years, if the usage takes place in accordance with the information in these instructions for use. It may be possible to use the product over and above this time period if it is in a safe condition. The expected duration of use does not refer to wear parts, such as for example covers, wheels, batteries.....The maintenance and evaluation of the condition, and if applicable the potential for re-use, must be decided by the specialist dealer. The recumbent tricycle is suitable for reuse. Please observe the instructions for cleaning and disinfection under **Point 6.1** before passing on the product. Accompanying documents such as these instructions for use are part of the product and must be given to the new user.



Should a serious incident occur during the service life of the product despite being used as intended, this must be reported immediately to the manufacturer and the competent authority.

6. Cleaning and maintaining.

6.9 Error messages and troubleshooting

If errors occur during operation of the drive system, “**Error**” is indicated on the display. At the same time, instead of the current display of the speed, an error number appears. The following table provides information about the possible error sources associated with these numbers and how the malfunction can be eliminated.

1	ERROR_HARDWARE BRAKE
Error	Overcurrent switch-off
Measure	Remove the battery and check the contacts. If the contacts are OK, reinsert the battery and restart the system. Please contact your specialist dealer (see Point 9.5) if the contacts on the battery pack are visibly damaged or the error continues to occur.
2	ERROR_HALL
Error	Motor signal faulty
Measure	Check the motor signal cable and restart the system. Please contact your specialist dealer (see Point 9.5) if the motor signal cable are visibly damaged or the error continues to occur.
3 & 4	ERROR_GRIP_OFFSET
Error	twist grip not in the home position at system startup
Measure	Make sure that the twist grip is in the home position at system startup. If necessary, a little oil under the handle can make it work again. If the error still occurs, the twist grip is probably defective. In this case, please contact your specialist dealer (see Point 9.5).
5	ERROR_TORQUE OFFSET
Error	Torque sensor incorrectly installed or not load-free at system startup
Measure	Do not apply pressure to the pedals on system startup. If the error still occurs, the torque sensor in the bottom bracket is probably defective. In this case, please contact your specialist dealer (see Point 9.5).
6	ERROR_I_OFFSET
Error	Current measurement error, contacts on the battery may be damaged
Measure	Remove the battery and check the contacts. If the contacts are OK, reinsert the battery and restart the system. Please contact your specialist dealer (see Point 9.5) if the contacts on the battery pack are visibly damaged or the error continues to occur.
7	ERROR_FAST_OVER VOLTAGE
Error	Brief overvoltage in the intermediate circuit, possibly due to excessive wheel speed or damaged contacts on the battery.
Measure	Remove the battery and check the contacts. If the contacts are OK, reinsert the battery and restart the system. Please contact your specialist dealer (see Point 9.5) if the contacts on the battery pack are visibly damaged or the error continues to occur.



6. Cleaning and maintaining.

8	ERROR_SLOW_OVER_VOLTAGE
Error	Permanent overvoltage in the intermediate circuit.
Measure	Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.
9	ERROR_FAST_UNDER_VOLTAGE
Error	Brief undervoltage in the intermediate circuit, battery possibly took weak or contacts damaged.
Measure	Remove the battery and check the contacts. Reinsert the rechargeable battery and restart the system. If the error still occurs, charge the battery pack, reinsert it and restart the system. Please contact your specialist dealer (see Point 9.5) if the contacts on the battery pack are visibly damaged or the error continues to occur.
10	ERROR_SLOW_UNDER_VOLTAGE
Error	Permanent undervoltage in the intermediate circuit, rechargeable battery possibly drained.
Measure	Charge the battery, reinsert and restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.
11	ERROR_OVER_TEMP_MOTOR
Error	Motor overheated
Measure	Leave the motor to cool down. Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur after approx. 20-60 minutes.
12	ERROR_OVER_TEMP_CONTROLLER
Error	Motor control overheated
Measure	Leave the motor control to cool down. Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur after approx. 20-60 minutes.
13	ERROR_PARAMETER
Error	General parameter error
Measure	Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.
14	ERROR_UNDER_TEMP_MOTOR
Error	Lower limit temperature for motor operation reached
Measure	Store the system at room temperature (approx. 20°C). Please contact your specialist dealer (see Point 9.5) if the error continues to occur after approx. 1 hour.
15	ERROR_EEPROM
Error	Error in the system accumulator
Measure	Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.

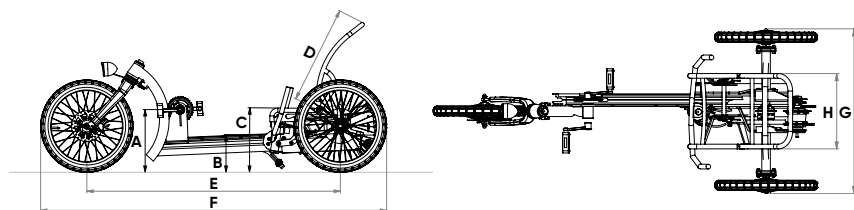
6. Cleaning and maintaining.

16	ERROR_PARAMETER_PROPERTY
Error	Error in parameter management
Measure	Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.
17	ERROR_AKKU_TEMP
Error	Battery either overheated or under-cooled
Measure	Allow the overheated battery to cool down or store under-cooled at room temperature (about 20°C). Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur after approx. 1 hour.
18	ERROR_UNDEFINED_BIKE_CONSTELLATION
Error	Configuration error
Measure	Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.
19	ERROR_BMS
Error	Rechargeable battery error
Measure	Remove the rechargeable battery and recharge. Reinsert the rechargeable battery and restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.
20	ERROR_BMS_VERSION
Error	Rechargeable battery error
Measure	Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.
21	ERROR_BMS_VERSION
Error	Loose contact or other defect on the torque sensor
Measure	Restart the system. Please contact your specialist dealer (see Point 9.5) if the error continues to occur.
22-30	ERROR_BMS_FAULTY_xxx
Error	Rechargeable battery error
Measure	Please contact your specialist dealer (see Point 9.5).
50	ERROR_DISPLAY_COMMUNICATION
Error	Communication between the display and control faulty
Measure	Check the display cable plug. Examine the display for visible damages. Restart the system. Please contact your specialist dealer (see Point 9.5) if damage can be identified on the plug or display or the error continues to occur.



7. Technical data.

7.1 Dimensions



		mats.
	Body size	100 – 160 cm
	Inside leg length	42 – 75 cm
A	Bottom bracket height	32.5 cm
B	Access point height	20 cm
C	Seat height	32 – 42 cm
	Seat angle	0 – 20°
	Seat depth	26 cm
D	Backrest length	50cm
E	Wheelbase	105 – 132 cm
	Track gauge	69 cm
F	Full length	155 – 182 cm
G	Full width	76 cm
	Full height	65 – 88 cm
H	Max. seat width	37 cm
	Turning radius	238 – 390 cm
	Tare weight	30 kg (without E-motor)
	Max. load	75 kg

7.2 Wheels

Front wheel / rear wheels	20" x 2.15" Schwalbe Big Apple
Rims	20" Ryde Big Bull
Spokes	2 mm, stainless steel

7.3 Tyre pressure

The minimum and maximum tyre pressure is indicated on the casing (**A**).



7. Technical data.

7.4 Drive system

System	
Protection class	3

Control	
Operating voltage	36 V
Max. current	depending on design & operation: 10 – 33 A

Motor	
Type	PRA 180-25
Motor nominal voltage	22.8 VAC
Achievement	250 W Pedelec (DIN EN 60034-1)
Speed during travel on the flat	depending on design & wheel diameter approx. 60–330 1/min
Torque	11.4 Nm
Impulse torque	up to 60 Nm
Overtemperature protection	Type KTY84-130
Overall motor diameter	Ø 220 mm
Weight	4.5 kg
Protection class	IP54
Utilised	0.5 – 1 kWh/100km

Battery pack		
Type	Lithium ion battery	
Nominal voltage	36 V	
Capacity	14.25 Ah, 400 Wh	
Charging time	approx. 5.5 h (at charge current 2 A)	
Temperature ranges	Operation	-10 – 45°C
	Charging	10 – 35°C
	Storage	-10 – 45°C



7. Technical data.

7.5 Lighting system

Front lighting	
Type	Union UN-4925
Luminous intensity	20 lx
Including reflector	Yes
On/off switch	Yes
Automatic light/dark sensor	No
Parking light	No
Daytime running light	No
Suitable for E-bike	Yes, 6–42 V
Primary colour	black
Product weight	120 g
Technology	LED

Rear lighting	
Type	UNION UN-4365
Parking light	Yes
Registration light	StVZO
Assembly	Rear cover
Technology	LED
Integrated reflector	Yes

7.6 Torque specifications

Pedal crank	40 Nm
Front wheel	20 Nm – 22 Nm
Wheel nuts (front wheel)	45 Nm ± 5 Nm
Wheel nuts (rear wheels)	25 Nm to 30 Nm

7. Technical data.

7.7 Equipment

Hubs	Front: Shimano DH3D30 hub dynamo, Rear: 36 hole with brake disc mount
Brake system	Rear: 2x AVID disc brake (mechanical)
Gear change	Basic mode without gear change (Shimano Nexus 8 optional)
Crank set	Crank length 125/105/85 mm, chain ring 18T
Pedals	Simple pedals in basic model
Dynamo	Shimano DH3D30 hub dynamo
Headlight	Union classic 20 UN-4925
Rear light	Union 4365
Mudguards	Schuchmann design
Frame colours (standard)	Pure orange RAL 2004, turquoise RAL 5018, pure white RAL 9010

7.8 Seat

Padding	Evazote (5 mm, elastic), RG50 (50 kg/m ³)
Cover (centre section)	Mesh (bi-elastic)
Cover (side parts)	Durable textile



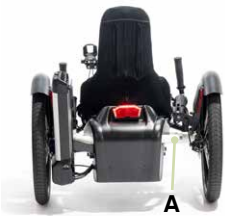
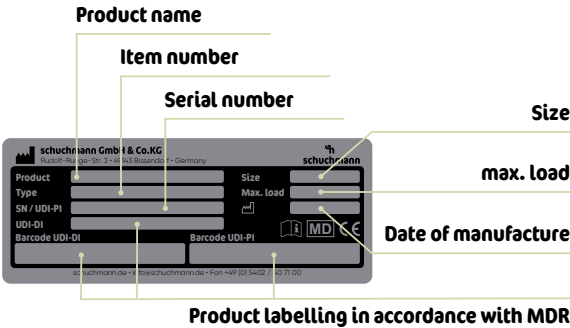
8. Guarantee.

The two-year statutory guarantee period shall apply for all products. This begins with the delivery or handover of the goods. Should a verifiable material or manufacturing fault occur within this time period, we shall, after carriage paid return to us, view the indicated damage and, if applicable, either repair or deliver a new product at our discretion.

9. Identification.

9.1 Serial number / date of manufacture

The serial number, the date of manufacture and other information can be found on the type plate, which is located on all of our products (A).



9.2 Product version

The **mats.** recumbent tricycle is available in one size and can be supplemented through a diverse range of accessories (see **Point 5**).

9.3 Issue of the document

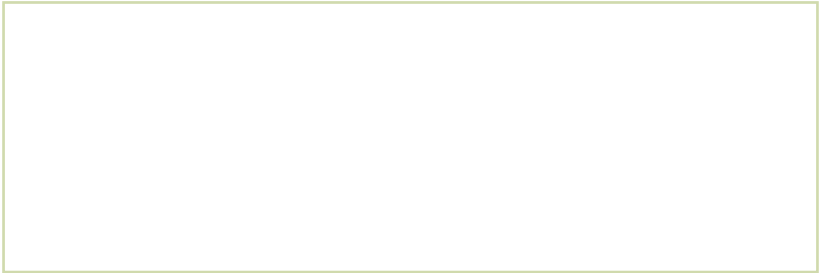
Instructions for use for **mats.** – Change status A; Issue 02.2024

9.4 Name and address of the manufacturer, specialist dealer supplying the product

This product was manufactured by:

**Schuchmann GmbH & Co. KG**
Rudolf-Runge-Str. 3 · 49143 Bissendorf
Phone +49 (0) 5402 / 40 71 00 · Fax +49 (0) 5402 / 40 71 109
info@schuchmann.de · www.schuchmann.de

This product has been delivered by the following specialist dealer:







schuchmann.de