	Product	DEFA Onboard Battery Charger #453080
	Components	See table below
	Difficulty	B
	Note: Difficulty stated above reflects the minimum level of expertise required to install the accessory (A) Customer (B) Dealer Technician (C) Master Technician	

Table of contents:	Page:
On Board Battery Charger Kit - 453080	
-Cord set	4
-Battery charger wiring harness	9
-Onboard battery charger	10
Engine Heater Kit	11

Notes to the Installer:

- 1) Read the entire installation pamphlet prior to beginning the installation of this accessory.
- 2) Ensure OEM fasteners that require removal and reinstallation are torqued to specifications
- 3) Avoid contact between the installed cables and any sharp or moving parts
- 4) Ensure the vehicle is properly protected in the area(s) where the accessory is to be installed.
- 5) To prevent vehicle damage, never place tools on top of painted surfaces, seats, dash pad, console or floor carpet/mats.
- 6) Always wear appropriate safety gear to include gloves and eye protection when required.

Special notes to consider when working on Hybrid vehicles:

- 1) Always isolate the high voltage battery as directed in the manufacturer's instructions when working on the vehicle electrical system.
- 2) Do not secure any DEFA components or cables to any or near any components of the Hybrid drive electrical system.
- 3) Follow this installation guide to ensure the correct routing of all DEFA system cables.
- 4) Always wear appropriate safety gear to include gloves and eye protection when required.
- 5) Always follow manufacturers' guidelines regarding safe work practices when working on Hybrid vehicles.

Instructional Symbols / Definitions



Denotes danger of serious physical injury or death



Denotes warning that may lead to serious physical injury or vehicle damage



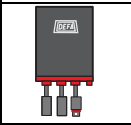


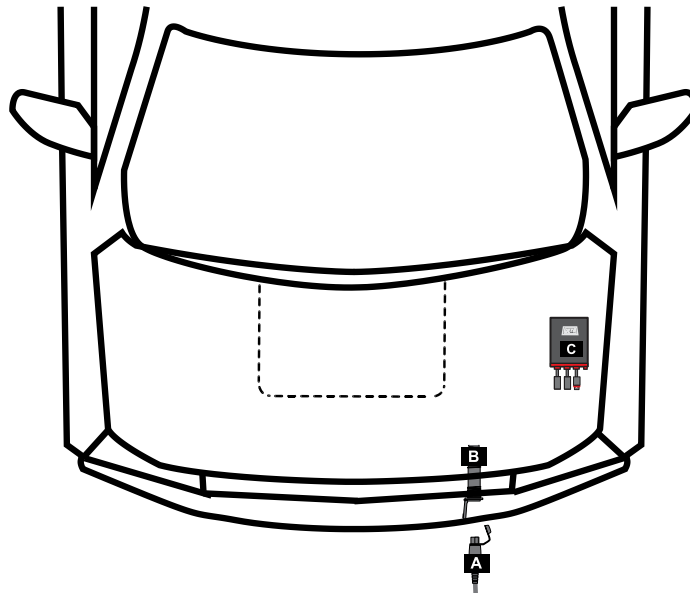
Denotes cautions to be taken to avoid physical injury or component damage.



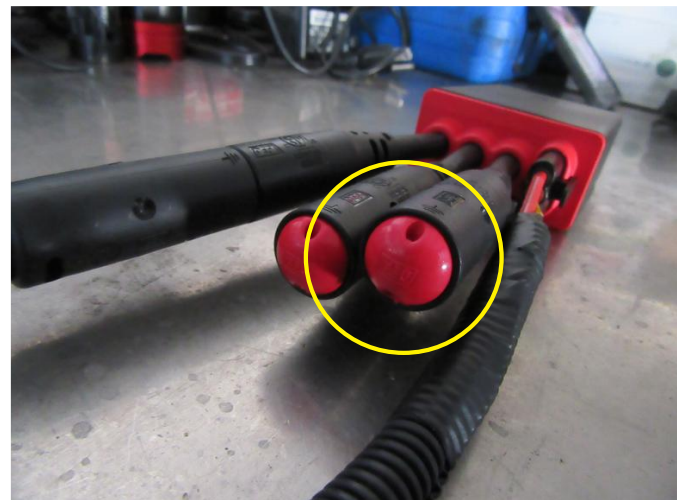
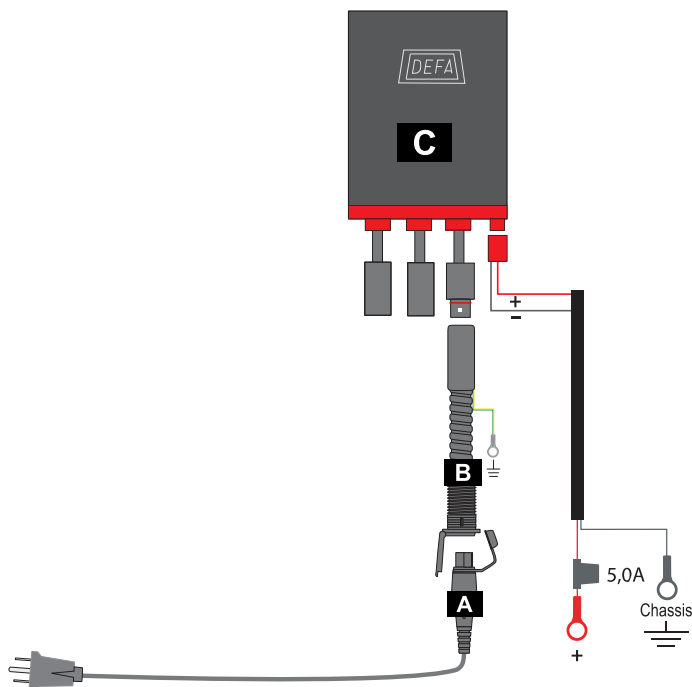
Denotes cautions to be taken to avoid vehicle and component damage.

The suggested locations for the components are shown in the diagrams below.

	A: MiniPlug power connecting cord		B: MiniPlug Inlet cable
	C: Onboard Battery Charger		



The diagram, below left, gives an overview of the electrical connections for the onboard battery charger. It is important to leave the red plastic caps, pictured below right, installed on the unused sockets to prevent corrosion in the sockets.



NOTICE**READ ALL THE INSTRUCTIONS BEFORE PROCEEDING WITH THE INSTALLATIONS AS PROCEDURES MAY OVERLAP.****Battery Charger kit contents:****Major Components:**

- Onboard Battery Charger
- 12V Harness - to Battery and Control Unit
- 6.6' (2.0m) Inlet Cable with MiniPlug (Cable from bumper to Battery Charger)
- Certified 8.2' (2.5m) Heavy Duty Power Cord (Cable from 120V outlet to MiniPlug)

Hardware:

- Mounting kit for MiniPlug with multiple installation options

Optional Upgrade:

- DEFA Engine Heater – requires DEFA Extension Cable to complete installation
- DEFA Termini Cabin Heater, requires DEFA Termini Cabin Heater Cable to complete installation
- Bluetooth Controller – for use with DEFA Engine Heater and/or DEFA Termini Cabin Heater
- Extension Cables (1.6' (0.5m) increments, up to 9.8' (3.0m) available, used with optional DEFA Engine Heater)
- 5.7' (1.75m) DEFA Termini Cabin Heater Cable
- 11.5' (3.5m), 16.4' (5.0m) and 32.8' (10.0m) Certified Heavy-Duty Power Cord

Additional required items:**Tools:**

- 15/16" (24mm) Hole Saw
- 1/8" (3mm) File
- Basic Hand Tools (Wrenches, Sockets, Screwdrivers, Side Cutters, etc)

Inlet Cable Installation:

⚠ DANGER	HYBRID VEHICLES: Disconnect the high voltage system following the manufacturers' service procedures.
⚠ WARNING	READ ALL THE INSTRUCTIONS BEFORE PROCEEDING WITH THE INSTALLATION. Failure to do so can result in personal injury and/or damage to vehicle systems.
⚠ WARNING	Avoid contact between the installed cables to any sharp or moving parts. Failure to do so can result in personal injury and/or damage to vehicle systems.
⚠ CAUTION	Ensure OEM fasteners that require removal and reinstallation are torqued to specifications. Failure to do so can result in damage to the vehicle and/or the DEFA system components.

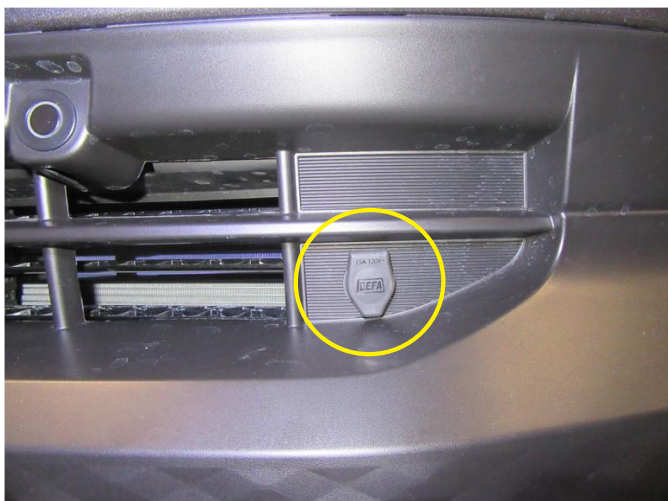
NOTE: Remove only one of the plastic drains (the one that will face the bottom once the MiniPlug is installed) as directed in detail picture number 5 on page 8 of these instructions, and as shown below.



The MiniPlug may be mounted to various locations in the front bumper that will retain the aesthetics of the vehicle. It is imperative that the plug be mounted longitudinally to the vehicle and not transversely or vertically. A variety of methods exist for installing the MiniPlug in the bumper. Refer to pages 7 and 8 for more details.

Installation Option 1 – In Bumper/Exterior Trim:

Drill a 15/16” (24mm) hole in the front bumper, with a 3mm groove in the 3, 9 or 12 o’clock position, depending on MiniPlug orientation. Install the Inlet Cable through and secure the MiniPlug socket to the bumper cover using the locking ring **(F)** and the orange O-ring **(B)**.

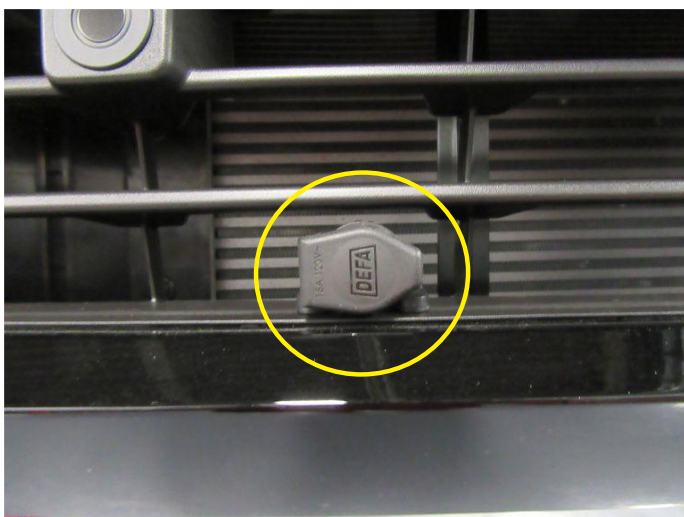
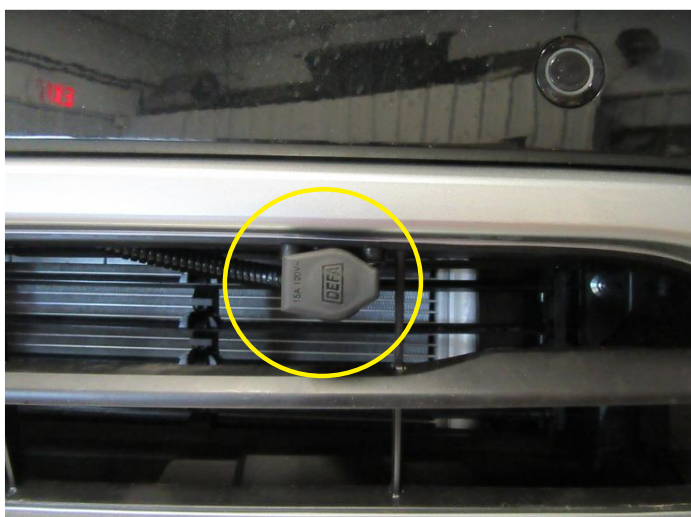


Installation Option 2 – On Bumper/Grill with Bracket:

Use the Mounting bracket **(G)** and the shim **(C)**, if needed, to secure the MiniPlug to the front bumper.

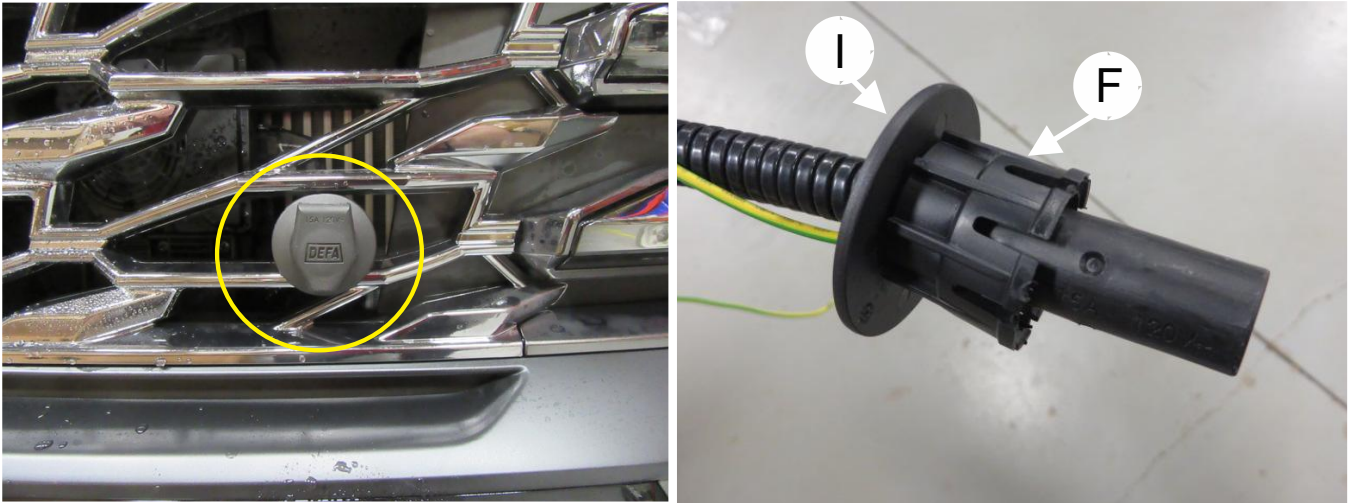
Use the small screws **(H)** to lock the bracket into position on the MiniPlug housing.

Use the self-tapping screws **(D)** to install the assembled MiniPlug on the front bumper as shown in the picture below.



Installation Option 3 – In Grill with Rings:

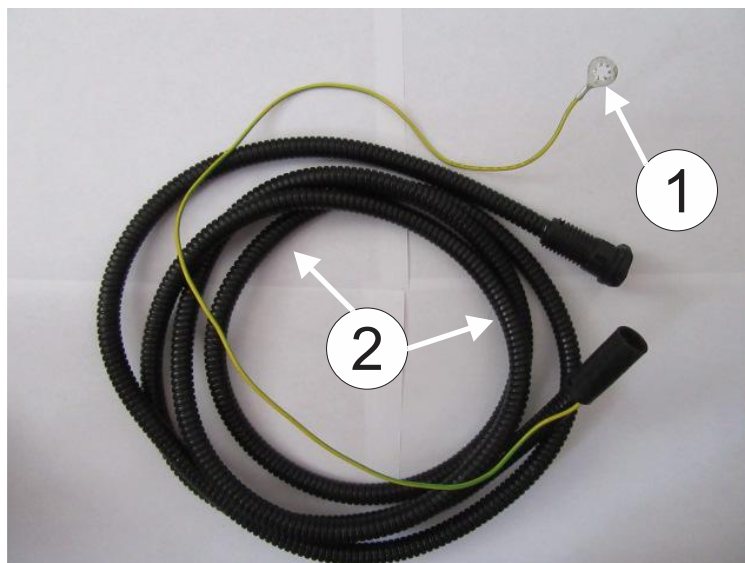
Install the Inlet cable through the grill as shown and secure the MiniPlug socket to the bumper cover using the assembly ring **(A)**, the locking ring **(F)**, the 2-1/8" (55mm) ring **(I)** and orange O-ring **(B)** as shown on pages 7 and 8.

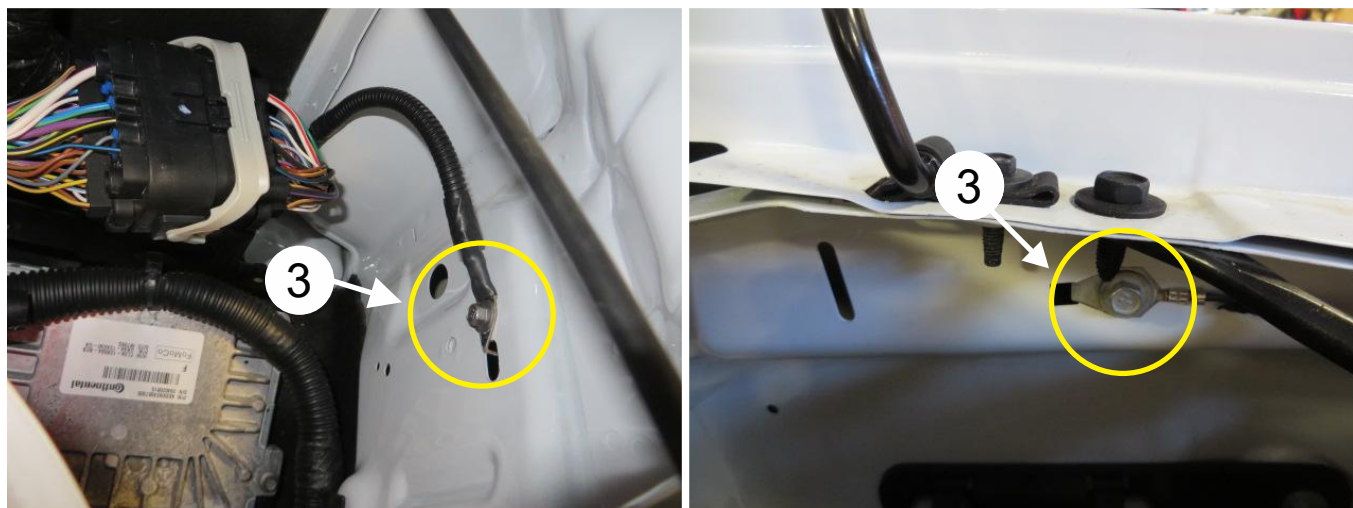


Route the Inlet cable to where the battery charger will be installed (see **Battery Charger installation**, page 10).

Make sure to secure the cable away from hot and moving components.

Connect the ground strap (1) on the DEFA inlet cable (2) to an existing body ground (3).





NOTE: It is highly recommended that the MiniPlug housing be cleaned regularly during vehicle maintenance or more frequently depending upon weather and road conditions.

Spray the inside of the MiniPlug housing with a suitable aerosol cleaner such as Electronic Parts Cleaner. This will help to flush out any remaining moisture or debris accumulation from regular use.

NOTICE	<p>Ensure the ground strap on the DEFA inlet cable is attached to a good clean chassis ground that is not painted to ensure a good ground connection.</p> <p>This is for safety and for the DEFA system to work correctly.</p>
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See next pages (pg. 7 and 8) for more information.



Cord set

- EN User & installation guide
- FR Utilisateur et installation



120V - 15A



701907-E20 PER 040116

EN

FR

The MiniPlug inlet socket **X** on the MiniPlug inlet cable must be located in a position which will allow the MiniPlug power connector **Z** to be inserted without difficulty. The DEFA MiniPlug may be recessed into the bodywork and fastened with the nut **H** or fitted externally by the use of bracket **F**.

Mounting

1 Recessed assembly: When installing the MiniPlug socket **X** into a curved surface **1** assembly ring **Z** can be used. O-ring **Z** (30 x 3.2 mm) must be placed between nutting **H** and bodywork. In order to recess the socket, a 24 mm diameter hole must be drilled and a keyway must be filed using e.g. a round file with diameter 3 mm **2**.

3 Using the bracket: The bracket **F** may be fitted either way, depending on location. The MiniPlug socket **X** can be adjusted backwards and forwards and turned to achieve the best position. Fasten the bracket to the MiniPlug contact using the two enclosed screws **H**.

Normally, the MiniPlug socket **X** should be fitted with the lid hinge at the top, but it may also be fitted with the hinge on the right- or left-hand side **4**. For preference, the MiniPlug socket should be fitted so that the front section faces downwards at a slight angle to drain out water or moisture from the MiniPlug socket. If you are using the bracket **F** you can fit the adapter **Z** to obtain the same effect. If the MiniPlug socket **X** is installed in such a way that the open end faces upwards, the lowest of the three punch-out points (X3) must be opened to drain out water or moisture. Use a knife **5** or similar tool for this purpose. This applies both to bracket fitting and recessed fitting. The ground lead **6** (lead with cable eye) must be attached with the enclosed screw **E** to the chassis or an original ground point. Scrape off paint etc. at the fitting point to ensure a good ground connection.

7 Fasten the bracket **F** to the chassis using the enclosed screws **H**.
 8 Ensure not to damage any original cables or tubes. Thoroughly clean the hole and add fx. Teroson FL cleaner.

In use

Connect the MiniPlug power cable connector **Z** to the MiniPlug inlet socket **X** before connecting the main power plug (NEMA 5-15P) **Z**.

The MiniPlug power cable must be treated with care to avoid damage to insulation by heat and/or moving or sharp objects. The cover should always be fitted on the connector **Z** when this is not connected. Connecting cables are developed and tested specially for use in the cold. They will not be damaged by normal use and when coiling up the cables even in very low temperatures.

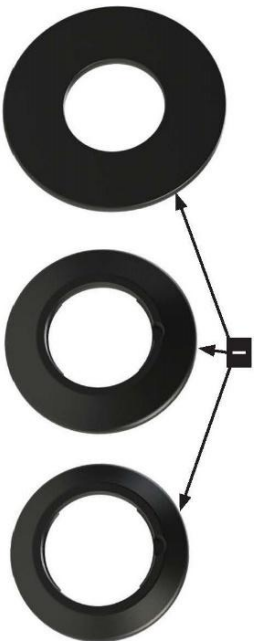
Only use original DEFA MiniPlug power cables and original DEFA MiniPlug inlet cables. The DEFA MiniPlug power cable must be plugged into approved grounded outlets only.

Maintenance

Spray Electronic Parts Cleaner into the DEFA MiniPlug socket terminals under the cover before and after the season and ensure that neither the cable nor cover is damaged. Install a new cable if the cover is damaged.

Standards

Cord sets and power supply cords (UL 817, Eleventh edition, Dated March 16, 2001, Rev. October 5, 2009)
 Cord sets and power supply cords (CSA C22.2 No 21, 1995/03/01, Ed 8, R2009)



La prise MiniPlug **X** du câble MiniPlug doit être positionnée de manière à pouvoir raccorder facilement le connecteur d'alimentation MiniPlug **Z**. La prise DEFA peut être encastrée dans la carrosserie et serrée avec l'écrou **H** ou installée à l'extérieur avec un support **F**.

Montage

1 Montage encastré: Pour installer la prise MiniPlug **X** dans une surface incurvée **1** une bague **Z** peut être utilisée. Le joint torique (B) (30 x 3.2 mm) doit être placé entre l'étrou/la bague **Z** et la carrosserie. Pour insérer la prise, un trou de 24 mm de diamètre doit être percé et une rainure doit être tracée avec, par exemple, une lime ronde d'un diamètre de 3 mm **2**.

3 Utilisation du support: L'installation du support **F** dépend de l'emplacement. La prise MiniPlug **X** peut être ajustée vers l'arrière et vers l'avant, puis tournée pour obtenir la meilleure position. Serez le support avec les deux vis fournies **H**.

Normalement, la prise MiniPlug **X** doit être installée avec la charnière vers le haut, mais elle peut aussi être installée avec la charnière à droite ou à gauche **4**. La prise MiniPlug doit de préférence être installée avec la partie avant orientée vers le bas légèrement inclinée pour éliminer l'eau ou l'humidité de la prise MiniPlug. Si vous utilisez le support **F**, vous pouvez installer l'adaptateur **Z** pour obtenir le même effet. Si la prise MiniPlug **X** est installée avec l'ouverture vers le haut, le point perforé le plus bas des trois (X3) doit être ouvert de façon à éliminer l'eau ou l'humidité. Pour ce faire, utilisez un couteau **5** ou un outil semblable. Ceci s'applique aussi bien au montage avec support qu'au montage encastré. Le fil de mise à la terre **6** (fil avec câble) doit être relié avec la vis fournie **E** au châssis ou à une mise à la terre d'origine. Grattez la peinture, etc. sur le point d'installation pour que la connexion à la terre soit appropriée.

7 Fixer le support **F** au châssis à l'aide des vis comprises **H**.

Remarque: Prenez les précautions nécessaires pour ne pas endommager les câbles ou les tuyaux d'origine. Nettoyez à fond le trou et ajoutez un nettoyant Teroson FL.

Utilisation

Raccordez le connecteur de câble MiniPlug **Z** à la prise MiniPlug **X** avant de brancher la prise secteur (NEMA 5-15P) **Z**.

Le câble MiniPlug doit être manipulé avec soin pour éviter d'endommager l'isolation avec la chaleur et/ou les déplacements ou avec des objets tranchants. Le couvercle doit toujours être installé sur le connecteur **Z** quand il n'est pas utilisé. Les câbles de connexion sont conçus et testés spécialement pour supporter les basses températures. Ils ne peuvent pas être endommagés quand l'utilisation est normale et en enroulant les câbles même à très basses températures.

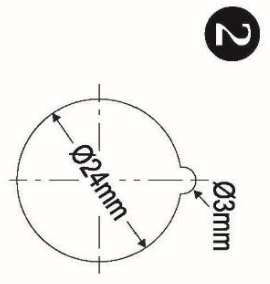
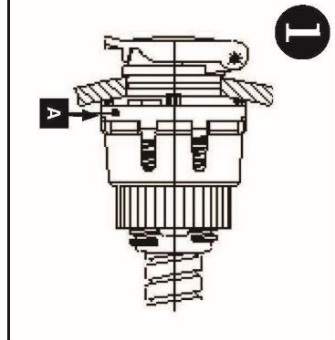
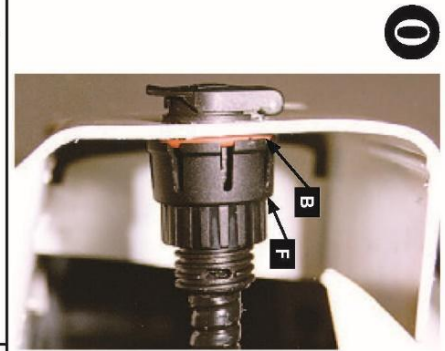
N'utilisez que les câbles d'alimentation MiniPlug DEFA d'origine et les câbles de disjonction MiniPlug DEFA d'origine. Le câble d'alimentation MiniPlug DEFA ne doit être branché que dans les prises de terre homologuées.

Maintenance

Vaporisez du nettoyant pour composants électroniques sur les extrémités de prise MiniPlug DEFA sous le couvercle avant et après la saison et vérifiez l'état du câble ou du couvercle. Installez un nouveau câble si le couvercle est endommagé.

Normes

Jeux de cordon et cordons d'alimentation (UL 817, Onzième édition, 16 mars 2001, Rev. 5 octobre 2009)
 Jeux de cordon et cordons d'alimentation (CSA C22.2 N° 21, 1995/03/01, Ed. 8, R2009)



701907-E20 PBR 04/01/16



Battery Charging Harness Installation:

⚠ DANGER	HYBRID VEHICLES: Disconnect the high voltage system following the manufacturers' service procedures.
⚠ CAUTION	Disconnect the battery before installation according to the manufacturer's specifications.

Remove the 5A fuse from the charging harness fuse holder. Connect the charging harness positive (+) wire to the main power supply (19) of the underhood fuse box. If the fuse box is not accessible, the positive wire may be connected to the battery positive terminal.



Connect the charging harness negative (-) wire to an existing body ground (20), close to the battery. Avoid connecting directly to the battery, as many vehicles have battery monitoring sensors built into the negative terminal.

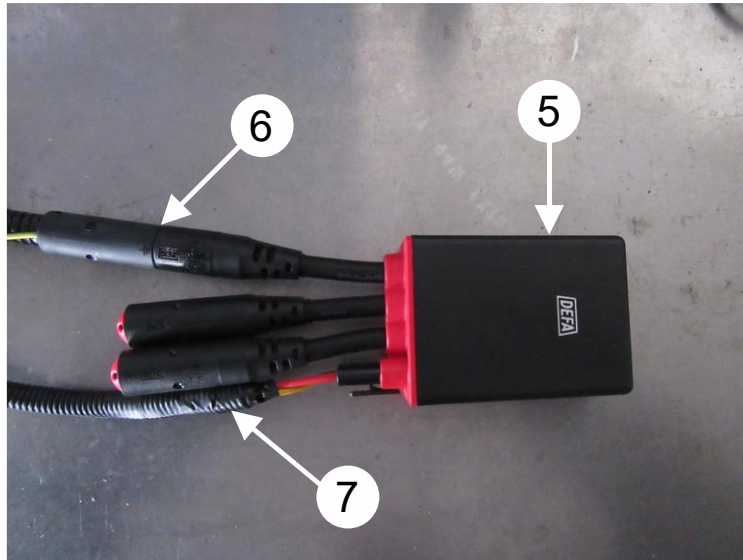


⚠ CAUTION	Re-torque fasteners to factory specifications.
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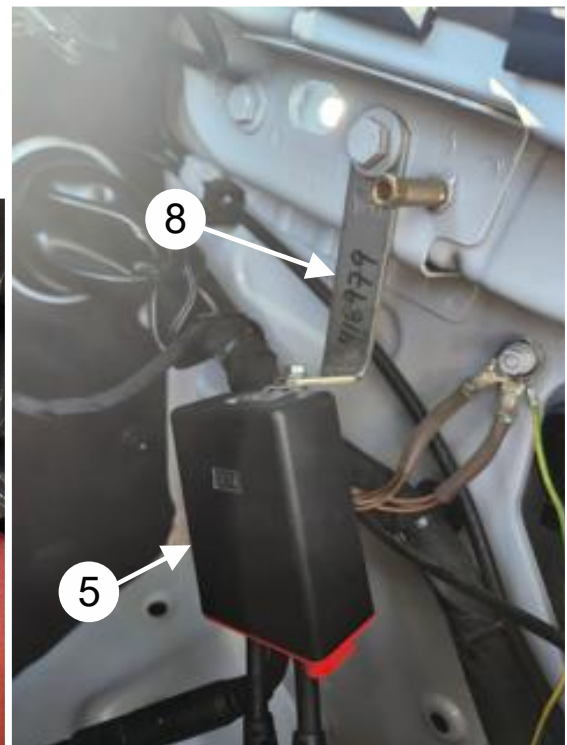
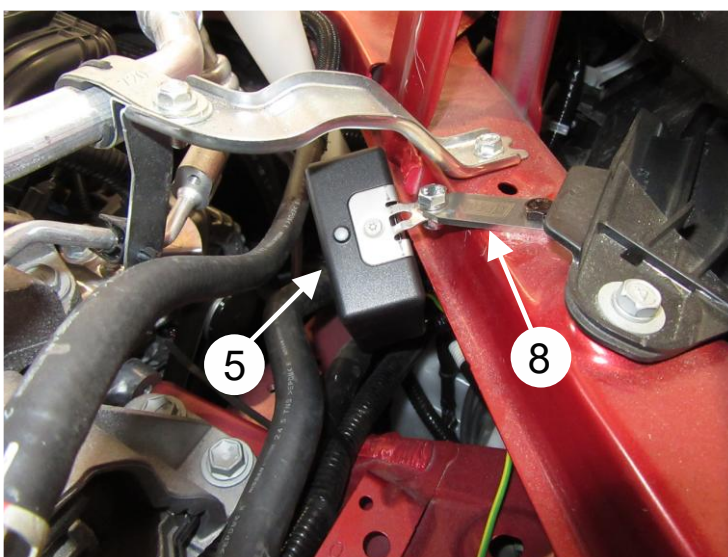
Battery Charger Installation:

⚠ DANGER	HYBRID VEHICLES: Disconnect the high voltage system following the manufacturers' service procedures.
⚠ CAUTION	Disconnect the battery before installation according to the manufacturer's specifications.

Assemble the battery charger (5) with the supplied bracket. Connect the previously installed Inlet cable (6, page 4) and charging harness (7, page 9).



Install the charger (5) under the hood, using the hardware and bracket (8, if necessary - sold separately), to an existing bolt or opening.



Install the 5A fuse in the charging harness fuse holder. Installation is now complete.

⚠ CAUTION	Use zip ties to fasten the cables to avoid contact with brake lines or any movable or hot parts.
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Engine Heater Installation:

Refer to the documents supplied with the engine heater for vehicle-specific instructions. The WarmUp kit does not include the necessary extension cable to allow the completion of the kit with a DEFA engine heater (available in 1.6' (0.5m) increments, up to 9.8' (3.0m), sold separately).

Connecting the engine block heater:

Use an extension cable (available separately) to connect the engine heater to the battery charger (see **Battery Charger installation**, page 10). Loop and secure the excess cable.



DEFA Onboard Smart Battery Charger: KEY checks for good installation and functionality

BEFORE YOU START THE INSTALLATION

- Read all instructions before proceeding with the installation as procedures may overlap.
- Before installation, disconnect the battery as directed by the manufacturer.

DURING THE INSTALLATION

- Make sure to remove the drain tab from the MiniPlug before installation in the bumper.
- Ensure there is sufficient space between components to avoid chaffing or contact with moving parts.
- Ensure the ground wire on the DEFA inlet cable is attached to a good clean chassis ground that is void of paint to ensure a good ground connection.

TEST THE SYSTEM

- Do not turn the ignition on while checking the operation of the DEFA Preheating system.
 - Connect the system using the complimentary power cable within the charger kit.
 - The light on the charger will only come on when the battery is at a low state of charge (Below 13.7V) and will not illuminate during the floating/maintaining states.
- To test the charger, place a load on the battery such as an open door or headlights on.

MAINTENANCE

- It is highly recommended to regularly clean the MiniPlug housing during vehicle maintenance or more frequently depending upon weather and road conditions. Spray the inside of the MiniPlug housing with a suitable aerosol cleaner such as Electronic Parts Cleaner. This will help to flush out any remaining moisture or debris accumulation from regular use.