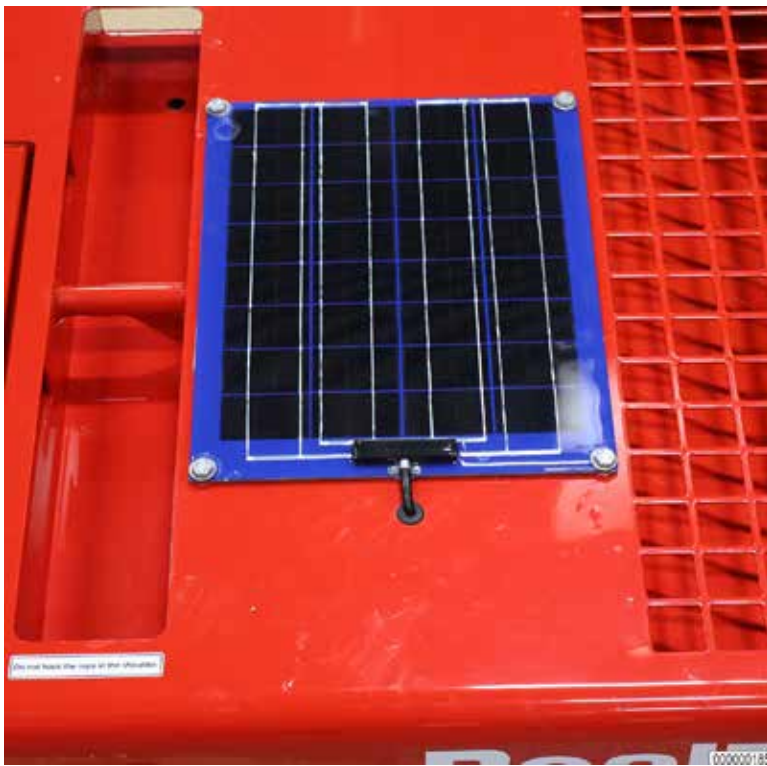




Installation Instructions

DGW400DML Solar Panel



Kit Contents:

- (1) 12v-12 Watt Solar Panel w/12v Pulse Charger



- (1) 1/4-20x1 " stainless steel bolt
- (4) 1/4-20x3/4 " stainless steel bolts
- (8) 1/4-20 stainless steel flat washers
- (4) 1/4-20 stainless steel lock nuts.
- (2) 8-32x3/4 " stainless steel screws
- (2) 8-32 stainless steel flat washers
- (2) 8-32 stainless steel lock nuts
- (1) M8x1.25x20mm" stainless steel bolt



- (1) 1/2"x 6" Black Heat Shrink Tubing
- (2) 18-22 ga Heat Shrink Butt Connectors
- (1) 1/8"x7/16" Grommet
- Black Cable Ties



- (1) DGW400DML Solar Panel Installation Template
- (1) DGW400DML Solar Panel Pulse Charger Installation Template

Tools & Materials Required:

- Masking tape
- Electrical tape
- Measuring tape
- Scissors
- Safety knife
- Center punch
- Deburring tool
- 1/8" drill bit
- 3/16" drill bit
- 5/16" drill bit
- 13/64" drill bit
- Drill (electric or cordless)
- 11/32 socket & 1/4 drive
- 10 mm socket - 3/8 drive
- 17 mm socket - 3/8 drive
- 3/8 impact driver with 3" extension
- 13 mm combination ratchet wrench
- #2 Phillips screwdriver
- Needle Nose Pliers
- Wire cutter\stripper & crimper
- Heat Gun or equivalent
- Clear silicone sealant

NOTES

INSTALLATION INSTRUCTIONS

- Step 1: Verify Kit Contents
- Step 2: Read through installation instructions before beginning the procedure.
- Step 3: Release the latch on the Right Door, Open the door then set Stopper to hold the door upright. (Figure 1)



Figure 1

- Step 4: Disconnect NEGATIVE battery cable: Using a 13mm ratchet wrench, remove bolt and washer securing cables to the negative side of the battery. (Figure 2)



Figure 2

- Step 5: Position Negative cable out of the way, then reinstall bolt and washer to battery terminal. (Figure 3).
- Step 4: Lift up on Stopper holding Right Door upright, then lower right door.



Figure 3

- Step 5: Using a small flat blade screwdriver, carefully remove the "e-clips" securing the Right Door Hinge Pins. Safely store e-clips for reuse. With the "e-clips" removed, remove the hinge pins, then carefully remove the door and store it in a safe secure place. (Figure 4) Store the hinge pins with the e-clips for reuse.



Figure 4

- Step 6: Using a 10 mm socket and driver, remove 3 bolts from the lower Left Door. Retain bolts for reuse. (Figure 5)



Figure 5

- Step 7: Using a small flat blade screwdriver, carefully remove the "e-clips" securing the Left Door Hinge Pins. Safely store e-clips for reuse. With the "e-clips" removed, remove the hinge pins, then carefully remove the door and store it in a safe secure place. (Figure 6) Store the hinge pins with the e-clips for reuse.



Figure 6

- Step 8: Using a 10 mm socket and driver, remove five (5) bolts attaching the Starter Switch Cover and Main Control Panel to the Front Enclosure. Store the starter switch cover and bolts in a safe secure location for reuse. (Figure 7)



Figure 7

- Step 8: Using a 10 mm socket and driver, remove three (3) bolts from the Front Enclosure as shown. (Figure 8)



Figure 8

- **Step 9:** Using a 10 mm socket and driver, remove four (4) bolts from each side (Left and Right) of the Top Enclosure. Store the bolts for reuse. (Figure 9).



Figure 9

- **Step 10:** Using a 10 mm socket and driver, remove one (1) bolt from the Top Enclosure near the Radiator Cap. (Figure 10)



Figure 10

- **Step 11:** Open fuel door in Top Enclosure; remove fuel cap and filter then remove the seal surrounding the fill neck. (Figure 11) Store cap, filter and seal for reuse.



Figure 11

- **Step 12:** Using a 13mm ratchet wrench or equivalent, remove two (2) bolts securing the Air Cleaner Housing to the underside of the Top Enclosure. Once the bolts have been removed, reinstall the bolts into the housing for future reuse. (Figure 12)

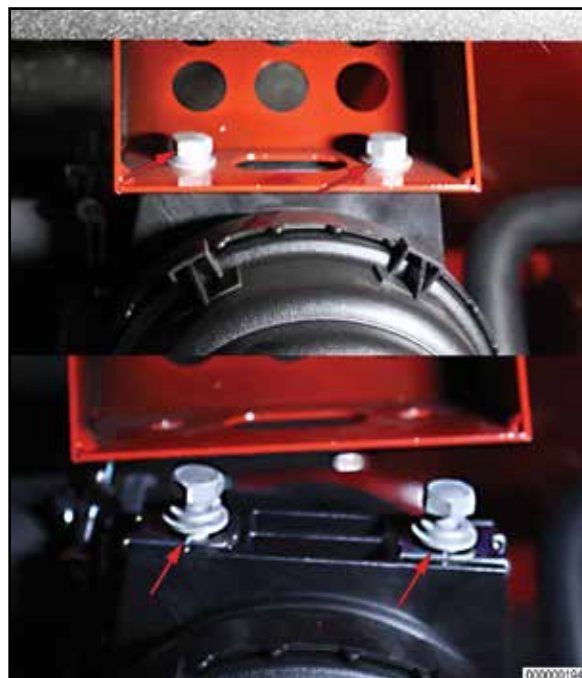


Figure 12

- **Step 13:** Using a 17mm socket and driver, remove two (2) bolts attaching the Top Enclosure to the Base Frame Top Enclosure Brackets. (Figure 13)



Figure 13

- **Step 14:** Carefully lift up on the Control Panel end of the Top Enclosure, lifting high enough to place a 4x4 block of wood between the top enclosure and the control panel exterior frame as shown. (Figure 14)



Figure 14

- **Step 15:** Pinch clamp securing spill containment hose to underside of Top Enclosure using needle nose pliers - sliding clamp away. Carefully remove hose (Figure 15)



Figure 15

- **Step 16:** Remove Top Enclosure and place on a sturdy flat work surface.
- **Step 17:** Prepare the Solar Panel Template (included with kit) for use by using scissors or safety knife; cut along dashed lines as indicated.



Figure 16

- Step 18: Place the Solar Panel Template onto the Top Enclosure surface. Using notes and arrows on template, align top of template as directed. Secure in place with masking tape. (Figure 17)
- Step 19: Using center punch, transfer hole center locations to the Top Enclosure surface.

NOTE: All drilling is intended to be done with template remaining taped in place.

- Step 20: Drill a pilot hole in all five (5) hole locations using 1/8" drill bit and drill. (Figure 8)

NOTE: In some models, a 1" square portion of foam insulation must be removed on the under side of the Top Enclosure to access the mounting hole.

- Step 21: Enlarge all five (5) holes using 5/16" drill bit and drill.
- Step 22: Enlarge Grommet hole using 7/16" drill bit and drill.
- Step 23: Remove and discard the template.
- Step 24: Deburr all holes.



Figure 17

- Step 25: Install grommet into 7/16" grommet hole. Make certain the grommet edges sit flush with surface. (Figure 18)



Figure 18

- Step 26: Remove Solar Panel from packaging; set panel on Top Enclosure.
- Step 27: Uncoil power cable and using measuring tape, measure out approximately 13 inches as shown. Cut power cable with wire cutters. DO NOT DISCARD remaining portion of power cable - it will be used later in the installation. (Figure 19)

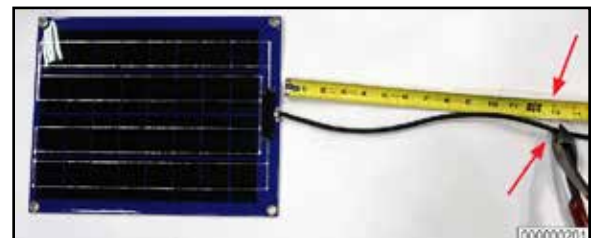


Figure 19

- Step 28: Insert short end of cable (attached to solar panel) into the grommet, pushing the cable through till approximately an inch and a half (1-1/2") is remaining. (Figure 20)

NOTE: If the power cable is difficult to push through the grommet, use of a lubricant such as glass cleaner on the cable can be used.

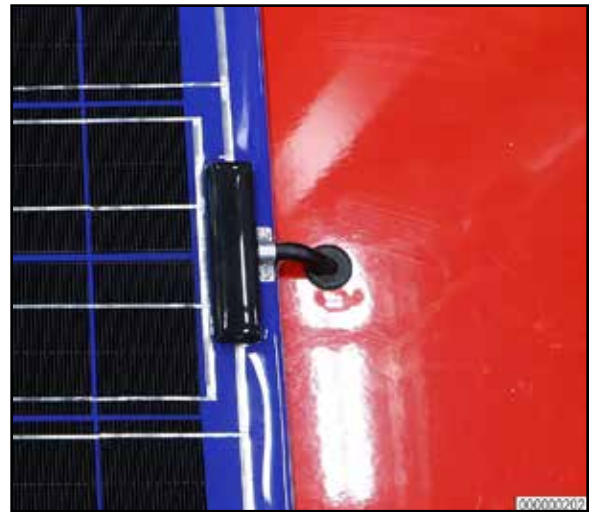


Figure 20

NOTE: Prior to attaching solar panel to Top Enclosure, place a pea size bead of silicon sealant to the underside of each 1/4-20 bolt head. (Figure 21). Additionally, the kit contains a 1/4-20x1" bolt that is not used in this application, and may be discarded.



Figure 21

- Step 29: Attach solar panel to Top Enclosure. Using four (4) 1/4-20x3/4" stainless steel bolts and four (4) 1/4-20 stainless steel flat washers on top of the solar panel mounting holes, and securing to the underside of top enclosure with four (4) 1/4-20 stainless steel flat washers and four (4) stainless steel 1/4-20 locknuts. DO NOT OVERTIGHTEN - Snug the bolts and locknuts only. (Figure 22)

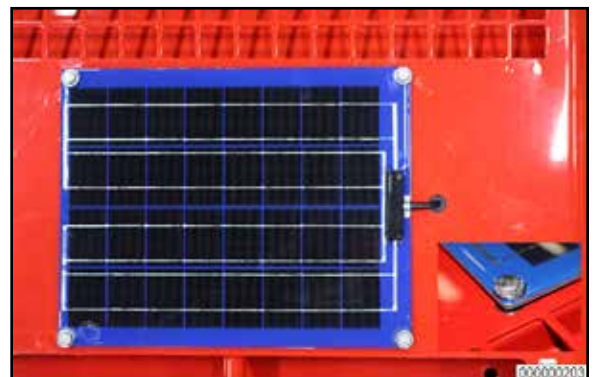


Figure 22

- **Step 30: Reinstall Top Enclosure** - This requires two individuals to safely and properly perform. Set the top enclosure back on the enclosure frame, propping up the controls end as previously done in step 14 during the removal.
- **Step 31: Reattach the spill containment hose removed in Step 15.** Using needle nose pliers, position hose clamp and secure hose in position. (Figure 23)
- **Step 32: Lift up on Top Enclosure Control Panel End,** remove the wood block and set the top enclosure in to place. Some minor adjustments may be required to get all the mounting holes to all line up, this is normal.
- **Step 33: Remove bolts and washers from Air Cleaner Housing,** then reattach air cleaner housing to underside of Top Enclosure previously removed in step 12, using a 13mm ratchet wrench. Do not overtighten. Snug bolts only. (Figure 24)



Figure 23

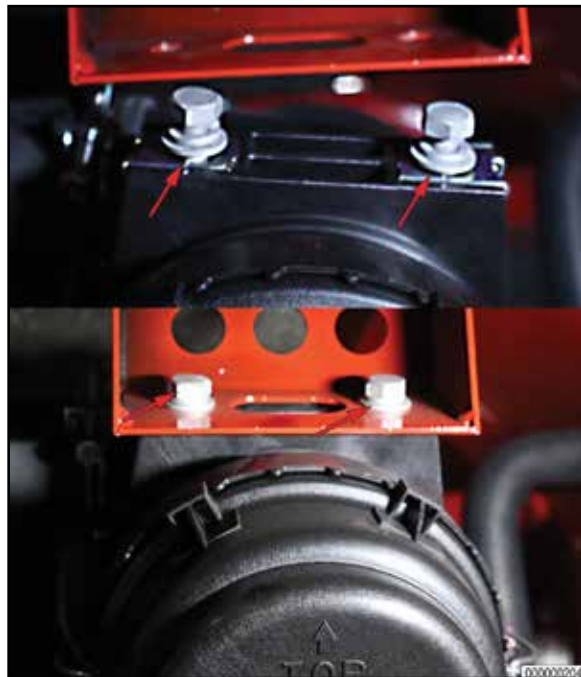


Figure 23

- **Step 34:** Reinstall two (2) bolts previously removed in step 13, using a 17 mm socket and impact driver. (Figure 24)
- **Step 35:** Reinstall all eleven (11) bolts previously removed in step 3, using a 10 mm socket and impact driver to secure the Top Enclosure to the enclosure frame.



Figure 24

- **Step 36:** Using a 10 mm socket and driver, reinstall one (1) bolt into the Top Enclosure near the Radiator Cap. (Figure 25)



Figure 24

- **Step 37:** Using a 10 mm socket and driver, install three (3) bolts into the Front Enclosure as shown. (Figure 26)



Figure 26

- **Step 38:** Using a 10 mm socket and driver, install four (4) bolts into each side (Left and Right) of the Top Enclosure. (Figure 9)



Figure 27

- **Step 39:** Using a 10 mm socket and driver, attach the Starter Switch Cover and Main Control Panel to the Front Enclosure using five (5) bolts. (Figure 28)



Figure 28

- **Step 40:** Place fuel fill seal around filler neck, place fuel filter into filler neck, then attach fuel fill cap. (Figure 29)



Figure 29

- **Step 41:** Using the power cable previous cut in step 23, measure approximately 10 inches from the red plug end, and cut the cable once again.
- **Step 42:** Using wire strippers, remove approximately two (2) inches of outer sheathing from the power cable, exposing the red and black wire within. Take care not to cut through into either of the wires.
- **Step 43:** Using the wire strippers, remove approximately 1/2" inch of insulation from both the red and black wires.
- **Step 44:** Place a "Butt" connectors (supplied in kit) over the exposed ends of each wire and using a wire crimper, secure the butt connectors to each wire. (Figure 30)



Figure 30

- **Step 45:** Place a 1/2"x 6" piece heat shrink tube (supplied in kit) over plug end portion of cable, exposing the wire butt connection as shown. Use a heat gun to shrink/seal the butt connectors to the wires. (Figure 31)
- **Step 46:** Repeat steps 33 and 34 to power cable end coming from the solar panel.



Figure 31

- **Step 47:** Place ends of wires from solar panel cable into the butt connectors of the same color, securing each connection by crimping.
- **Step 48:** Using heat gun, shrink butt connectors to seal wires (Figure 32)



Figure 32

- **Step 49:** Slide the 1/2" x 6" heat shrink tube up over butt wire connections. Starting from the bottom, working upward using the heat gun, slowly shrink the tubing over the power cable, wires and butt connectors.

(Figure 33)

- **Step 50:** Locate the DGW400DML Solar Pulse Charger Mounting Template; prepare for use by cutting it out using scissors or safety knife.



Figure 33

- **Step 51:** Position the template on the Right Top Enclosure Support Bracket as shown. Secure in place with masking tape.

(Figure 34)

- **Step 52:** Using center punch indicate hole locations.
- **Step 53:** Use 3/16" drill bit and drill to create solar pulse charge mounting holes through template. Remove and discard template.

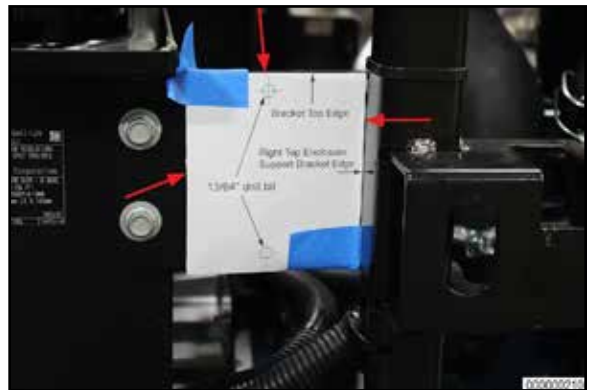


Figure 34

- **Step 54:** Attach Solar Pulse Charger to Right Top Enclosure Mounting Bracket using two (2) stainless steel 8-32x3/4" bolts, flat washers and locknuts using 11/32" socket and driver and #2 Phillips screwdriver. DO NOT OVERTIGHTEN - Snug bolts and nuts. (Figure 35)



Figure 35

- **Step 55:** Connect plug ends of solar panel to solar pulse charger. To prevent plugs from separating, secure with electrical tape (Figure 36)



Figure 36

- **Step 56:** Secure power cables from both solar panel and solar charger to side of Top Enclosure Mounting Bracket using a cable tie as shown. (Figure 37)



Figure 37

- **Step 57:** Remove bolt securing cables to POSITIVE side of battery using a 13 mm ratchet wrench. Discard the bolt.
- **Step 58:** Combine RED wire lead from solar charger connector with cables removed in step 48, and reinstall to POSITIVE side of battery using new M8x1" bolt in kit and 13 mm ratchet wrench. DO NOT OVERTIGHTEN - Snug bolt (Figure 38)



Figure 38

- **Step 50:** Secure positive wire lead with fuse holder to existing cables with cable tie. (Figure 39)



Figure 39

- **Step 51:** Connect plug ends (from solar charger and to the battery). To prevent plugs from separating, secure with electrical tape. (Figure 40)



Figure 40

- **Step 52:** Combine new negative wire lead from solar charger with previously removed **NEGATIVE** battery cables and secure using 13mm bolt with 13mm ratchet wrench to negative battery terminal. (Figure 41)



Figure 41

- Step 53: Secure excess length of power cables\wires to existing wire harness with cable tie as shown. (Figure 42)
- Step 54: Remove all excess cable tie tails using wire cutters.



Figure 42

- Step 55: Reinstall Left Door - attaching at hinges with previously removed hinge pins and securing hinge pins with previously removed "e-clips" as shown. (Figure 43)



Figure 43

- Step 56: Using a 10mm socket and driver, install 3 bolts previously removed from the lower Left Door. (Figure 44)



Figure 44

- Step 57: Reinstall Right Door - attaching at hinges with previously removed hinge pins and securing hinge pins with previously removed "e-clips" as shown. (Figure 45)
- Step 58: Close Right Door securing with latch.
- Step 59: Place Lift Decal (included in kit) onto Top Enclosure surface near original one, now covered by solar panel.



Figure 45

The Installation of the Solar Panel is now complete