



3-Wheel Electric Scooter

COLLY 1



Operating Instructions

Please read the operating instructions before operating the scooter!

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EG-Konformitätserklärung

im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anh. II 1. A

Original



Hersteller

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In der Gemeinschaft ansässige Person, die bevollmächtigt ist, die relevanten technischen Unterlagen zusammenzustellen

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Beschreibung und Identifizierung der Maschine

Produkt / Erzeugnis	Flurförderzeug
Projektnummer	20200305-312-A46125-2386621231-010-421532
Handelsbezeichnung	Elektro-3-Rad-Roller
Modell	1 / 1L / 2 / 2L
Funktion	Dreirädriger Elektroroller für den innerbetrieblichen Transport von Personen und kleinen Gegenständen in vorgesehenen Transportvorrichtungen.

Es wird ausdrücklich erklärt, dass die Maschine allen einschlägigen Bestimmungen der folgenden EG-Richtlinien bzw. Verordnungen entspricht:

2014/30/EU	Richtlinie 2014/30/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit (Neufassung) Veröffentlicht in 2014/L 96/79 vom 29.03.2014
2006/42/EG	Richtlinie 2006/42/EG des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung) (1) Veröffentlicht in L 157/24 vom 09.06.2006

Fundstelle der angewandten harmonisierten Normen entsprechend Artikel 7 Absatz 2:

EN ISO 13850:2015	Sicherheit von Maschinen — Not-Halt — Gestaltungsleitsätze (ISO 13850:2015)
EN 16307-1:2013+A1:2015	Flurförderzeuge — Sicherheitsanforderungen und Verifizierung — Teil 1: Zusätzliche Anforderungen für motorkraftbetriebene Flurförderzeuge mit Ausnahme von fahrerlosen Flurförderzeugen, Staplern mit veränderlicher Reichweite und Lasten- und Personentransportfahrzeugen
EN 60204-1:2006-06	Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen
EN ISO 3691-1:2015/AC:2016	Sicherheit von Flurförderzeugen — Sicherheitsanforderungen und Verifizierung — Teil 1: Motorkraftbetriebene Flurförderzeuge mit Ausnahme von fahrerlosen Flurförderzeugen, Staplern mit veränderlicher Reichweite und Lastentransportfahrzeugen (ISO 3691-1:2011, einschließlich Cor 1:2013)

Dinslaken, 3/13/2020

Ort, Datum

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2. Technical data

Model Name:	COLLY 1
Dimensions:	L 102 x W 55/67 x H 120 cm
Drive motor:	Brushless three-phase motor
Motor output:	36 V 300 W
Noise emission value:	70 db
Battery type:	Lead-gel batteries in fleece technology, closed, maintenance-free
Battery capacity:	3x12 V 22 Ah (C20) approx. 200 full cycles
Battery charger:	230 V 4 amp
Charging time:	10-12 hours
Driving speed:	adjustable to approx. 9 km and 21 km/h
Range per charge:	approx. 30 km.
Max. load:	130 kg, maximum 1 person
Net weight :	52 kg
Safety devices:	2 brakes, emergency stop, safety foot switch

The following applies to the entire operating instructions:

- Technical changes reserved
- Reproduction in whole or in part is prohibited

3. General description

3-wheel electric scooter for the transportation of one person.

Standard design:

- 36 V/300 W drive motor, brushless, without gears
- Chassis width 55 cm or 67 cm
- Electronic traction control with battery monitor and reverse gear
- Twist grip master control with battery indicator, adjacent emergency stop button (rocker switch)
- Max. speed 20 km/h, throttling possible
- Two independently functioning hand brake levers, both with engine stop function; left with parking brake. The right brake lever brakes the front wheel, the left brake lever brakes the left rear wheel
- Safety foot switch
- Pneumatic tyres, front (12½ x 2¼) and rear (2.80/2.50-4), black, air pressure 2.5 bar
- Bell, separately switchable button for reversing
- Handlebar basket
- 3x12 V 22Ah rechargeable batteries, cycle-proof, maintenance-free, closed (installed under step plate, connected in series)
- Separate charger 36 V 4 amp, to be charged with charging cable (charging flap in step plate)

4. Available equipment options

- Transport frame in front of the handlebars (instead of the basket) with baseplate or with stacking boxes
- Lighting set-up = LED headlights, 2 pcs. tail lights, 1 pc. brake light (rear lighting with anti-glare), blue spot, flashing light
- Rear view mirror
- Puncture-proof tyres (solid rubber at the rear, polyurethane foam at the front)
- Non-marking tyres
- Backrest
- Driver's saddle, height-adjustable, spring-loaded
- Foot pedal instead of twist grip master control (see below)
- Battery-replaceable drawer

5. Safety instructions, information on the training of scooter users

This scooter is an industrial vehicle within the meaning of the DGUV V68 accident prevention regulations. The entrepreneur/operator may only appoint persons to drive it who are at least 18 years of age, who are suitable and trained for this activity and who have demonstrated their ability to operate the scooter independently.

Drivers of industrial trucks are qualified for this activity if they have received instruction in accordance with the respective internal company regulations. This instruction should be recorded in writing in terms of the content and time and should be confirmed by the instructed person by means of signature. The information provided by the manufacturer can serve as support for this.

Practical training should include a test drive, including reverse driving, cornering and braking tests. Physical fitness should be determined by preliminary occupational medical examinations according to the G25 DGUV principle for occupational health screening (DGUV principle 308-001).

The appointment must be made in writing. The driver should be obliged in writing to observe the operating instructions supplied by the manufacturer.

Operating instructions produced by the entrepreneur should be written in understandable form and language and made known at a suitable place in the workplace.

Please note that use of the vehicle is only permitted on private premises/company premises.

The maximum load is 130 kg.

The scooter is suitable for transporting one person at a time. The driver is not allowed to transport any other persons.

Prior to initial operation, the scooter must be inspected for damage and correct assembly by a competent or qualified person.

Before each journey, check the scooter for proper condition and observe the

vehicle during operation for defects. Check all screw connections 4 weeks after commissioning the scooter and tighten if necessary.

Only get on or off the scooter when stationary. When leaving the scooter, stop the engine, apply the parking brake and remove the ignition key (protection against unauthorised use).

Before leaving the vehicle, the driver must ensure that it does not constitute an obstacle to traffic and escape routes and that access to safety devices and operating devices that must be accessible at all times remains clear.

The floor or ground should be as smooth as possible and also free of chemicals and ice.

Uneven paths, thresholds and steps must be approached with care. Driving against obstacles, as well as turning and driving on slopes and/or inclines must be avoided. The vehicle should be driven with suitable footwear (no heels, non-slip footwear) and at a reasonable speed, e.g. sensible cornering.

The handlebars must be held firmly by both hands while driving.

The driver is responsible for the safe control of the vehicle and must pay attention to the industrial traffic.

The working and parking area of the scooter must be sufficiently well-lit; and, where necessary, it should be cordoned off. In the event of a failure of the lighting in the operational area, emergency lighting is to be provided or the persons are to be provided with additional, independent lighting devices. Only drive the scooter in areas specified by the entrepreneur/operator.

In the event of defects that impair safety, e.g. in the event of a malfunction or failure of a brake, damaged tyres, lack of required air pressure in the tyres, excessive steering clearance, continuing to drive the scooter is prohibited and the scooter must be stopped. The fault may only be rectified by qualified personnel.

The wheel pressure is 100 kg, and sufficient load-bearing capacity of the subsurface must be ensured.

To avoid squeezing parts of the body between stationary objects and the scooter, remaining in a possible danger zone is not permitted.

The scooter should be stored in dry conditions and at temperatures not below 0°C or above 40°C.

Protect the scooter and batteries from water, heat and fire.

Protect the charger from water, heat, fire, dirt and shock. The batteries may only be charged with the charger supplied.

Check the batteries for proper charging and installation. Batteries may only be changed by qualified personnel wearing gloves and protective goggles.

Only lift the device by supporting it properly, lifting by the handlebars is prohibited.

Always accelerate gently. Jerky driving with a spinning drive wheel results in higher engine and tyre wear.

If equipped with a handlebar basket, it must not be loaded with more than 5 kg; neither explosive or flammable substances nor liquids or gases under pressure may be transported.

If equipped with a stacking box, only the intended stacking box may be transported in the holder.

The stacking box must not be loaded beyond its upper edge or 20 kg, neither explosive or flammable substances nor liquids or gases under pressure may be transported.

Only load or unload the scooter if it is secured against rolling (if necessary also against tipping), e.g. by activating the parking brake.

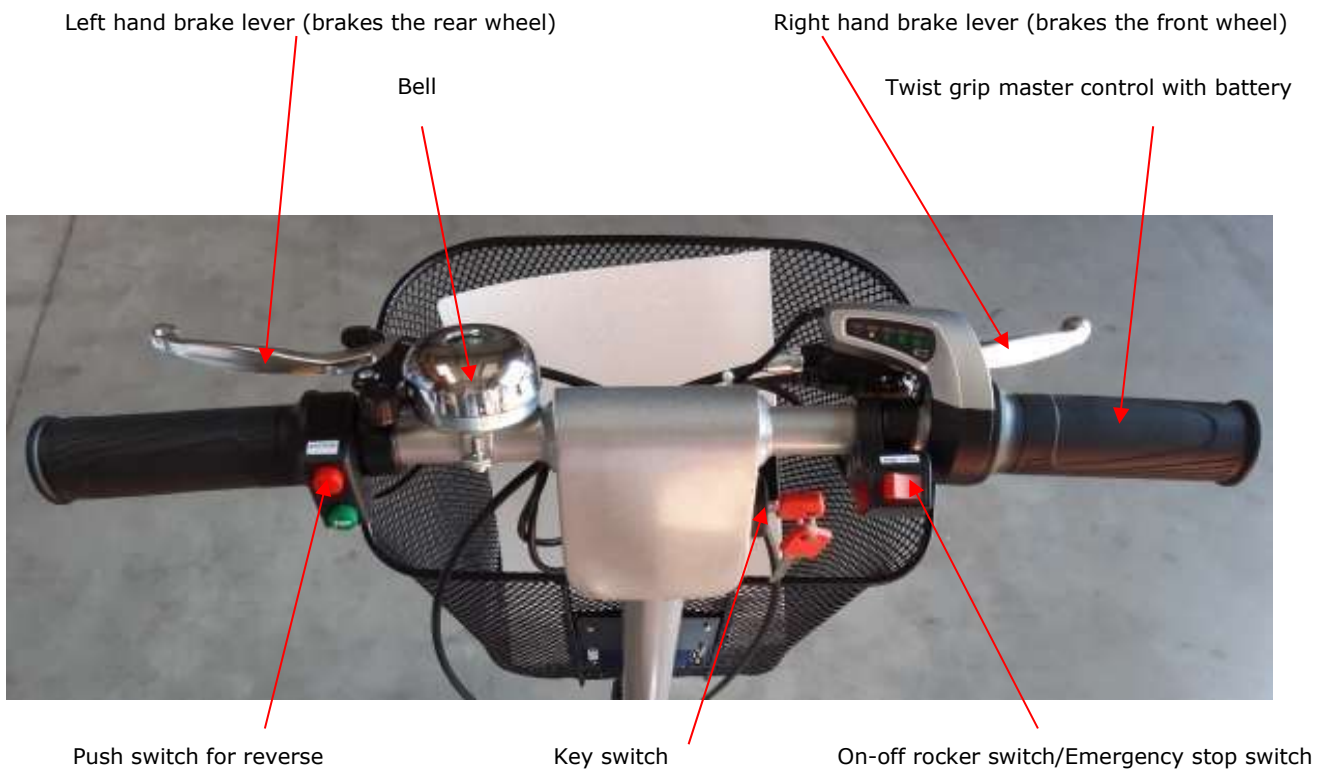
Subsequent drilling or welding in the fork and handlebars area can lead to breakage in these areas of the scooter and must only be carried out by the manufacturer.

When transporting the scooter, the load must be secured with belts in accordance with the load securing regulations using gloves and protective goggles.

Even when the scooter is operated properly, some risk remains.

6. Overview

6.1 Handlebars



6.2 Driving the scooter

Please observe the safety instructions on pages 5-6 of this operating manual!

In the case of delivery by a forwarding agent, the handlebars are "turned over" for protection during transportation. Assembly: raise the handlebars and carefully place them on the wheel fork yoke. Align the handlebars. Tighten the steering shaft to 10 NM (Newton metre).

The batteries come from the factory pre-charged. Always pay attention to the battery indicator (twist grip master control on the handlebars).

The scooter can reach speeds of up to 20 km/h, depending on the surface being travelled on, the weight of the driver and the factory setting. Always drive at a suitable speed. Comply with the safety regulations that may apply to the places being travelled in.

Hold the handlebars with both hands.

1. Key switch to "ON"
2. Emergency switch to "ON"
3. Press the safety foot switch with your right foot

Safety foot switch



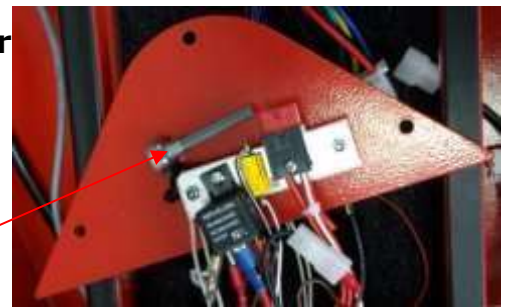
This causes the circuit to be closed via the relay to the batteries and the controller and allows the device to be used. Visible control by means of LEDs on the master controller.

6.3 Vehicle with master controller on the handlebar

Speed reduction

The speed can be adjusted continuously from 0 to approx. 20 km/h.

The maximum driving speed can be reduced to the desired speed by turning the potentiometer located behind the triangular plate.



Potentiometer for speed reduction

6.4 Possible variant: vehicle with foot pedal

Pressing the pedal forward first actuates a built-in safety switch which opens the circuit to the motor brake on the control unit (only when the circuit to the motor brake is open does the control unit release the motor brake). The master controller fitted to the brake pedal then controls the speed of the engine. When the foot pedal is released, a tension spring pulls the pedal to the zero position. In addition, the motor brake is activated by releasing the safety switch and automatically brings the scooter to a stop. The motor brake is activated by pressing the foot pedal with the heel. The speed can be reduced by means of a set screw located under the foot pedal.

6.5 Slowing the scooter down

The scooter is equipped with two independent manual hand brakes.

In addition, the motor brake is activated by lifting the foot from the safety foot switch which makes the scooter come to a halt after about 2 m.

Operating the left hand brake lever:

brake shoes in the rear wheel brake the vehicle according to the amount of pressure applied to the brake lever. In addition, pressing the brake lever activates the automatic motor brake and stops the motor.

Operating the right-hand brake lever:

the front wheel is braked in the same way as the rear wheel.

Safety foot switch:

releasing the safety foot switch activates the motor brake and brings the scooter to a halt.

6.6 Safety foot switch

The safety foot switch is connected to the motor brake by a 4-pin plug. The master controller is connected to phases 6, 7 and 8 with the handlebar cable. The connection between phase 6 and the master controller is only possible if the 4-pin plug is inserted at the safety foot switch. This acts as a safety feature, as the scooter can only be driven with a functioning safety foot switch.



7. Charging the batteries

1. Set key switch to "off".
2. For scooters with battery charging flap: open the battery charging flap (see figure below) and pull out the charging cable with the charging socket, connect the charging socket to the plug of the charger (see figure below)
3. Plug the 220 V mains plug into the mains socket.
4. Only use the charger supplied by us to charge the batteries.

The operating light (left) on the charger lights up red continuously.

The charging light (right) lights up orange when the batteries are empty, and green when the batteries are charged. The charging time is approx. 10-12 hours for completely empty batteries.

Continuous charging is essential for properly charged batteries. Intermittent interruption of the charge can lead to a loss of capacity and premature failure of the batteries (not applicable for lithium-iron phosphate batteries).

If the charge status indicator shows fully charged batteries, recharging is not recommended, even after the vehicle has been used.

Disconnect the charger from the power and batteries if it is not to be used for a long period of time.

Charging plug



7.1 Safety notice

The plug connections are protected against polarity reversal.

When changing the batteries, check the 25 amp. fuse 80 V. The batteries are connected in series.

7.2 Battery indicator

The scooter is equipped with a battery indicator. It is located on the handlebars (see Fig. on Page 5). The 3 LEDs (max=green=batteries fully charged, mid=orange=batteries half-full, min=red=batteries empty) indicate the charge status of the batteries. As soon as the green and orange LEDs are off and only the red LED lights up, the batteries should be charged immediately.

7.3 Deep discharge protection

The scooter's electronic control automatically cuts off the circuit when the voltage of the batteries drops below 31.5 V. However, this deep discharge protection does not work if the charging processes have been carried out in an incomplete way or have been interrupted in advance, so that the batteries connected in series have different voltage figures.

7.4 Changing the optional battery drawer

As a rule, the power of the 3x12 V 22Ah batteries is sufficient for daily use. If the scooter is used in shift operation, the scooter can be equipped with a battery rear drawer. In this case, an additional rear drawer can be supplied with 3x12 V 22Ah batteries. The drawer is secured with a lock. Turning it 90° locks or unlocks it.

Important: never leave the scooter with empty batteries, but recharge the batteries as soon as possible!

8. Information on maintenance, care and repair of the scooter

Annual inspections/maintenance must be arranged by the purchaser at their own responsibility in the interest of your safety and to maintain the utility value within the framework of the BG regulations.

Inspections may only be carried out by authorised personnel.

The contractor may only commission qualified persons to carry out repair work/repairs on industrial vehicles. An expert is someone who, due to his/her professional training and practical experience, is able to carry out maintenance work on industrial vehicles properly.

8.1 Changing the fuses

The fuses for the drive motor (20 amp), the control unit (3 amp) and the charging cable (10 amp) are located behind the screw-off front cover.



8.2 Adjusting the front brake

The front brake should be checked for correct operation before each journey.

The brake cable and pads should be checked every 6 months.

If necessary, the brake cable can be adjusted using the adjusting screws on the brake lever or on the front wheel.



Brake cable holder/Adjusting screw

8.3 Adjusting the rear brake

The rear brake should be checked for correct operation before each journey.

The brake cable and pads should be checked every 6 months.

If necessary, the brake cable can be adjusted using the adjusting screw.



Adjusting screw on rear wheel

8.4 Checking the tyres and wheels

Before each journey, check that the tyres are sufficiently filled with air (max. 3 bar).

Important notice: when installing the drive motor on the fork, it must be ensured that the motor engages with the surfaces on the axles and is protected against twisting with locking rings.

Tightening the motor to the fork should be done carefully and with only moderate force, as the thread could be damaged if the force is too great (approx. 4.8 Nm).

8.5 Safety devices for electronics

Relay 24V, can be loaded with up to 40 Ah

Resistance

reduced from 36 V to 24 V

25 amp fuse

for batteries up to 80 V.

20 amp fuse

for motors with a load of up to 80 V.

3 amp fuse

for control with a load of up to 80 V.

10 amp fuse

for charging plug with a load of up to 80 V.

Battery monitor

3 batteries with 6 cells each = 18 cells

against deep discharge

fixed value by battery manufacturer = 1.78 V per cell

$$1.78 \times 18 = 32.04 \text{ V}$$

9. Troubleshooting

Problem	Cause	Solution
Key switch and emergency switch are on – but no display	<ol style="list-style-type: none"> 1. Fuse defective 2. Plug connection interrupted 3. Batteries empty 4. Control unit defective 	<ol style="list-style-type: none"> 1. Replace the fuse 2. Check that the cable is securely attached to the terminal strip 3. Charge batteries, replace if necessary 4. Replace the control unit
Motor doesn't run	<ol style="list-style-type: none"> 1. Master controller defective 2. Control unit defective 3. Motor defective 4. Safety foot switch not working 	<ol style="list-style-type: none"> 1. Replace the master controller 2. Replace the control unit 3. Replace the motor 4. Replace the safety foot switch
Front or rear brakes not working	<ol style="list-style-type: none"> 1. Brake cable cracked 2. Too little lever effect 	<ol style="list-style-type: none"> 1. Replace the internal brake cable 2. Increase effect by unscrewing the adjusting screw
Rear wheel noisy	Wheel bearing defective	Replace the wheel bearing
Steering wobbly	Brake plates on the rear wheel partially without profile	Replace the tyres
For scooters with foot pedal: pedal is pressed, scooter still fails to move	<ol style="list-style-type: none"> 1. Micro switch not working 2. Cable connection loose 3. Potentiometer not working 	<ol style="list-style-type: none"> 1. Replace the micro switch 2. Connect 3. Replace potentiometer
Charger: indicator does not light up	<ol style="list-style-type: none"> 1. Mains voltage not available on charger 2. Fuse on charger defective 	<ol style="list-style-type: none"> 1. Check the socket 2. Replace the fuse
Charger: indicator light lights up red, does not charge	Fuse in the drawer defective	Replace the fuse
When charging the batteries, the operating light must be red and the charging light must be yellow. When the charging process is complete, the charging light is green.		

10. Miscellaneous



Front wheel side view
with motor cable box



Charging flap in the step
plate with charging cable



Chassis interior with
batteries, control unit and
cable to safety foot switch

Control unit



11. Maintenance instructions

- Unscrew the step plate – open half-way
- Disconnect the plug from the dead man switch - make sure that the dead man's switch is firmly seated in the tread plate
- Check the protective rubber for damage and tightness
- Check continuity (when the dead man switch is pressed, the connection is interrupted = open)
- Check dirt film
- Disconnect the motor cable from the control unit
- Remove the cable tie
- Check the motor cable for damage, then pull it out of the frame opening
- Unscrew the angle for the front wheel brake
- Remove the motor from the fork

Drum brake check:

- Loosen the nuts
- Remove and clean brake shoes and springs
- Then apply a little grease to the sliding parts
- Roughen the brake shoes with coarse emery paper
- Re-assemble

Check the electrics on the triangular plate:

- Check cables and connectors for weak points
- Check the steering cable for damage

Check the rear wheels:

- Loosen the caps
- Remove the rear wheels from the axle
- Check the axles
- Clean the rims
- Clean the rear wheel brake
- Grease the sliding parts
- Check brake shoes, if necessary also treat with coarse emery paper
- Check the bearings
- Re-assemble

Check batteries:

- Remove the batteries
- Check for damage
- At this time, clean the inside of the chassis, check for damage,
- If necessary, straighten the fender
- Charge batteries individually and test for Ah value
- Reinstall the batteries

Check both brake levers:

- Release the brake cables
- Check the brake lever for correct operation
- Reconnect the brake cables. Front brake: Use the adjusting screw to adjust the clearance of the brake shoes to the brake drum to 0.5 - 1.0 mm.

- Completely re-assemble your COLLY 1

Check the connection of the motor cable to the control unit

- 3 thick wires / test terminal strip
- 5 thin wires /pull slightly on the plug, check for firm grip

- Check connections at the terminals up at the handlebars
- Check all fastening elements
- Check the air pressure of the tyres and valves for leaks
- Perform an operational check of all switches - test drive

12. Maintenance/Inspection log

Company:

Date:

Delivery Note No.:

COLLY Chassis No.:

Handlebars, fixed seat of steering head bearing set	checked
Tightness of the connections at the terminals in the handlebars	checked
Motor - smooth running	checked

Tyres

Front tyres	checked	new
Front inner tube	checked	new
Rear rims (retaining rings)	checked	new
Rear tyres	checked	new
Rear inner tubes	checked	new
Rear wheel bearing (concentricity)	checked	new
Tyre pressure (2.5 bar optional) at the front and rear	checked	

BATTERY 1	Date:	Voltage/Ah	new
BATTERY 2	Date:	Voltage/Ah	new
BATTERY 3	Date:	Voltage/Ah	new

Brake anchor plate	cleaned	new
Rear brake shoes	checked	new
Rear brake lever (return spring + engine stop function)	checked	new
Rear brake cable	checked	new
Front brake lever (return spring + engine stop function)	checked	new
Front brake cable	checked	new

Connections, or plug connections	checked	new
For foot pedal: spring	checked	new
Safety foot switch (fixed seat/function)	checked	new

Wiring harness (fuses 3A, 20A, 25A, 10A)	checked	new
Relay (function via key switch)	checked	new
Key switch (function/seat)	checked	new
Emergency stop switch (function/seat)	checked	new
Bell/horn	checked	new

13. Spare parts list

Part No.	Description
----------	-------------

Basic structure

410xxx	chassis, painted
411xxx	railing
Handlebar parts	
420000	Standard handlebars with cover
420001	Handlebars 10 cm longer, with cover
420002	Handlebars for charging on handlebars 36 V (circular)
420003	Handlebars for charging on handlebars 48 V (circular)
420004	Handlebars tube clamp
420005	Steering head bearing set for wheel fork
420006	Wheel fork 12", primed
420007	Wheel fork 12", enzean blue
420008	Wheel fork 12", fire red
420009	Wheel fork 12", carmine red
420010	Wheel fork 12", melon
420011	Wheel fork 12", red-orange
420012	Wheel fork 12", black
420013	Wheel fork 12", silver metallic
420014	Wheel fork 12", ultramarine blue
420015	Wheel fork 12", traffic yellow
420016	Wheel fork 12", traffic red
420017	Wheel fork 12", turquoise blue
420020	Wheel fork 14", primed
420021	Wheel fork 14", enzean blue
420022	Wheel fork 14", fire red
420023	Wheel fork 14", carmine red
420024	Wheel fork 14", melon
420025	Wheel fork 14", red-orange
420026	Wheel fork 14", black
420027	Wheel fork 14", silver metallic
420028	Wheel fork 14", ultramarine blue
420029	Wheel fork 14", traffic yellow
420030	Wheel fork 14", traffic red
420031	Handlebars cable protection
420032	Front wheel shield
420033	Bracket for protective shield

Wheels

430000	Rear wheel rim with ball bearing 6201 2RS (for 12 mm axle)
430001	Rear wheel rim with ball bearing 6002 ZZ (for 15 mm axle)
430002	Solid rubber tyre 2.80/2.50-4 (small rear wheel)
430003	Solid rubber tyre 3.00-4 (large rear wheel)
430006	Rear wheel bearing 6201 2RS (for 12 mm axle)
430007	6002 ZZ rear wheel bearing (for 15 mm axle)
430008	Rear wheel axle 12 mm
430009	Rear wheel axle 15 mm
430010	Rear wheel caps (with or without print?)
430011	Rear tyre 2.80/2.50-4, small, black, without inner tube

430012	Rear tyre 2.80/2.50-4, small, grey, without inner tube
430013	Rear tyre 3.00-4, large, black, without inner tube
430014	Rear tyre 3.00-4, large, grey, without inner tube
430015	Rear wheel inner tube 3.00-4 (2.80/2.50-4) small
430016	Rear wheel inner tube 3.00-4, large
430017	Drive wheel tyre 12 1/2 x 2 1/4, cross, black, without inner tube (profile C-623 or C-628)
430018	Drive wheel tyre 12 1/2 x 2 1/4, cross, grey, without inner tube
430020	Drive wheel tyre 2.50-10, cross, black, without inner tube
430022	Drive wheel tyre 3.00-10, road profile, black
430023	Drive wheel tyre 3.00-10, road profile, grey
430024	Drive wheel inner tube 12 1/2 x 2 1/4
430027	Drive wheel inner tube 3.00-10
430028	Retaining ring for rear wheels

Brake parts

440001	Drum brake SZ 108 (front)
440002	Rear wheel brake
440003	Front brake cable support
440004	Rear brake adjusting screw
440005	Left hand brake lever with parking brake
440008	Right hand brake lever (without parking brake)
440013	Front brake spiral spring (on brake anchor plate)
440019	Complete brake cable Drive wheel 1050x1600mm incl. cable+sheath COLLY 1
440020	Front brake cable 1600 mm COLLY 1, COLLY 1L, COLLY 2
440021	Front brake cable sheath 1050 mm COLLY 1
440022	Complete brake cable Drive wheel 1070x1600mm incl. cable+sheath COLLY 1L, COLLY 2
440024	Front brake cable sheath 1070 mm COLLY 1L, COLLY 2
440025	Brake cable complete rear 1650x200 mm incl. cable+sheath COLLY 1
440026	Rear brake cable 2000 mm COLLY 1
440027	Rear brake cable sheath 1650 mm COLLY 1
440028	Brake cable complete rear 1900x2200 mm incl. cable +sheath COLLY 1L
440029	Rear brake cable 2200 mm COLLY 1L
440030	Rear brake cable sheath 1900 mm COLLY 1L
440031	Brake cable complete rear 2120x2350 mm incl. cable + sheath COLLY 2(70x50)
440032	Rear brake cable 2350 mm COLLY 2 (70x50)
440033	Rear brake cable sheath 2120 mm COLLY 2 (70x50)
440034	Brake cable complete rear 2250x3050 mm incl. cable + sheath COLLY 2(70x80)
440035	Rear brake cable 3050 mm COLLY 2 (70x80)
440036	Rear brake cable sheath 2250 mm COLLY 2 (70x80)

Electronic parts

450000	Ignition switch 301 complete
450001	Key to ignition switch 301
450002	Ignition switch 302 complete
450003	Key to ignition switch 302
450004	Ignition switch special closing complete
450005	Special closing key
450006	Horn 36 V
450007	Horn 48 V
450009	Motor 48 V 500 W 12"
450010	Motor 36 V 300 W 12"
450012	Motor cable protection

450013	Motor cable box (incl. connecting terminals and screws), prefabricated/box for potentiometer
450014	Motor cover
450015	Collector for 300 W + 500 W motor
450016	Control unit 36 V
450017	Control unit 48 V
450019	Charger 36 V/4 amp (for 3 pcs. 22 Ah batteries)
450019b	Charger 36 V/6 amp (for 3 pcs. 36 Ah batteries)
450020	Charger 48 V/4 amp (for 4 pcs. 22 Ah batteries)
450022	Charger 48 V/6 amp (for 4 pcs. 36 Ah batteries)
450023	Strain relief for plug on charger
450024	Vehicle/charging plug AP 25 amp, grey, incl. contacts
450025	Vehicle/charging plug AP 40 amp, black, incl. contacts
450025b	Vehicle/charging plug AP 25 amp, red, incl. contacts
450026	3-pin plug for charger 36 V (round plug)
450027	Appliance plug and socket 48 V
450028	Appliance plug and socket 36 V
450030	Main wiring harness with relay and AP plug 36 V, grey
450031	Main harness with relay and AP plug 48 V, black
450032	Main wiring harness for charging on the handlebars 36 V with relay
450033	Main wiring harness for charging on the handlebars 48 V with relay
450034	Battery harness with AP plug 36 V grey
450035	Battery wiring harness with AP plug 48 V black
450037	12-wire steering cable
450038	Motor cable
450039	Potentiometer/speed limiter with cable
450042	Counter-grip for twist grip
450043	Twist grip master controller with battery indicator, 36 V
450044	Twist grip master controller with battery indicator, 48 V
450045	Master controller without battery indicator, also for foot pedal
450046	Master controller with battery indicator and vertical lever
450047	Battery indicator with foot pedal
450048	Combination switch (light/horn/reverse)
450049	On-off rocker switch 2-wire
490050	Forward-back rocker switch 3-wire
490051	Button, new, for reverse gear and horn
450052	Safety foot switch (dead man switch) complete, incl. cap
450053	Cap/rubber protection for safety foot switch
450054	Safety foot switch large
450055	Fuse holder for 25 amp fuse, incl. cap
450056	24 V relay (for 36 V scooter)
450057	Relay 48 V
450058	Fuse holder for 3/10/20 amp fuses (36+48 V scooter)
450059	Fuse holder for 30 amp fuse (for 48 V scooter)
450060	Fuse 3 Amp
450061	Fuse 5 Amp
450062	Fuse 10 Amp
450063	Fuse 20 Amp
450064	Fuse 25 Amp
450065	Fuse strip 30 Amp
450066	Resistance

450067	Foot pedal micro switch/limit switch
450075	Battery monitor 36 V (Bauser)
450081	Contact for AP plug

Batteries and drawers

460000	Drawer handle
460001	Lever lock
460004	Red pole cover
460005	Black pole cover
460006	Battery 12 V 22 Ah, cycle-proof, maintenance-free, closed
460007	Battery 12 V 36 Ah, cycle-proof, maintenance-free, closed
460012	Battery 12 V 50 Ah, cycle-proof, maintenance-free, closed

Add-On parts/Spare parts/Complete packages

480001	Transport frame in front of the handlebars for stacking boxes 545x345 mm incl. assembly
480002	Transport frame in front of the handlebars for stacking boxes 600x400 mm incl. assembly
480003	Clamping board with support for handlebar mounting
480003b	Clamping board without holding device
480004	Battery drawer incl. handle+cap, without batteries, for COLLY 1 incl. wiring
480005	Battery drawer incl. handle+cap, without batteries, for COLLY 1L incl. wiring
480006	Battery drawer incl. 3x12 V/22 Ah batteries for COLLY 1 incl. wiring
480007	Battery drawer incl. 4x12 V/22 Ah batteries for COLLY 1L incl. wiring
480009	Full rubber rear wheel complete for COLLY 1L/COLLY 2 (black), incl. rim
480010	Full rubber rear wheel complete COLLY 1 (black), incl. rim
480011 s	Rear wheel complete, COLLY 1 black (incl. rim, tyre, inner tube)
480011 g	Rear wheel complete, COLLY 1 grey/non-marking (incl. rim, tyre, inner tube)
480012 s	Rear wheel complete, COLLY 1L/COLLY 2 black (incl. rim, tyre, inner tube)
480012 g	Rear wheel complete, COLLY 1L/COLLY 2 grey/non-marking (incl. rim, tyre, inner tube)
480013 s	Rear wheel complete, COLLY 1L/COLLY 2 foam black (incl.)
480013 g	Rear wheel complete, COLLY 1L/COLLY 2 foam grey (incl.)
480014 s	Rear wheel complete, COLLY 1 foam black (incl.)
480014 g	Rear wheel complete, COLLY 1 foam grey (incl.)

Accessories / Miscellaneous

480015	Spring-loaded driver's saddle, height-adjustable, incl. base, saddle clamp, support
480015b	Spring-loaded driver's saddle
480016	Backrest, height-adjustable, incl. cushioning, without mounting
480017	Cushion for backrest
480018	Foot pedal complete
480020	Base plate for transport frame 545x345 mm
480021	Base plate for transport frame 600x400 mm
490000	Handlebar basket, without bracket
490000b	Bracket for handlebar basket
490001	Bell
490002	Tachometer complete, incl. assembly
490003	LED headlight 36 V
490004	LED headlight 48 V
490005	Tail light, red
490006	Rear light ram protector
490008	Flash lamp 36/47 V complete
490010	LED blue spot incl. bracket for handlebars
490011	Stacking box 545x345x350 mm conical (for transport frame 545x345 mm)
490012	Stacking box 600x400x120 mm (for transport frame 600x400mm)

490013	Sheet for stacking box holder (545x345 or 600x400 mm)
490017	Seat with weight adjustment and guide rail
490022	Tip-top sealant per bottle
490023	Tip-top sealant per bottle incl. injection
490024	Roller board for drawer change
490025	Rear view mirror
490026	Paint spray can

Miscellaneous

500000	Working time per 5 minutes
500001	UVV check/maintenance/inspection incl. sticker
500002	Consumables
500003	Special paint
500004	Postage and packaging

Bolts/Nuts/Washers			
<u>Item</u>	<u>Number</u>	<u>Article Description</u>	<u>Application Area</u>
S01	6	M6 screw	Step plate
S02	3	M6 screw	Electrics cover plate
S03	2	M6 bolt	Drawer handle
S04	2	M6 washer	"
S05	2	M6 nut (self-tightening)	"
S06	3	M3 countersunk screw	Cable guard
S07	2	M4 bolt	Mounting of the AP connector
S08	2	M4 washer	on wiring harness in the
S09	2	M4 nut (self-tightening)	chassis
S10	2	M4 bolt	Mounting of the AP connector
S11	2	M4 washer	to drawer
S12	2	M4 nut (self-tightening)	"
S13	2	M3 countersunk screw	Mounting of the clearance
S14	2	M3 washer	relay bar bracket
S15	2	M3 nut (Self)	on the electrical cover
S16	1	M6 bolt	Mounting the fender
S17	1	M6 washer	to the yoke
S18	1	M6 nut (self-tightening)	"
S19	2	11 mm locking ring	Mounting of the rear wheel on axle
S20	4	M5 screws	Mounting of the handlebar basket on the handlebar basket holder
S21	2	M8 screws	Mounting of the handlebar basket on handlebars
S22	1	M5 screw	Mounting of the cover on the handlebars
S23	1	M5 bolt	Mounting of the control unit
S24	1	M5 washer	onto chassis
S25	1	M5 nut (self-tightening)	"
M26	1	5x34 screw	Set screw for rear
M27	1	5x34 lock nut	brake

14. Circuit Diagram

