-- Revision 2, 14/12/2011 –

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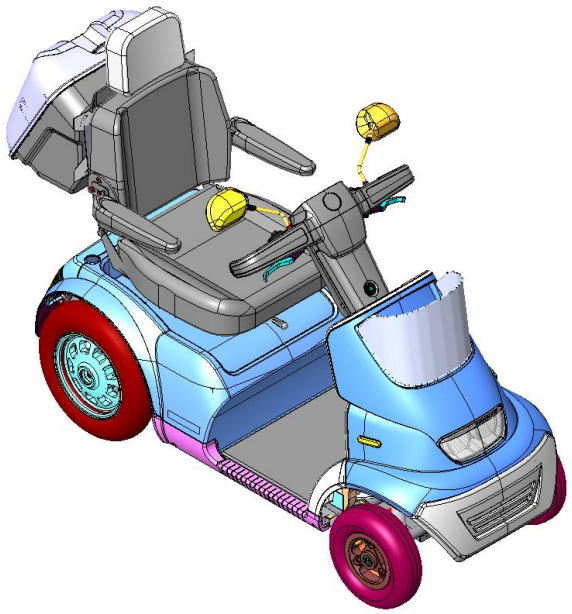
BREEZE-S

The Senior Class Lifestyler

Maintenance Manual



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Contents

1. Safety instructions

1.1 General:

1.1.1 Technicians who are servicing the scooter should be authorized to service the scooter.

1.1.2 Technicians who are servicing the scooter should be aware and follow all safety instructions within the User Manual.

1.1.3 Technician should follow general safety instruction like using gloves, safety glasses when needed.

1.1.4 The scooter weight with batteries is about 150 kg even lifting 1 wheel is about 40 kg. Always use other people help or a appropriate lifting device.

1.1.5 When lifting always use your legs and not your back.

1.1.6 The battery weight is about 24 kg . The power unit weight is about 25 kg. The seat weight is about 15kg.

1.1.7 Never do any change in the product before consulting the manufacturer engineering. Remember the products are approve as they are , any chage remove the manufacturer responsibility for the safety of the product.

1.2 Drive :

1.2.1 Technicians who are drivinging the scooter should be aware and follow all safety instructions within the User Manual.

1.3 Mechanic :

1.3.1 It is possible that a technician will need to operate the scooter when he is standing on the side ,working on different assemblies.

1.3.2 When no electric power and operation needed , always Stop the power by Switch OFF and disconnecting the battery terminals.

1.3.3 Never put any part of your body under the scooter parts.

1.3.4 If necessary, first place a wood block under, to make sure no injure will happen.

1.3.5 Use standard tools. Use them according to their safety instructions .

1.4 Electric :

1.4.1 If necessary to operate the scooter when you are not seating on it. In such cases you should be aware to the parts that can move by power – Power unit shafts and wheels.

1.4.2 Never put your hands close to a part that is moving or turning. Be aware that your cloth will not be trapped into one of the moving parts.

1.4.3 Batteries contain a large electric energy inside. This energy can cause sparks and heat metals when short circuiting.

1.4.4 When working on the battery terminals, make sure no to short circuit between any 2 terminals. This can cause strong spars and make the tools very hot.

1.4.5 When working on the batteries, use protecting gloves and safety glasses.

1.4.6 Battery contains acid. Never open any of the battery case. If you see any liquid or Gel aside, beware of it. It might be Acid.

2. Specific Tools for technicians

- Standard tool box (wrenches, socket-head cap screw , hexagon keys, Phillips (crosshead) tip and/or screwdrivers, etc.)
- Voltmeter (To measure 24VDC)
- Air pressure gauge (To measure 35 psi)
- Batteries tester (under load)
- Density meter
- Valve Wrench
- Wooden blocks to elevate the Breeze during checks, maintenance and repairs:
  - ✓ 2 blocks 20-22 centimeters height to place beneath the batteries box.
  - ✓ 2 blocks 14-16 centimeters height to place beneath the foot rest area.
  - ✓ **Remark** : Always before operating a lifted Breeze make sure that the 2 rear wheels are free to turn , so that the scooters will not move.

3. Specific Parts:

We recommend the availability of the following set of test and repair assemblies:

1. Handlebars switches – Left and Right
2. Front Board
3. Display LCD Board
4. Main Harnesses Cable.
5. Main Lights Harness Cable.
6. Main Supply Harnesses.
7. Controller SDrive 140A - P&G
8. Motor/Power Unit
9. Also it is very much recommended hold and use P&G SP-1 Programmer (for S-Drive, possible to upgrade old model to modified free of charge).

4. Options / Accessories assembling drawing /instructions

See attached accessories assembling drawing:

"Breeze S accessories1.pdf"

5. Mechanical Adjustments

#	Description	Where	How to Adjust
1	Seat Height	Seat pin under the battery cover. See attached assembling drawing: **"Breeze S(4W) assembling.pdf"**	Release both secure bolt and level bolt. Change pin Level hole as required . Resecure bote level bolt and secure bolt. Adjustments : 3 x 20 mm.
2	Tiller Height	Tiller bottom adaptor under the rubber cover. See attached assembling drawing : **"Breeze S(4W) assembling.pdf"**	Release the secure nut and screw , adjust height and resecure again the screw and the nut. Adjustments : 40 mm continues.
3	Rear Shock absorber Load	Rear Shock absorber under the battery cover. See attached assembling drawing : **"Breeze S(4W) assembling.pdf"**	I t is possible to replace the whole shock absorber for persons until 120 Kg and above. Also it is possible to adjust the the load rate by changing the Sprint pretention. 5 stages are possible : 20% / 40% / 50% / 80% / 100% Should be fit to user weights: 80 / 100 / 120 / 140 / 160 kg Remark: The Adjust should fit the comfort of the user .

6. Front Electronics Board Setup

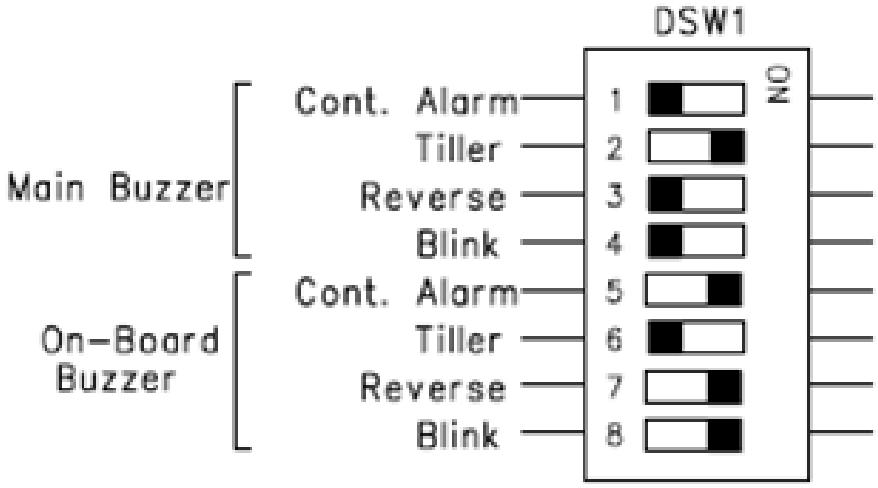
There are 2 horns in the Breeze S :

One is main Buzzer – external, located at the front of the tiller.
Second is Internal Buzzer located on the front board.

Each one of the Horns can be setup to work in one of the follows options : Controller alarms,Tiller push button , Reverse alarm , Blinkers alarms.

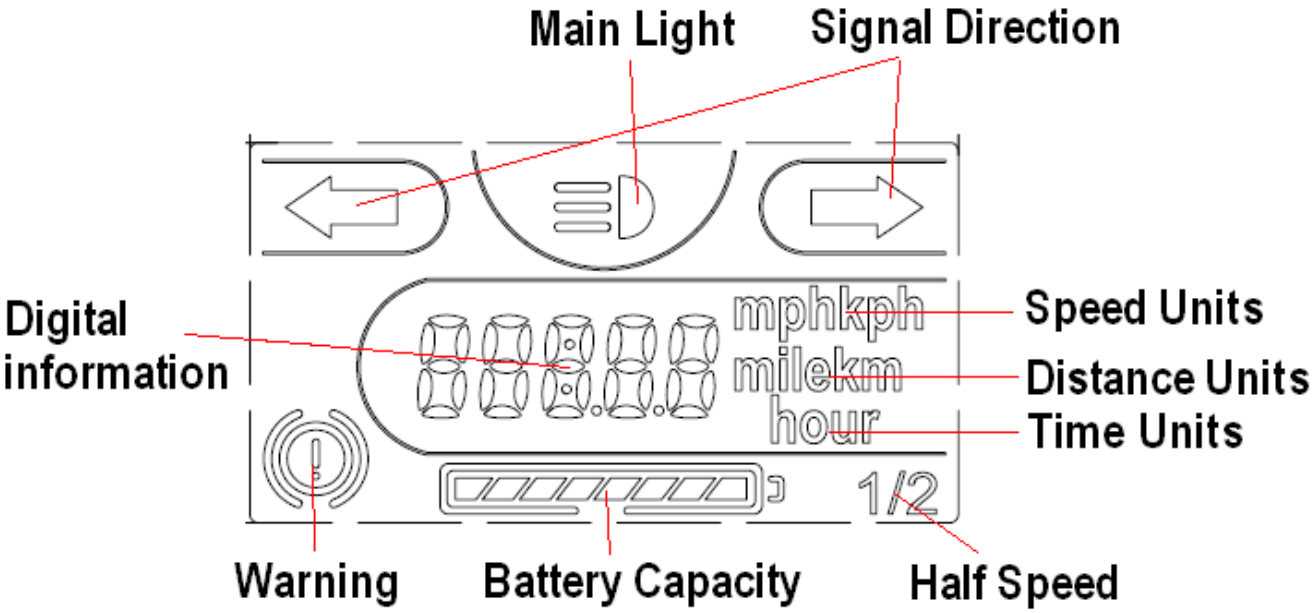
The front board include setup options for the Horn. This can be done with the dipswitch DSW1 that is on the front board.

Dip Switches Setup is as follows : (Shown the Default Set Up)



7. LCD Display Set Up and User Manual

a. LCD Display:



Push buttons:

b. **Right – Mode** : Use to change between different display modes and to Reset the Distance and Time.

Every push - changes the display mode cyclic (Speed ,Trip Distance ,Trip Time , Clock). Return automatically to initial (Speed) after 5 seconds.

Long Push - (more than 7 seconds) when change Modes:

Trip Time : Reset Trip time.

Trip Distance : Reset Trip Distance.

Time : Enter to Clock setup.

c. **Left- Setup** : Use to adjust the clock.

d. **Internal LED**: Use for a technician. Can be seen only from the bottom side of the LCD board. When LCD board active – flashes to indicate OK.

e. **Display Legend**:

Signal Direction - Use to show Blinkers working.

Main Light - Use to show Front lights and rear Pilot lights are working.

Digital information - Shows : Speed ,Distance of Trip ,Time of Trip, Time or Faults Codes.

Speed Units – Show mph(miles per hour) or kph (kilometers per hour).

Distance Units- Shows: mile (miles) or km (kilometers).

Time – Shows Hour = HH:mm (hours:minuts).

Half Speed – shows 1 (full) or 1/2 (half speed)

Battery Capacity – 8 Bars =full , 1 bar = empty, between is proportional.

Also flashes at a CODE when there is a controller fault CODE.

Warning / Inhibit - Indicate when the motor is heated , and when the EMB is opened.

Dip Switches:

f. #1-2-5: User Modes setup with relate to user needs.

State	**Description**
"0" = On - On - On	Regular (Speed,Distance,Time ,Clock)
"1" = Off - On - On	Minimal (No Digital Information)
"2" = On - Off - On	Speed only
"3" = On - Off - Off	Speed and Distance only.
"4" = On - On - Off	Hour only.

g. #3: Controller Type setup –

State	Description	Remark
Off	PG SDrive	Battery status from Controller
On	Dynamic Rhino	Battery status calculated upon Algorithm (22-24 VDC)

h. #4: Units setup (Europe or US)

State	Speed	Distance	Date (in Clock mode)
Off = Europe	kmh	km	DD.MM
On = USA	mph	mile	MM.DD

i. #6: Pulses per km

State	curve	product
Off	740 pulse / km	Breeze S = wheel diameter = 430 mm
On	1044 pulses / km	Breeze C = wheel diameter = 305 mm

j. Clock Adjust:

Every push on **Mode** change different time unit and this unit is Flashing.

When Flashing , every push on **Setup** increase 1 unit.

Stage	Display	Flashing
1	HH:mm	mm
2	HH:mm	HH
3	DD.MM or MM.DD	DD
4	DD.MM or MM.DD	MM
5	20YY	YY

6		Save of Updated Time and Date

k. Controller Fault Code : ~~will be shown together with Speed ,changed every 2 seconds~~.

~~"Er xx" , xx= Code known by the controller~~.

~~"Bat x", x= Battery Codes 1-3~~.

Will be shown on Batt. Icon upon controller fault code.

l. Technician state : active when Mode button is pressed :

(a) Will show software version, before it returns to regular work mode.

(b) LED will flash constant until the LCD board is OFF.

Note: it needs a complete OFF , not only Power signal change.

8. Controller Programming / Setup

If the user cannot find a position on the half speed limit switch control that suits him, the controller can be programmed to meet his needs. The controller can be programmed in two ways – with an SP1 Programmer or specialist PC software and interface cable.

The SP1 is a small hand-held unit which can be plugged into your controller to alter the program.

The PC Programmer is a piece of PC software and an interface cable. When the software is installed onto a PC, it can then be connected to the controller by using the special interface cable. The controller can then be programmed using a windows type environment

The programming tools may be included with your scooter. If they are not, the scooter distributor or service agent or scooter manufacturer will are able to program the controller.

If you have a programmer, read the user guide before you use it.

If you re-program your controller, make sure that you observe any restrictions given in your scooter user manual. Note any changes you make for future reference.

Programming should only be conducted by healthcare professionals with in-depth knowledge of PGDT electronic controllers. Incorrect programming could result in an unsafe set-up of a scooter for a user. PGDT accept no liability for losses of any kind if the programming of the controller is altered from factory pre-set values.

9. Controller Parameters List

	Manual Programmer								
	Breeze S , S-Drive 140 controller setup				**update : 25/10/2011**				

#	Parameter Name	Parameter Text	units	AMT 10	AMT12	AMT 15	Afikim 10	Afikim 12	Afikim 15
1	Forward Accel'n ?	fast	0.1s	35	35	40	35	35	40
1	Forward Accel'n ?	slow	0.1s	40	40	40	40	40	50
2	Forward Decel'n ?	fast	0.1s	14	12	16	10	15	14
2	Forward Decel'n ?	slow	0.1s	15	15	18	15	15	20
3	Reverse Accel'n ?	fast	0.1s	40	40	40	40	40	25
3	Reverse Accel'n ?	slow	0.1s	40	40	40	40	40	60
4	Reverse Decel'n ?	fast	0.1s	20	20	25	25	25	20
4	Reverse Decel'n ?	slow	0.1s	25	25	25	25	25	20
5	Max Fwd Speed ?	fast	%	100	100	100	100	100	100
5	Max Fwd Speed ?	slow	%	60	60	50	60	60	100
6	Min Fwd Speed ?	fast	%	50	50	50	50	50	30
6	Min Fwd Speed ?	slow	%	30	30	30	30	30	30
7	Max Rev Speed ?	fast	%	50	50	30	50	50	40
7	Max Rev Speed ?	slow	%	35	35	20	35	35	30
8	Min Rev Speed ?	fast	%	30	30	10	30	30	30
8	Min Rev Speed ?	slow	%	30	30	10	30	30	30
9	Invert Throttle?	inv throttle		No	No	No	No	No	No
10	Sleep Timer ?	time	m	0	0	0	0	0	0
11	Read System Log?								
12	Read Timer?	elapsed	h						
13	Engineer Menu ?								
14	Current Limit ?	min	A	130	130	130	130	130	130
15	Current Limit ?	max	A	130	130	130	130	130	130
16	Output Voltage?	output	V	24	24	24	24	24	24
17	Drive Boost ?	current	A	140	140	140	140	140	140
18	Drive Boost ?	time	s	10	10	10	10	10	10
19	Drive Foldb'k 1 ?	threshold	A	130	130	130	130	130	130
20	Drive Foldb'k 1 ?	time	s	20	20	20	20	20	20
21	Drive Foldb'k 2 ?	level	%	100	100	100	100	100	100
22	Drive Foldb'k 2 ?	temp	ºC	80	80	80	80	80	80
23	Motor Cooling ?	time	s	120	120	120	120	120	120
24	Compansation ?	motor cmp	mΩ	55	50	45	20	20	20
25	Parameter 3?	Param. 3		124	116	122	200	115	140
26	Parameter 4?	Param. 4		300	300	300	300	300	300
27	Bridge Hold?	bridge hld	cs	300	300	300	300	300	300
28	Soft Stop ?	soft-stop		On	On	On	On	On	On
29	Freewheel?	threshold		100	100	100	100	100	100
30	Freewheel?	timeout	cs	20	20	20	20	20	20
31	Throttle Gain ?	gain		300	300	300	300	300	300
32	Throttle D'band ?	deadband	%	3	3	3	3	3	3
33	ISO Tests ?	ISO tests		Off	Off	Off	Off	Off	Off
34	Throttle Type ?	thrtl' type		0	0	0	0	0	0
35	Displaced Mode?	Dspl		1	1	1	1	1	1

		mode							
36	Check Refs?	check refs		On	On	On	On	On	On
37	Speed Limit Pot?	pot enabled		Off	Off	Off	Off	Off	Off
38	Brake Time ?	brake time	ms	750	850	750	500	500	1000
39	Brake Check?	brake check		On	On	On	On	On	On
40	Brake Alarm?	brake alarm		On	On	On	On	On	On
41	Brake Light?	brake light		Off	Off	Off	Off	Off	Off
42	Status Output?	type		0	0	0	0	0	0
43	Diagnostic Flash	flesh		2	2	2	2	2	2
44	Diagnostic Alarm	diag. alarm		On	On	On	On	On	On
45	Inhibit 1 Mode?	Mode		1	1	1	1	1	1
46	Inhibit 1 Speed?	speed		0	0	0	0	0	0
47	Inhibit 1 Latch?	latched		Non-Latching	Non-Latching	Non-Latching	Non-Latching	Non-Latching	Non-Latching
48	Inhibit 2 Mode?	Mode		1	1	1	1	1	1
49	Inhibit 2 Speed?	speed		0	0	0	0	0	0
50	Inhibit 2 Latch?	latched		Latching	Latching	Latching	Latching	Latching	Latching
51	Inhibit 3 Mode?	Mode		1	1	1	1	1	1
52	Inhibit 3 Speed?	speed		0	0	0	0	0	0
53	Inhibit 3 Latch?	latched		Non-Latching	Non-Latching	Non-Latching	Non-Latching	Non-Latching	Non-Latching
54	Clear SystemLog	erase log							
55	Clear Timer	clear timer							
56	Reverse Alarm?	Alarm		On	On	On	On	On	On
57	Pulse Rev Alarm?	pulsed		On	On	On	On	On	On
58	TruCharge Cable?	cable res	mΩ	20	20	20	20	20	20
59	TruCharge Cal.?	calibration	%	100	100	100	100	100	100
60	Low Batt Flash ?	flash level		2	2	2	2	2	2
61	Low Batt Alarm?	Low bat. alm		Off	Off	Off	Off	Off	Off
62	Back To Root ?								

PC programmer	(software revision: 9.8.1)
Breeze S , S-Drive 140 controller setup	**update : 25/10/2011**

Power Unit	**AMT10**	**AMT12**	**AMT15**	**Afikim10**	**Afikim12**	**Afikim15**
Speed Settings						

Forward Acceleration Fast Profile (0.1 Seconds)	35	35	40	35	35	40
Forward Acceleration Slow Profile (0.1 Seconds)	40	40	40	40	40	50
Forward Deceleration Fast Profile (0.1 Seconds)	14	12	16	10	15	14
Forward Deceleration Slow Profile (0.1 Seconds)	15	15	18	15	15	20
Reverse Acceleration Fast Profile (0.1 Seconds)	40	40	40	40	40	25
Reverse Acceleration Slow Profile (0.1 Seconds)	40	40	40	40	40	60
Reverse Deceleration Fast Profile (0.1 Seconds)	20	20	25	25	25	20
Reverse Deceleration Slow Profile (0.1 Seconds)	25	25	25	25	25	20
Max Forward Speed Fast Profile (%)	100	100	100	100	100	100
Max Forward Speed Slow Profile (%)	60	60	50	60	60	100
Min Forward Speed Fast Profile (%)	50	50	50	50	50	30
Min Forward speed Slow Profile (%)	30	30	30	30	30	30
Max Reverse Speed Fast Profile (%)	50	50	30	50	50	40
Max Reverse Speed Slow Profile (%)	35	35	20	35	35	30
Min Reverse Speed Fast Profile (%)	30	30	10	30	30	30
Min Reverse Speed Slow Profile (%)	30	30	10	30	30	30
Speed Limit Pot Enabled	Off	Off	Off	Off	Off	Off
Operation Settings						
Sleep Timer (Minutes)	0	0	0	0	0	0
Throttle Invert	No	No	No	No	No	No
Battery Settings						
Low Battery Flash Level (Bars)	2	2	2	2	2	2
Cable Resistance (milli-Ohms)	20	20	20	20	20	20
Calibration Factor	100	100	100	100	100	100
Low Battery Alarm	Off	Off	Off	Off	Off	Off
Battery Alarm Tone Tag	0	0	0	0	0	0
Trucharge Reset Voltage Tag	255	255	255	255	255	255
Battery Curve Scaler	0	0	0	0	0	0
Inhibit Settings						
Inhibit 1 Mode	1	1	1	1	1	1
Inhibit 1 Operation	Non-Latching	Non-Latching	Non-Latching	Non-Latching	Non-Latching	Non-Latching
Inhibit 1 Speed (%)	0	0	0	0	0	0
Inhibit Mode 2	1	1	1	1	1	1
Inhibit 2 Operation	Latching	Latching	Latching	Latching	Latching	Latching
Inhibit 2 Speed (%)	0	0	0	0	0	0
Inhibt Mode 3	1	1	1	1	1	1
Inhibit 3 Operation	Non-Latching	Non-Latching	Non-Latching	Non-Latching	Non-Latching	Non-Latching
Inhibit 3 Speed (%)	0	0	0	0	0	0
Aux Output Mode	2	2	2	2	2	2
General Settings						
Soft Stop	On	On	On	On	On	On
Brake Drive Time (Seconds)	750	850	750	500	500	1000
Output Voltage (Volts)	24	24	24	24	24	24
Status Output Type	0	0	0	0	0	0
Diagnostic Flash Sequence	2	2	2	2	2	2
Power Unit	**AMT10**	**AMT12**	**AMT15**	**Afikim10**	**Afikim12**	**Afikim15**
Reverse Alarm	On	On	On	On	On	On
Reverse Alarm Tone	0	0	0	0	0	0
Pulsed Reverse Alarm	On	On	On	On	On	On

Diagnostic Alarm	On	On	On	On	On	On
Diagnostic Alarm Tone	0	0	0	0	0	0
Brake Disconnected Alarm	On	On	On	On	On	On
Brake Disconnected Alarm Tone	0	0	0	0	0	0
Brake Fault Detect	On	On	On	On	On	On
Brake Light	Off	Off	Off	Off	Off	Off
Freewheel Speed Limit	100	100	100	100	100	100
Freewheel Time-out (0.01 Seconds)	20	20	20	20	20	20
Freewheel Enable	Enable	Enable	Enable	Enable	Enable	Enable
Horn Input/Enable Tag	Off	Off	Off	Off	Off	Off
Horn Tone	0	0	0	0	0	0
Motor Settings						
Current Limit Max (Amps)	130	130	130	130	130	130
Boost Drive Current (Amps)	140	140	140	140	140	140
Boost Drive Time (Seconds)	10	10	10	10	10	10
Current Foldback Threshold (Amps)	130	130	130	130	130	130
Current Foldback Time (Seconds)	20	20	20	20	20	20
Current Foldback Level (%)	100	100	100	100	100	100
Motor Cooling Time (Seconds)	120	120	120	120	120	120
Current Foldback Temp (Deg C)	80	80	80	80	80	80
Current Limit Min (Amps)	130	130	130	130	130	130
Motor Compensataion (milli-Ohms)	55	50	45	20	20	20
AntiRollback Level	0	0	12	0	0	0
Pull-away Delay (centi-Seconds) (=parameter#4 /10)	30	30	30	30	30	30
Slope Factor	500	500	500	500	500	500
Anti Rollback Velocity	68	58	0	42	23	28
Braking Current Limit (Amps)	140	140	140	140	140	140
Timed Foldback Braking Current (Amps)	130	130	130	130	130	130
Timed Foldback Speed (%)	100	100	100	100	100	100
Enhanced Motor Compensation Value (=parameterar#3)	124	116	122	200	115	140
Bridge Hold Time	300	300	300	300	300	300
Factory Settings						
Throttle Settings						
Throttle Type	0	0	0	0	0	0
Throttle Deadband (%)	3	3	3	3	3	3
Throttle Gain (%)	300	300	300	300	300	300
Throttle Operated at Power-Up	1	1	1	1	1	1
Throttle Reference Test	On	On	On	On	On	On
ISO Test Resistor	Off	Off	Off	Off	Off	Off

10. Periodic maintenance Check

No.	Type of Service	Who	Frequency
1	Check air pressure in all tires.	User	Every week
2	Check emergency brakes	User	Every week

3	Check normal drive and stop	User	Every Month
4	Check tires wear	User	Every Month
5	Check for missing parts and damaged parts .Use the figures #1,2,3,4 .	User	When receiving the ***Breeze S*** or after a long time not using it.
6	Check emergency brake	User	Every Month
7	Check secure of all screws and parts	Technician	Once a year by technician.
8	Batteries replacing.	Technician	Every 2-3 years , after about 300-400 full cycles of charge/discharge. When short travel distance and/or technician check. **Note: To Replace the batteries, the Seat and Battery Cover located under the Seat must be removed.**
9	Cleaning	User Technician	External – when needed. Internal – Once a year.
10	Check power unit	Technician	Check noise , clearance , current on surface should be 12 to 15 Amp.
11	Check Emergency Brake	Technician	Once a year.

Removing the Seat and the Batteries Cover(2)	Turn the Seat by using the lifting Lever (7.5) so that the Lever will point 45º Right or Left. The Seat can be removed only at this position. Remove the Seat (7): Hold the Seat in your two hands – one hand on the backrest and a second hand at the front lower part of the seat and lift the seat up from its pivot.

	Warning! **The seat weight is 15 Kg (33lbs).** Keep lifting with your Knees/legs and not loading your Back. Release Battery Cover (2) securing screws (2.6). Lift the Battery Cover (2) until it is released from the Seat Pivot .
Replacing the Batteries Cover(2)	The replacement of the Gray Cover is done in reverse order; MAKE SURE that the Gray Cover (2) fits onto it's place. Secure with the 4 screws (2.6).
Batteries	Batteries weight each ~23 Kg (~50 lbs) and over. Lift each battery only with the appropriate handle. Keep lifting with your Knees/legs and not loading your Back.
Tires	Correct air pressure in the tires is essential for optimal steering and stability of the ***Breeze S***. Check air pressure every two weeks. ±2 psi. Breeze 4W Inflate to the proper air pressure: 25 front tires: 20±2 psi. Golf wheels tires : 20±2 psi.
Cleaning	Use only a damp cloth and mild detergent. Never use a hose for cleaning. This may severely damage the power and electronic components.

11. Mechanical Fault troubleshooting

#	Description	Probable cause	Repair action
1	Noises from front steering and suspension system	Check front suspension for clearances and secure of bolts. Check front shock absorbers.	Replace wear parts, secure bolts. Replace if needed.
2	Front suspension not functioning properly.	Check front shock absorbers.	Replace if needed.
3	Excessive wear of front tires after short period.	Wear of bushings that cause clearances in the system. Un adjusted steering system.	Replace wear parts , Adjust the steering and secure.
4	Rear suspension Noisy.	Wear in power unit absorbing Rubbers. Check for clearances and unsecured parts. Check the shock absorbers.	Replace the absorbing rubbers if needed. Secure parts. Replace shock absorbers if needed.
5	Rear suspension not functioning	Check user weight and the fit of the absorbers. Faulty shock absorbers	Replace if needed Replace if needed
6	Noise from power unit.	Wear in power unit	Check and replace power unit if needed
7	Too short distance travel between charging	Power unit wear, consume high current. Also might be noisy.	Check noise and current and replace if needed.
8	Clearances in tiller	Unsecured screws and gas piston faulty	Check scure of screws. Replace gas piston if needed.
9	Scooter does not have power or does not brake	Wear in motor brushes.	Replace motor brushes.

	well or go to high speed downhill.		
10	Noises from motor	Wear of brushes. Faulty motor.	Check brushes and replace if needed. Replace motor.
11	Emergency handbrake does not stop	The brake cable is not tight or brake drum/disk is wear.	Tight cable and replace brake drum/disk if needed.
12	Flat tire and uneven and not smooth drive	Flat tire	Repair / replace tire's tube.

12. Control and Electronics system fault troubleshooting

12.1 General control system and Front Board Troubleshoots

The front board is the center of all peripheral functions of the scooter : Lights , Horn , Information goes to the LCD display .

Elimination troubleshoots:

The Front Board wiring connections are all quick connectors.

If you suspect the Front Board to be faulted we recommend as a quickest way to find if the Front Board is faulty, Doing by elimination – Just replace temporarily the Front Board with another working one and thus make sure if the problem is within the Front Board or somewhere else.

Check all connection of the Front Board, following the wiring diagram that can be found within this maintenance manual.

Check main and Charging fuses, located near the rear wheels.

Also always check related function switch , as example Light does not work , first check the light switch for continuity ,when is in ON position. Use the wiring diagram to figure the proper terminals to check each function switch terminals.

12.2 Trouble Shoot Table:

#	Description	Probable cause	Repair action
1	First check that Front Board internal LED flashes. If it is not Flashing.	Front Board is faulty or no power supply to the board.	Check Supply. If OK than Front Board is Faulty – Replace it.
2	If LCD is not working, check if LCD internal LED flashes. If it is not flashing.	LCD board is faulty or no power supply to the board.	Check supply. If OK than LCD board is faulty – Replace it.
3	Front light doesn't work	Front LED board faulty	Replace front LED board
		Front Board faulty	Replace Frond Board
4	Front Blinker/s doesn't work	Front Blinker board faulty	Replace front Blinker board
		Front Board faulty	Replace Frond Board
5	Rear pilot/s light does work	Rear Blinker board faulty	Replace Rear Blinker board
		Front Board faulty	Replace Frond Board
6	Rear Blinker/s doesn't work	Rear Blinker board faulty	Replace Rear Blinker board
		Front Board faulty	Replace Frond Board
7	Horn does not work properly	External Horn is faulty	Replace Horn
		Internal Horn is faulty	Replace Frond Board
		Front Board faulty	Replace Frond Board
8	Hazard doesn't work	Hazard switch fault	Check switch and repair
		Front Board faulty	Replace Frond Board
9	Reverse function doesn't work	Reverse switch fault	Check switch and repair
		Front Board faulty	Replace Frond Board
10	Electric EMB release function does not work	EMB release Switch faulty	Check switch and repair
		Front Board faulty	Replace Frond Board
11	LCD is not powered ON	LCD board faulty	Replace LCD board
		Front Board faulty	Replace Frond Board
12	No Charge start	Charger fault	Replace charger
		Charge fuse popup or faulty	Reset /Replace charge fuse
13	Travel distance very low	Charger fault	Replace charger
		Old / Weak batteries	Check Batteries / charge batteries, Replace if

			needed.
14	The LCD does not keep the time	LCD battery end of life (after 3-5 years of use)	Replace the LCD Battery.
15	No power or main fuse pop out	Over load Mechanical fault Fault controller Faulty power unit Short circuit occur	Try to reset 2 times. Troubleshoot the fault. Replace the controller. Replace the power unit. Find and repair short circuit.

12.3 Controller / Drive Troubleshoots

The controller is the center of all driving functions of the Breeze S: Speed control , acceleration , deceleration , EMB (Electro Magnetic Brake used as parking brake) , Reverse drive , Speed limiting etc. . But still the functions of the controller are all connected to all the wiring, connectors and as well the Front board, power units and batteries.

Elimination troubleshoots:
The controller wiring connections are all quick connectors.
If you suspect the controller to be faulted we recommend as a quickest and way to find if the controller is faulty, Doing it by elimination – Just replace temporarily the controller with another working one and thus make sure if the problem is within the controller or somewhere else.

Check all connection of the controller, following the wiring diagram that can be found within this maintenance manual.

12.4 Controller Fault codes using the LCD:

Count the number of flashes in the battery indicator of the LCD and see the code in the follows Table (Each cycle there is a short stop of few seconds):

1 Flashes	The battery needs charging or there is a bad connection to the battery. Check the connections to the battery. If the connections are good, try charging the battery.
2 Flashes	There is a bad connection to the motor. Check all connections between the motor and the controller.
3 Flashes	The motor has a short circuit to a battery connection. Contact your service agent.
4 Flashes	The freewheel switch is activated or the manual brake disengagement mechanism is operated. Check the position of the switch or lever.
5 Flashes	Not used.
6 Flashes	'The S-drive is being inhibited from driving. Inhibit 2 is active'. This may be because the battery charger is connected or the seat is not in the driving position.
7 Flashes	A throttle fault is indicated. Make sure that the throttle is in the rest position before switching on the scooter.
8 Flashes	A controller fault is indicated. Make sure that all connections are secure.
9 Flashes	The parking brakes have a bad connection. Check the parking brake and motor connections. Make sure the controller connections are secure.
10 Flashes	An excessive voltage has been applied to the controller. This is usually caused by a poor battery connection. Check the battery connections.

12.5 Controller Trip codes using programmer SP1 & actions to repair:

When the fault exists, connect the SP1 programmer's connector directly to the controller SDRIVE140 or to the charging socket, using a special wiring adaptor.

Trip Code	Action
A01	Quick switch ON / OFF. Switch OFF wait few seconds and ON again.
0300	Check the tiller & throttle wiring to the controller, then retest
0815	Check the tiller & throttle wiring to the controller, then retest
0A00	Check the sleep mode parameter is set correctly, then retest
0E07	Check the tiller & throttle wiring to the controller, then retest
0E08	Check the tiller & throttle wiring to the controller, then retest
1501	Check the solenoid brake's wiring & connections to the controller, then retest
1502	Check the solenoid brake's wiring & connections to the controller, then retest
1600	Check the batteries' wiring & connections to the controller, then retest
1601	Check the batteries' wiring & connections to the controller, then retest
1705	Internal faults in relay.
1E08	Check the wiring & connections to pin 4 of the programming socket, then retest
1E09	Check the wiring & connections to pin 6 of the 14 way tiller connector, then retest
1E0A	Check the wiring & connections to pin 14 of the 14 way tiller connector, then retest
2C00	Check the batteries' wiring & connections to the controller, then retest
2F01	Check the throttle is not displaced on start-up, then retest
2F01	Check the tiller & throttle wiring to the controller, then retest
3100	Battery connected whilst scooter is switched on. Turn off, wait 10 seconds, then retest
3B01	Check the motor wiring & the connections to the controller, then retest
3D02	Check the motor wiring & the connections to the controller, then retest
3D03	Check the motor wiring & the connections to the controller, then retest
3600	Internal un expected fault in the controller
4401	Internal controller fault
5300	Programmable parameter changed. Turn the scooter off, then on again, then retest
7000	Push at startup
7001	Push at drive
7C00	High temperature in the controller.
All Others	Check all wiring & connections to the controller, then retest. Try replacing the controller.

12.6 Possible Faults symptoms and repair actions:

Symptom	Action
No power to programmer	Check the wiring & connections to the batteries, then retest
No power to programmer	Check the wiring & connections to the programmer, then retest
Scooter drives slowly	Check the controller is programmed correctly, then retest
Scooter drives slowly	Check the speed limiting function is not active e.g. seat raised, then retest
Scooter drives slowly	Check the solenoid brakes are not jammed, then retest
Status indicator does not light	Check the wiring & connections to the status indicator, then retest
Reverse alarm does not sound	Check the wiring & connections to the buzzer then retest
Reverse alarm does not sound	Check the buzzer is working correctly, then retest
Reverse alarm does not sound	Check the scooter is programmed correctly then retest
Scooter will not drive in reverse	Check the tiller wiring & connections, then retest
Scooter will not drive in reverse	Check the reverse switch is working correctly, then retest

Slow or Sluggish Movement

If the scooter does not travel at full speed and the battery condition is good, check the position of the speed limiting control. If adjusting the speed limiting control does not remedy the problem then there may be a non-hazardous fault.

Contact your service agent.

User Daily Checks

Throttle: With the scooter switched off, check that the throttle mechanism is not bent or damaged and that it returns to the position when you push and release it. If there is a problem do not continue with the safety checks and contact your service agent.

User Weekly Checks

Throttle: Put the throttle to the full speed forward position and switch the scooter on. The scooter should not move. show you that you have switched the scooter on with the throttle already pushed, a TruCharge Trip type status indicator will display 7 Bars, whereas a single bulb (or LED) type status indicator will flash seven times sequence.

If the scooter does move, contact your service agent.

Parking brake: This test should be carried out on a level surface with at least one meter clear space around the scooter.

Switch the scooter on.

Check that the status indicator remains on, or flashes slowly, after half a second.

Go to drive the scooter slowly in the forwards direction until you hear the parking brake operate. The scooter may start to move.

Immediately release the throttle. You must be able to hear the parking brake operate within a few seconds.

Repeat the test in the reverse direction.

Cables and connectors:

Check that all connectors on the scooter are securely mated, and ensure that all cables are free from damage.

13. Mechanical assembly drawings

See attached assembling drawings: "Breeze S(4W) assembling.pdf".

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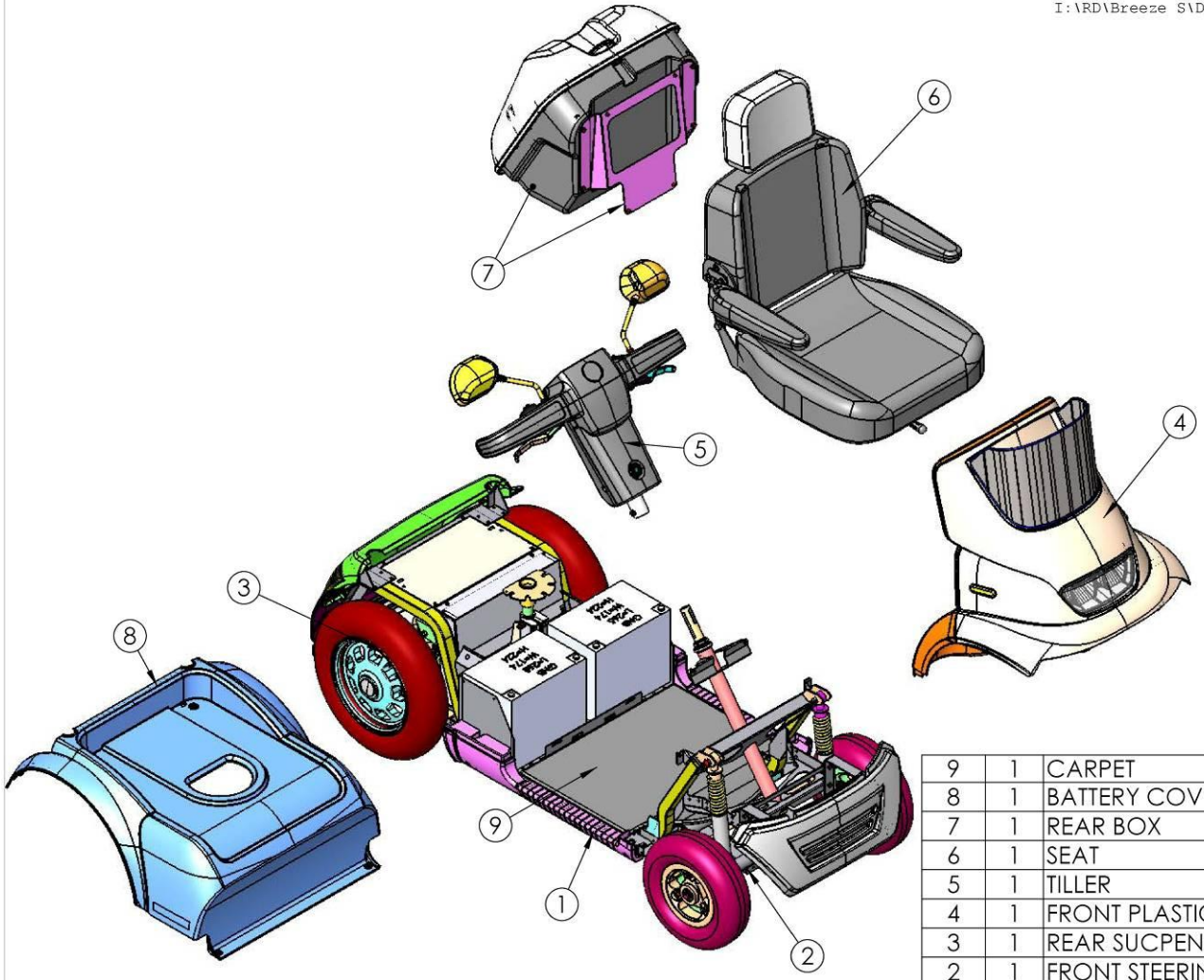

ITEM	QTY.	NAME	PART/NO	REMARK
9	1	CARPET	HWS4004	PAGE 2
8	1	BATTERY COVER	IPS4007	PAGE 2
7	1	REAR BOX	ASS4027	PAGE 2
6	1	SEAT	ASBR019	PAGE 8
5	1	TILLER	ASS4020	PAGE 7
4	1	FRONT PLASTIC COVERS	ASS4024	PAGE 6
3	1	REAR SUCPENSION		PAGE 5
2	1	FRONT STEERING		PAGE 4
1	1	FRAME S -ASSY.		PAGE 2,3

Page: 2	DATE	Scale	tolerance holes d.	tolerance linear	tolerance angular	Drawing no.	Cat. No.	Part name:
Of: 8	2-4-10	X	±0.3	>500mm±1mm <500mm±0.5mm	±1°	nor.br.-s p-1,2 4w	x	BREEZE S ASSY.

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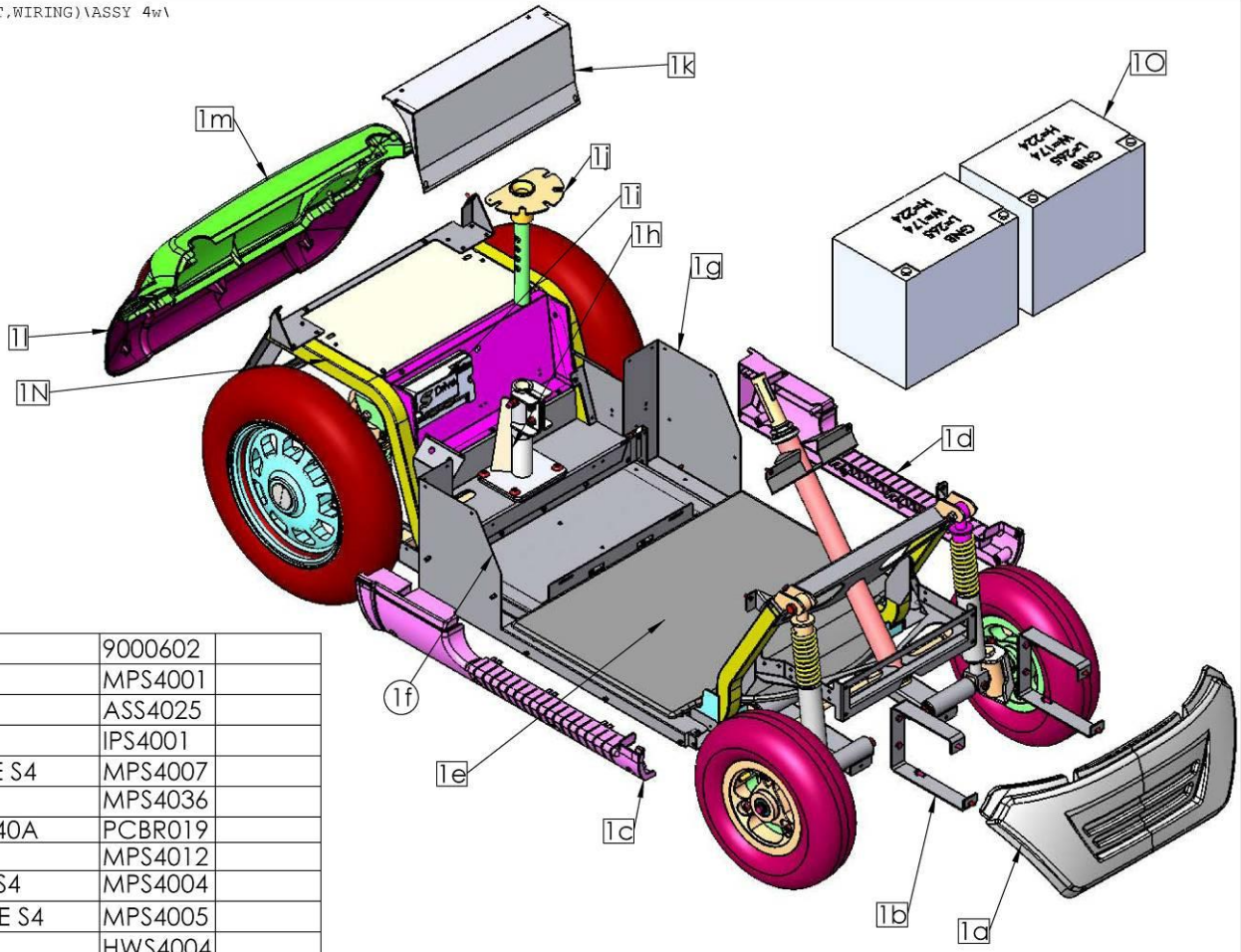

1o	2	BATTERY 70AH,12V	9000602	
1n	1	FRAME WELDING BREEZE S4	MPS4001	
1m	1	REAR LIGHT COVER ASSY.	ASS4025	
1l	1	BUMPER REAR BREEZE S3/4	IPS4001	
1k	1	COVER CONTROLLER BREEZE S4	MPS4007	
1j	1	PIN SEAT BREEZE S3/4	MPS4036	
1i	1	CONTROLLER P&G SDRIVE 140A	PCBR019	
1h	1	COLUMN SEAT BREEZE S3/4	MPS4012	
1g	1	CANAL CABLES LEFT BREEZE S4	MPS4004	
1f	1	CANAL CABLES RIGHT BREEZE S4	MPS4005	
1e	1	CARPET BREEZE S4	HWS4004	
1d	1	COVER SIDE LEFT FLOOR BREEZE S4	IPS4010	
1c	1	COVER SIDE RIGHT FLOOR BREEZE S4	IPS4009	
1b	1	ABZORB ENERGY FRONT BREEZE S4	MPS4010	
1a	1	BUMPER FRONT BREEZE S4	IPS4019	
IITEM	**QTY.**	**NAME**	**PART/NO**	**REMARK**

Page:	3	DATE	Scale	tolerance			Drawing no.	Cat. No.	Part name:
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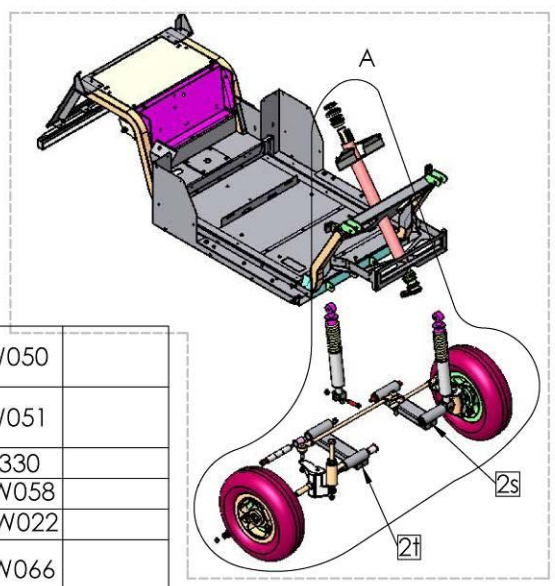

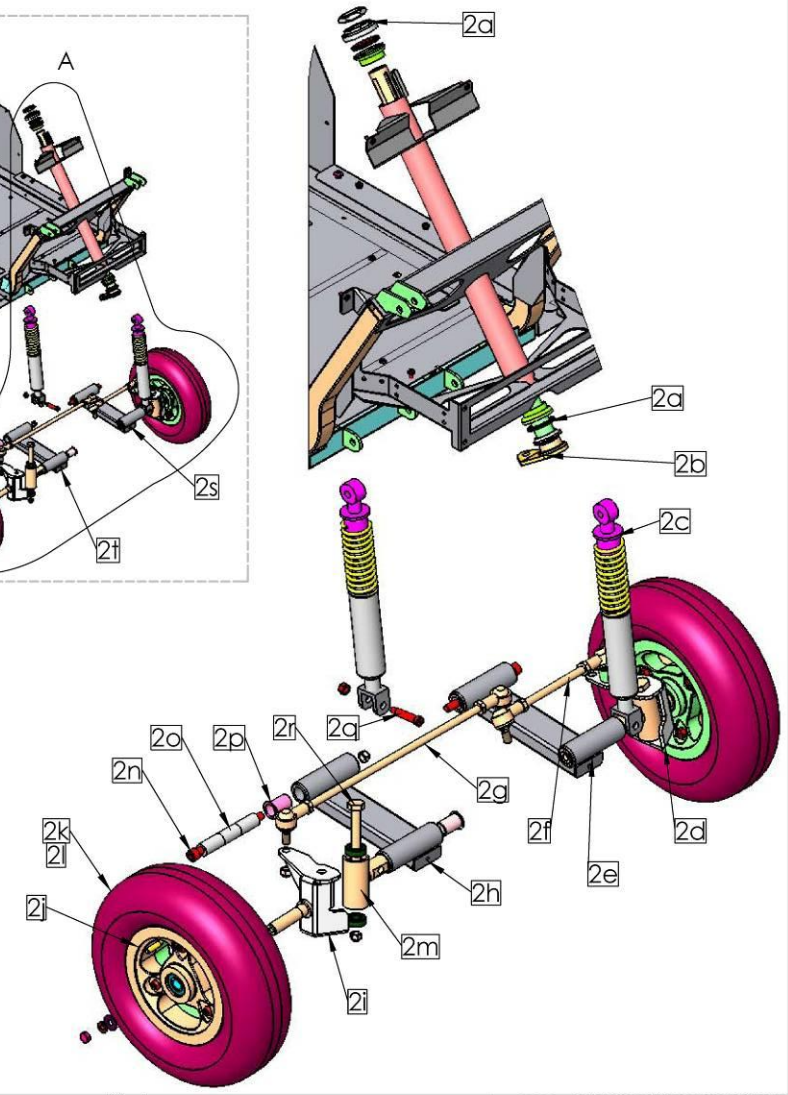

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2t	1	SHOK ABSORB FRONT RIGHT BRZ.4W ASSY.2008	AS4W050	
2s	1	SHOCK ABSORB FRONT LEFT BREEZE 4W ASSY.2008	AS4W051	
2r	2	SCREW SHAFT M8 10*35	SC00330	
2q	2	SHAFT KING PHI BREEZE 4W 2008	MP4W058	
2p	8	BUSHING IGUS GFM-1820-32	HW4W022	
2o	2	BUSHING CHROME 10*18*102 BREEZE 4W 200	MP4W066	
2n	2	HEX.SOC.DIN 912 ST.12.9 GALV. M10*130	SC00340	
2m	2	STEERING GUIDE BREEZE 4W 2008	MP4W059	
2l	2	TUBE 3.00/3.50-10 90 DEG.VALVE	HWBR004	
2k	2	TIRE KT-928 300-10 4PR	HW00124	
2j	2	RIM FOR FRONT WHEEL 3-10 BREEZE	MPBR002	
2i	1	KING PIN RIGHT BREEZE 4W 2008	MP4W067	
2h	1	TRAIL ARM RIGHT BREEZE 4W 2008	AS4W056	
2g	1	LINK JOINT M10 LONG NOR. ASSY.	AS4W069	
2f	1	LINK JOINT M10 SHORT NOR. ASSY.	AS4W070	
2e	1	TRAIL ARM LEFT BREEZE 4W 2008	MP4W062	
2d	1	KING PIN LEFT BREEZE 4W 2008	MP4W057	
2c	2	SHOK OBSORB.FRONT BREEZE 4W	MP4W054	
2b	1	STR.SH.PIS.HAND.BR.4W	MP4W035	
2a	1	THREADAD HEAD SET-7,1-1/8"*26T	ACBR011	

Page:	4	DATE	Scale	tolerance holes d.	tolerance linear	tolerance angular	Drawing no.	Cat. No.	Part name:
Of:	8	2-4-10	X	±0.3	>500mm±1mm <500mm±0.5mm	±1°	nor-br.-s p-4	x	BREEZE S ASSY.

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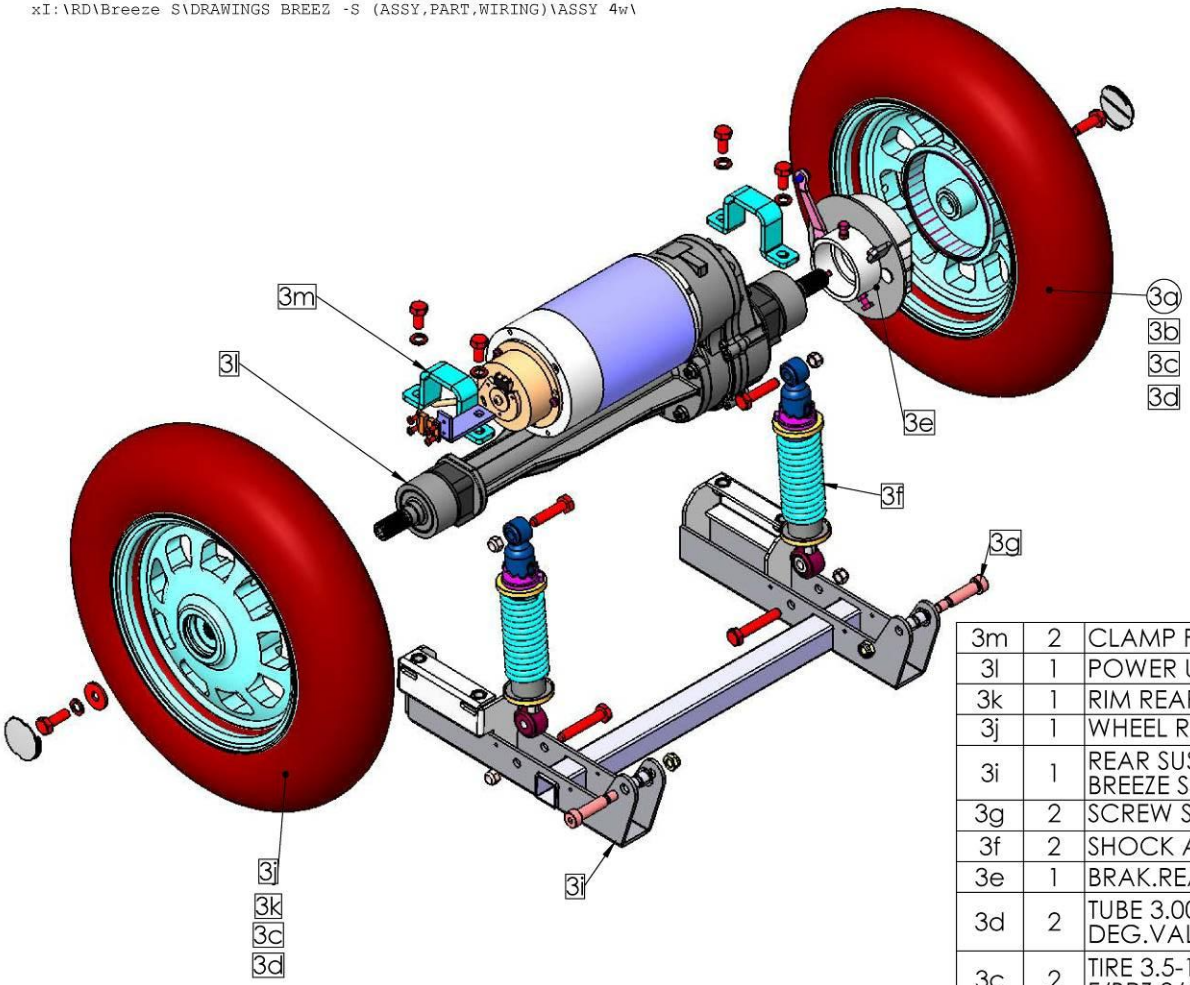

IITEM	QTY.	NAME	PART/NO	REMARK
3m	2	CLAMP FOR POWER UN.SE	MP00329	
3l	1	POWER UNIT AFIKIM 10KMH.BRZ.	ASBR132	
3k	1	RIM REAR WHEEL 2.5-10	MPBR006	
3j	1	WHEEL REAR 4W F/NOR.	AS4W029	
3i	1	REAR SUSPENSION POWER UNIT BREEZE S3/	MPS4013	
3g	2	SCREW SHAFT M10 12*40	SC00356	
3f	2	SHOCK ABSORBER BACK BREEZE	ACBR039	
3e	1	BRAK.REAR BRZ.4W ASSY.	AS4W011	
3d	2	TUBE 3.00/3.50-10 90 DEG.VALVE	HWBR004	
3c	2	TIRE 3.5-10 HF-203-2 DURO F/BRZ.3/4W NOR.	HWBR027	
3b	1	RIM RE.WH.10-2.5+BRAK.	MP4W017	
3a	1	WHEEL RE.LEF.4W F/NOR.	AS4W030	

Page: 5	DATE	Scale	tolerance holes d.	tolerance linear	tolerance angular	Drawing no.	Cat. No.	Part name:
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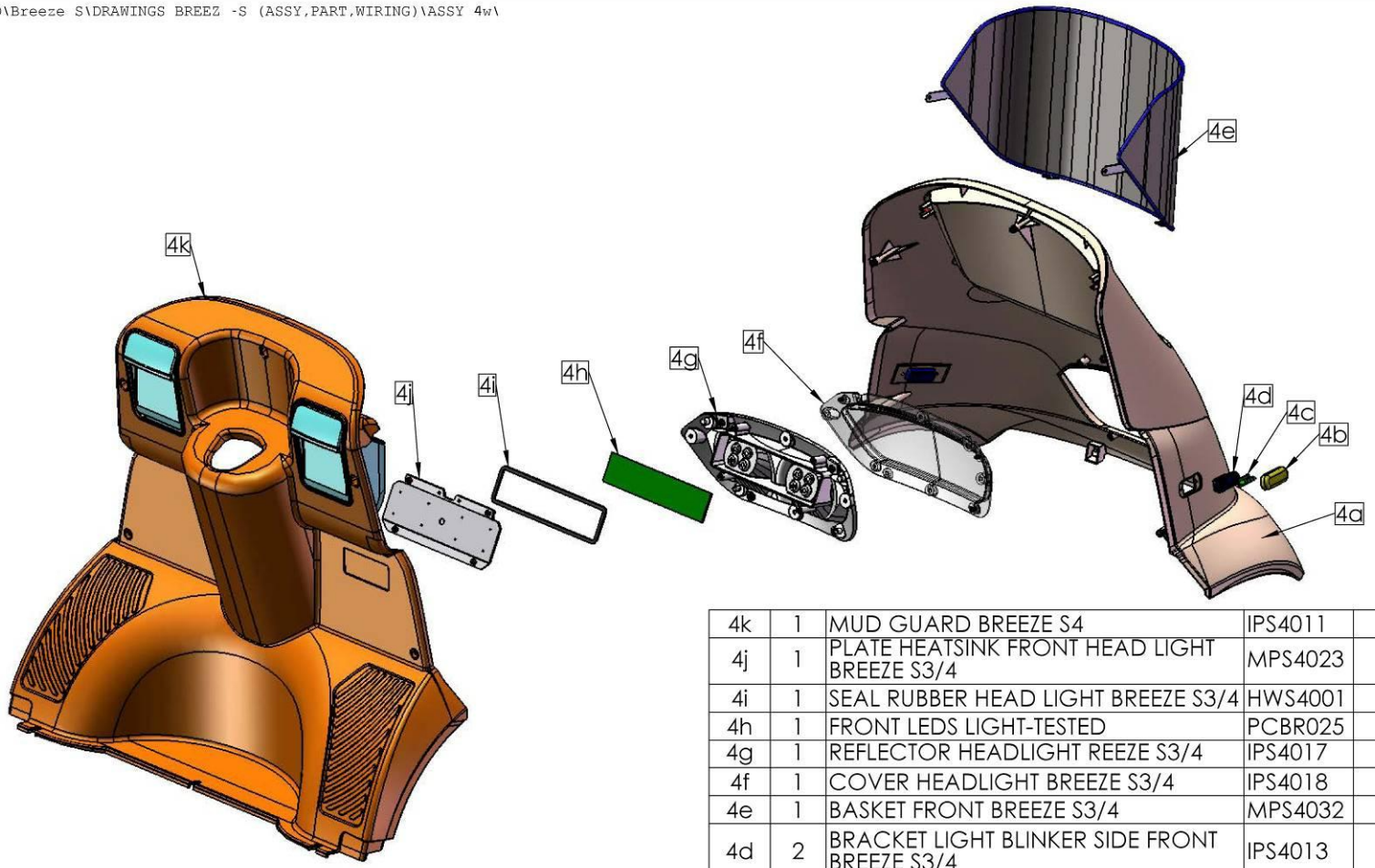

IITEM	QTY.	NAME	PART/NO	REMARK
4k	1	MUD GUARD BREEZE S4	IPS4011	
4j	1	PLATE HEATSINK FRONT HEAD LIGHT BREEZE S3/4	MPS4023	
4i	1	SEAL RUBBER HEAD LIGHT BREEZE S3/4	HWS4001	
4h	1	FRONT LEDS LIGHT-TESTED	PCBR025	
4g	1	REFLECTOR HEADLIGHT REEZE S3/4	IPS4017	
4f	1	COVER HEADLIGHT BREEZE S3/4	IPS4018	
4e	1	BASKET FRONT BREEZE S3/4	MPS4032	
4d	2	BRACKET LIGHT BLINKER SIDE FRONT BREEZE S3/4	IPS4013	
4c	2	FRONT LED BLINKER-TESTED	PCBR022	
4b	2	COVER LIGHT BLINKER SIDE FRONT REEZE S3/4	IPS4014	
4a	1	COVER FRONT BREEZE S4	IPS4015	

Page: 6	DATE	Scale	tolerance holes d.	tolerance linear	tolerance angular	Drawing no.	Cat. No.	Part name:
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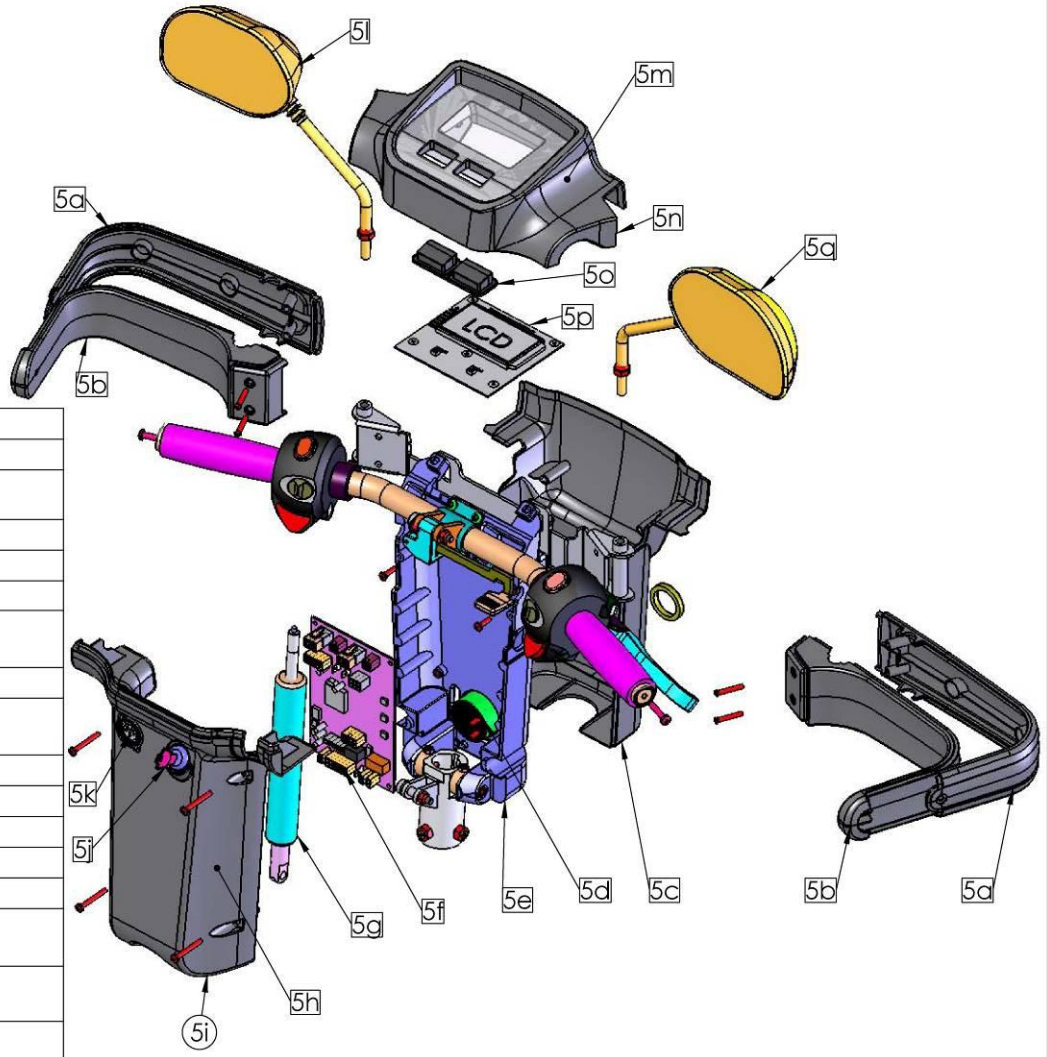

IITEM	QTY.	NAME	PART/NO	REMARK
5q	1	MIRROR RIGHT F/BREEZE	ACBR018	
5p	1	LCD DISPLAY F/BREEZE	PCBR021	
5o	1	BUTTON OPERATING TILLER BREEZE S3/4	HWS4002	
5n	1	COVER TOP TILLER BREEZE S3/4	IPS4021	
5m	1	COVER TILLER TOP ASSY.	ASS4022	
5l	1	MIRROR LEFT F/BREEZE	ACBR017	
5k	1	HARNESS CHARGING SOCKET BREEZE S3/4	ASS4003	
5j	1	KEYSWITCH BREEZE ASSY.	ASBR008	
5i	1	COVER BACK TILLER BREEZE S3/4	IPS4023	
5h	1	COVER TILLER INSIDE ASSY.	ASS4021	
5g	1	PIST.GAZ SP.HANDL.BRZ.	MPBR093	
5f	1	FRONT BOARD BREEZE S	PCS4001	
5e	1	TILLER ASSY. BRZ. S 3/4	ASS4020	
5d	1	BUZZER BREEZE ASSY.	ASBR007	
5c	1	COVER FRONT TILLER BREEZE S3/4	IPS4022	
5b	1	HAND SHIELD BACK TILLER BREEZE S3/4	IPS4025	
5a	1	HAND SHIELD FRONT TILLER BREEZE S3/4	IPS4024	

Page:	7	DATE	Scale	tolerance holes d.	tolerance linear	tolerance angular	Drawing no.	Cat. No.	Part name:
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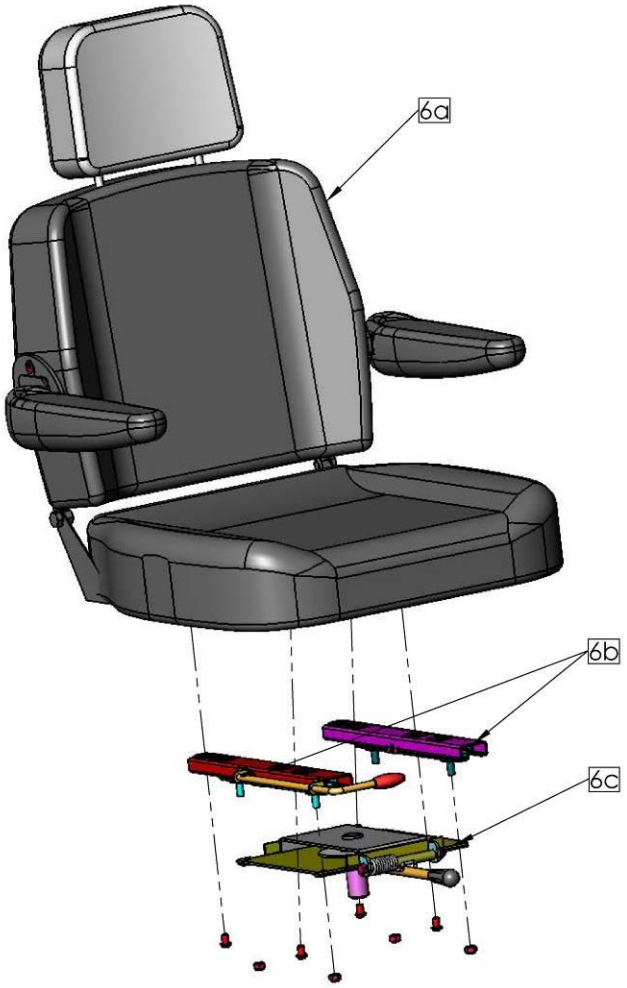

IITEM	QTY.	NAME	PART/NO	REMARK
6c	1	BASE SEAT BREEZE NEW	MPBR087	
6b	1	SLIDERS-ROODIN SET	ACBR010	
6a	1	SEAT BREEZE+ARMREST	SEBR001	

Page: 8	DATE	Scale	tolerance			Drawing no.	Cat. No.	Part name:
			holes d.	linear	angular			
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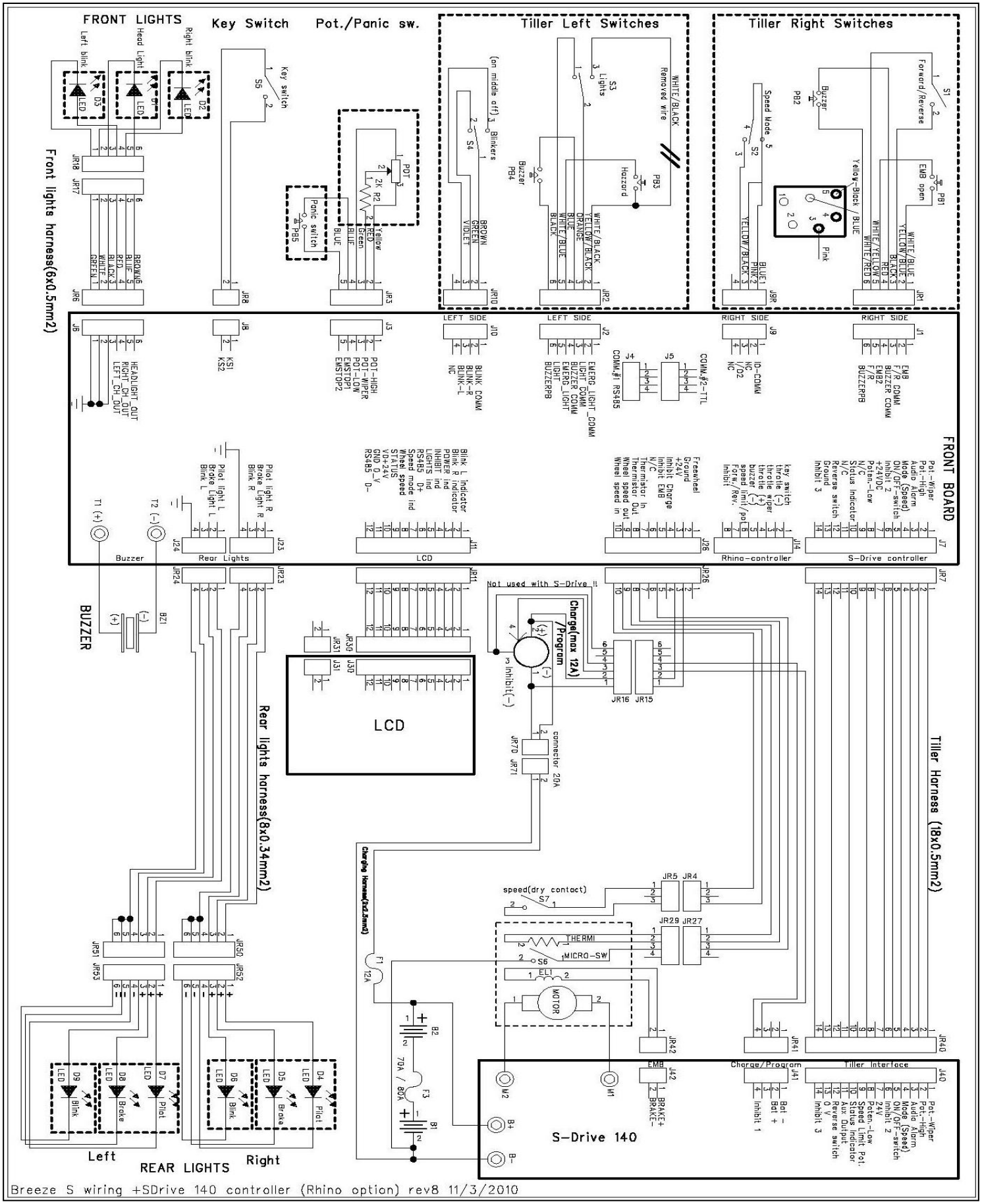
14. Electrical diagrams

a. General Wiring diagram



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