Technical Manual

TASKI Diversey

swingo XP

Diversey
for a cleaner, healthier future™

Edition: V4.00/2012

Index

Technical Manual

swingo XP

1 Forward

29. August 2012 Edition: V4.00/2012

1 Foreword

1.1 Target

To serve our customers faster and more efficient it is important to achieve a general standard of technical know how with our partners in the market.

Therefore we developed a Technical Training concept which is based on e-spares. The concept consists of a Technical Manual and a Technical Training.

These two tools will be produced for each newly launched machine with a certain complexity. The Technical Manual will be available as PDF file and can be downloaded from e-spares. The Technical Training documentation will be distributed after having attended the technical training.

1.2 Technical Training

The Technical Training is addressed as reference book for the technical training sessions and will be distributed to the floor care responsible and/or to the technical training responsible after attending a training session provided by GTS (max. 2 persons per country).

The intension is, that after this session, a technical trainer is able to perform technical training for their local technical staff and in this way to transfer the knowledge to all service technicians.

The Technical Training is not intended as manual for the service technicians and will be distributed only to the training responsible of each country.

1.3 Technical Manual

The Technical Manual is addressed to the service technicians and should be translated and distributed after a technical training.

It contains a summary of procedures, hints and suggestions etc. which are helpful and

essential for the daily business. The Technical Manual can be downloaded from e-spares/documents.

1.4 Summary

We are convinced that the Technical Manual concept together with the Technical Training are powerful tools, which will help our service organisations to achieve a higher level of quality in repairs and customer satisfaction.

If you have any comments or questions do not hesitate to contact your country responsible.

Sincerely yours

GTS Team

Technical Manual

swingo XP

2 Elementary

29. August 2012 Edition: V4.00/2012

2 Elementary

2.1 Health & Safety

Scrubber dryers may be powered by mains electricity or batteries. There are risks associated with both, which call for proper precautions, such as the provision of good ventilation and the elimination of risk of ignition.

All work, carried out on such machines, should only be performed by trained personnel in accordance with local regulations.

Before working on such a machine, isolate it from any electrical power source.

Always wear the required personal protective equipment (including gloves and goggles) that must be worn when potentially exposed to any hazardous material and when carrying out hazardous tasks.

Note that parts may be contaminated with chemical product. If possible flush hoses out with fresh water prior to carrying out any maintenance. For information on chemical products that are used in this machine, please carefully read the product label and Material Safety Data Sheet (MSDS).

Empty water tanks prior to carrying out any maintenance. Ensure contaminated water is emptied into an approved drain. Avoid pollution.

2.2 ESD

Static electricity is electricity at rest or the accumulation of electric charge, as opposed to an electric current which is the movement of electricity. The flow or movement of people and/or materials in and through the environment causes separation of electrons and therefore static electricity. A familiar example of static electricity is when a person walks across a carpeted floor. Static electricity/electrostatic charge is generated simply by the contact and separation of the soles of that individual's shoes from the carpeted floor.

Electrostatic Discharge (ESD) occurs when the electrostatic charge is transferred from a material that carries the charge to an electrostatic sensitive device. In the example above, this electrostatic discharge is the „shock“ felt after walking across the carpeted floor and then touching a door knob. It is this electrostatic discharge, which comes in varying de-

grees, that can be most damaging to electronical devices.

Static electricity, is a natural phenomenon and consequently electrostatic discharge is the primary cause of countless problems affecting industry, business and personal life. These problems can be as simple as the shock resulting from walking across a carpet; as costly as the destruction of sensitive electronic components.

Almost any material can generate static electricity. The ability to store or unload the charge depends on the type of material.
Static discharge can damage devices, this can result in immediate product failure or in a latent failure. Latent failures can go undetected for a period of time, the results are product failure in the field.
Electrostatic fields are associated with charged objects.
The degree of severity of ESD events depends on the type of discharge which occurs. The three most common ESD charge transfers are:

- from an external object to the device
- from a device to another object
- resulting from electrostatic fields

⚠CAUTION *Please do not store electronics without ESD bags at any time.*

Technical Manual

swingo XP

3 General

29. August 2012 Edition: V4.00/2012

3 General

3.1 General information

3.1.1 Part reference

⚠CAUTION *Explicitly mentioned parts are defined by references corresponding to the e-spares spare parts list.*

E.g. Tank axle (02/118) corresponds to the parts list on e-spares, sub assembly 2, position 118.

3.1.2 Consumable supplies

⚠CAUTION *If you have to remove cable ties then position the new ones at the original place.*

If you have to remove self locking nuts, you should replace them by new ones.

3.1.3 Direction description

⚠CAUTION *On the „RH“ always means on the right hand side of the machine in working direction (when you are standing behind the machine).*

On the „LH“ always means on the left hand side of the machine in working direction (when you are standing behind the machine).

3.1.4 Power source

Depending on the work it might be required to remove the power source (mains/batteries) from the machine.

The in here mentioned sequences (mechanical and electrical) are based on the assumption that the power source (mains/batteries) were removed from the machine before.

3.2 Required material

3.2.1 Tools

- A standard range of tools is required e.g.
  - Fork spanners
  - Allen keys
  - Torx keys

3.2.2 Material

- No special tools are required.

⚠CAUTION *The above listings are only a recommendation for the technical training.*

Technical Manual

swingo XP

4 Technical data

29. August 2012 Edition: V4.00/2012

4 Technical data

4.1 Machine range

SKU	Description	Version	Series
7514504	TASKI swingo XP		03
7514505	TASKI swingo XP	BMS EURO	03
7514506	TASKI swingo XP	BMS UK	03
7514507	TASKI swingo XP	BMS SEV	03
7514508	TASKI swingo XP	Seafreight	03
7514509	TASKI swingo XP	BMS EURO Seafreight	03
7514510	TASKI swingo XP	BMS UK Seafreight	03
7517964	TASKI swingo XP	BMS CN Seafreight	03

Table 1: Machine range

Remarks

SKU's for all TASKI swingo XP types are the „naked machine". Cleaning tools and batteries have to be ordered separately.

4.2 Technical information

4.2.1 Machine profile

Pos.	Unit	Value
Theoretical performance	(m^2/h)	4500
Working width	(mm)	750
Squeegee width	(mm)	950
Tank size (bag system)	(l)	105

Table 2: Machine profile

4.2.2 Technical data

Pos.	Unit	Value
Noise level	(dB(A))	65
Vibration	(m/s2)	< 2.5
Approvals		ÖVE
Nominal consumption	(W)	1200
Power drive motor	(W)	2x 450
Power suction motor	(W)	490
Voltage	(V)	24
Battery capacity maintenance-free	(Ah)/C5	160/180
Battery capacity wet	(Ah)/C5	200
Battery autonomy max. (180 Ah maintenance free battery)	(h)	3.5
Internal charger		BMS models
Protection grade		IPX3
Protection		II

Table 3: Technical data

4.2.3 Machine speed

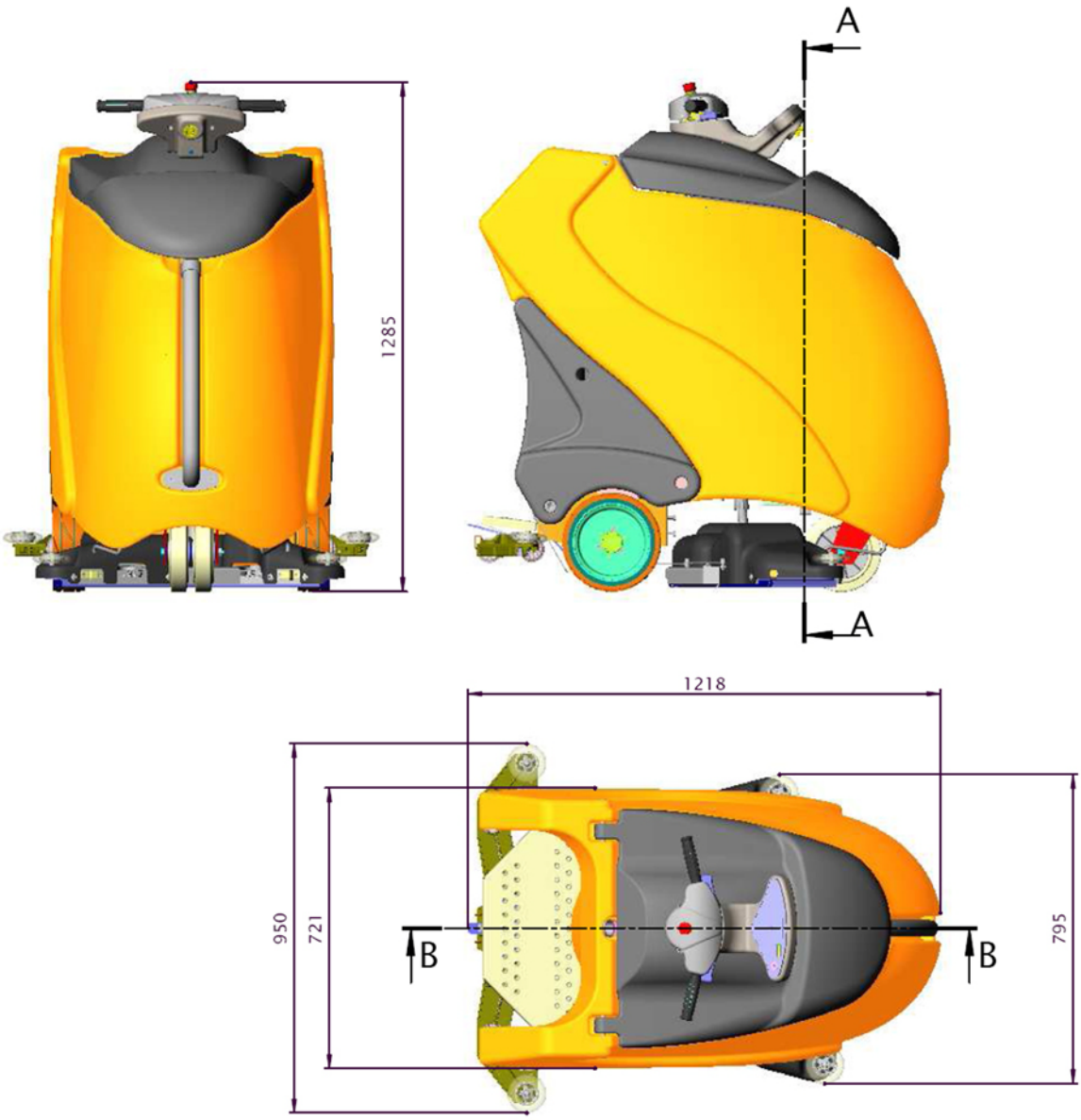
Pos.	Unit	Value
Transportation speed	(km/h)	6
Cleaning speed	(km/h)	6
Reverse speed	(km/h)	2.5
Ramp max.	(%)	8

Table 4: Machine speed

4.2.4 Dimensions and weights

Pos.	Unit	Value
Dimensions	L/W/H (mm)	1218/950/1285
Door pass through with (without) squeegee	(mm)	950 (795)
Battery compartment (two)	L/W/H (mm)	535/190/276
Net weight without batteries; empty tank	(kg)	180
Weight, ready to use (without driver)	(kg)	410
Weight, ready for shipping	(kg)	220
Max. floor pressure front	(N/mm2)	0.768
Max. floor pressure rear	(N/mm2)	0.772
Turn radius (between two walls)	(mm)	1550
Wheel diameter front	(mm)	200
Wheel diameter rear	(mm)	250

Table 5: Dimensions and weights



04.0 swingo XP – technical data_V1.00.fm

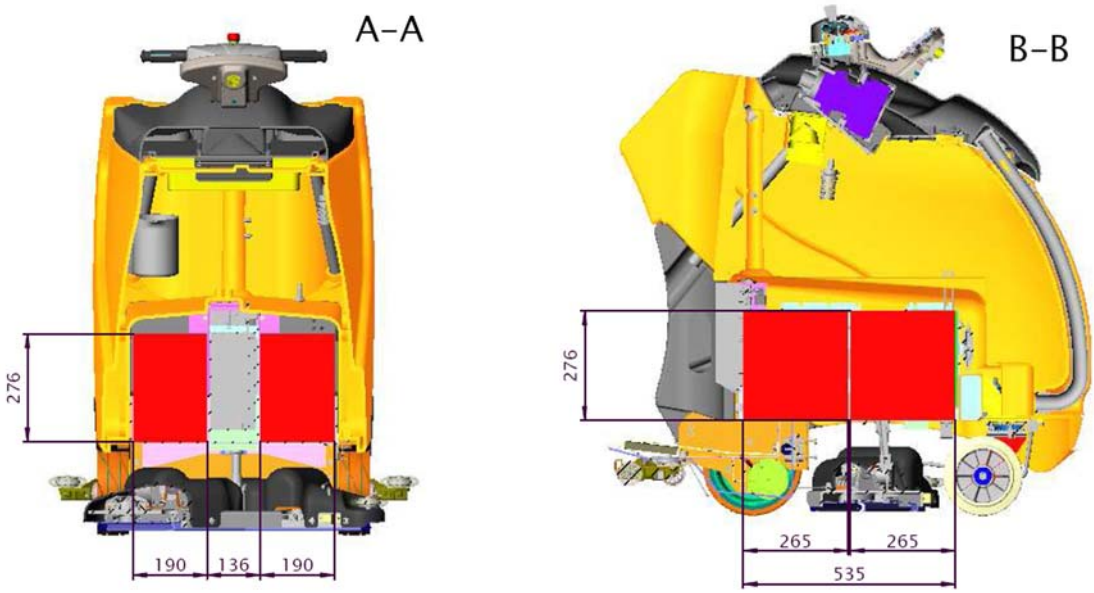
Picture 1: Dimensions

4.2.5 Battery

4.2.5.1 Battery compartment

Pos.	Unit	Value
Battery compartment	L/W/H (mm)	2x 535 x 190 x 276

Table 6: Battery compartment



Picture 2: Battery compartment

4.2.5.2 Battery specifications

⚠CAUTION

Please use batteries from Exide/Sonnenschein, as this is our preferred partner.

BMS is only for dry (gel) batteries.

For the correct connection of the batteries, pay attention to the voltage of each battery and the correct connection. Therefore refer to e-spares.

Dry batteries

Supplier	Wet/ Dry	Type	Voltage	Ah	Length	Width	Height	Weight
Sonnenschein	D	GF06160V2	6	160 (C5)	264	181	270	33
Sonnenschein	D	GF06180V	6	180 (C5)	244	190	275	31

Table 7: Dry batteries

Wet batteries

⚠CAUTION *The wet battery kit is required. Therefore please refer to the chapter Technical Data / Accessories & Additional Parts / Options*

Supplier	Wet/ Dry	Type	Voltage	Ah	Length	Width	Height	Weight
Exide - Classic	W	FT 06 200	6	200 (c5)	263	182	269	32

Table 8: Wet batteries

4.2.6 Charger

Pos.	Unit	Value
Primary	(V)	230 - 240
Primary	(Hz)	50 - 60
Secondary	(V)	24
Secondary	(A)	27
Protection class (BMS model)		II
Approval		CE/CB
Cable length/BMS cable	(m)	3

Table 9: Charger

4.2.7 Brush system

Pos.	Unit	Value
Brush system	(mm)	2 units 150 x 450
Brush motor	(W)	2 x 130
Micro-rotation brush speed	(rpm)	550
Brush pressure min. - max.	(kg)	40 - 60 - 80
Brush pressure min. - max.	(N/cm2)	0.33 - 0.50 - 0.67

Table 10: Brush system

Pos.	Unit	Value
Brush pressure min. - max.	(g/cm2)	33 - 50 - 67

Table 10: Brush system

4.2.8 Suction power

Pos.	Unit	Value
Vacuum motor	(W)	490
Max. air flow	(l/s)	30
Max. vacuum	(mbar)	120
Max. vacuum	(kPa)	12

Table 11: Suction power

4.2.9 Additional

Pos.	Unit	Value
Dosing of cleaning solution		IntelliFlow
Spot cleaning	default	timer 90 sec.
W-contour squeegee lifting		electrical
Brush lifting		electrical

Table 12: Additional

4.3 Accessories & Additional parts

4.3.1 Accessories

SKU	Article
7514650	Scrubbing brush 450 mm
7515725	Scrubbing brush hard 450 mm
7515726	Scrubbing brush abrasive 450 mm
7514648	Pad drive harpoon grip 450 mm
7514732	TASKI contour contact pad 450 mm (pack of 4)
7514727	TASKI contour pad 450 mm white (pack of 10)
7514728	TASKI contour pad 450 mm red (pack of 10)
7514729	TASKI contour pad 450 mm blue (pack of 10)
7514730	TASKI contour pad 450 mm brown (pack of 10)
7514731	TASKI contour pad 450 mm black (pack of 10)
7515372	TASKI contour diamond s-pad 450 mm
8502830	Filling hose with universal coupling

Table 13: Accessories

4.3.2 Additional parts

SKU	Article
4126922	Warning beacon (orange blinker) kit
4126911	Brush & tank protection bar
7515208	Wet battery kit TASKI swingo XP
4126911	Protection profile set
4128981	Drive wheel red

Table 14: Additional parts

Technical Manual

swingo XP

5 Mechanical

29. August 2012 Edition: V4.00/2012

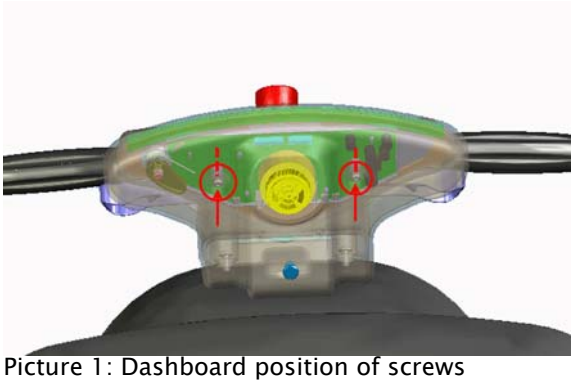
5.1 Control group

5.1.1 Removing of dashboard and cover

Remarks

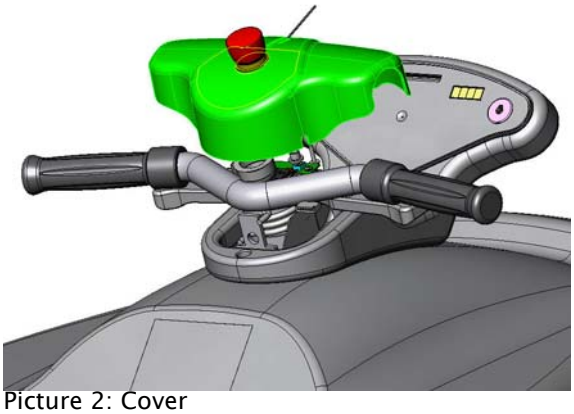
For the correct connection of the aggregates and wires please refer to the chapter: Electrical/DASHBOARD CONNECTIONS.

⚠CAUTION *Do not damage the dashboard by improper placement of screws.*



Picture 1: Dashboard position of screws

- Remove the two screws (01/124) for the dashboard (01/125).
- Position the dashboard beside the dashboard support (01/123).



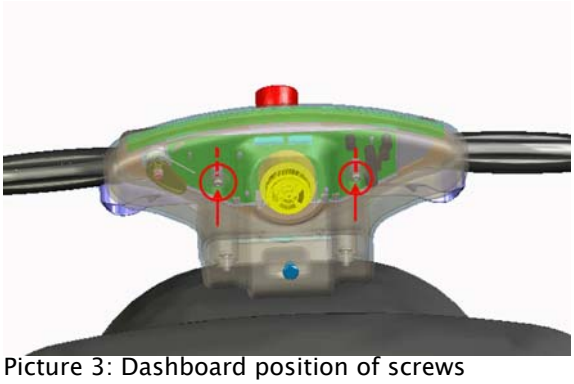
Picture 2: Cover

- Loosen the two screws (01/102) for the cover (01/103).
- Position the cover (01/103) beside the guidance.
- Disconnect all electrical connections to the dashboard.

⚠CAUTION *Make sure that the ribbon cable of the dashboard does not get bent.*

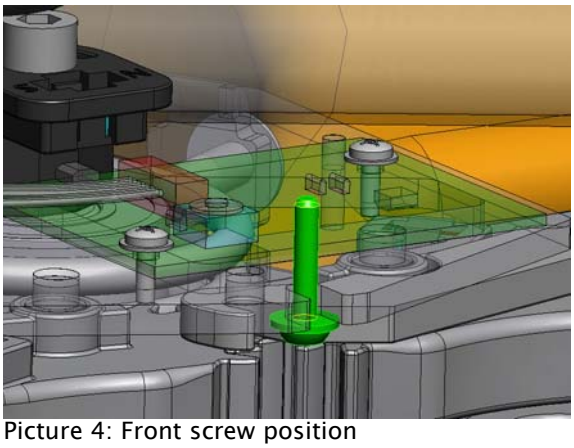
5.1 Control group

5.1.2 Mounting of dashboard and cover



Picture 3: Dashboard position of screws

- Connect all electrical connections to the dashboard.
- Put the cover back onto the two screws (01/102) and tighten them.



Picture 4: Front screw position

⚠CAUTION

Make sure that you hook the front screw (01/112) of the cover (01/103) into the slot of the handle bar (01/109).

Make sure that the cover is fixed correctly, so the horn is not activated.

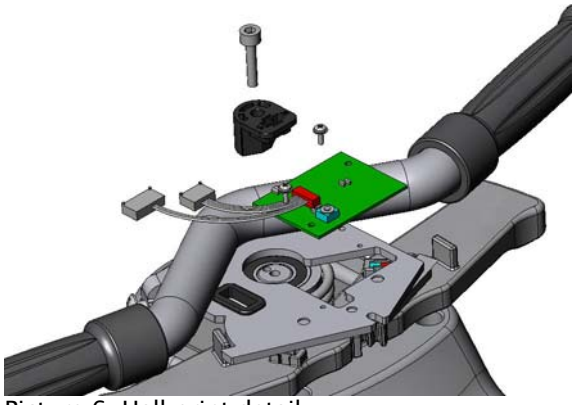
- Assemble the dashboard.
- Mount the two fixation screws.

5.1 Control group

5.1.3 Removing of hall print configuration

Picture 5: Hall print configuration

- Remove the cover and dashboard according to the chapter REMOVING OF DASHBOARD AND COVER.
- Remove the screw (01/115) together with the magnetic guide bush (01/116).



Picture 6: Hall print detail

Remarks

For an easier access of the cables remove the handle bar (01/109) together with the torsion spring (01/117).

- Remove the two screws (01/105) together with the washers (01/129) for the hall print configuration (01/106).
- Carefully remove the complete handle (01/109) by lifting it out from the steering bracket (01/120).
- Disconnect the guidance and throttle plug from the dashboard.
- Tread out the ribbon cable.
- Remove the hall print configuration (01/106).

5.1 Control group

5.1.4 Mounting of hall print configuration

Picture 7: Hall print configuration

- Thread in the ribbon cable through the dashboard support and connect the plugs.
- Mount the handle bar and torsion spring onto the support.
- Position the new hall print configuration onto the guidance.
- Mount the complete handle onto the steering bracket.
- Mount the two screws and washers.

⚠CAUTION *Ensure that the ribbon and stop actuator cable is positioned correctly along the protection plate (01/128).*

- Mount the screw with the magnetic guide bush.

⚠CAUTION *Make sure that the magnetic guiding bush (01/116) is aligned in the driving direction (positioning pin).*

Service

Fix the screw (01/115) of the magnetic guide bush (01/116) with adhesive locking.

- Complete assembling according to the chapter MOUNTING OF DASHBOARD AND COVER.

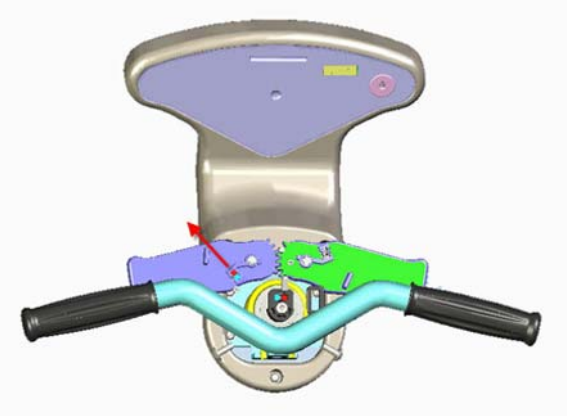
⚠CAUTION *After working on the guidance and throttle hall sensors Teach-In the machine.*

Adjustment

Adjust guidance and throttle as described in the Service Tool Manual.

5.1 Control group

5.1.5 Removing of driving speed lever



Picture 8: Driving direction levers

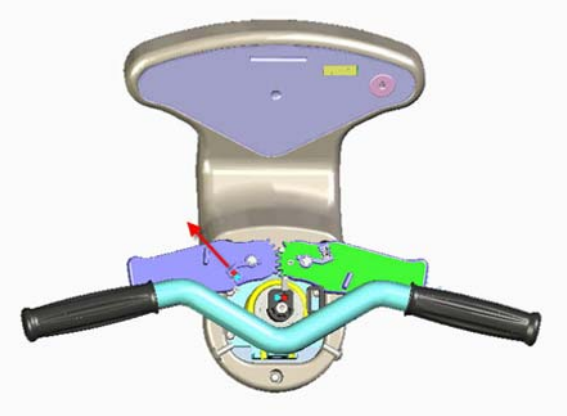
- Remove the cover according to chapter REMOVING OF DASHBOARD AND COVER.
- Remove the screw (01/115) together with the magnetic guide bush (01/116).
- Carefully remove the handle bar (01/109).
- Turn the handle bar upside down.
- Remove the tension spring (01/110).
- Remove the two circlips (01/114) from the driving speed lever.
- Remove the two driving speed levers.

Remarks

Both levers are the same spare part.

5.1 Control group

5.1.6 Mounting of driving speed lever



Picture 9: Driving direction levers

- Mount the driving speed levers onto the handle.

⚠CAUTION *Ensure that the magnet is positioned into the LH lever before assembling.*

The magnet is marked with a red dot. The red dot has to be positioned in driving direction. Please see the arrow in picture 9.

- Mount the circlips.
- Assemble the tension spring (01/110).
- Carefully mount the handle bar.
- Mount the screw together with the magnetic guide bush.

⚠CAUTION *Ensure that the ribbon and stop actuator cable is positioned correctly along the protection plate (01/128).*

- Complete assembling of the cover according to the chapter MOUNTING OF DASHBOARD AND COVER.

5.2 Upper part

5.2.1 Removing of vacuum motor

Picture 10: Vacuum motor

- Open tank cover (02/102).
- Remove the six screws (02/108) for the cover plate (02/107).
- Remove the cover plate.
- Disconnect the vacuum motor cable from the connection block (02/112).
- Remove the vacuum motor (02/109) by pulling it out from the tank cover.

Picture 11: Vacuum motor details

5.2 Upper part

5.2.2 Mounting of vacuum motor

Picture 12: Vacuum motor

- Mount the vacuum motor.

Service

Apply silicone paste onto the sealing ring (02/111).

- Connect wires to the connection block.
- Mount the cover.

⚠CAUTION *Ensure that the cover gasket (02/106) is in good condition.*

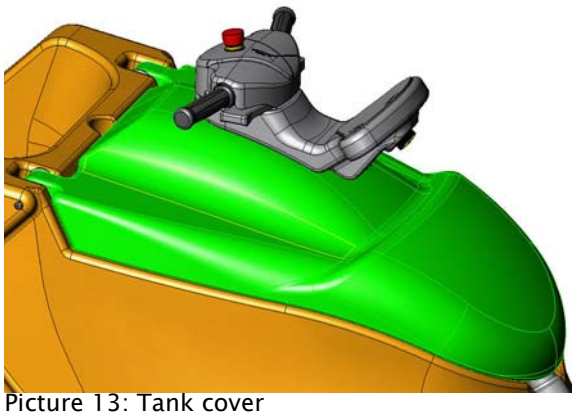
- Mount the six screws for the cover plate.

⚠CAUTION *Make sure that the screws of the cover plate are fixed properly, so that the loops of the fresh water foil tank (02/123) do not get damaged.*

- Close tank cover.

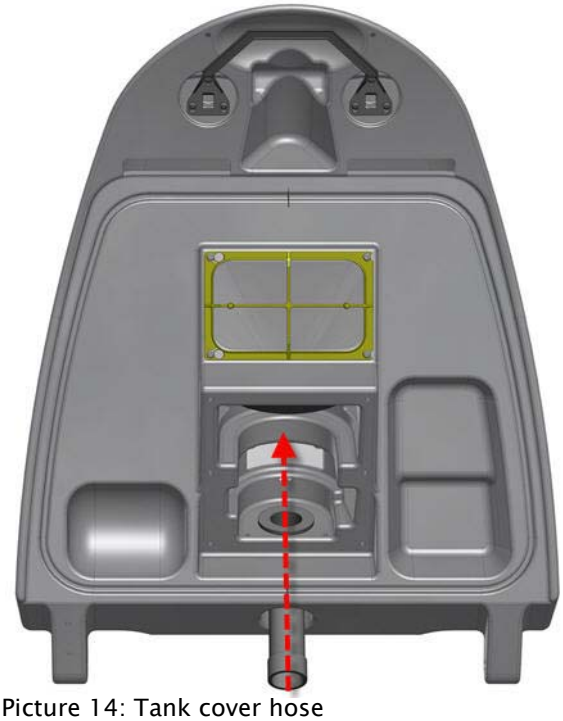
5.2 Upper part

5.2.3 Removing of tank cover



Picture 13: Tank cover

⚠CAUTION *If the hose (02/101) has to be removed, it has to be done from the inside of the tank cover (Refer to picture 14).*



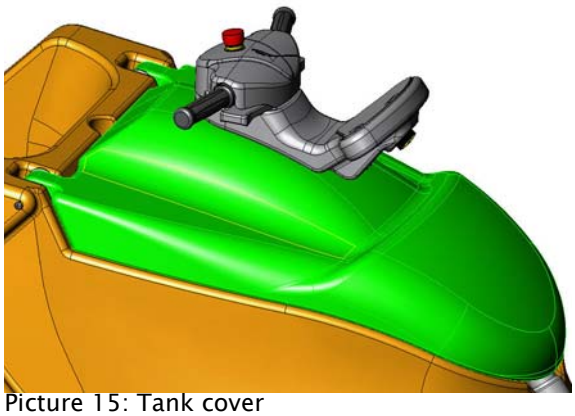
Picture 14: Tank cover hose

- Remove the dashboard according to the chapter REMOVING OF DASHBOARD AND COVER.
- Disconnect the patch, emergency loop an ground cable at the dashboard.
- Open tank cover (02/102).

- Remove the vacuum motor according to the chapter REMOVING OF VACUUM MOTOR.
- Disconnect wires to the connection block (02/112).
- Thread out the cables from the control group.
- Pull out the hose from the tank cover.
- Remove the hinge bolts (02/135) and distance disc (02/122).
- Remove tank cover (02/102).
- According to what you need to exchange, remove the existing parts from the tank cover and place it on the new one.

5.2 Upper part

5.2.4 Mounting of tank cover



Picture 15: Tank cover

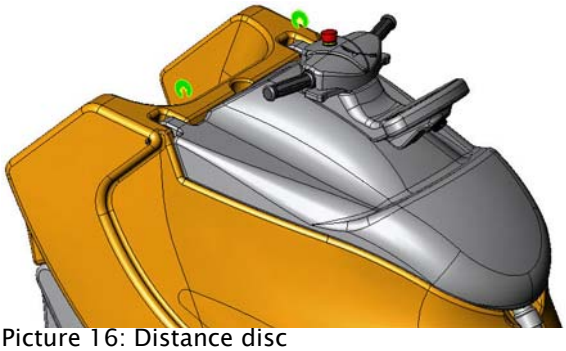
(Drilling of hole for tank cover axle)

⚠CAUTION *Assemble the tank cover locking bow (02/118) at the end of this sequence.*

- Position the tank cover correctly on the tank.

⚠CAUTION *Make sure that the sealings are nicely positioned.*

- Drill the hole for the tank axle without pressing the tank cover down onto the tank (drill with 12 mm).
- Mount the two hinge bolts.
- Position the distance disc (02/122).



Picture 16: Distance disc

⚠CAUTION *Make sure that the tank cover is positioned in the centre of the tank.*

- Open tank cover.
- Mount the hose onto the tank cover.
- Thread in the cables to the control group.

⚠CAUTION *Protect the communication cable connector with tape to prevent damages.*

- Connect wires to the connection block (02/112).
- Mount the vacuum motor according to the chapter MOUNTING OF VACUUM MOTOR.
- Close tank cover.
- Connect the patch, emergency loop and ground cable at the dashboard.
- Mount the dashboard according to the chapter MOUNTING OF DASHBOARD AND COVER.

Remarks

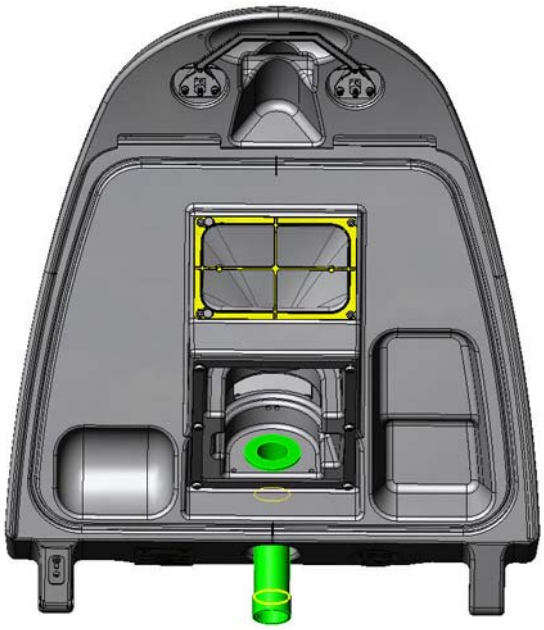
Ensure that the cables are positioned that way, that they can not be squeezed by the tank cover.

Adjustment

Adjust the tank cover lock and ensure a proper opening and closing of the tank cover.

5.2 Upper part

5.2.5 Removing of hose



Picture 17: Cable hose

⚠CAUTION *If the hose (02/101) has to be removed, it has to be done from the inside of the tank cover.*

- Remove dashboard according to the chapter REMOVING OF DASHBOARD (refer to „Electrical“ section).
- Disconnect the CAN interface (pos.1), GND (pos.13) and the Emergency loop (pos.6) from the dashboard.

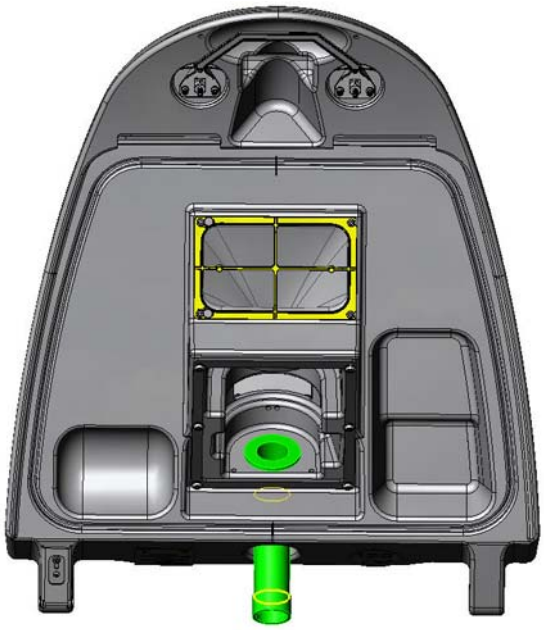
Remarks

For the dashboard connections refer to the chapter DASHBOARD CONNECTION in the „Electrical“ section.

- Remove the vacuum motor according to the chapter REMOVING OF VACUUM MOTOR.
- Disconnect the vacuum motor cable from the connection block (02/112).
- Carefully pull out the cable hose (02/101) from the tank set (10/121).
- Thread out the cables from the cable hose.
- Pull out the cable hose from the tank cover (02/102).

5.2 Upper part

5.2.6 Mounting of hose



Picture 18: Cable hose

- Mount the cable hose into the tank cover.
- Thread in the cables.
- Mount the cable hose into the tank set.
- Connect the vacuum motor cable onto the connection block.
- Mount the vacuum motor according to the chapter MOUNTING OF VACUUM MOTOR.
- Connect the cables onto the dashboard.
- Mount dashboard according to the chapter MOUNTING OF DASHBOARD (refer to „Electrical“ section).

⚠CAUTION *Protect the communication cable connector with tape to prevent damages.*

5.2 Upper part

5.2.7 Removing of waste water sensor

Picture 19: Waste water sensor

- Open tank cover (02/102).
- Disconnect the wire (08/107) of the waste water detector sensor at the power electronic (03/108).
- Remove the two sensor bolts (02/131).
- Disconnect the sensor wires from the bolts.
- Thread out the wires.

5.2 Upper part

5.2.8 Mounting of waste water sensor

Picture 20: Waste water sensor

⚠CAUTION *Start to install the waste water sensor from position of the sensor inside the tank, down to the power electronics.*

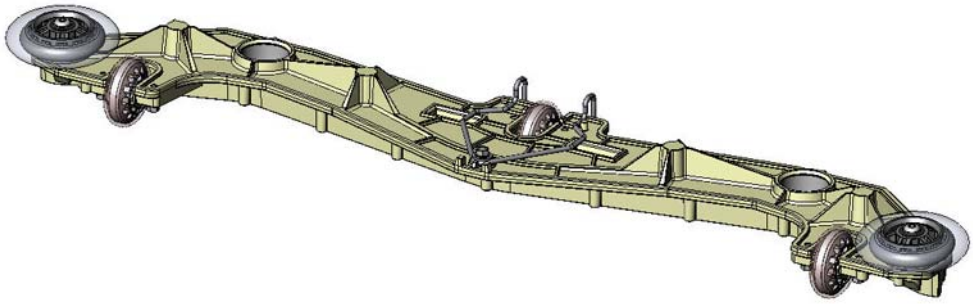
- Thread in the wires (08/107) from the sensor down to the power electronics.
- Connect the sensor bolts to the sensor wires.
- Tighten the sensor bolts.

⚠CAUTION *Tighten the sensor bolts carefully, not to damage the tank.*

- Position the sensor plug (08/108) on the wires.
- Connect the sensor plug to the power electronics.
- Close tank cover.

5.3 Squeegee 1650/XP

5.3.1 Removing of wire spring

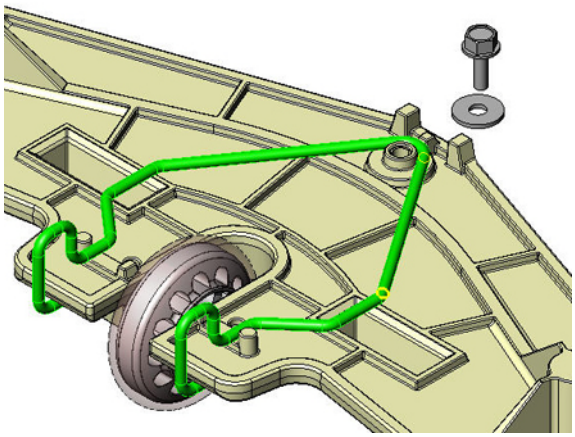


Picture 21: Squeegee without flat spring

- Remove the self threading screw (1650:03/115, XP:06/115).
- According to which type of squeegee you have you need to remove:
  - the washer (1650:03/106)
  - the flat spring (1650:03/120, XP:06/116)

Remarks

Detailed information to the spring you find at the end of the mounting section.

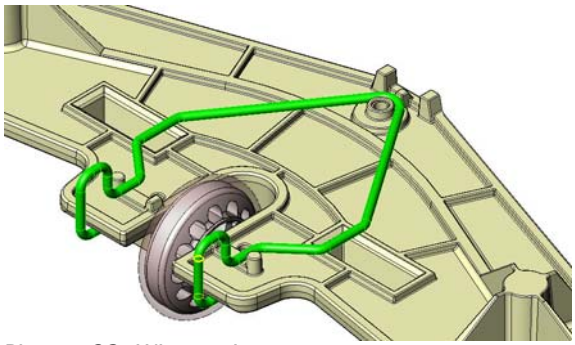


Picture 22: Wire spring without flat spring

- Remove the wire spring (1650:03/107, XP:06/107).

5.3 Squeegee 1650/XP

5.3.2 Mounting of wire spring



Picture 23: Wire spring mount

- Assemble the new wire spring.

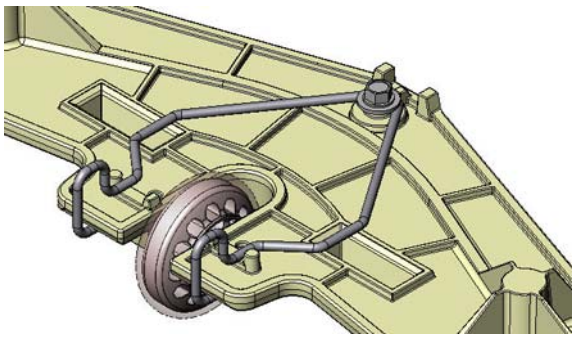
Remarks

Please hook in the back part of the click spring and place it inside the moving way slots.

⚠CAUTION *The squeegees of the TASKI swingo 1650 and XP are different. Please take note of this as the pick up result can be affected.*

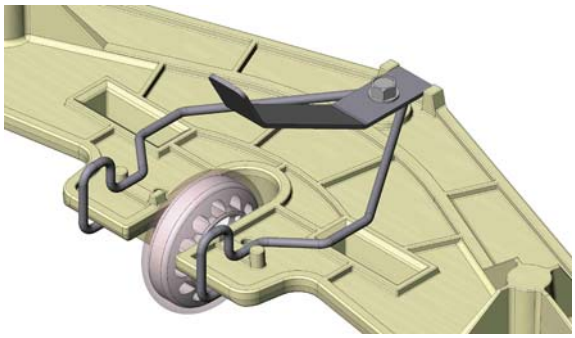
Remarks

The TASKI swingo 1650 squeegee with old squeegee lowering mechanism is in the following picture:



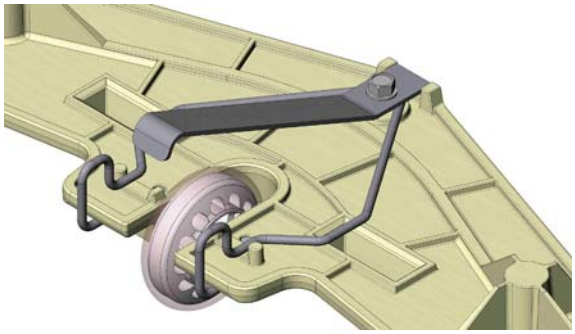
Picture 24: Wire spring 1650 old

The TASKI swingo 1650 squeegee with new squeegee lowering mechanism is in the following picture:



Picture 25: Wire spring 1650 new

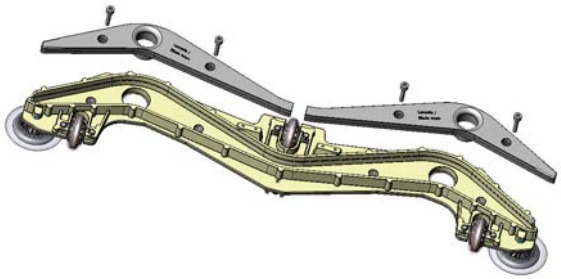
The TASKI swingo XP squeegee is in the following picture:



Picture 26: Wire spring XP

5.3 Squeegee

5.3.3 Removing of front and back blades

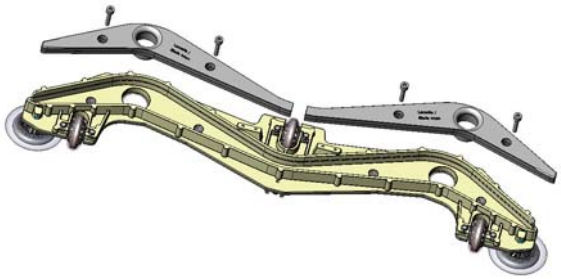


Picture 27: Squeegee blades

- Remove the 4 screws (1650:03/116, XP:06/116) from the blade clamping insert.
- Remove the LH (1650:03/113, XP:06/113) and the RH (1650:03/114, XP:06/114) blade clamping insert.
- Remove the front (1650:03/110, XP:06/110) and/or the back blade (1650:03/111, XP:06/111).

5.3 Squeegee

5.3.4 Mounting of front and back blades



Picture 28: Squeegee blades

- Insert the new blades into the squeegee body (1650:03/105, XP:06/105).

⚠CAUTION

Ensure that the middle marking of the blades are placed in the middle of the squeegee body.

Ensure that the front and/or back blades are nicely fitted into the squeegee body before inserting the blade clamping inserts.

- Place the LH and the RH blade clamping inserts into the squeegee body.
- Insert the four screws for the blade clamping inserts.

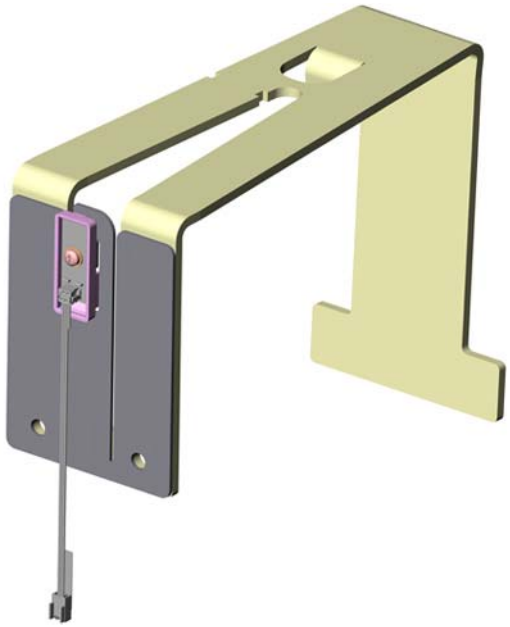
Service

Please use wear resistant spray (1650:03/117, XP:06/117) for the screws.

- Tighten the screws evenly so the blade clamping is not angled.

5.4 Base

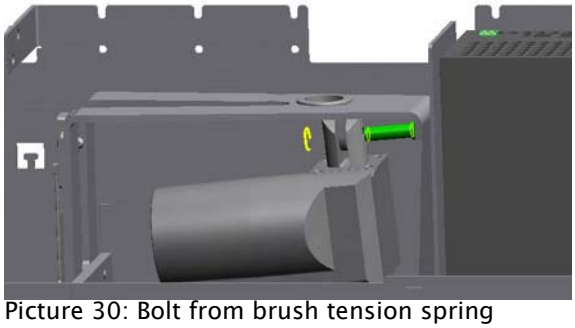
5.4.1 Removing of spring bracket set configurated



Picture 29: Brush tension spring

⚠CAUTION *Lower the brush unit before you start to disassemble. As soon as the brush unit touches the floor, press the emergency stop.*

- Disconnect the ribbon cable plug (03/166) of the sensor from the spring bracket set according to the chapter REMOVING OF POWER ELECTRONICS.
- Open tank set (10/121) by releasing locking spring (03/143).
- Thread out the cable.

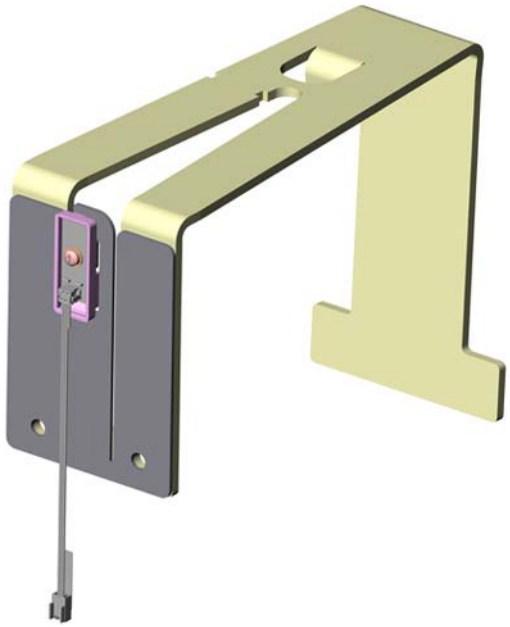


Picture 30: Bolt from brush tension spring

- Remove the circlip (03/130) from the upper bolt (03/131) of the linear drive (03/124).
- Remove the upper bolt.
- Remove the two screws (03/121) for the spring bracket set configurated.
- Remove the spring bracket set configurated (03/123).

5.4 Base

5.4.2 Mounting of spring bracket set configurated



Picture 31: Brush tension spring

- Position the spring bracket set configurated.

⚠CAUTION *Always replace the complete spring bracket set configurated. The adjustment of the hall sensor can only be done in the factory.*

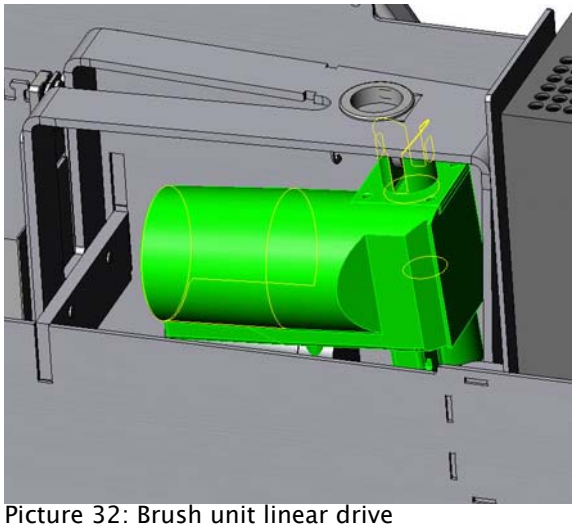
- Mount the two screws for the spring bracket set configurated.

⚠CAUTION *Make sure that the tongue of the front plate moves freely.*

- Mount the bolt of the linear drive.
- Mount the circlip back on the bolt.
- Thread in the cable.
- Close the tank set.
- Complete assembling of the plug according to the chapter MOUNTING OF THE POWER ELECTRONICS.

5.4 Base

5.4.3 Removing of brush unit linear drive



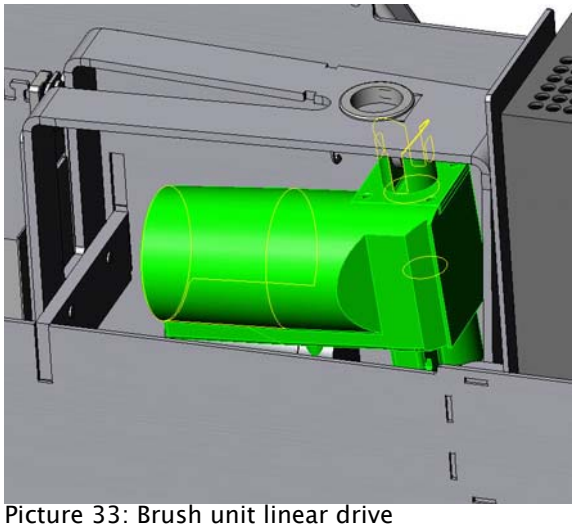
Picture 32: Brush unit linear drive

⚠CAUTION *Lower the brush unit before you start to disassemble. As soon as the brush unit touches the floor, press the emergency stop.*

- Disconnect the linear drive plug according to the chapter REMOVING OF POWER ELECTRONICS.
- Open tank set (10/121) by releasing locking spring (03/143).
- Remove the eight screws (07/110) for both brush housings.
- Remove the two screws (07/112) and wheels (07/113).
- Remove the two brush housings (07/111) and (07/128).
- Thread out the cable.
- Remove the two circlips (03/130) from the upper and lower bolt of the brush unit linear drive (03/124).
- Remove the two bolts (03/131).
- Carefully weave out brush unit linear drive.

5.4 Base

5.4.4 Mounting of brush unit linear drive

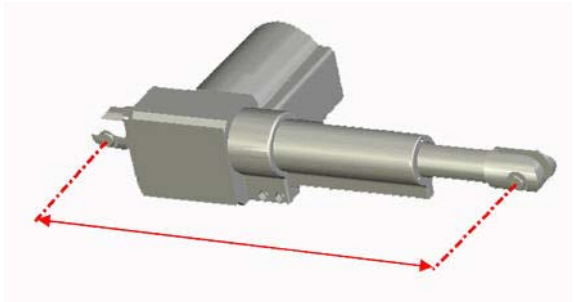


Picture 33: Brush unit linear drive

- Position the brush unit linear drive.
- Mount the two bolts.
- Mount the two circlips back on the bolts.
- Thread in the cable.
- Mount the two brush housings.
- Mount the eight screws for both brush housings.
- Mount the two screws and wheels.
- Close the tank set.
- Complete assembling of the plug according to the chapter MOUNTING OF THE POWER ELECTRONICS.

Adjustment

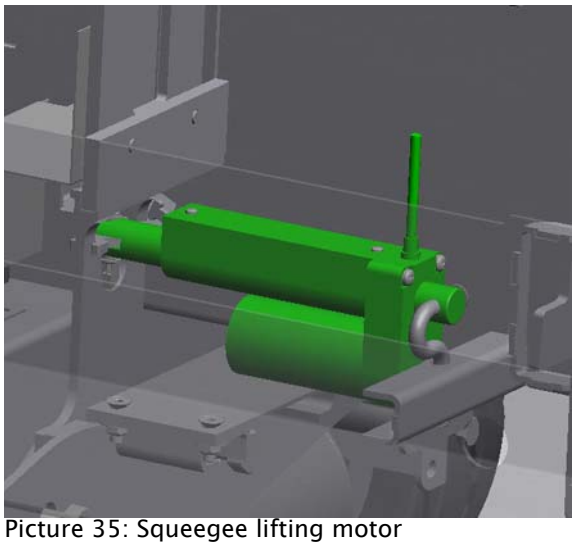
Pre-adjust the brush unit linear drive to approximately 330 mm bolt distance before assembling.



Picture 34: Brush unit linear drive pre-adjustment

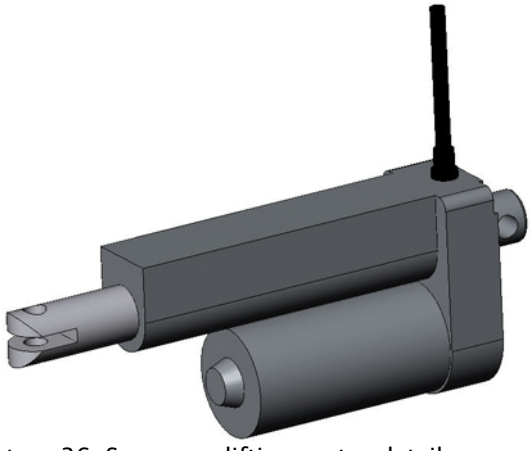
5.4 Base

5.4.5 Removing of squeegee linear drive



Picture 35: Squeegee lifting motor

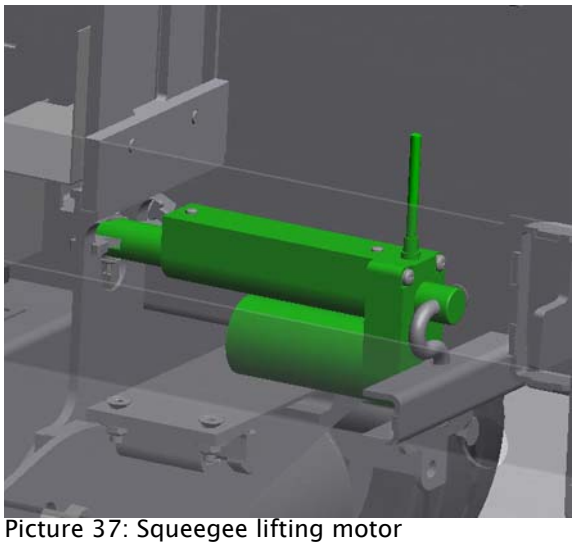
- Remove the brush unit linear drive according to the chapter REMOVING OF BRUSH UNIT LINEAR DRIVE.
- Remove the circlip (03/134) from the articulated axle (03/138).
- Remove the upper circlip (03/134) from the axle (03/135).
- Remove the axle from the articulation (03/136).
- Weave out the squeegee linear drive from the swinging arm (03/126).



Picture 36: Squeegee lifting motor details

5.4 Base

5.4.6 Mounting of squeegee linear drive

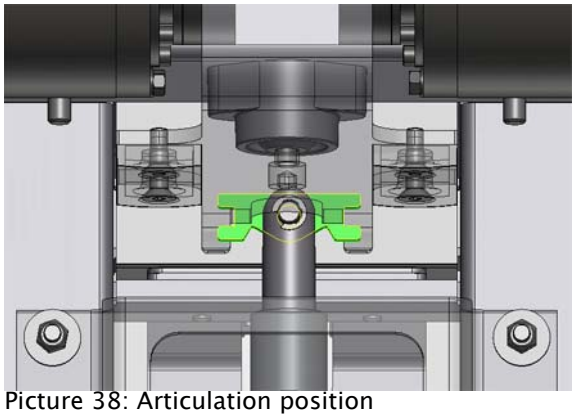


Picture 37: Squeegee lifting motor

- Position the squeegee linear drive.

⚠CAUTION *Take care not to position the motor wrongly.*

- Mount the squeegee linear drive to the articulation and to the articulated axle.



Picture 38: Articulation position

⚠CAUTION *Make sure that the articulation is positioned correctly. Refer to upper picture.*

- Mount the axle from the bottom side to the articulation.
- Mount the two circlips onto the axle and articulated axle.
- Complete assembling according to the chapter MOUNTING OF BRUSH UNIT LINEAR DRIVE.

5.4 Base

5.4.7 Removing of castor wheel

Picture 39: Castor wheel

- Lay the machine on the LH side or use a jack to lift it.
- Remove the four screws (03/141) with the washers (03/140).
- Remove the complete castor wheel.

Remarks

The castor wheel complet consists of the castor wheel 200 (03/117) and bracket (03/168).

5.4 Base

5.4.8 Mounting of castor wheel

Picture 40: Castor wheel

- Assemble castor wheel.
- Mount the 4 fixation screws together with the washers.
- Lift up the machine or lower the jack.

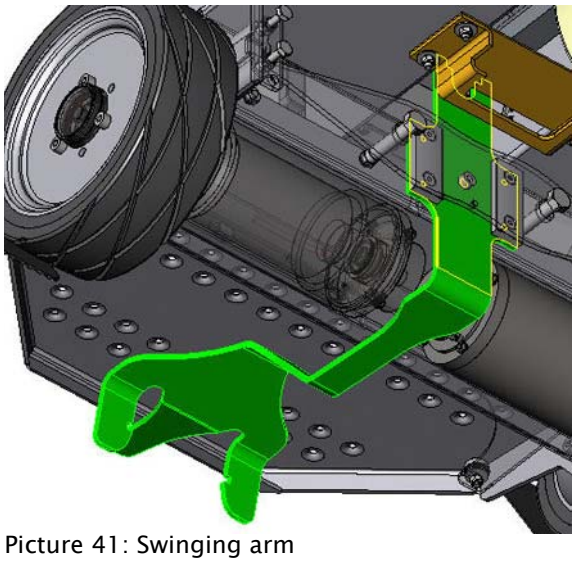
Service

Lubricate the castor wheel bearing with ball bearing grease (03/164).

Fix the screws (03/141) of the castor wheel with adhesive locking.

5.4 Base

5.4.9 Removing of swinging arm



Picture 41: Swinging arm

- Remove the squeegee from the swinging arm.
- Remove the brush unit according to the chapter REMOVING OF COMPLETE BRUH UNIT.
- Remove the brush unit linear drive according to the chapter REMOVING OF BRUSH UNIT LINEAR DRIVE.
- Remove the bolt on the swinging arm side according to the chapter REMOVING OF SQUEEGEE LINEAR DRIVE.

Remarks

For an easier access lay the machine on the RH or LH side.

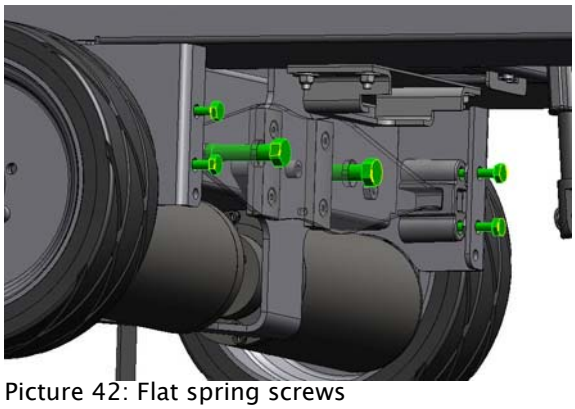
- Remove the two nuts (04/149) and washers (04/148) from the bolts (03/165).
- Remove the two bolts from the chassis frame (03/110) and step board (04/145).
- Loosen the two screws (03/107) from the fender (03/106) on one side.

⚠CAUTION *Take care that you release both screws at the same time.*

- Loosen the two screws (03/107) on the other side.

Remarks

It is not necessary to remove the 4 screws (03/107) completely.

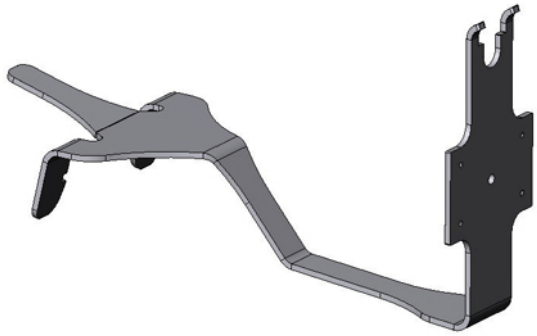


Picture 42: Flat spring screws

- Remove the flat spring (03/104).
- Remove the swinging arm (03/126) by weaving it out.
- According to what you need to exchange, remove the existing parts from the swinging arm and place it on the new one.

Service

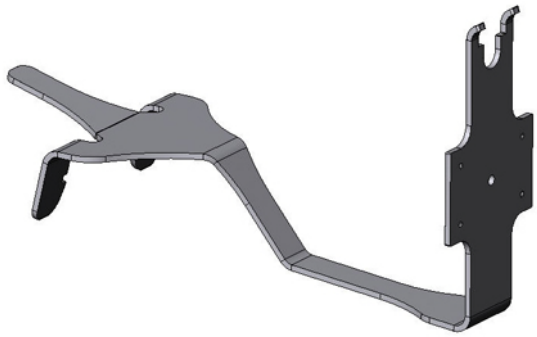
If you replace the handle ball (03/127) or the two plates (03/128), fix the screws (03/133) and (03/139) with adhesive locking (03/162).



Picture 43: Swinging arm detail

5.4 Base

5.4.10 Mounting of swinging arm

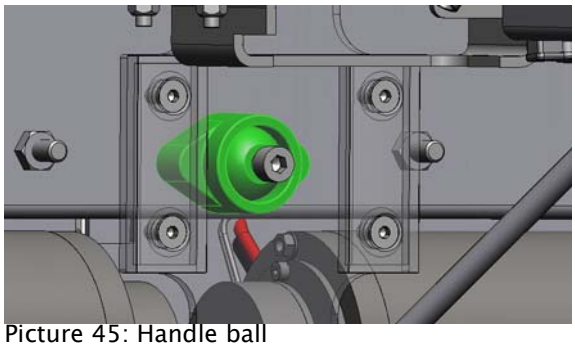


Picture 44: Swinging arm detail

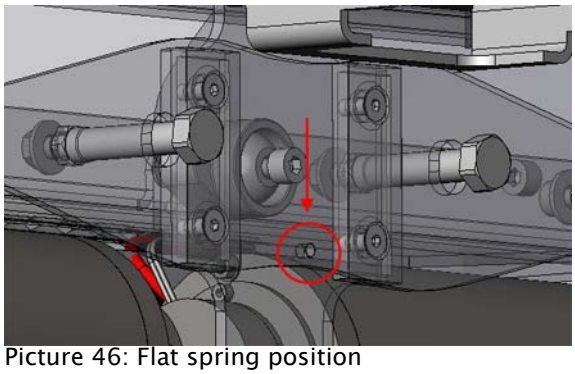
- Mount the swinging arm.

Service

Lubricate the handle ball (03/127) and ball socket (03/129) with grease wear resist (03/163).



Picture 45: Handle ball



Picture 46: Flat spring position

- Mount the flat spring.

⚠CAUTION *Take care that you position the flat spring correctly, so that the small hole is on the bottom side. Refer to the upper picture.*

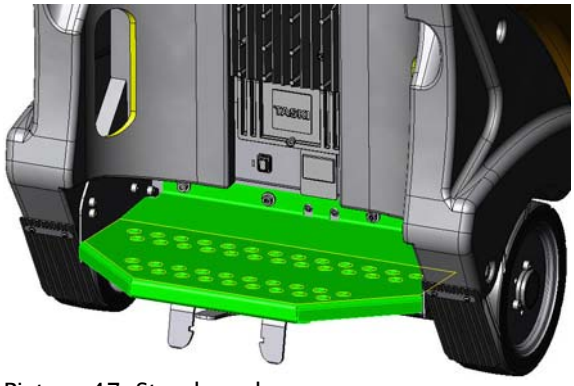
- Tighten the 4 screws.

⚠CAUTION *Take care that you tighten both screws on one side at the same time.*

- Mount the two bolts on the chassis frame and step board.
- Mount the two washers and nuts on the bolts.
- Lift up the machine.
- Mount the bolt on the swinging arm side according to the chapter MOUNTING OF SQUEEGEE LINEAR DRIVE.
- Mount the brush unit linear drive according to the chapter MOUNTING OF BRUSH UNIT LINEAR DRIVE.
- Mount the brush unit according to the chapter MOUNTING OF COMPLETE BRUSH UNIT.
- Mount the squeegee onto the swinging arm.

5.5 Base supplement

5.5.1 Removing of step board



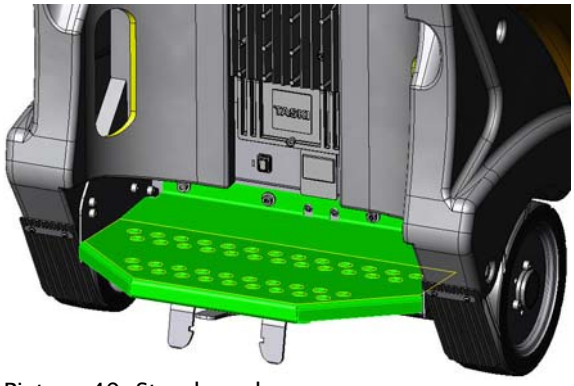
Picture 47: Step board

Picture 48: Step board fixation

- Remove the two step board fixation screws (04/141) and the two nuts (04/149) together with the washers (04/148).
- Remove step board (04/145).

5.5 Base supplement

5.5.2 Mounting of step board



Picture 49: Step board

⚠CAUTION

Loosen the two screws (04/143) for the plate (04/151) and push the limit switch (04/142) down, not to damage the limit switch when mounting the step board.

- Mount step board.
- Mount the two step board fixation screws and the two nuts together with the washers.
- Move the plate (04/151) with the limit switch up to the step board.
- Tighten the two screws of the limit switch plate.

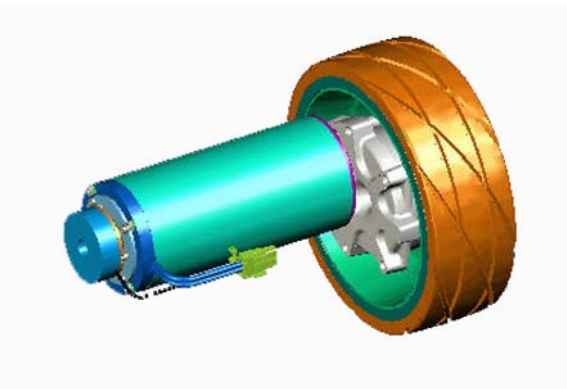
Picture 50: Limit switch

Adjustment

The step board switch is correctly adjusted if it activates at a pressure of 30 - 40 kg.

5.5 Base supplement

5.5.3 Removing of drive gear



Picture 51: Traction unit

- Lay the machine on the LH side or use a jack to lift it.
- Disconnect the drive gear plug according to the chapter REMOVING OF POWER ELECTRONICS.
- Remove the three screws (04/129) for the traction wheel (04/130).
- Remove traction wheel.
- Remove cable tie of the drive gear (04/131) from chassis.
- Thread out the cable.
- Remove the four screws (03/105) for drive gear.
- Remove the drive gear.

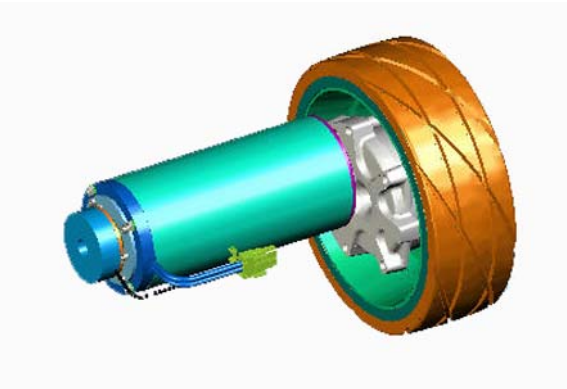
Remarks

To get better access to the drive gear fixation screws, you can dismount the step board.

⚠CAUTION *Before laying the machine on the side remove the brush unit, so it does not get damaged.*

5.5 Base supplement

5.5.4 Mounting of drive gear



Picture 52: Traction unit

- Position the drive gear.
- Mount the four screws for drive gear.
- Thread in the cable.
- Complete assembling of the plug according to the chapter MOUNTING OF THE POWER ELECTRONICS.
- Mount cable tie of the drive gear.
- Mount traction wheel.
- Mount the three screws for the traction wheel.
- Lift up the machine or lower the jack.

Remarks

Lay the machine on the RH side and repeat the remove and mount steps of the chapter DRIVE GEAR.

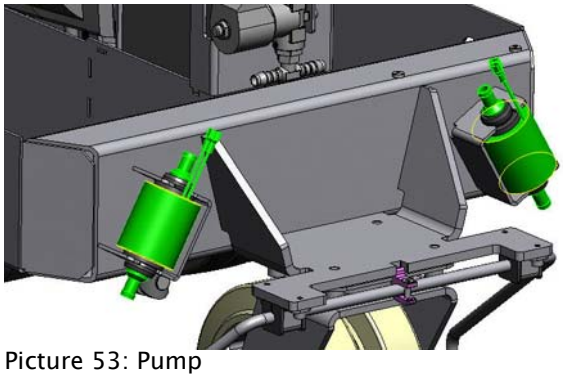
Service

Tighten the screws (04/129) of the wheel with 18 Nm.

Fix the screws (04/129) and (03/105) with adhesive locking (04/115).

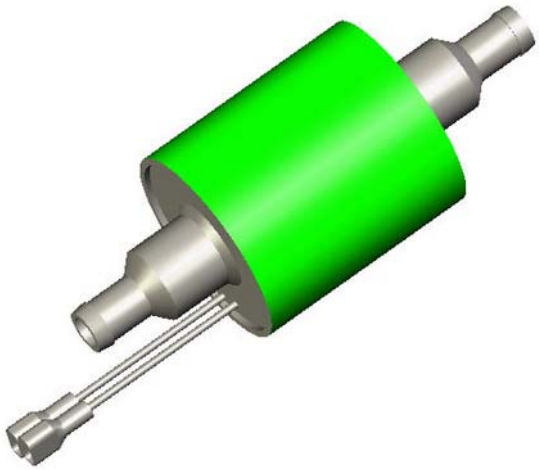
5.6 Fresh water circle

5.6.1 Removing of pumps



Picture 53: Pump

- Open tank set (10/121) by releasing locking spring (03/143).
- Remove the hose clamps (05/111) on both sides of pump (05/119).
- Remove the hoses (05/113), (05/121) and (05/122).
- Disconnect wires of the pump.

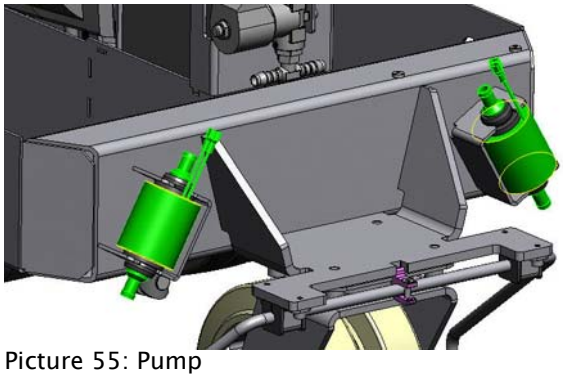


Picture 54: Pump detail

- Remove the pumps (05/119).
- Remove the two rubber bushes (05/120).

5.6 Fresh water circle

5.6.2 Mounting of pumps



Picture 55: Pump

- Mount the two rubber bushes onto the pump.
- Mount the pump.

⚠CAUTION *Ensure that the pump is build in according to the water flow. The arrow on the pump indicates the water flow direction.*

- Connect wires of the pump.
- Mount the hoses.
- Mount the hose clamps on both sides of pump.
- Close the tank set.

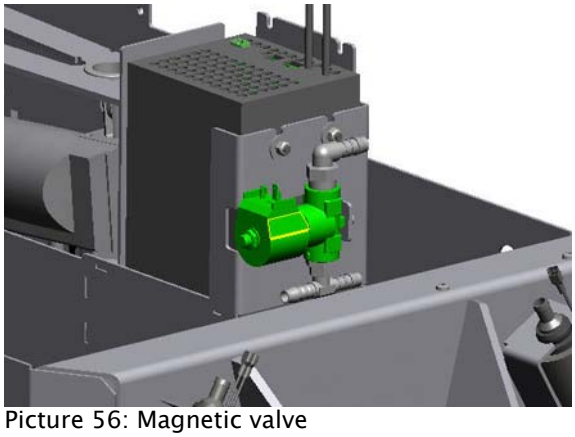
Service

Apply silicone paste to the rubber bushes (05/120).

⚠CAUTION *The voltage of the pumps can only be measured with an oscilloscope (Duty cycle-signal). Machine has to be operated for measurement.*

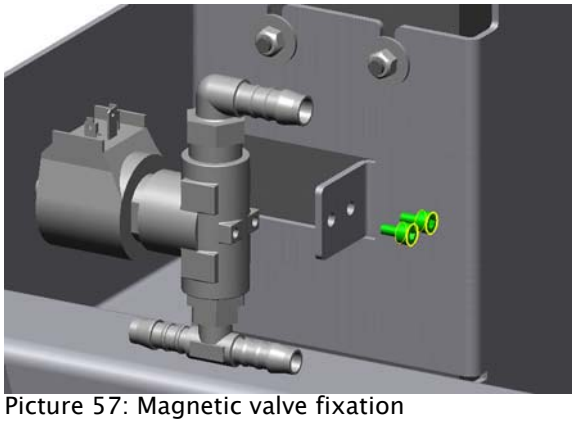
5.6 Fresh water circle

5.6.3 Removing of magnetic valve



Picture 56: Magnetic valve

- Open tank set (10/121) by releasing locking spring (03/143).
- Remove the hose clamp (05/123) and hose (05/107) from the angle nipple (05/114).
- Remove the hose clamps (05/111) and hose (05/113) on both sides of the T-pipe connection (05/118).

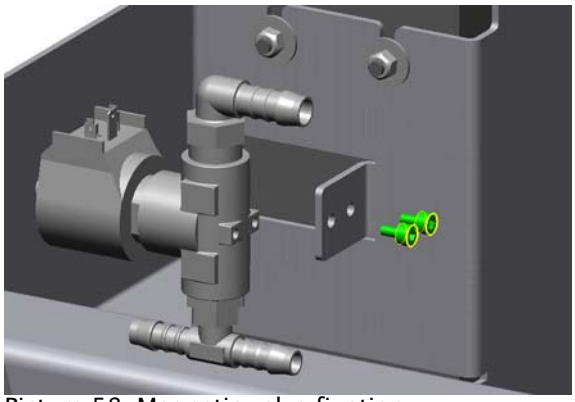


Picture 57: Magnetic valve fixation

- Disconnect the wires on the magnetic valve (05/112).
- Remove the two screws (05/115) from the magnetic valve.
- Remove the magnetic valve.
- According to what you need to exchange, remove the existing parts from the magnetic valve and place it on the new one.

5.6 Fresh water circle

5.6.4 Mounting of magnetic valve

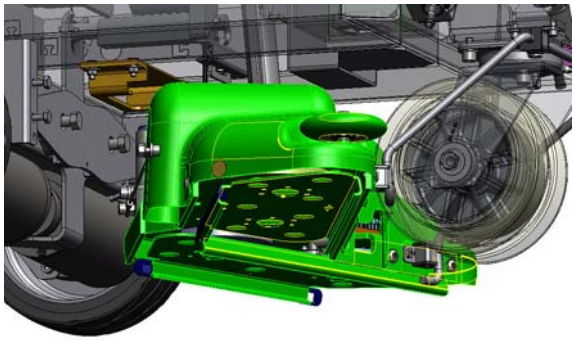


Picture 58: Magnetic valve fixation

- Take the magnetic valve and make sure that the two connectors (05/118) and (05/114) are mounted.
- Position the magnetic valve.
- Mount the two screws onto the magnetic valve.
- Connect the wires on the magnetic valve.
- Mount the hoses and the hose clamps
- Close tank set.

5.7 Brush drive

5.7.1 Removing of complete brush unit

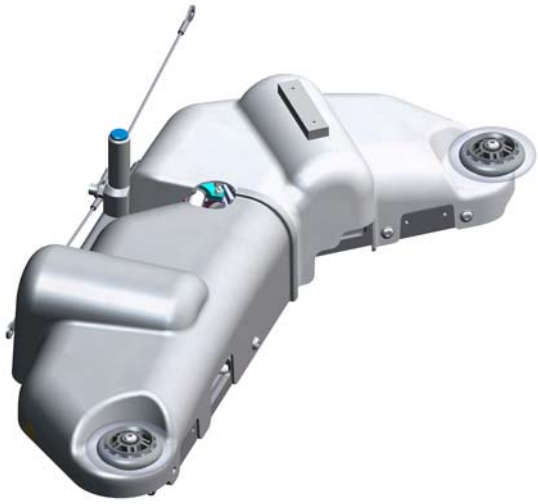


Picture 59: Brush unit complete

⚠CAUTION

Lower the brush unit before you start to disassemble. As soon as the brush unit touches the floor, press the emergency stop.

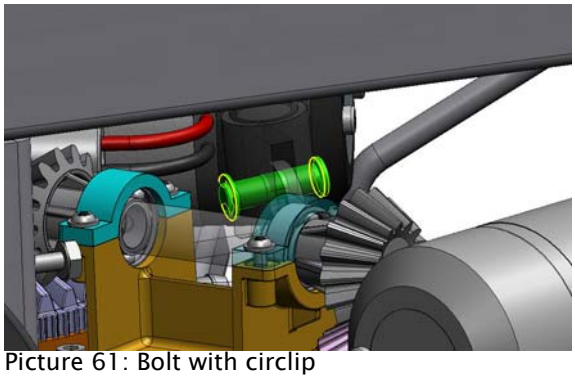
If possible do not remove brushes/pads. If you remove the brushes/ pads the console might get damaged when lowering the brush unit.



Picture 60: Brush unit complete

- Disconnect the two brush motor plugs according to the chapter REMOVING OF POWER ELECTRONICS.
- Open tank set (10/121) by releasing locking spring (03/143).
- Remove the eight screws (07/110) for both brush housings.
- Remove the two screws (07/112) and wheels (07/113).
- Remove the two brush housings (07/111) and (07/128).
- Thread out the cable.

- Remove the two screws (07/143) and nuts (07/144) on both sides of the chassis frame (03/110) to release the steel rope (07/140).
- Remove the two hose clamps (05/111) on the lower side of the pumps (05/119).
- Remove the two water hose (05/121) and (05/122) on the lower side of the pumps.
- Remove the four screws (07/133) for the bracket (04/112) fixation.

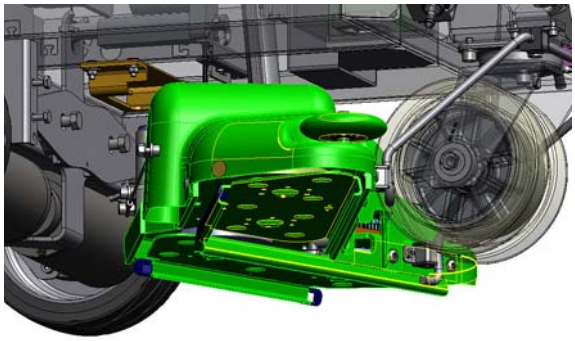


Picture 61: Bolt with circlip

- Remove the circlip (03/130) at the side of the brush unit.
- Remove the bolt (03/131) at the side of the brush unit.
- Remove the complete brush unit.

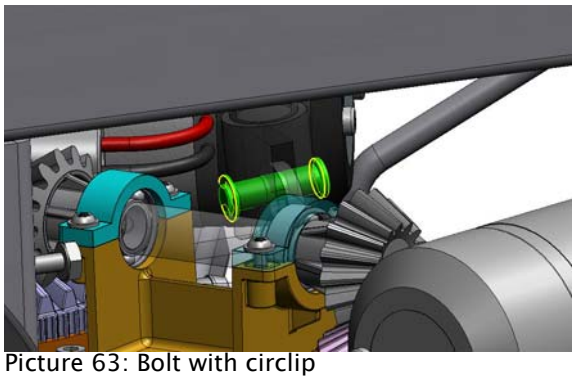
5.7 Brush drive

5.7.2 Mounting of complete brush unit



Picture 62: Brush unit complete

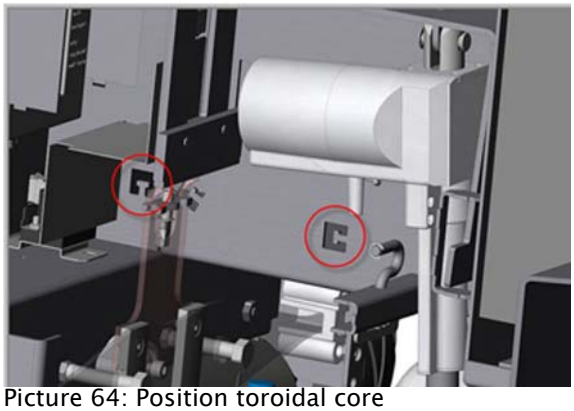
- Position the brush unit under the machine.



Picture 63: Bolt with circlip

- Mount the bolt of the linear drive.
- Mount the circlip on the bolt.
- Position the bracket fixation.
- Mount the four screws for the bracket fixation.
- Mount water hose on the pumps.
- Mount hose clamps on the pumps.
- Position the steel rope.
- Mount the two screws and nuts on both sides of the chassis frame for the steel rope.
- Thread in the cables of the brush motors.
- Mount the two brush housings.
- Mount the eight screws for both brush housings.
- Mount the two wheels and screws.

⚠CAUTION *Make sure that you position the toroidal core in the same position on the chassis. Position the toroidal core in between the cable ties.*



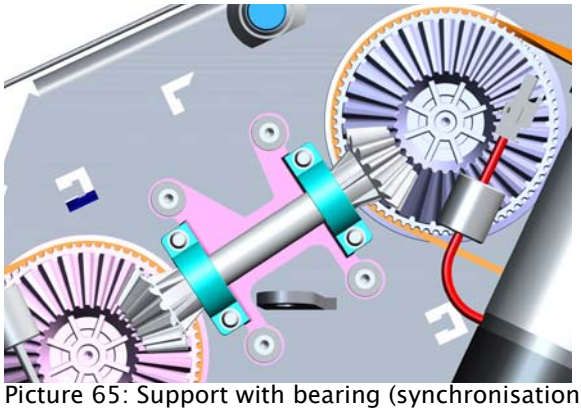
Picture 64: Position toroidal core

⚠CAUTION *Before fixing the brush unit motor cables, please check that the cables allow the complete movement of the brush unit.*

- Close the tank set.
- Mount the brush motor plugs according to the chapter MOUNTING OF THE POWER ELECTRONICS.

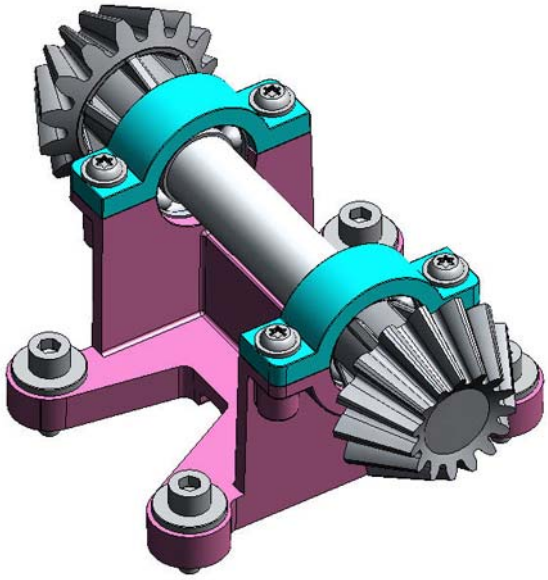
5.7 Brush drive

5.7.3 Removing of support with bearing (synchronisation)



Picture 65: Support with bearing (synchronisation)

- Remove the brush unit according to the chapter REMOVING OF COMPLETE BRUSH UNIT.

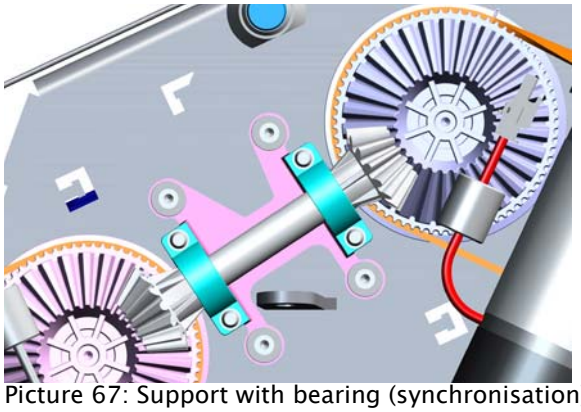


Picture 66: Support with baring detail

- Remove the four allen screws for the support with bearing (07/101).
- Remove the support with bearing.

5.7 Brush drive

5.7.4 Mounting of support with bearing (synchronisation)



Picture 67: Support with bearing (synchronisation)

⚠CAUTION *Take care that you clean the motor base plate (07/127) before you position the synchronisation (07/101).*

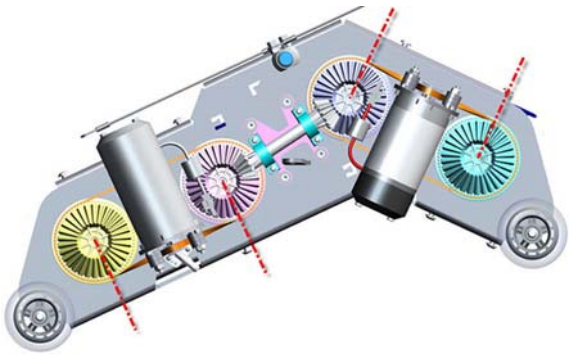
- Position the support with bearing.

⚠CAUTION *Take care that you position the synchronisation correctly onto the motor base plate (see upper picture).*

- Mount the four screws for the support with bearing.
- Complete assembling the brush unit according to the chapter MOUNTING OF COMPLETE BRUSH UNIT.

Adjustment

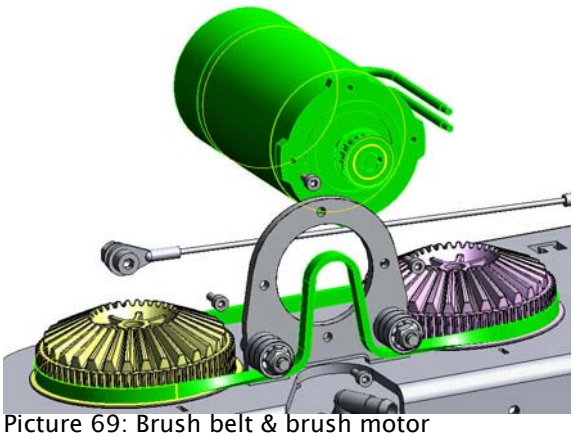
Position the bevel gears (07/121) such, that the arrows are positioned on the marks on the base plate.



Picture 68: Position bevel gear

5.7 Brush drive

5.7.5 Removing of brush belt & brush motor

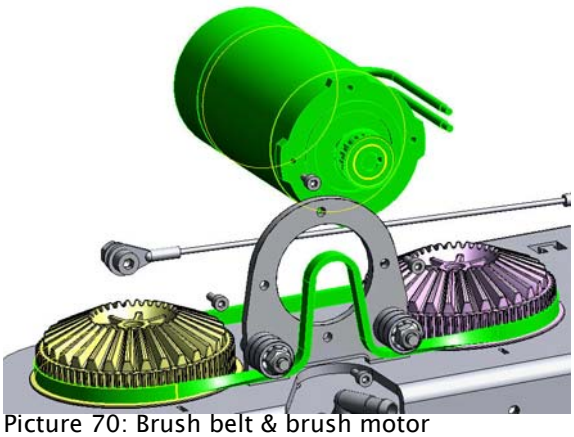


Picture 69: Brush belt & brush motor

- Remove the brush unit according to the chapter REMOVING OF COMPLETE BRUSH UNIT.
- Remove the synchronisation according to the chapter REMOVING OF SUPPORT WITH BEARING (SYNCHRONISATION).
- Untighten the screws (07/107) with the ball bearings (07/108) to release tension of brush belt (07/120).
- Remove the four screws (07/114) of the brush motor (07/116).
- Remove brush motor.
- Remove toothed belt.

5.7 Brush drive

5.7.6 Mounting of brush belt & brush motor



Picture 70: Brush belt & brush motor

- Mount toothed belt.
- Position brush motor.
- Mount the four screws of the brush motor.
- Tighten the screws to tension the brush belt.

⚠CAUTION *Do not tighten the belts (07/120) too much.*

- Complete assembling the synchronisation according to the chapter MOUNTING OF SUPPORT WITH BEARING (SYNCHRONISATION).
- Complete assembling the brush unit according to the chapter MOUNTING OF COMPLETE BRUSH UNIT.

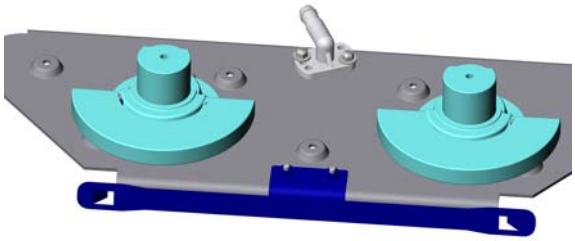
⚠CAUTION *If the brush motor has to be replaced check the polarisation. The motors have to rotate in opposite directions (both brushes have to turn to the inner side).*

Service

Fix the screws (07/114) of the brush motor with adhesive locking (07/160).

5.7 Brush drive

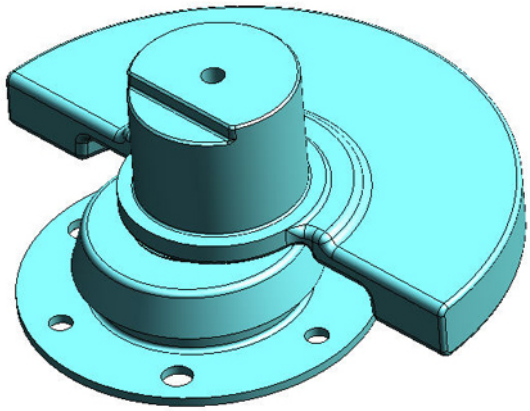
5.7.7 Removing of eccentric shaft



Picture 71: Eccentric shaft

- Remove the brush unit according to the chapter REMOVING OF COMPLETE BRUSH UNIT.
- Remove the synchronisation according to the chapter REMOVING OF SUPPORT WITH BEARING (SYNCHRONISATION).
- Remove the brush belt according to the chapter REMOVING OF BRUSH BELT & BRUSH MOTOR.
- Remove the two hose clamps (05/111) on the brush drive end.
- Remove the hoses (05/121) and (05/122).
- Remove the screws (07/104) and the bevel gears (07/121).
- Turn the brush unit upside down.
- Carefully remove brush console (07/138).

⚠CAUTION *If the eccentric shaft is rusty use a plastic hammer, take care when removing the brush console that it does not tilt.*

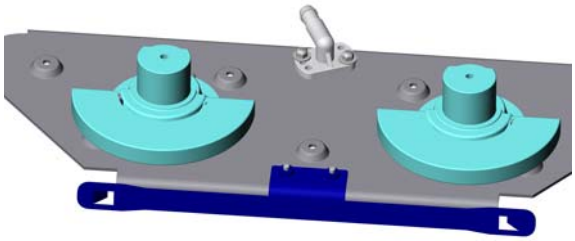


Picture 72: Eccentric shaft detail

- Remove the three self-locking nuts M6 (07/125).
- Remove eccentric shaft (07/124).

5.7 Brush drive

5.7.8 Mounting of eccentric shaft



Picture 73: Eccentric shaft

- Position the eccentric shaft.
- Mount the three self-locking nuts M6.
- Carefully mount brush console.

⚠CAUTION *Take care when positioning the brush console that it does not tilt.*

- Turn the brush unit.
- Mount the bevel gears and the screws.

Service

Fix the screws (07/104) of the bevel gears with adhesive locking (07/160).

- Mount the hoses.

⚠CAUTION *Take care that you assemble the longer hose (05/121) on the RH of the brush unit.*

- Mount the hose clamps.
- Complete assembling the brush belt according to the chapter MOUNTING OF BRUSH BELT & BRUSH MOTOR.
- Complete assembling the synchronisation according to the chapter MOUNTING OF SUPPORT WITH BEARING (SYNCHRONISATION).
- Complete assembling the brush unit according to the chapter MOUNTING OF COMPLETE BRUSH

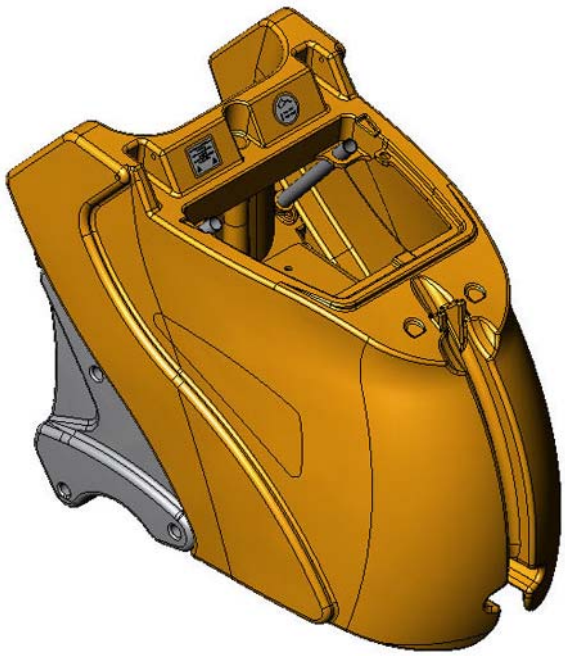
Fix the screws (07/122) of the bearing flange with adhesive locking (07/160).

Fix the screws (07/104) of the bevel gear with adhesive locking.

Lubricate brush console bearings (07/134) with ball bearing grease (03/164) as a water-repellent.

5.8 Tank

5.8.1 Removing of tank set

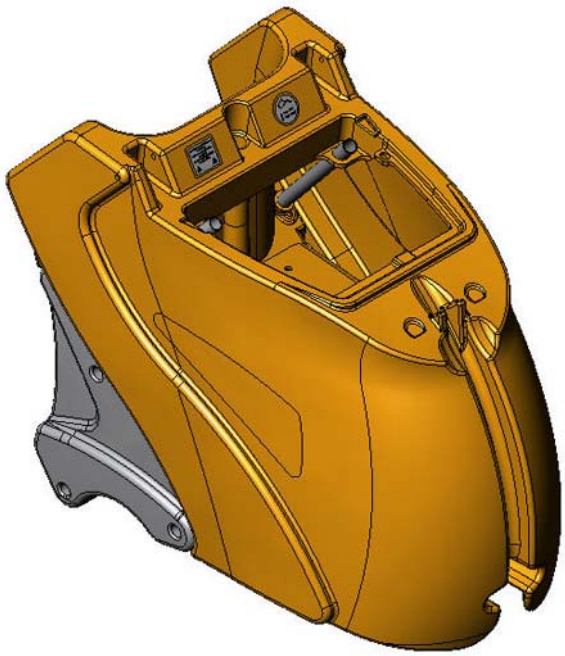


Picture 74: Tank set

- Remove the power electronics according to the chapter REMOVING OF POWER ELECTRONICS.
- Remove the waste water sensor according to the chapter REMOVING OF WASTE WATER SENSOR.
- Remove the tank cover according to the chapter REMOVING OF TANK COVER.
- Disconnect main cable (04/120) from charger.
- Remove charger main cable from wiring harness.
- Remove the two screws (04/104) and washers (04/103) for the cable guiding strip (04/101) at the tank.
- Remove the hose clamp (05/123) from the fresh water hose (05/107).
- Remove the fresh water hose from the tank.
- Thread out the cables from the tank set.
- Remove the 4 screws (02/147) from the two stud axles.
- Remove the two stud axles (02/142).
- Remove complete tank.
- According to what you need to exchange, remove the existing parts from the tank and place it on the new one.

5.8 Tank

5.8.2 Mounting of tank set



Picture 75: Tank set

- Position the tank on the chassis.
- Mount the two stud axles.
- Mount the 4 fixation screws for the stud axle.
- Mount the fresh water hose on to the tank nipple.
- Mount the hose clamp onto the fresh water hose.
- Mount the cable guiding strip on the tank.
- Mount the charger main cable at the wiring harness.
- Connect the main cable on to the charger.
- Mount the tank cover according to the chapter MOUNTING OF TANK COVER.
- Mount the waste water sensor according to the chapter MOUNTING OF WASTE WATER SENSOR.
- Mount the power electronics according to the chapter MOUNTING OF POWER ELECTRONICS.

Technical Manual

swingo XP

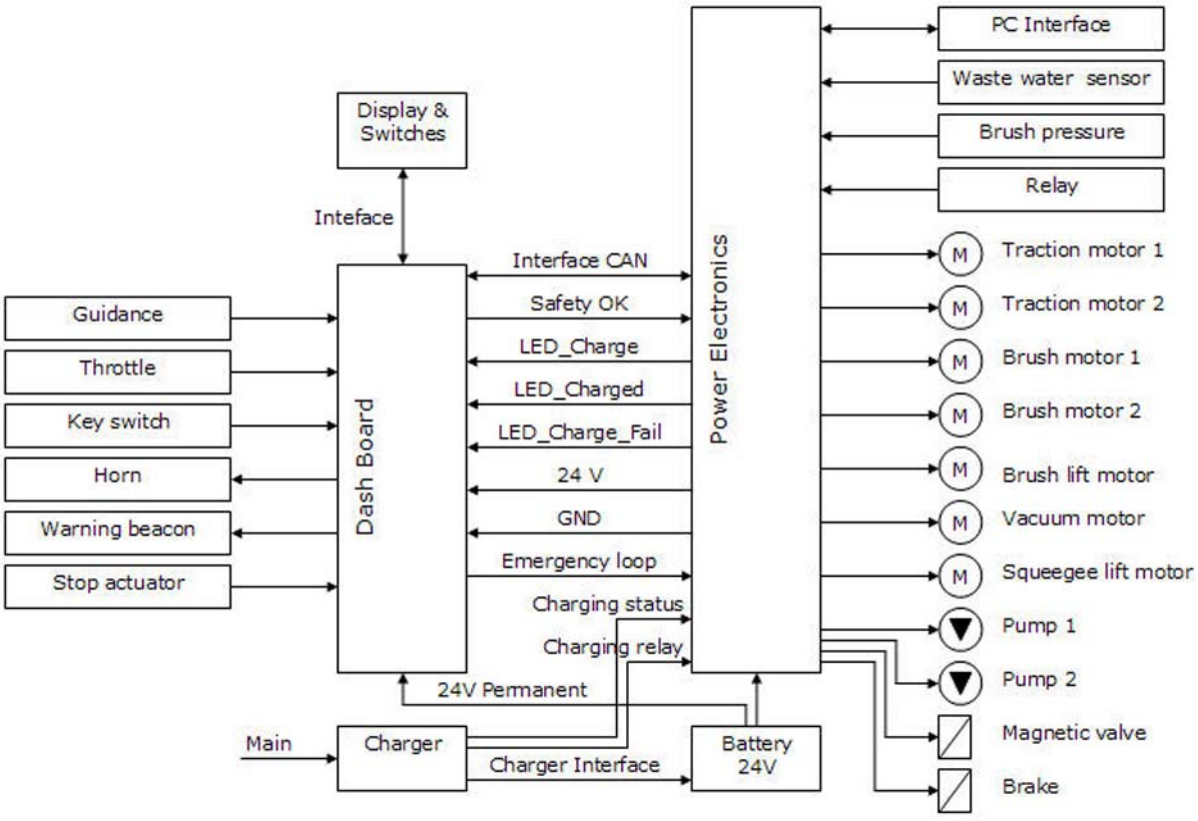
6 Electrical

29. August 2012 Edition: V4.00/2012

6.1 System architecture

6.1.1 General

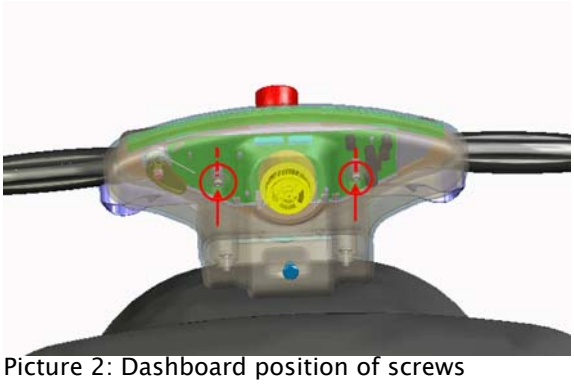
- The firmware is memorised only on the power electronics.
- The dashboard visualises the states of the machine. It also functions as a connection between the power electronics and the devices (e.g. hall sensor, key switch and foil keyboard).
- Applying the correct torque where required is essential for a safe operation of the machine.
- ESD can harm the electronic boards and therefore reduce the life time of the machine. Use always an ESD bag to protect them.



Picture 1: System architecture

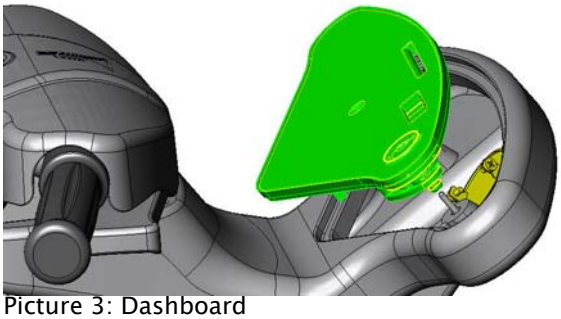
6.2 Dashboard

6.2.1 Removing of dashboard



Picture 2: Dashboard position of screws

- Remove the two screws (01/124) for the dashboard (01/125).
- Slowly lift out the dashboard from the dashboard support (01/123).



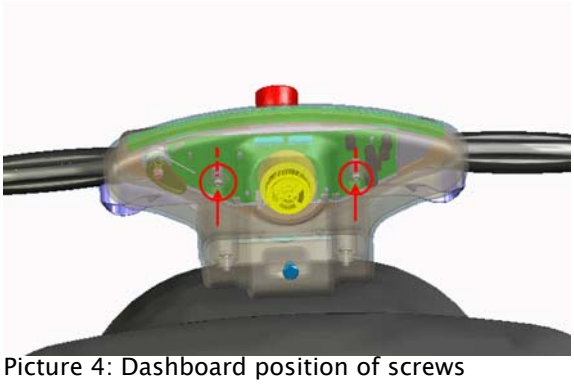
Picture 3: Dashboard

- Disconnect the wires to the dashboard.
- Remove the dashboard.

⚠CAUTION *Be cautious when removing the dashboard as you can damage the wires or the ribbon cables of the dashboard. Disconnect all electrical connections to dashboard.*

6.2 Dashboard

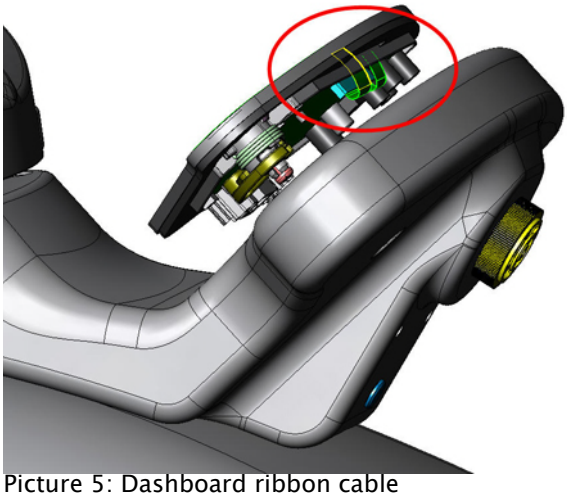
6.2.2 Mounting of dashboard



Picture 4: Dashboard position of screws

- Connect the wires to the dashboard.

⚠CAUTION *Ensure that you do not damage the wires and especially the ribbon cable to the key foil when inserting the dashboard into the dashboard support.*



Picture 5: Dashboard ribbon cable

- Assemble the dashboard.
- Mount the fixation screws.

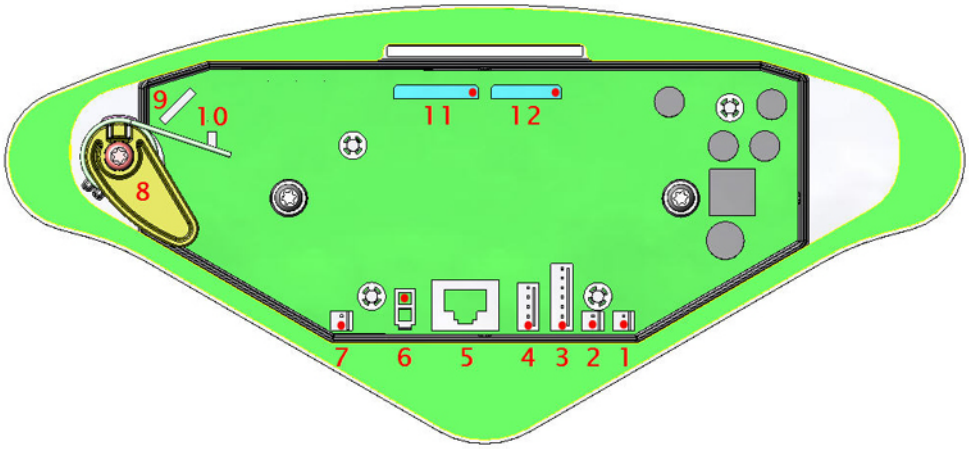
⚠CAUTION *Do not damage the dashboard by improper placement of screws.*

6.2 Dashboard

6.2.3 Main functions

- Evaluation of throttle and guidance sensors.
- Control of LED and buttons.
- Control of horn and warning light.

6.2.4 Dashboard connections



Picture 6: Dashboard connections

06.14.37 dashboard - connections - XP_V1.00.fm

Please find description of the connections on the following table. The connections are marked in the upper picture with numbers and the pin 1 of the connections is marked with a red dot.

Pos.	Plug	Description [plug]	Pin	Description [pin]
1	X09	Horn	1	Plus (+)
1	X09	Horn	2	GND
2	X10	Warning light	1	Plus (+)
2	X10	Warning light	2	GND
3	X05	Guidance	1	Plus (+)
3	X05	Guidance	2	<DMS bridge +> (not used)
3	X05	Guidance	3	<DMS bridge -> (not used)
3	X05	Guidance	4	Output hall sensor guidance
3	X05	Guidance	5	<Output DMS bridge> (not used)
3	X05	Guidance	6	GND
3	X05	Guidance	7	Cable shield
4	X06	Throttle / touch button horn	1	Plus (+)
4	X06	Throttle / touch button horn	2	Output single hall sensor
4	X06	Throttle / touch button horn	3	Touch button horn signal
4	X06	Throttle / touch button horn	4	Plus (+)
4	X06	Throttle / touch button horn	5	GND
5	X04	CAN interface	1	CAN-H data communication
5	X04	CAN interface	2	CAN-L data communication
5	X04	CAN interface	3	Safety okay signal
5	X04	Communication power board	4	Signal LED charge

Table 1: Connection description dashboard

Pos.	Plug	Description [plug]	Pin	Description [pin]
5	X04	CAN interface	5	Signal LED charged
5	X04	CAN interface	6	Signal LED charge failure
5	X04	CAN interface	7	Plus (+)
5	X04	CAN interface	8	GND
6	X07	Emergency loop	1	24V
6	X07	Emergency loop	2	Emergency stop power electronics
7	X08	Stop actuator	1	Emergency stop 1
7	X08	Stop actuator	2	Emergency stop 2
8		ON/OFF Key		ON/OFF key
9	S01	Read element	-	Start read element
10	B01	Read element	-	ON read element
11	X01	LED 7 segment display	-	LED ON display
12	X02	Keyboard	-	Switch bus
13	X11	GND	1	GND
13	X11	GND	2	GND

Table 1: Connection description dashboard

6.2 Dashboard

The TASKI swingo XP has some dashboard service functions as for example: reset service LED, Teach-In hall, sensors self test and error buffer. Following you will find the descriptions to the reset of the service counter.

6.2.5 Reset service hour counter

To reset the service hour counter LED you have to perform the following steps:

Picture 7: Service menu

- Press dosing (+) and brush pressure (+) and keep pressed.
- Turn on ON/OFF key.
- The machine is in service mode as soon S100 appears on the display.
- Press Start/Stop button.
- Press brush pressure (+) until reaching parameter number (S102).
- Press turtle button for the reset of the service LED.
- Press Start/Stop button for confirmation.
- Press ECO button repeatedly as long as you are in the service mode.

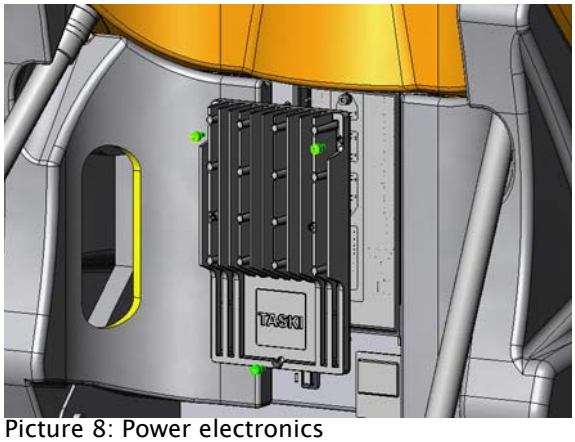
Remarks

You also can reset the service hour counter with the Service Tool online. Please refer to the Service Tool Manual for this and additional explanations.

⚠CAUTION *If the service LED is not ON and you follow this procedure, then you reset the service hour counter. The reason is: if you carry out a service, even if the LED is not ON, then you have the possibility to reset the service hour counter.*

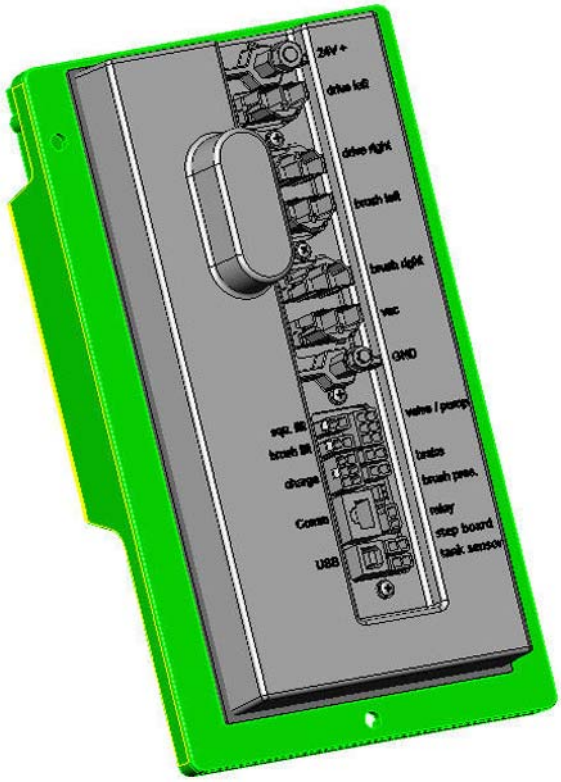
6.3 Power electronics

6.3.1 Removing of power electronics



Picture 8: Power electronics

- Remove the three screws (03/101).
- Remove the power electronics (03/108).

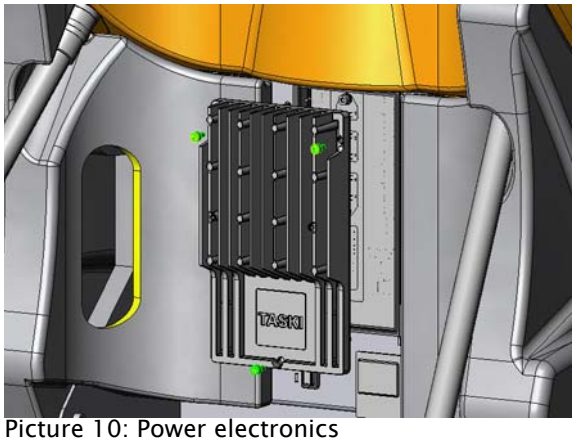


Picture 9: Power electronics detail

- Disconnect all the plugs and connections.

6.3 Power electronics

6.3.2 Mounting of power electronics



Picture 10: Power electronics

- Connect the wires and the connectors to the power electronics.
- Position the power electronics on to the chassis.
- Mount the three fixation screws for the power electronics.

⚠CAUTION *Tighten the connectors with the correct torque. Refer to Adjustment or spare parts list.*

Adjustment

- Plus pole M5 with 5 Nm
- Minus pole M6 with 6 Nm

⚠CAUTION *If the power cables are not tightened with the correct torque it can lead to a dangerous situation due to overheating.*

Remarks

For the correct connecting of the aggregates and wires please refer to chapter: Electrical/POWER ELECTRONICS CONNECTIONS.

⚠CAUTION *After replacing the power electronics Teach-In the machine.*

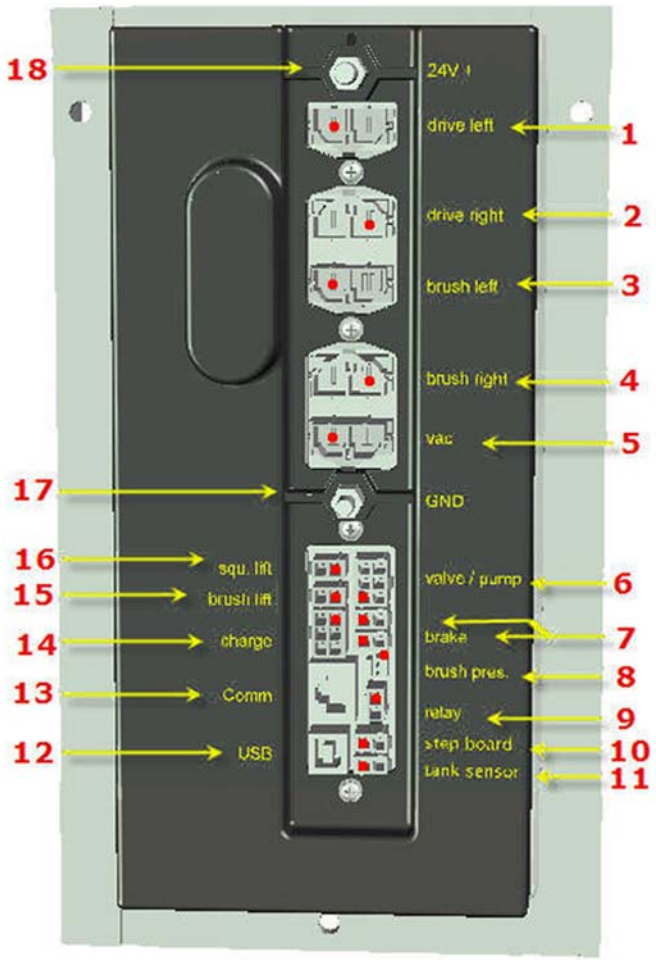
6.3 Power electronics

6.3.3 Main functions

- Control of motors.
- Evaluation of brush pressure signal.
- Evaluation of waste water signal.
- Control and regulation of cleaning and driving procedures.
- Communication interface (USB) to external computer.
- Save error buffer.

6.3.4 Power electronics connections

06.18.25 electronics connection - XP_V1.00.fm



Picture 11: Power electronics connections

Please find description of the connections on the following table. The connections are marked in the upper picture (Power electronic connections) with numbers and the pin 1 of the connections is marked with a red dot.

Pos.	Plug	Description [plug]	Pin	Description [pin]
1	X12	Traction motor 1 LH	1	Minus (-)
1	X12	Traction motor 1 LH	2	Plus (+)
2	X11	Traction motor 2 RH	1	Plus (+)
2	X11	Traction motor 2 RH	2	Minus (-)
3	X10	Brush motor 1 LH	1	Minus (-)
3	X10	Brush motor 1 LH	2	Plus (+)
4	X09	Brush motor 2 RH	1	Plus (+)
4	X09	Brush motor 2 RH	2	Minus (-)
5	X08	Vacuum motor	1	Minus (-)
5	X08	Vacuum motor	2	Plus (+)
6	X13	Valve/Dosing pump	1	Duty cycle pump 1
6	X13	Valve/Dosing pump	2	Duty cycle pump 2
6	X13	Valve/Dosing pump	3	Valve
6	X13	Valve/Dosing pump	4	GND
6	X13	Valve/Dosing pump	5	GND
6	X13	Valve/Dosing pump	6	GND
7	X17	Brake 1	1	Plus (+)
7	X17	Brake 1	2	GND
7	X18	Brake 2	1	Plus (+)
7	X18	Brake 2	2	GND

Table 2: Connection description power electronics

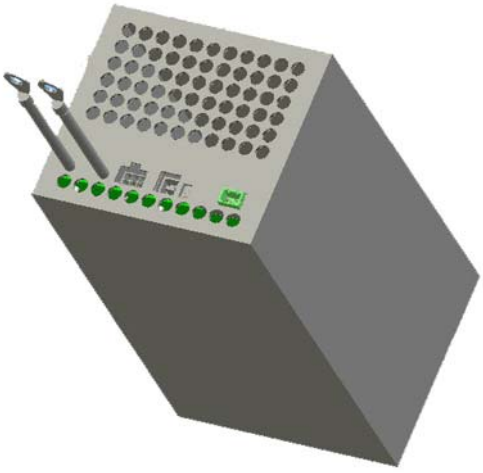
Pos.	Plug	Description [plug]	Pin	Description [pin]
8	X16	Brush pressure	1	Plus (+)
8	X16	Brush pressure	2	Output brush pressure hall sensor
8	X16	Brush pressure	3	GND
9	X20	Emergency loop	1	Stop actuator In
9	X20	Emergency loop	2	Stop actuator Out
10	X19	Step board	1	Switch step board
10	X19	Step board	2	GND
11	X03	Waste water sensor	1	Electrode 1
11	X03	Waste water sensor	2	Electrode 2
12	X04	Service port (USB)	1	<not connected>
12	X04	Service port (USB)	2	USB (-)
12	X04	Service port (USB)	3	USB (+)
12	X04	Service port (USB)	4	PC minus (-)
13	X05	Communication dashboard	1	CAN-H data communication
13	X05	Communication dashboard	2	CAN-L data communication
13	X05	Communication dashboard	3	Safety okay signal
13	X05	Communication dashboard	4	Signal LED charge
13	X05	Communication dashboard	5	Signal LED charged
13	X05	Communication dashboard	6	Signal LED charge failure
13	X05	Communication dashboard	7	Plus (+)

Table 2: Connection description power electronics

Pos.	Plug	Description [plug]	Pin	Description [pin]
13	X05	Communication dashboard	8	GND
14	X15	Charger status	1	Charging LED (yellow)
14	X15	Charger status	2	Charged LED (green)
14	X15	Charger status	3	Charge failed LED (red)
14	X15	Charger	4	Emergency loop In-Relay charge
14	X15	Charger	5	Emergency loop Out
14	X15	Charger	6	GND
15	X06	Brush unit lifting device	1	Plus (+)
15	X06	Brush unit lifting device	2	Minus (-)
16	X07	Squeegee lifting device	1	Plus (+)
16	X07	Squeegee lifting device	2	Minus (-)
17	W01	GND	5	GND (battery minus)
18	W02	24 V	1	24 V (battery plus)

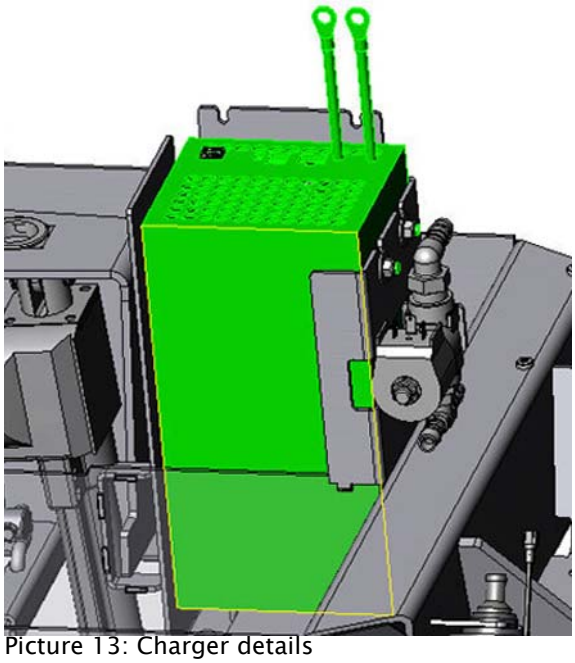
Table 2: Connection description power electronics

6.4 Charger



Picture 12: Charger

6.4.1 Removing of charger

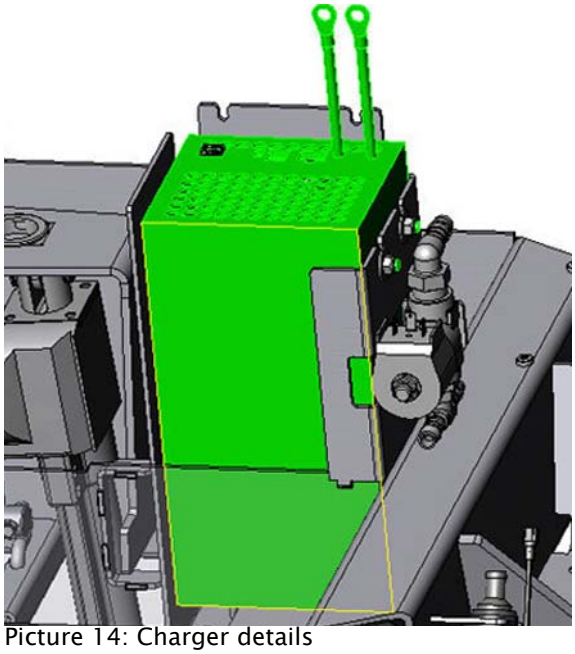


Picture 13: Charger details

- Open tank set (10/121) by releasing locking spring (03/143).
- Remove the charger cable from relay (04/137).
- Disconnect the main cable plug (04/121) and communication cable (08/113) from the charger (04/122).
- Remove the two self-locking nuts (04/124) and washers (04/123).
- Remove the charger.

6.4 Charger

6.4.2 Mounting of charger

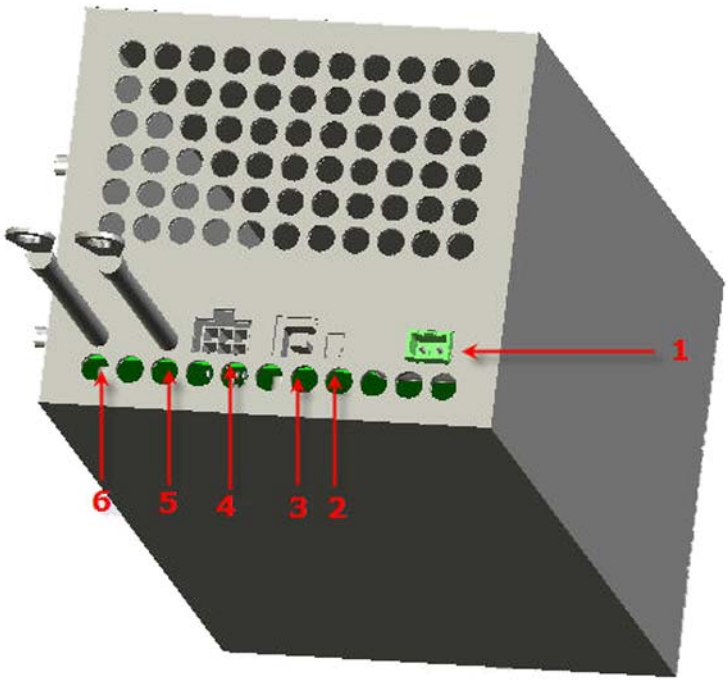


Picture 14: Charger details

- Mount the charger.
- Mount the two washers and the self-locking nuts.
- Connect the cable to the relay.
- Connect the plugs.
- Close the tank set.

6.4 Charger

6.4.3 Charger connections



Picture 15: Charger connections

06.20.24 charger - connections - 1650_1850_XP_V1.00.fm

Please find description of the connections on the following table. The connections are marked in the upper picture (Charger connections) with numbers.

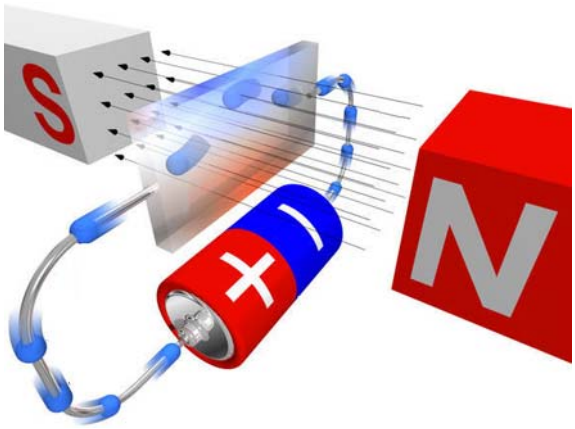
Pos.	Plug	Description [plug]	Pin	Description [pin]
1	SV4G1	Main power	1	Main power 230 V/50 Hz
1	SV4G2	Main power	2	Main power 230 V/50 Hz
2	S01	Switch (Charging curve)	-	Default = 1 Please leave the switch on default
3	SV USB	Service port (USB)	1	VCC (No software available for the charger)
3	SV USB	Service port (USB)	2	USB (-) (No software available for the charger)
3	SV USB	Service port (USB)	3	USB (+) (No software available for the charger)
3	SV USB	Service port (USB)	4	PC minus (-) (No software available for the charger)
4	SV11	Charger	1	Signal LED charge
4	SV12	Charger	2	Signal LED charged
4	SV13	Charger	3	Signal LED charge failure
4	SV14	Charger	4	Emergency loop In
4	SV15	Charger	5	Emergency loop Out
4	SV16	Charger	6	GND
5	H01	Battery supply	-	Battery (+) (red wiring)
6	H02	Battery supply	-	Battery (-) (black wiring)

Table 3: Charger connections

6.5 Hall sensors

6.5.1 Description

The Hall effect refers to the potential difference (Hall voltage) on opposite sides of a thin sheet of conducting or semiconductor material in the form of a 'Hall bar' (or a van der Pauw element) through which an electric current is flowing, created by a magnetic field applied perpendicular to the Hall element. Edwin Hall discovered this effect in 1879. (Source: http://www.answers.com/topic/hall-effect)



Picture 16: Hall effect

06.22.10 hall sensors - XP_V1.00.fm

6.5.2 Guidance

⚠CAUTION *Measure between pin 4 and 6 of plug X05 on the dashboard.*

- Voltage range 0.6 V - 4.4 V
- Guidance LH approx. 0.6 V
- Guidance RH approx. 4.4 V

Plug	Description [plug]	Pin	Description [pin]
X05	Guidance	1	Plus (+) 5V
X05	Guidance	2	-
X05	Guidance	3	-
X05	Guidance	4	Output signal hall sensor guidance

Table 4: Guidance

Plug	Description [plug]	Pin	Description [pin]
X05	Guidance	5	-
X05	Guidance	6	GND
X05	Guidance	7	Cable shield

Table 4: Guidance

6.5.3 Throttle

⚠CAUTION *Measure between pin 2 and 5 of plug X06 on the dashboard.*

- Voltage range 0.6 V - 4.0 V
- Backward approx. 0.6 V
- Forward approx. 4.0 V

Plug	Description [plug]	Pin	Description [pin]
X06	Throttle/touch button horn	1	Plus (+) 5V
X06	Throttle/touch button horn	2	Output signal hall sensor
X06	Throttle/touch button horn	3	Touch button horn signal
X06	Throttle/touch button horn	4	Plus (+) 5V
X06	Throttle/touch button horn	5	GND

Table 5: Throttle

6.5.4 Brush pressure

⚠CAUTION *Measure between pin 2 and 3 of plug X16 on the power electronics.*

- Brush unit upper position approx. 0.6V
- Brush unit switch-on point approx. 1.9V

Plug	Description [plug]	Pin	Description [pin]
X16	Brush pressure	1	Plus (+) 5V
X16	Brush pressure	2	Output signal brush pressure hall sensor
X16	Brush pressure	3	GND

Table 6: Brush pressure

6.6 Safety concept

6.6.1 Concept

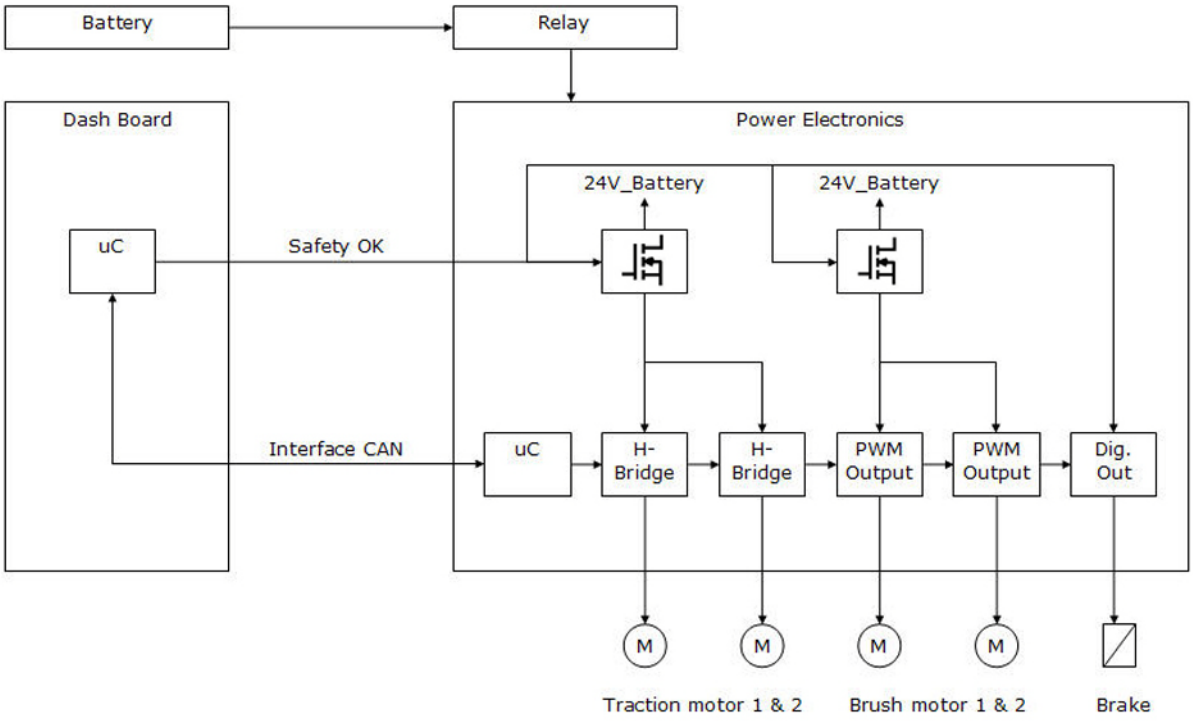
- The machine contains two safety loops.
  - Emergency loop.
  - SAFETY_OK signal loop.

Remarks

The concept is based on a one failure safety.
This means that any failure that could put the machine in an undefined condition, will stop the machine and display SAFE on the dashboard.

6.6.2 Electromechanical disconnection (Relay 04/137)

- Due to the electromechanical disconnection the batteries will be disconnected from the electronics as soon as the emergency loop is interrupted.
- This action ensures that:
  - Unintended acceleration of the machine during „stand-by“ can not happen.



Picture 17: Safety concept

A safe working condition of the machine is ensured if:

- Emergency loop is available. This includes:
  - Stop actuator not activated.
  - Charger is not connected to the mains.
  - Machine is switched on (ON/OFF key).
- SAFETY_OK signal is available which depends on:
  - Step board switch.
  - Microprocessor trigger protocol.
  - Plausible values of throttle and guidance hall sensor.

6.6.3 Emergency loop

Stop actuator

- If the stop actuator is pressed the emergency loop is interrupted.
- If the emergency loop is interrupted the current of the power relay (04/137) is interrupted which disconnects the battery from the electronics.

Charger

- The charger has a built-in relay.
- As soon as the mains are connected to the charger the relay will interrupt the emergency loop and the electronics will be disconnected from the batteries.

Remarks

If the charger has to be removed from the machine it is required to plug in a jumper on the electronics. Otherwise the machine will not work. (Interrupted emergency loop).

Switch ON/OFF key

- To switch on the machine, the ON/OFF key has to be turned first to start position and then remain on position 1.
- As soon as the magnet is positioned above the reed contact the emergency loop will be closed, the relay switches and the machine will switch on.

6.6.4 SAFETY_OK signal loop

⚠CAUTION *If the SAFETY_OK signal is interrupted, then the machine can not be moved.*

Step board switch

- The step board switch makes sure that the machine does not work if no one is standing on the step board.
- If the step board switch is not activated the SAFETY_OK signal is interrupted.

⚠CAUTION *No error message appears on the display.*

- The power for traction motor and brush motor will be switched off and the brakes are applied if the SAFETY_OK signal is interrupted.

Trigger protocol (Watchdog)

- The trigger protocol ensures the communication between the dashboard and the power electronics.
- This trigger protocol is sent continuously from the power electronics microprocessor to the dashboard microprocessor and vice versa.
- If the communication is interrupted, the dashboard microprocessor does not get the trigger protocol and the SAFETY_OK signal is cut off.
- The power electronics microprocessor will not get a feedback from the dashboard microprocessor.
- A counter in the power electronics will start to increment for each trigger protocol which does not come back from the dashboard microprocessor.
- As soon as the counter reaches a certain value the traction and the brush motors will be switched off and the brakes will be applied.
- Once a trigger protocol reaches the power electronics microprocessor again, the counter will be reset automatically and the machine will work again.

Plausibility check of throttle and guidance values

- The default values of throttle and guidance are checked whether they are within the specifications (within border lines).
- If one of the signals is out of specification the power electronics changes into LOCKOUT status and switches off the traction and brush motor. SAFE is displayed on the dashboard.

6.6.5 Emergency brake

- Additionally to the software (application) the brakes are controlled by the SAFETY_OK signal.
- If the SAFETY_OK signal is missing the brake relay is automatically applied (03/157).

6.6.6 Charging batteries with low voltage

- If the voltage of the batteries when starting to charge is lower than 20.4V (5.1V each battery) the charger, charges with 1.9A for one hour.
- If after this hour the voltage is still below 20.4V (5.1V each battery) then the charging process is stopt and the ERROR LED goes on.
- The charger considers the batteries as being defective.
- If the voltage is higher than 20.4V (5.1V each battery) after one hour, then the charger starts the regular charging process.

6.6.7 Internal-/external charger

- To operate a machine without charger (removed charger) you have to position a jumper (4127107) on the power electronics plug 14 (X15) which connects pin 4 to pin 5.
- This ensures that the emergency loop is closed.

Pos.	Plug	Description [plug]	Pin	Description [pin]
14	X15	Charger	4/5	Emergency loop In/Out

Table 7: Charger external

⚠CAUTION *The machine does not work without connected charger or connected jumper.*

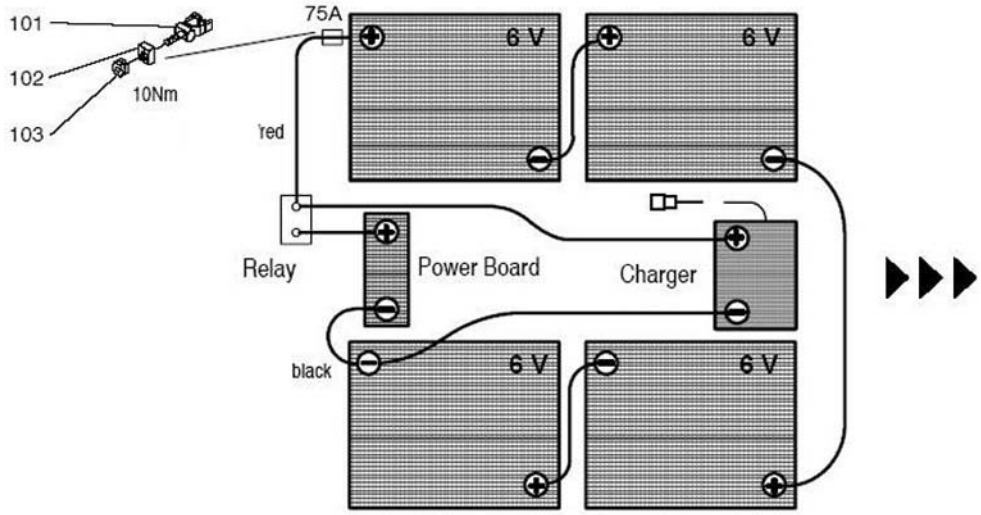
Remarks

During troubleshooting it can be helpful to use the jumper to ensure that the problem is not caused by the charger.

Picture 18: Charger jumper

6.7 Battery

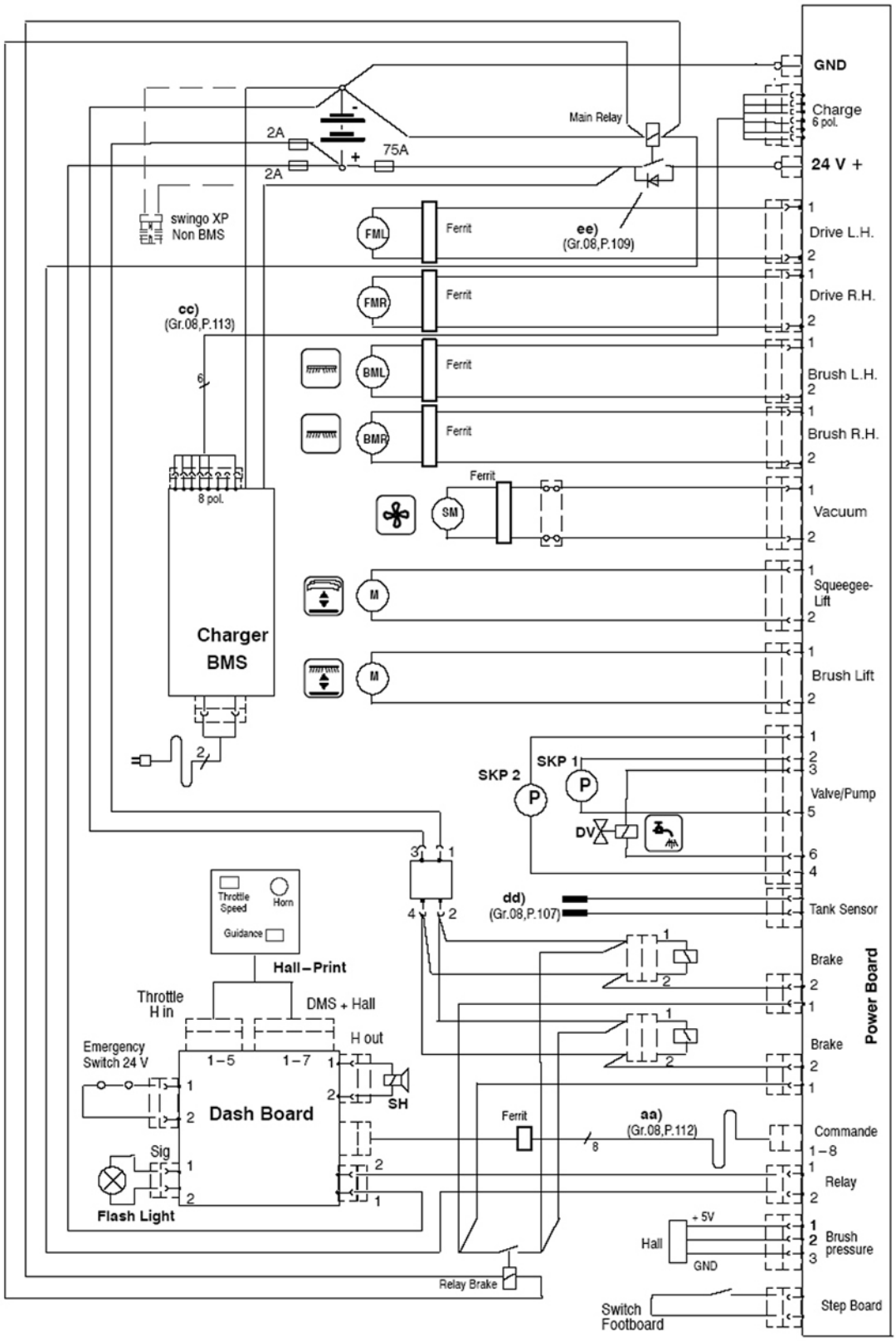
6.7.1 Battery connection 6V



Picture 19: Battery connection 6V

06.28.14 schematics - battery connection - XP_V1.00.fm

6.8 Electrical schematic



Picture 20: Electrical schematic

Technical Manual

swingo XP

7 Additional information

29. August 2012 Edition: V4.00/2012

7 Additional information

7.1 Available GTS Newsletter/Instructions

⚠CAUTION *To find the up to date available GTS Newsletters and instructions refer to e-spares.*

Newsletter	Date of issue	Machine	Subassembly	Topic/Modification	Serial number
N2007/16	29.08.2007	TASKI swingo XP	Electronic	New Firmware V3_17	1502
N2007/19	25.09.2007	TASKI swingo XP	Upper part	Tank cover locking mechanism	1539
N2007/20	26.09.2007	TASKI swingo XP	Base	Squeegee lowering	1533
N2007/26	11.12.2007	TASKI swingo XP	Brush drive	Improved waterproofing	1802
N2008/04	26.02.2008	TASKI swingo XP	Tank	New modification set	2000
N2008/06	26.04.2008	TASKI swingo XP	Chassis	Squeegee lowering mechanism set	2626
N2008/12	08.11.2008	TASKI swingo XP	Chassis	Cable traction motor and brake	2626
N2008/17	11.11.2008	TASKI swingo XP	Tank	Induction air filter and safety hinge	2876
N2008/20	11.12.2008	TASKI swingo XP	Squeegee	Squeegee wheel 64/24	2904
N2008/21	11.12.2008	TASKI swingo XP	Control group	Torsion spring steering	2899

Table 1: Newsletters/Instructions

Newsletter	Date of issue	Machine	Subassembly	Topic/Modification	Serial number
N2009/02	12.02.2009	TASKI swingo XP	Upper part	New Lid with extra moulding for hose	2981
N2009/04	30.03.2009	TASKI swingo XP	Electronic	New Firmware V3.21	3121
N2009/05	04.05.2009	TASKI swingo XP	Base	Ball joint squeegee lowering	3130
N2009/06	04.05.2009	TASKI swingo XP	Tool	Fixation of rubber caps at the tools	-
N2009/07	08.05.2009	TASKI swingo XP	Fresh water circulation	New pump membrane on teflon ba-sis	5000
N2009/08	09.05.2009	TASKI swingo XP	Control group	Cable protection profile hall print	5000
N2009/09	02.06.2009	TASKI swingo XP	Base	Protection lowering brush drive lowering	5000
N2009/10	02.09.2009	TASKI swingo XP	Brush lowering device	Spring bracket brush lowering	5122
N2009/11	02.09.2009	TASKI swingo XP	Electronic	Firmware V3.32	5122
N2009/14	06.10.2009	TASKI swingo XP	Option wheel	Optional wheel "red"	-
N2009/15	06.10.2009	TASKI swingo XP	Brush drive	Brush synchronisation (bevel gear)	5184
N2009/17	16.11.2009	TASKI swingo XP	Control group	Torsion Spring	5250
N2010/03	04.03.2010	TASKI swingo XP	Brush lowering device	Linear drive (New ref. nr. 65597)	5425
N2010/09	09.07.2010	TASKI swingo XP	Draining Hose	Draining Hose	5637
N2010/10	16.07.2010	TASKI swingo XP	Electronic	New Firmware V3.34	5646
N2010/12	27.08.2010	TASKI swingo XP	Electronic	New Firmware V3.35	5660
N2010/16	29.09.2010	TASKI swingo XP	Electronic	USB Cable	5764
N2011/07	06.06.2011	TASKI swingo XP	Pad drive	Pad drive	-

Table 1: Newsletters/Instructions

Newsletter	Date of issue	Machine	Subassembly	Topic/Modification	Serial number
N2011/16	22.09.2011	TASKI swingo XP	Chassis	Implementation of an antistatic strap	6524
N2012/07	20.02.2012	TASKI swingo XP	Electronic	New firmware version 3.36	6651
N2012/13	26.04.2012	TASKI swingo XP	Steering unit	Hall-Sensors and magnets in steering unit	-
N2012/19	13.08.2012	TASKI swingo XP	Electronic	New firmware version 3.40 strand with capacitor	6939

Table 1: Newsletters/Instructions

Technical Manual

swingo XP

8 Revision

29. August 2012 Edition: V4.00/2012

8 Revision

Date	Chapter	Content	Description	Revision
06.12.2007	Technical Data	3.2.8 Suction Power	Adj. max. vacuum motor power	V1.10
06.12.2007	Technical Data	3.2.5.2 Battery specification	Adj. battery types and separation dry & wet batteries	V1.10
06.12.2007	Technical Data	3.3.1 Accessories & additional parts	Additional accessories	V1.10
06.12.2007	Technical Data	3.3.2 Accessories & additional parts	Additional options	V1.10
06.12.2007	Mechanics	4.2.5 Remove batteries	Connection picture removed and reference added	V1.10
06.12.2007	Electrical	5.6.1 Battery connection	Battery connection added for 12V batteries	V1.10
06.12.2007	Electrical	5.6.2 Schematics	Newest schematics (e-spares V8.0) added	V1.10
06.12.2007	Recommend-ed spare parts list	9.3.2 Upper parts	Order no. adjusted	V1.10
06.12.2007	Recommend-ed spare parts list	9.3.9 Batteries	Added	V1.10
29.07.2010	Book		New template and FM9 --> no major update!	V1.11
29.07.2010	Recommend-ed spare parts list		Removed from technical manual. Find it in e-spares	V1.11

Date	Chapter	Content	Description	Revision
29.07.2010	Evaluation machine condition		Removed from technical manual	V1.11
29.07.2010	Software & Parameters	6.1.2 Exchange of electronic components	Removed E099 information	V1.11
29.07.2010	Software & Parameters	6.4 Error code overview	Adjusted to actual firmware	V1.11
29.07.2010	Additional information		Added a caution, to refer to e-spares	V1.11
18.02.2011	Book		Update of all chapters and added a new template	V2.00
06.06.2011	Book		Update of book and all chapter titel	V2.10
06.06.2011	Book		New manual concept and template	V2.10
07.07.2011	Book		New concept and template	V3.00
22.08.2012	Book	The whole book	Complete new concept	V4.00
22.08.2012	Book	The whole book	New concept and template	V4.00
22.08.2012	Additional information	GTS Newsletter/Instruction	Added GTS Newsletters/Instruction	V4.00
22.08.2012	Mechanical/ Electrical		Added procedures	V4.00

Table 1: Revision

Technical Manual

swingo XP

9 Appendix

29. August 2012 Edition: V4.00/2012

Glossar

Technical Manual

swingo XP

10 Notes

29. August 2012 Edition: V4.00/2012