

SOLAR
DRIVE



01-1-0010-01
S2E & S2F Mounting Kit
Version 1.9

Introduction



Thank you for choosing a genuine SolarDrive product

At SolarDrive, we take pride in keeping our standards high. Based on genuine Scandinavian design and tradition our focus is always on top quality in all aspects and on continuous drive for even greener solutions.

For the genuine SolarDrive products we have made the choice of durable and reliable materials and the finished products undergo a thorough quality check before leaving our factories.

Despite our ongoing efforts towards perfection, errors can happen and damage can occur during transport. Contact your local SolarDrive distributor or the SolarDrive sales department immediately should you find our product dissatisfactory in any way or in case of transportation damages. Please find an updated list of agents on our homepage www.solardrive.com

We appreciate your opinion. Feel free to write or call if you have any suggestions and please share with us and other users your SolarDrive experiences at info@solardrive.com.

Sharing is caring for a greener world.

The SolarDrive Team

Content

Cover page	1
Introduction	2
Contents	3
Owner's manual	4
Warranty	5
Installation manual	9
01 step Content of the S2E/S2F box	9
02 step Preparing the strut brackets	10
03 step Sliding the struts into position	11
04 step Mounting the S2E/S2F on the front struts	13
05 step Mounting the S2E/S2F on the rear struts	14
06 step Mounting the lower strut reinforcement	15
07 step Mounting the upper strut reinforcement	16
08 step Adjusting voltage to 48 volts	17
09 step Connecting models with 6x8 batteries	18
10 step Connecting models with 4x12 batteries	20
11 step Plugging in the S2E/S2F	22
12 step MPPT & charge controller	23
Assembly Complete	26
Spec	27
Dimensions	28

Owner's Manual

USE AND CARE of your S2E/S2F SolarDrive Roof:

1. Use a soft damp micro fibre cloth to clean the solar panels daily.
2. **Do not** use alcohol or any other unauthorized cleaning solutions on the S2E or S2F.
3. **Do not** immerse the S2E or S2F or any parts hereof in water.
4. **Do not** spray or high pressure clean, with water, the roof or any parts hereof.
5. Dry the S2E or S2F with a dry micro fibre cloth should it get damp or wet.
6. During long-term storage of the S2E or S2F without solar exposure, the golf cars batteries should regularly be charged to avoid damage to the batteries.
7. Depending on geographical operation area, check the golf cars battery water level according to battery manufacturer's directions.
8. Performance of the solar-canopy depends on adherence to the maintenance instructions of the golf car and battery manufacturer.
9. Always secure correct tyre pressure according to manufacturer's instructions, for optimal performance of the unit.

If you have a problem, which you believe requires service, please call first and speak with a service technician at your point of purchase or local distributor. A phone call to your local dealer will bring a solution to most of your questions.

WARNING: Do not handle or touch broken glass if the S2E glass solar panels for any reason should shatter. Contact the professionals - your dealer or distributor.

SolarDrive Original accessories and professional cleaning and polishing kits, are available at your local distributor.

Note: SolarDrive Features & Specifications are subject to change without notice. SolarDrive do not in any case directly or indirectly bear any responsibility or liability with respect to any occurrences or accidents that may occur.

Warranty

Limited Warranty for SolarDrive Solar Systems model S2E/S2F

This Limited Warranty applies to photovoltaic solar system model S2E/S2F manufactured by SolarDrive Corporation or an affiliated company, warrants the quality of such SolarDrive S2E/S2F System and specifies the scope of such warranty.

A. One Year Limited Warranty

SolarDrive warrants the S2E/S2F System to be free from the defects and/or failures specified below for a period not exceeding one (1) year from the date of sale to the original customer ("Customer"):

- 1) Defects and/or failures due to manufacturing;
- 2) Defects and/or failures due to materials;
- 3) Cracking of the front glass surface due to foreign objects inside the glass;
Note: This limited warranty shall exclude cracking of the front glass surface due to external shock, including, but not limited to, shocks from flying objects or external stress.
- 4) Non-conformity to specifications due to faulty manufacturing and/or inspection processes.

If the S2E/S2F System fails to conform to this warranty, SolarDrive will repair or replace the S2E/S2F System or affected parts, at SolarDrive's sole option.

B. Limited Power Output Warranty of 2 years

Subject to SolarDrive determining in its sole discretion that any power loss is due solely to defects in materials or workmanship, SolarDrive warrants the power output of the S2E/S2F System as follows: SolarDrive warrants that if, (a) within the first two (2) years from the date of sale to the Customer the S2E/S2F System exhibits a power output of less than eighty percent (80%) of the original minimum rated power specified at the time of sale*, SolarDrive will deliver an exchange S2E/S2F solar module to replace the missing power output, or repair or replace the S2E/S2F System or part hereof, at SolarDrive's sole option.

*The power output values shall be those measured under SolarDrive's standard measurement conditions.

C. Warranty Exclusions

- 1) No claim based on this Limited Warranty may be brought after the applicable warranty period. Any delivery of additional S2E/S2F Systems or the repair or replacement of the S2E/S2F Systems or parts hereof, shall not extend the original terms of this Limited Warranty.
- 2) This Limited Warranty shall not cover defects and/or failures of the S2E/S2F Systems from the following causes even though such defects and/or failures are discovered within the applicable warranty period:
 - a) Defects and/or failures caused by devices and/or parts other than the original SolarDrive parts and S2E/S2F Systems or by mounting methods of such devices and/or parts;
 - b) Defects and/or failures caused by defective wiring, installation, or handling;

- c) Defects and/or failures caused by installations not in conformance with S2E/S2F Systems specifications, Installation Guide, User Guide and Owner's Manual, or labels carrying warnings or additional instructions attached to the System;
 - d) Defects and/or failures caused by unauthorized maintenance, operation or modification;
 - e) Defects and/or failures caused by removal from the original place of installment;
 - f) Defects and/or failures caused by repairs not in accordance with SolarDrive's instructions;
 - g) Defects and/or failures caused by inappropriate handling during transportation or storage;
 - h) Defects and/or failures caused by unintended use;
 - i) Defects and/or failures caused by external accidents including, but not limited to, collisions, fire, explosion, and civil disorder;
 - j) Defects and/or failures caused by natural forces, force majeure events and other unforeseen circumstances or causes beyond SolarDrive's reasonable control including, but not limited to, earthquakes, typhoons, hurricanes, tornadoes, volcanic action, floods, tsunami, lightning, snow damage, excessive heat etc.; or
 - k) Defects and/or failures caused by smoke and/or other pollution, salt damage, acid rain, etc.
- 3) This Limited Warranty covers only the transportation cost for reshipment of any repaired or replaced S2E/S2F System or parts hereof to the applicable location, and does not cover the transportation cost for return of the S2E/S2F System to SolarDrive or SolarDrive's authorized distributor and costs associated with installation, removal, or reinstallation of the S2E/S2F System.

D. Obtaining Warranty Performance

- 1) This Limited Warranty is applicable only to Customers who have purchased the S2E/S2F System directly from SolarDrive or from an authorized distributor of SolarDrive. To qualify for this warranty, it is necessary for the Customer to prove that the S2E/S2F System was purchased from SolarDrive or such authorized distributor.
- 2) When applying for warranty coverage, please provide SolarDrive or SolarDrive's authorized distributor with the S2E/S2F System model name, a description of the defect and/or failure, and the serial number located laser engraved on the S2E/S2F System at the time of manufacture.
- 3) Any uninstalled S2E/S2F System or parts shall become the property of SolarDrive when replaced on warranty. SolarDrive shall have the right to deliver another type of S2E/S2F System (different in size, color and shape but of the same or stronger power performance) if SolarDrive has discontinued manufacture of the S2E/S2F System in question at the time the warranty claim is accepted.
- 4) This Limited Warranty is transferable to a new owner of the location where the S2E/S2F System were originally installed, provided that the S2E/S2F system remain installed at the location where originally installed.

E. Warranty Limitations

THE LIMITED WARRANTY SET FORTH HEREIN IS EXPRESSLY IN LIEU OF AND EXCLUDES ALL OTHER EXPRESS OR IMPLIED WARRANTIES INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF SOLARDRIVE, UNLESS SUCH

OTHER WARRANTIES, OBLIGATIONS OR LIABILITIES ARE EXPRESSLY AGREED TO IN WRITING BY SOLARDRIVE. SOLARDRIVE SHALL HAVE NO RESPONSIBILITY OR LIABILITY WHATSOEVER FOR DAMAGES OR INJURY TO PERSONS OR PROPERTY, OR FOR OTHER LOSS OR INJURY RESULTING FROM ANY CAUSE WHATSOEVER ARISING OUT OF OR RELATING TO THE S2E/S2F SYSTEM AND RELATED COMPONENTS AND/OR INSTALLATIONS, INCLUDING WITHOUT LIMITATION, ANY DEFECTS AND/OR FAILURES IN THE S2E/S2F SYSTEM OR FROM USE OR INSTALLATION. SOLARDRIVE SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR ANY INCIDENTAL, INDIRECT, CONSEQUENTIAL OR SPECIAL DAMAGES, HOWSOEVER CAUSED. IN NO EVENT, SHALL SOLARDRIVE'S AGGREGATE LIABILITY EXCEED THE VALUE OF THE S2E/S2F SYSTEM WHICH IS THE SUBJECT OF A CLAIM OR DISPUTE. S2E/S2F SYSTEMS SOLD IN FLEET SALES WILL VOID WARRANTY IF THEY ARE NOT SERVICED AND MAINTAINED ACCORDING TO THE SOLARDRIVE MAINTENANCE REQUIREMENTS BY AN OFFICIALLY APPOINTED SOLARDRIVE DISTRIBUTOR. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON WARRANTIES OR EXCLUSIONS OR LIMITATION OF DAMAGES. ACCORDINGLY, THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY. THESE WARRANTIES GIVE A CUSTOMER SPECIFIC LEGAL RIGHTS AND A CUSTOMER MAY HAVE OTHER RIGHTS THAT VARY FROM JURISDICTION TO JURISDICTION.

F. Validity

This Limited Warranty shall be valid from Jan 1st, 2014 and shall apply to all S2E/S2F Systems sold to a Customer on or after this date. This Limited Warranty shall be valid until a new revision is issued by SolarDrive.

Warranty Seal

The Maximum Power Point Tracker, MPPT has a warranty seal.

Note

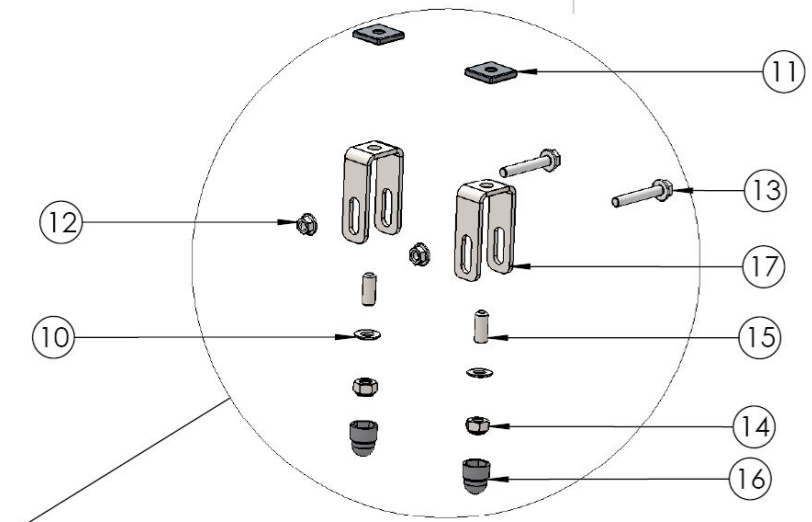
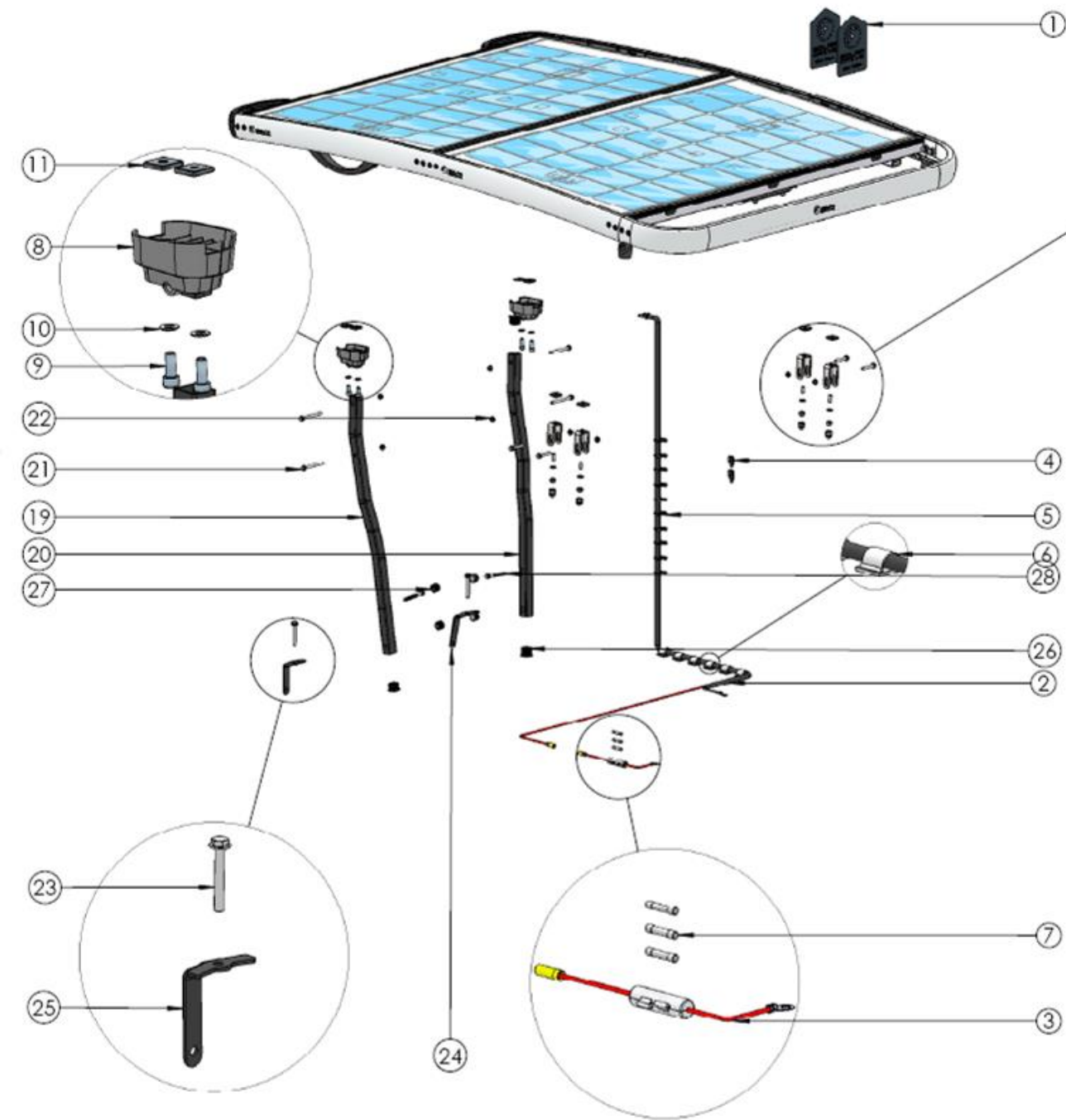
Any tempering with the warranty seal or evidence of attempting to open the MPPT the warranty will void!

1-1-0010-01 S2E & S2F Mounting Kit



Content of the S2E/S2F box

01. Step - Content:



Note After assembly check all joints and screw torques on a weekly base

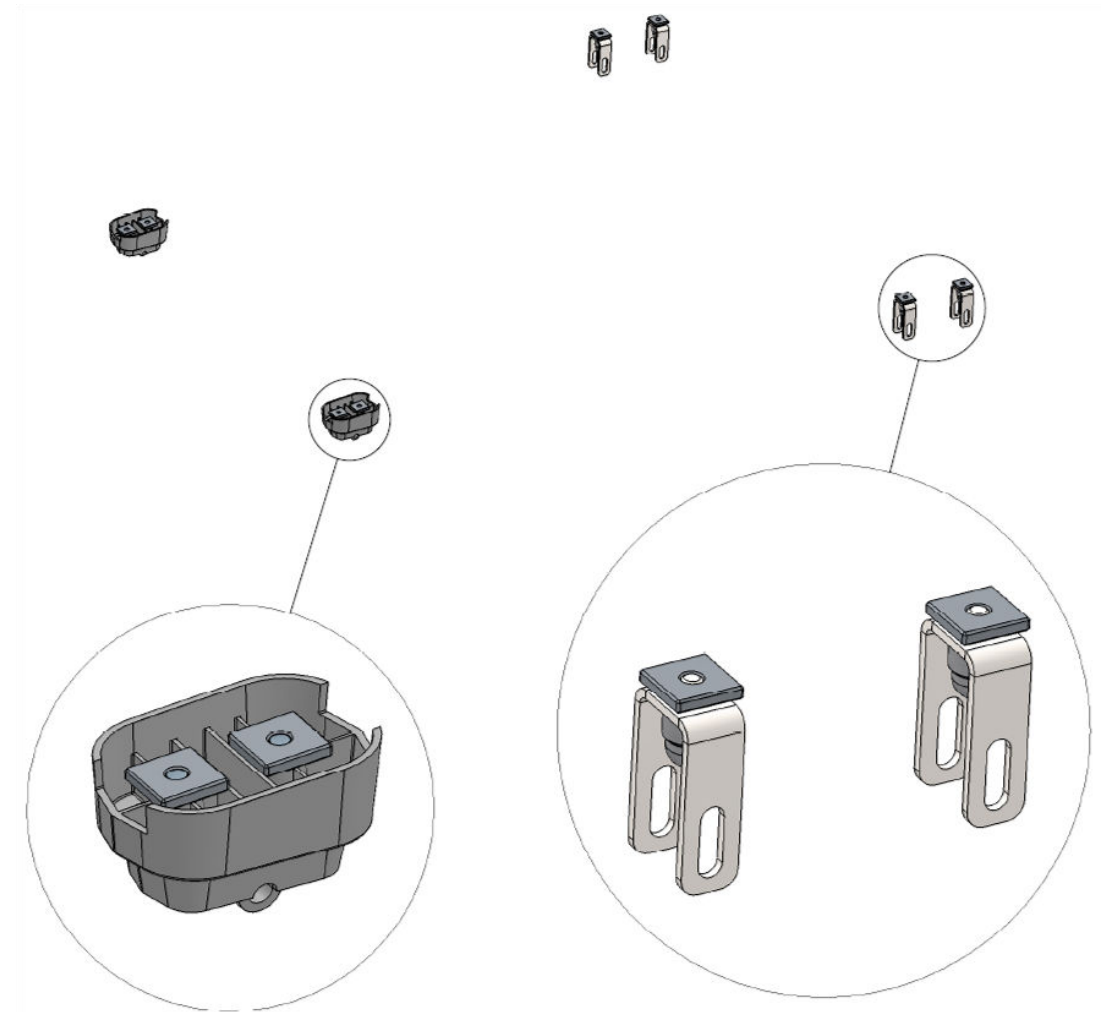
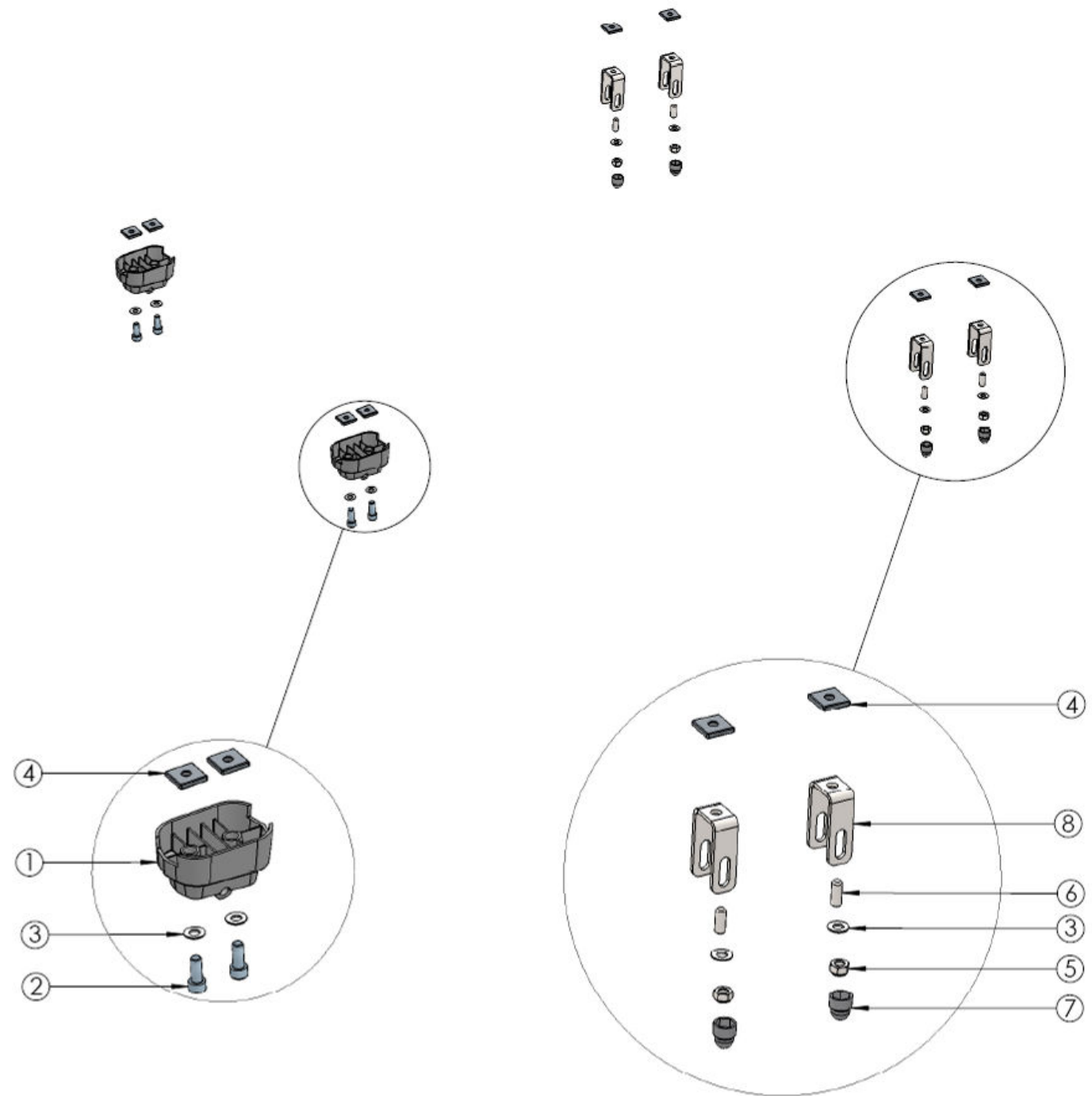
Metric screw/nut torque (Replacement inch screw/nut)
 M6 7.4 Nm (1/4" 8 lbf ft)
 M8 17.9 Nm (5/16" 17 lbf ft)

Note The S2E/S2F box might contain additional parts for different car models please look up your model on our webpage www.solardrive.com or contact your local dealer if you have any questions

ITEM NO.	PART NUMBER	QTY.
1	01-0-0221-00 SolarDrive On Top Sticker	2
2	01-1-0024-01 Wire Controller Battery 2200 mm	1
3	01-1-0028-01 Wire Battery Clamp 250 mm	1
4	01-0-0081-00 Switch Key	2
5	01-0-0134-00 Strip 186 mm RS 666-155	10
6	01-0-0066-00 Wire Clip RS 170-5352	6
7	01-0-0092-00 Fuse 12.5 Amp T Ø6.3x32mm RS 209 9305	3
8	01-0-0062-00 Club Car Precedent Mounting	2
9	01-0-0013-01 M8x20 A2 DIN 912 Socket Head Cap Screw	4
10	01-0-0027-00 M8 A2 DIN 125 Form B Washer	8
11	01-0-0168-00 M8x23,5x23,5x4,5 A2 Nut Squared	8
12	01-0-0215-00 M6 9.8 Black Zink DIN 6923 Flange Nut	4
13	01-0-0222-00 M6x40 9.8 Black Zink DIN 6921 Flange Bolt	4
14	01-0-0014-00 M8 A2 DIN 985 Lock Nut	4
15	01-0-0211-00 M8x20 A2 DIN 913 Pinole Screw Würth Art. No. 0259 8 20	4
16	01-0-0053-01 M8 Plastic Nut Cap	4
17	01-0-0063-01 Mounting Angle	4
18	01-1-0084-01 Club Car Precedent Strut Kit S2E	1
19	01-0-0165-01 Strut Support R - Club Car Precedent 103722801	1
20	01-0-0164-01 Strut Support L - Club Car Precedent 103722802	1
21	01-0-0214-00 M6x70 9.8 Black Zink DIN 6921 Flange Bolt	4
22	01-0-0215-00 M6 9.8 Black Zink DIN 6923 Flange Nut	4
23	01-0-0213-02 M8x55 9.8 Black Zink DIN 6921 Flange Bolt	2
24	01-0-0216-00 Club Car Precedent Support Bracket Left 103795401	1
25	01-0-0217-00 Club Car Precedent Support Bracket Right 103795402	1
26	01-0-0185-00 25 x 25 mm Pipe End	4
27	01-0-0244-00 Ø 20 mm Pipe End	4
28	01-0-0245-00 8x70 Black Zink - Hex Flange Tapping Screw	2

Preparing the strut brackets

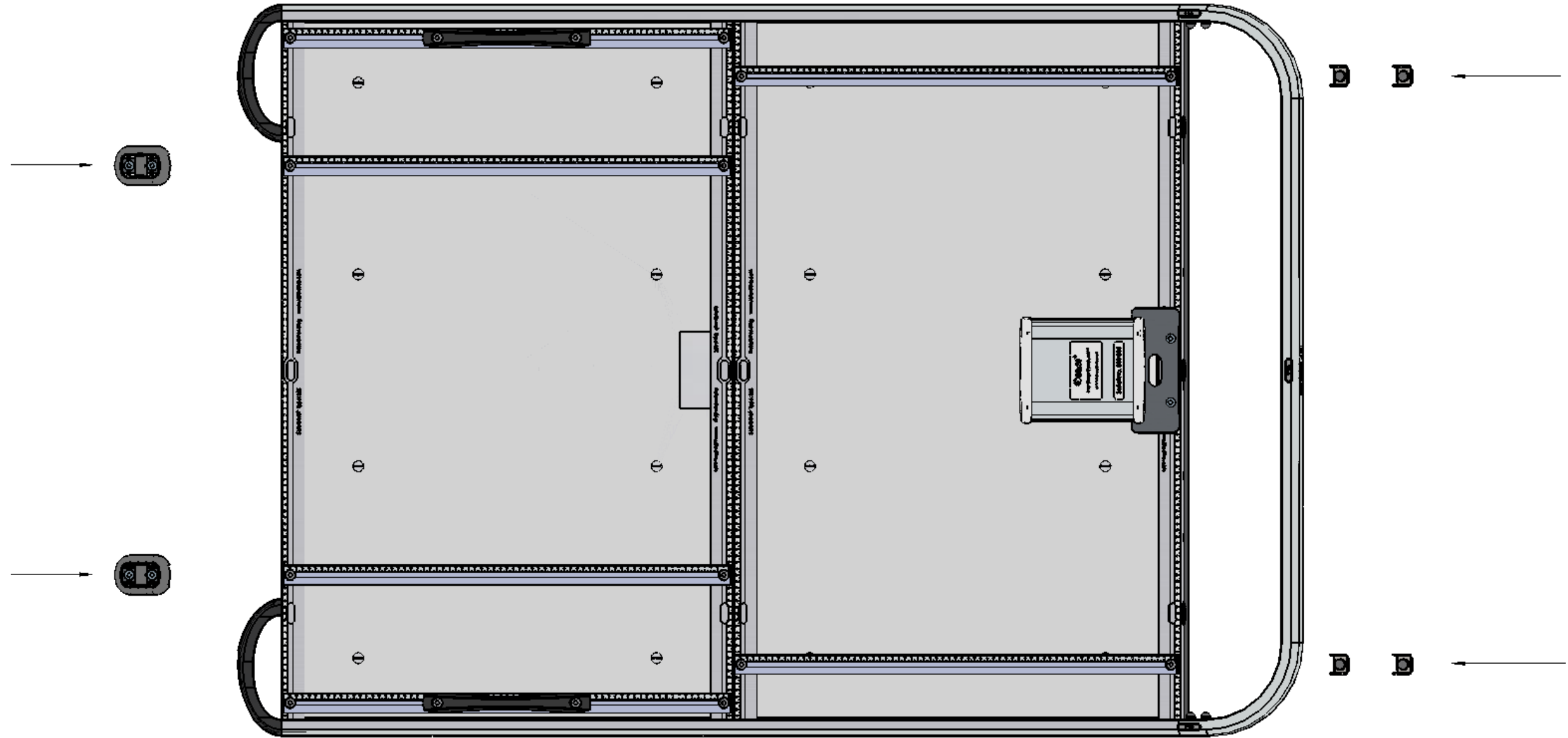
02. Step - Assembly:



ITEM NO.	PART NUMBER	QTY.
1	01-0-0062-00 Club Car Precedent Mounting	2
2	01-0-0013-01 M8x20 A2 DIN 912 Socket Head Cap Screw	4
3	01-0-0027-00 M8 A2 DIN 125 Form B Washer	8
4	01-0-0168-00 M8x23,5x23,5x4,5 A2 Nut Squared	8
5	01-0-0014-00 M8 A2 DIN 985 Lock Nut	4
6	01-0-0211-00 M8x20 A2 DIN 913 Pinole Screw Würth Art. No. 0259 8 20	4
7	01-0-0053-01 M8 Plastic Nut Cap	4
8	01-0-0063-01 Mounting Angle	4

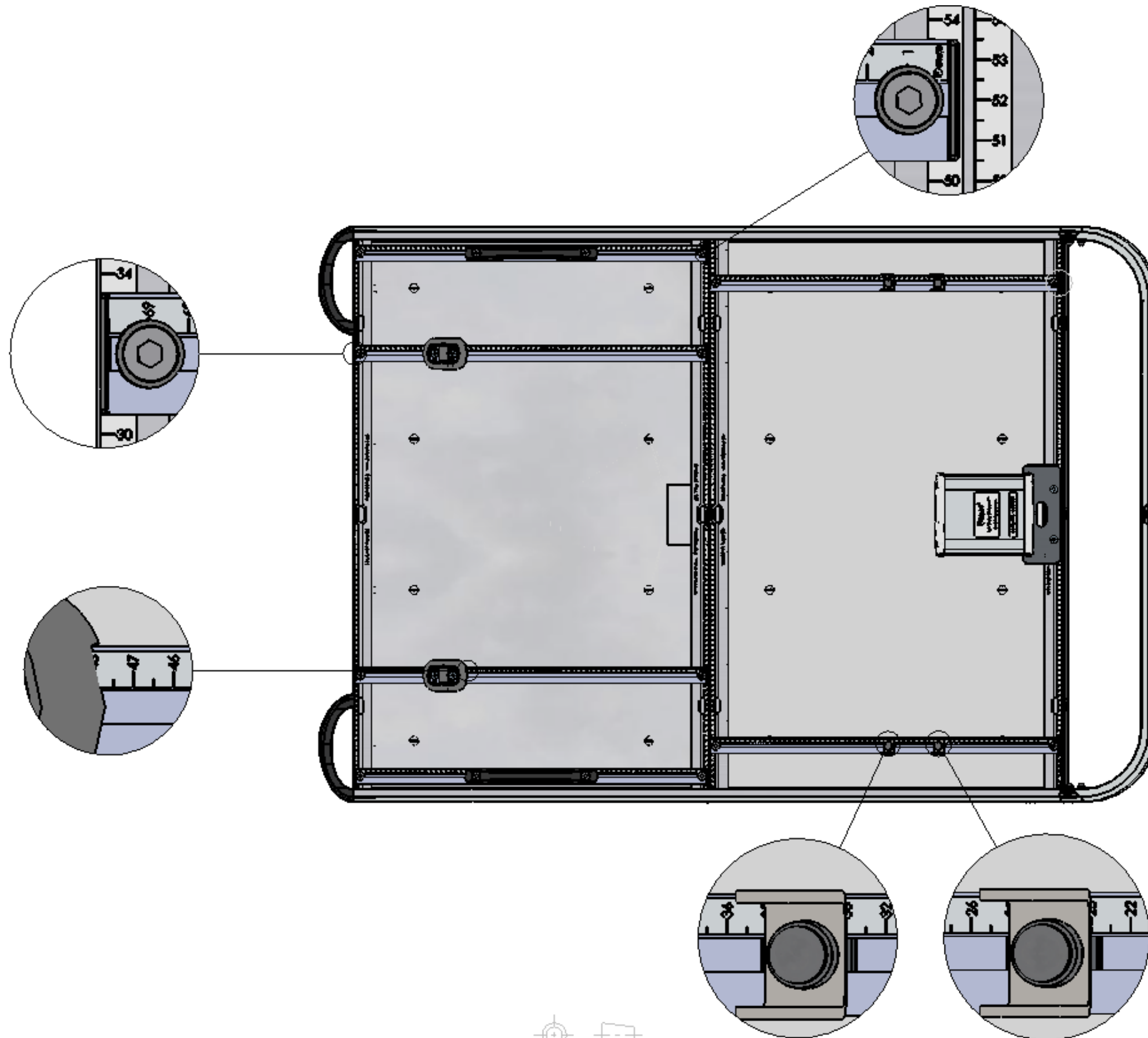
Sliding the strut brackets into position

03. Step - Assembly:



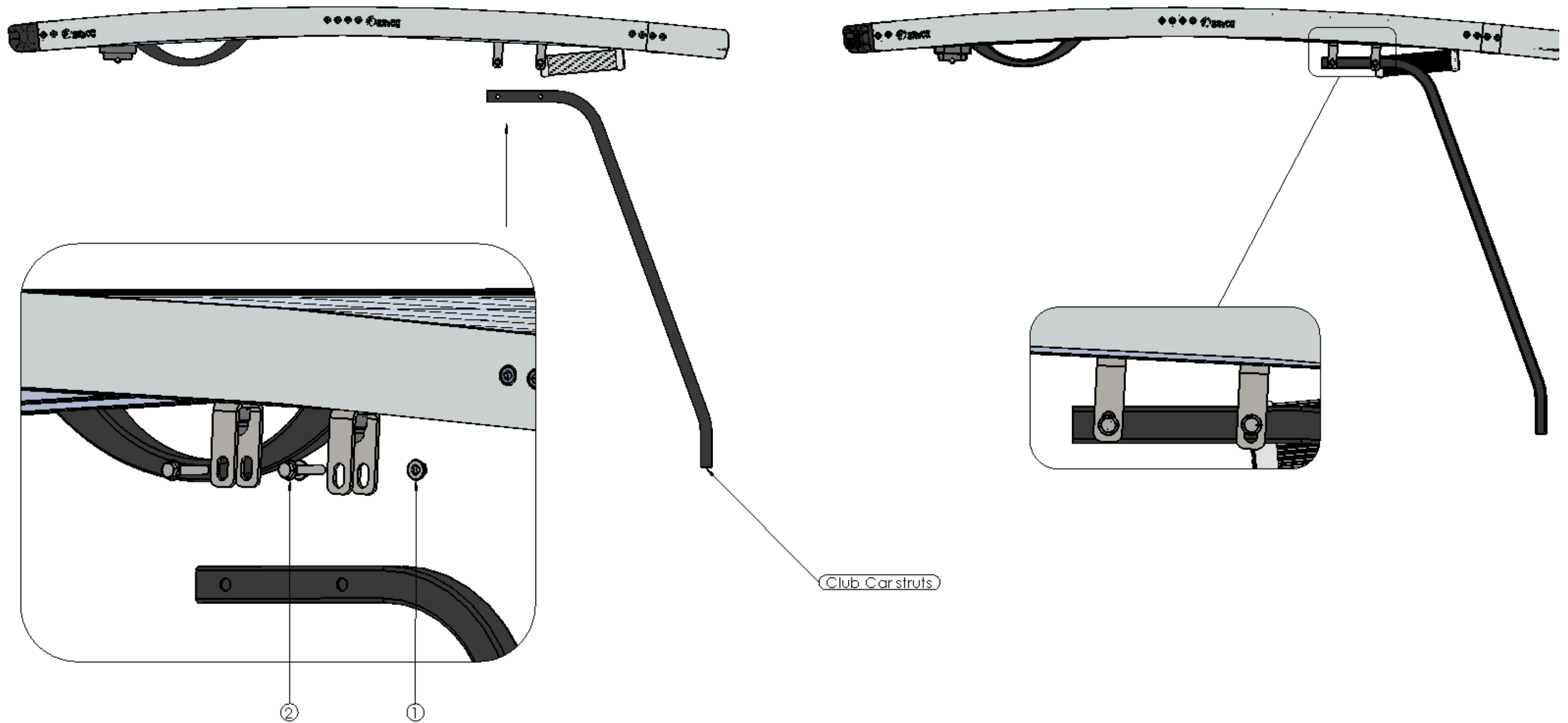
Sliding the strut brackets into position

03. Step - Assembly:



Mounting the S2E/S2F on the front struts

04. Step - Assembly:



ITEM NO.	PART NUMBER	QTY.
1	01-0-0215-00 M6 9.8 Black Zink DIN 6923 Flange Nut	4
2	01-0-0222-00 M6x40 9.8 Black Zink DIN 6921 Flange Bolt	4

Mounting the S2E/S2F on the rear struts

05. Step - Assembly:



Put the battery wire thru the strut before mounting



Reuse club Car screw and nut for mounting

Mounting the lower strut reinforcement

06. Step - Assembly:

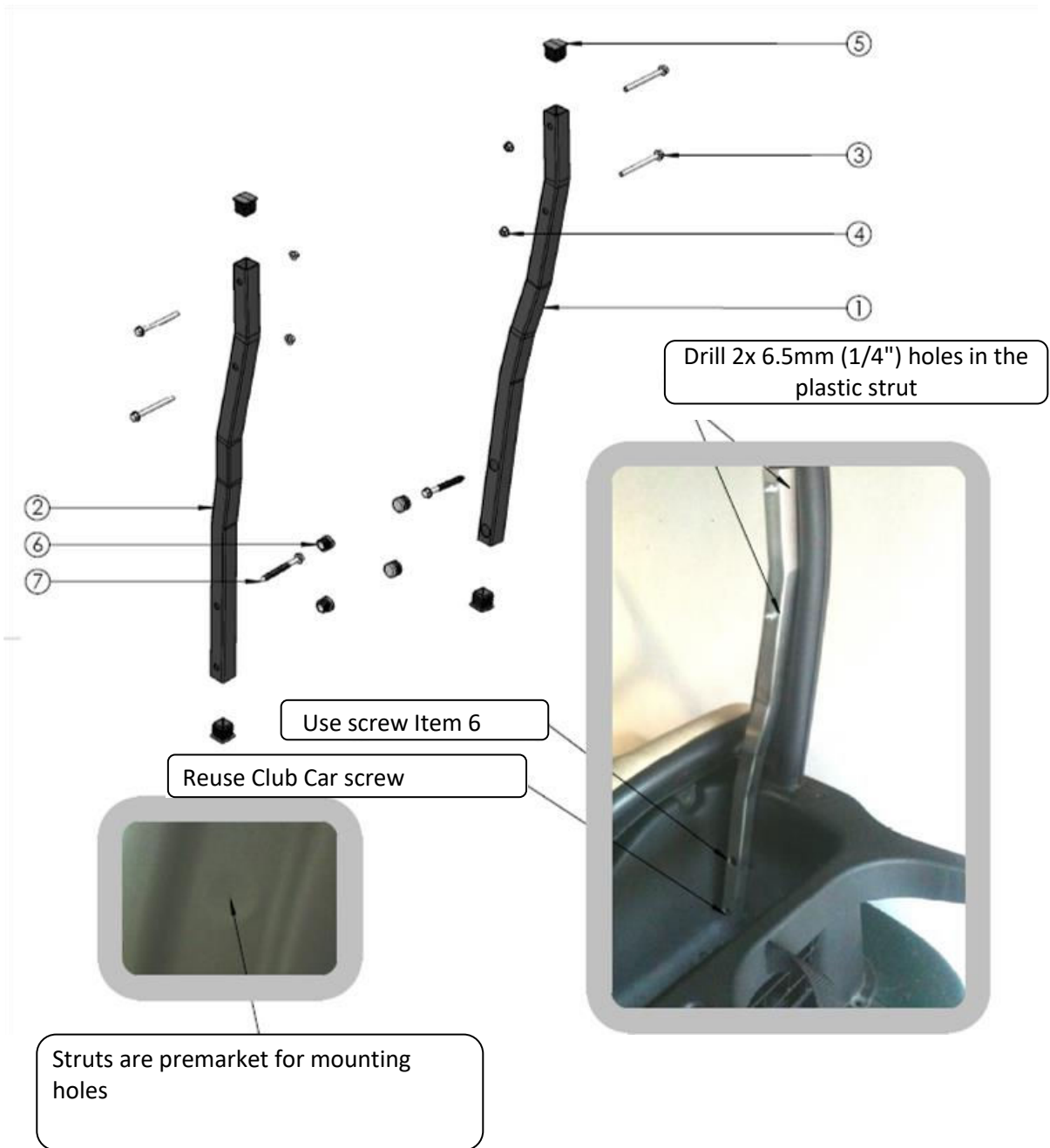


Reuse Club Car screw

ITEM NO.	PART NUMBER	QTY.
1	01-0-0213-02 M8x55 9.8 Black Zink DIN 6921 Flange Bolt	2
2	01-0-0216-00 Club Car Precedent Support Bracket Left 103795401	1
3	01-0-0217-00 Club Car Precedent Support Bracket Right 103795402	1

Mounting the upper strut reinforcement

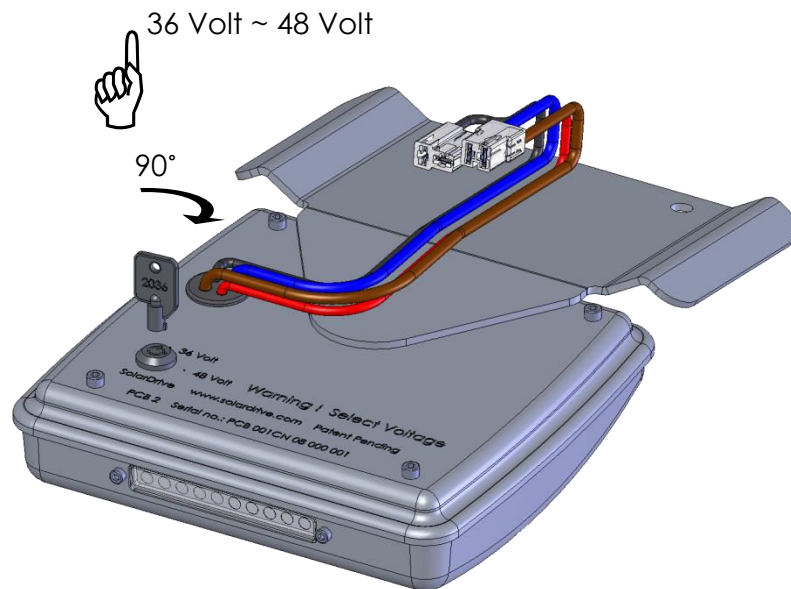
07. Step - Assembly:



ITEM NO.	PART NUMBER	QTY.
1	01-0-0165-01 Strut Support R - Club Car Precedent 103722801	1
2	01-0-0164-01 Strut Support L - Club Car Precedent 103722802	1
3	01-0-0214-00 M6x70 9.8 Black Zink DIN 6921 Flange Bolt	4
4	01-0-0215-00 M6 9.8 Black Zink DIN 6923 Flange Nut	4
5	01-0-0185-00 25 x 25 mm Pipe End	4
6	01-0-0244-00 Ø 20 mm Pipe End	4
7	01-0-0245-00 8x70 Black Zink - Hex Flange Tapping Screw	2

Adjusting voltage to 48 volts

08. Step - Connecting:



Note!

For controllers, up 2016.



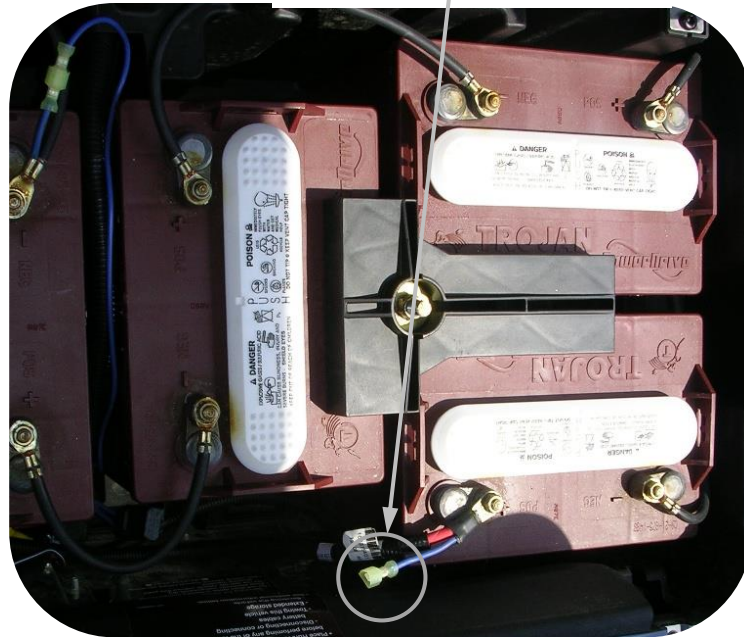
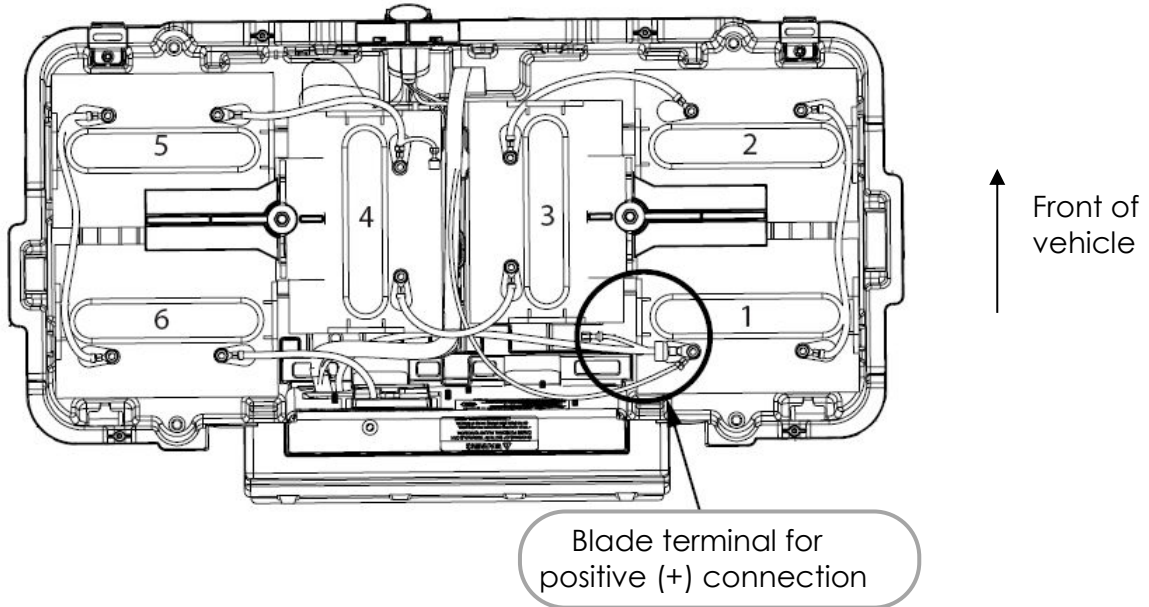
The new controllers automatically adjust to battery voltage.

Connecting models with 6x8 V batteries

09. Step Connecting:

Connecting the positive (+) wire:

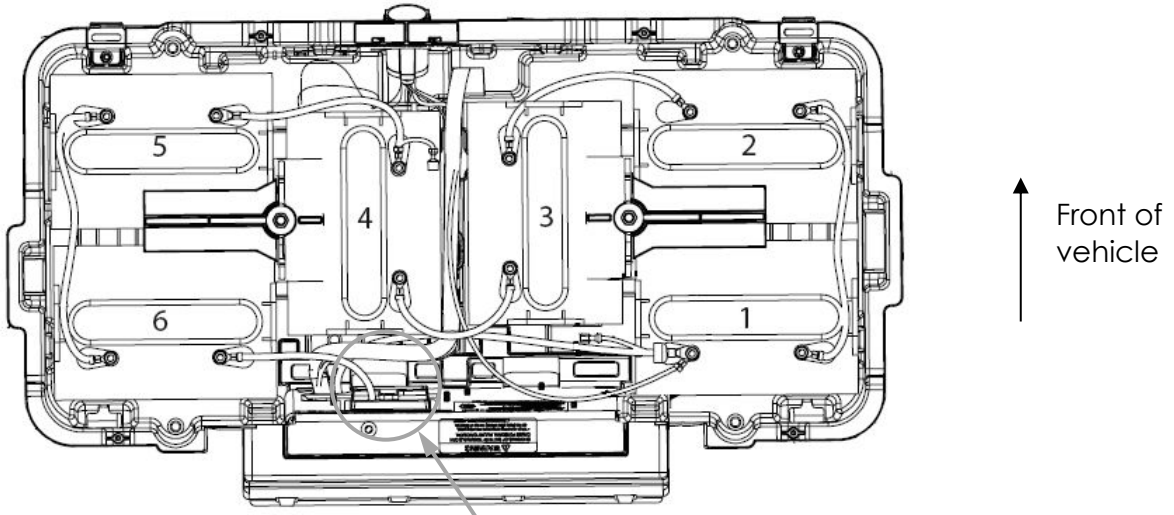
Battery compartment



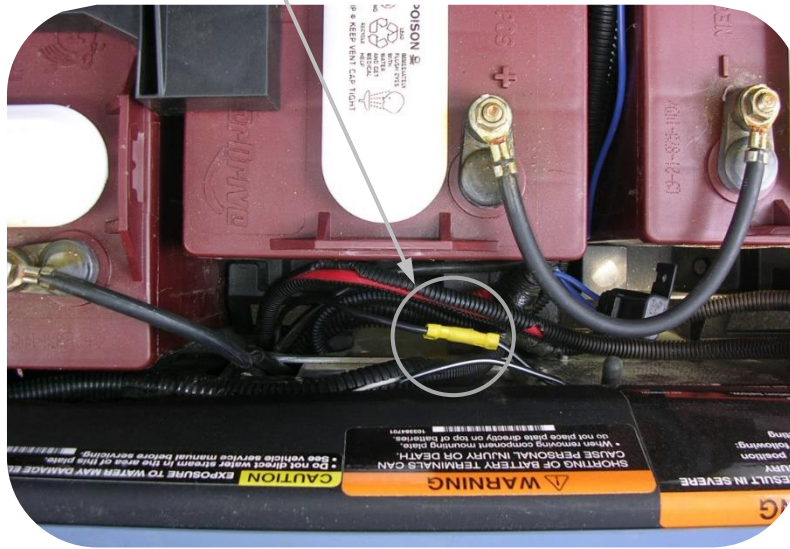
Connecting the negative (-) wire:

Connection is located either in battery compartment or behind electrical component mounting plate (accessed through panel in bag storage area)

Battery compartment

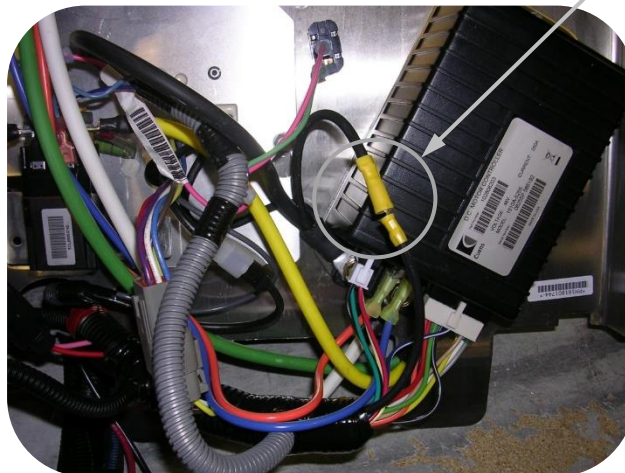


Negative (-) connection



Electrical component mounting plate

Negative (-) connection



View through rear access panel

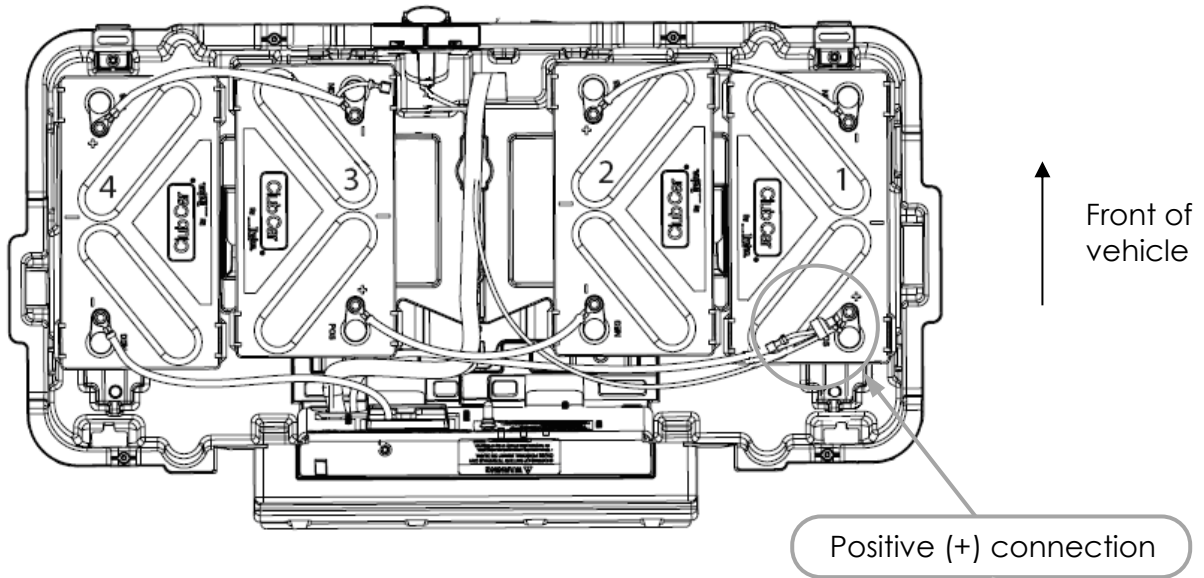
Connecting models with 4x12 V batteries

10. Step Connecting:

Connecting the positive (+) wire:

Precedent vehicles manufactured after Jan 2, 2008 (4x12volt battery configuration)

Battery compartment



Connecting the negative (-) wire:

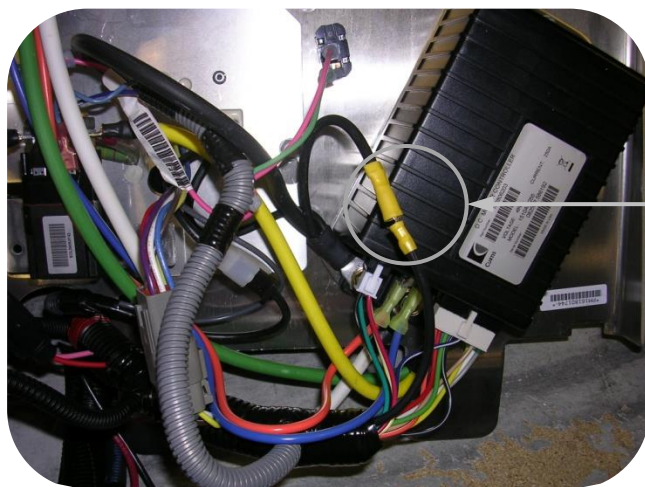
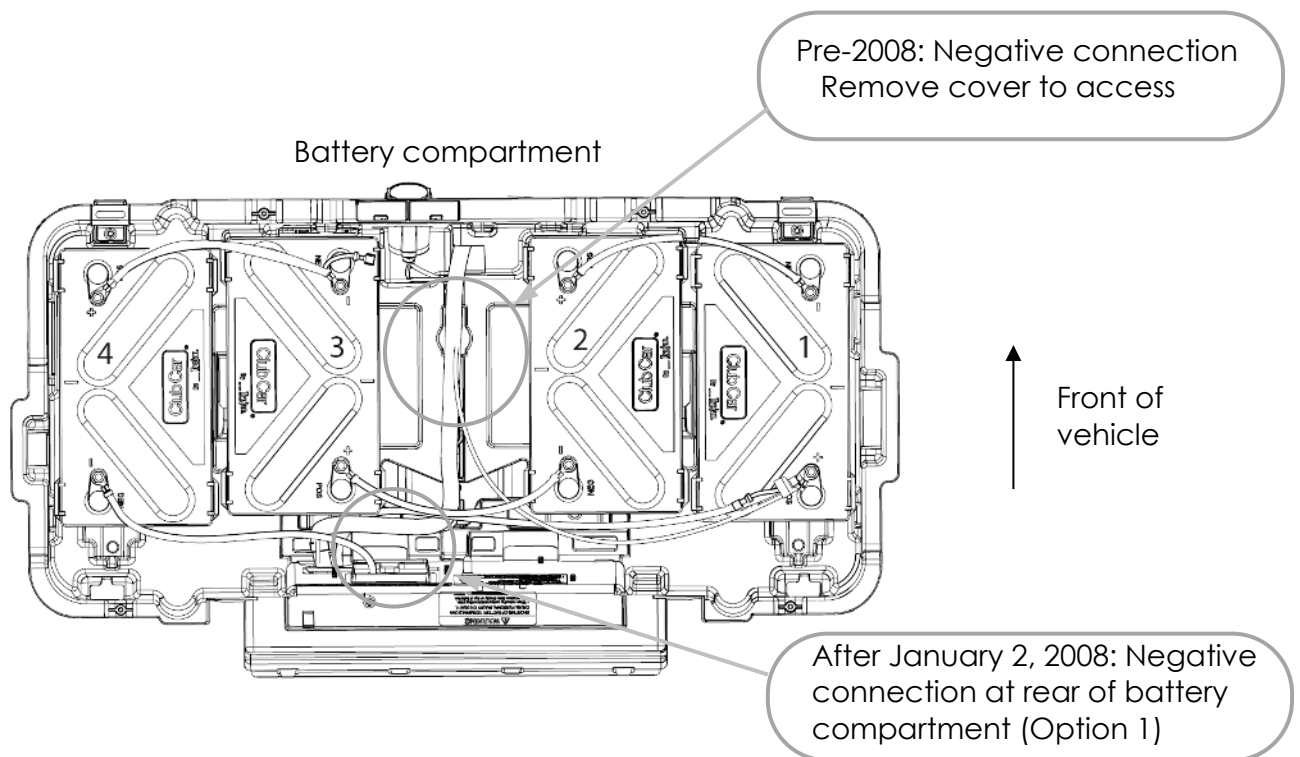
Vehicles manufactured prior to 2008:

Remove centre cover in battery compartment to access black wire.

Vehicles manufactured after January 2, 2008:

Negative connection is located either:

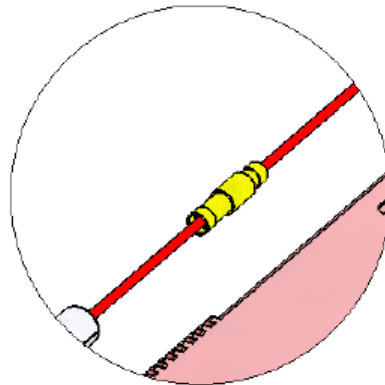
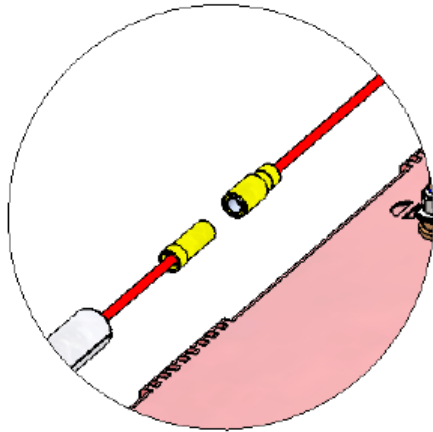
- at the rear of the battery compartment
- behind electrical component mounting plate (access through panel in bag storage area)



Electrical component mounting plate as viewed through rear access panel

Plugging in the S2E/S2F

11. Step Connecting:



Alternative fuse and battery connector

S2E MPPT and charge controller

12. Step - MPPT and charge controller:

S2E – S2F MPPT (Maximum Power Point Tracker)
Battery charge control

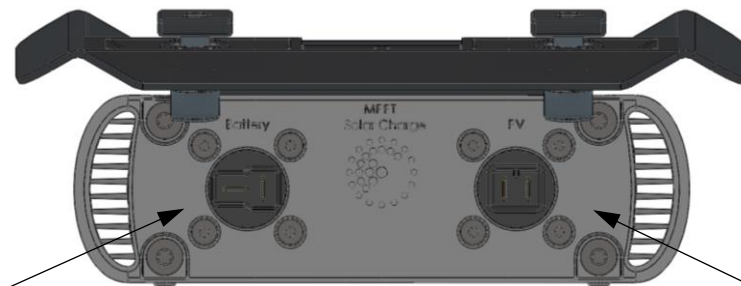


Perspective view



Display

Front view



Connect to battery

Rear View

Connect to PV

S2F MPPT and charge controller

12. Step - MPPT (Maximum Power Point Tracker) and battery charge control with LCD display



Version identification:

SOLAR DRIVE
VERSION R051

PV: Photo Voltaic voltage
BATT: Battery voltage
xxxW: Charge power in Watt
xx.xA: Charge current in Amps

PV: 20.3V 040W
BATT 49.8V 00.8A

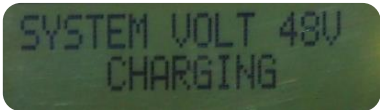
Low solar radiation:

PV: 10.7V 000W
BATT 49.3V 00.0A

CO2 SAVE:
Accumulated carbon dioxide (CO₂) savings
ACC POWER:
Accumulated power production in KWh

CO2 SAVE 07.6Kg
ACC POWER 12.8KWH

State of MPPT:



SYSTEM VOLT 48V
CHARGING

System voltage description:

BATT UNDER VOLT:

Battery voltage is out of range.

PV UNDER VOLT:

Solar panel voltage is below 14 V

BATT FULL:

Battery fully charged, the MPPT will stop charging. The MPPT automatically reduces charging power when batteries are close to full.

PREPARE CHARGE:

MPPT will start charging in a few seconds

CHARGING:

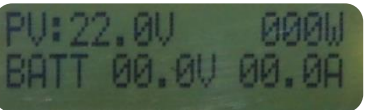
Solar power is delivered to batteries



SYSTEM VOLT 48V
BATT UNDER VOLT

BATT 00.0V 00.0A:

Battery is disconnected.



PV: 22.0V 000W
BATT 00.0V 00.0A

Assembly complete

Last step:



Enjoy

Troubleshooting

If you should ever encounter problems with the power production or charging functionality of the SolarDrive S2E please use the following troubleshooting steps to rule out any easily solved causes. Not all steps may seem relevant in your given situation but please check them anyway.

1. FUSE – is the fuse on the red wire near the battery ok?
2. BATTERIES – are they ALL in good condition and equally charged?
3. BATTERIES – do they charge as supposed using the factory charger?
4. CONTROLLER/MPPT - has the voltage selector accidentally been switched to the wrong voltage (48/36)?
5. CONTROLLER/MPPT – does strange sounds come from the unit? (you might unscrew the unit to turn it around a few times listening for any loose parts inside)
6. WIRING – are both wires all the way from solar system to the batteries intact? (easy to check with ohm-meter)
7. WIRING – does the controller produce power? (With the batteries partly discharged, using a clamp amp meter, check the red or the black wire between controller and batteries for passing current – expect 1 – 4 Amps at 50 - 53V in sunny weather.)
8. WIRING – doe the solar panels produce power? (Note! with the batteries partly discharged, using a clamp amp meter, check the blue and white wire between solar panels and controller – expect 4 – 12 Amps in sunny weather.)

For the S2E MMPT (LED version)

Indications of LED lights

Many green lights: Everything should be working properly – sun is good and batteries accept charging

Few green lights: 1) Everything should be working properly – sun is low, sky is clouded or hazy and batteries accept charging.
2) If the sun is high and the sky is clear the solar panels might have a defect!

Blue light is on:

- 1) The batteries are fully charged already and the charging process has been stopped by the controller
- 2) The car is indoor
- 3) The controller has no connection to the batteries caused by a wiring problem or bad fuse
- 4) The controller is defective and does not sense the batteries

For the S2F MPPT (LCD version)

BATT UNDER VOLT

Possible cause: The battery is completely discharged or disconnected. Check fuse and wiring. If fuse and wiring are ok, check condition of every single battery using a handheld voltmeter or check the electrolyte in every single cell using a refractometer. Refill with distilled water if necessary. If the batteries are discharged, consider manually charging the battery using the external grid charger. If batteries cannot be charged properly consider changing the battery.

Percentage of Charge SOC	Specific Gravity	Open-Circuit Voltage (48V battery)
100 %	1.277	50.93
90 %	1.258	50.47
80 %	1.238	49.99
70 %	1.217	49.49
60 %	1.195	48.96
50 %	1.172	48.41
40 %	1.148	47.83
30 %	1.124	47.26
20 %	1.098	46.63
10 %	1.073	46.03

PV UNDER VOLT

Possible causes: Defect solar panels or bad wiring. Check solar panels for damages. Check wiring, including the wires and connectors inside the roof system.

In case the above steps does not reveal the cause, before you contact your supplier or the SolarDrive Service Team, please make a note of your results, the serial no. of the product as well as purchase information.

Specifications

Frame type

Aluminium profiles made of high quality recycled aluminium

Solar panels

Teflon/Polymer lamination or hardened glass - see spec on solar panel

Controller

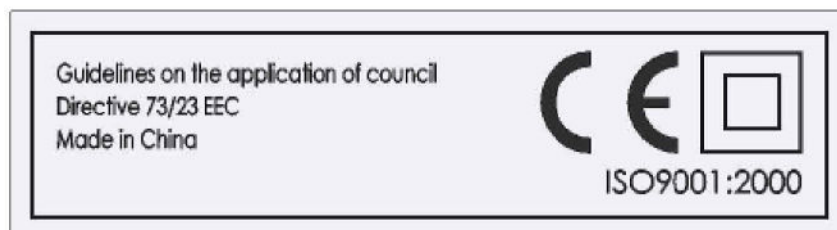
Charge controller

MPPT (Maximum Power Point Tracker)

Output for 24 V, 36 V, 48 V, 60 V and 72 V (S2F version)

©®

PATENTED PRODUCT



Dimensions

