

## HILUX/FORTUNER

JULY 2015 PRODUCTION ONWARDS

### SNORKEL KIT

#### Installation Instructions

**ACCESSORY PART NO:** PZQ1289030 / PZQ1289040 / PZQ1289050 **INSTALLATION TIME:** 90 minutes

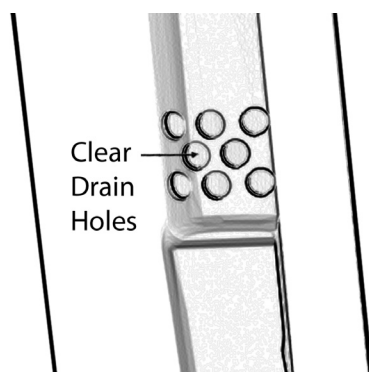
**PLACE THIS COVER SHEET IN VEHICLE'S GLOVE BOX AFTER INSTALLATION IS COMPLETE.**

#### SNORKEL USAGE INSTRUCTIONS – ROTATING THE SNORKEL RAM HEAD

1. For Ram Head Snorkels, the head should be rotated to face rearwards during prolonged or heavy rainstorm, snowstorm, insect swarms or extremely dusty driving conditions to minimise foreign material intake to the engine air inlet system.
2. The Ram Head should be rotated back to the normal forward-facing position to ensure optimum engine performance under normal driving conditions.
3. To rotate the Ram Head, loosen the 2 screws at the base of the Head to disengage them from the main Snorkel Body.

Do not remove the screws from the Ram Head itself as they are designed to be retained to avoid loss.

Lift the Ram Head off and rotate it to the required direction before refitting and then lightly tighten the 2 screws being careful to avoid cross-threading.



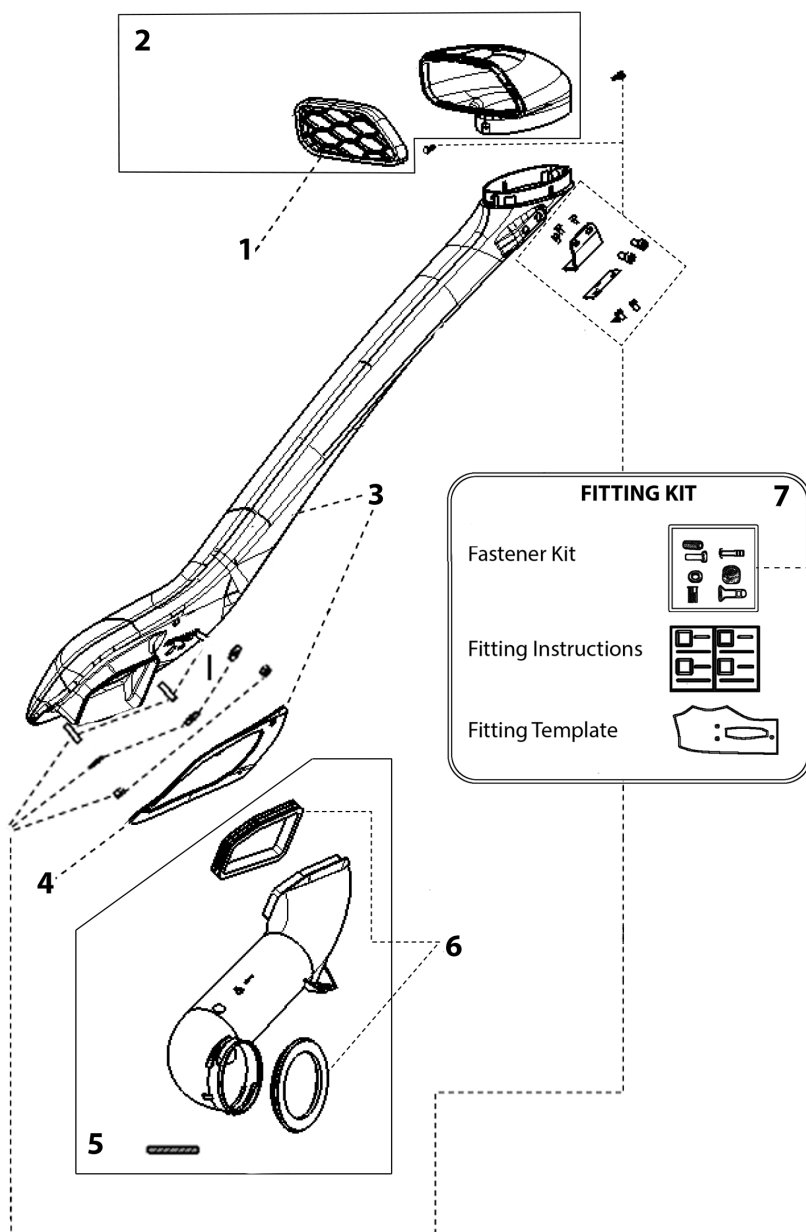
#### CARE INSTRUCTIONS:

1. Do not wash the Snorkel surfaces using abrasive sponges.
2. Avoid application of any cutting or polishing compound to the Snorkel surface to prevent surface discolouration/ marking.
3. Avoid directing water into the Ram Head opening during vehicle washing.
4. Periodically check to ensure the drainage holes underneath the Snorkel are open/clear.

## KIT CONTENTS

EXPLODED VIEW

### ITEMS SUPPLIED IN SNORKEL KIT



#### FASTENER KIT [A SUBSET OF PZQ1289037]

	Bracket, Snorkel A-Pillar	1 pc
	Seal, Snorkel A-Pillar	1 pc
	Stud, Threaded M8	3 pcs
	Screw, Cap M8	2 pcs
	Washer, Flat M8	3 pcs
	Nutsert, Threaded M5	3 pcs
	Screw, Button Head M5	3 pcs
	Screw, Captive M5	2 pcs
	Nut, Self Locking M8	3 pcs
	Plug Gauge	1 pc
	Grease, Rust Preventive	1 pc
	Foam, Strip	1 pc

ITEM	PART NAME	QUANTITY	PART NUMBER
1.	Front Grille, Ramhead, Snorkel	1	PZQ1289033
2.	Ramhead, Snorkel	1	PZQ1289032
3.	Main Body, Snorkel	1	PZQ1289031/41/51
4.	Foam Pad, Snorkel	1	PZQ1289034
5.	Inner Intake Tube Assy, Snorkel	1	PZQ1289035
6.	Seal Kit, Snorkel	1	PZQ1289036
7.	Fitting Kit, Snorkel	1	PZQ1289037

PLEASE CHECK THAT ALL ITEMS LISTED ABOVE ARE PRESENT.

## TOOLS REQUIRED

### REQUIRED TOOLS & HARDWARE:

- 10mm & 13mm sockets
- Ratchet drivers
- Side cutters
- 13mm spanner
- Sheet metal nibbler drill attachment (**Fig. 3**)
- 2mm, 7mm, 11mm & 13mm drill bits  
(or appropriate step drill bit)
- Centre punch
- Power drill
- Phillips head screwdriver
- 3mm, 4mm & 6mm allen keys
- Torque wrench
- Roll of masking tape

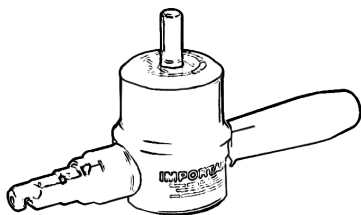
### RECOMMENDED TOOLS:



**Fig. 1** Heavy Duty, Manual Nutsert Tool



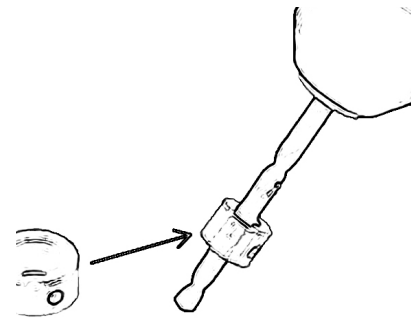
**Fig. 2** Swivel Type Deburring Tool



**Fig. 3** Sheet Metal Nibbler



**Fig. 4** Torque Wrench



**Fig. 5** Drill Stop

### PERSONAL PROTECTION EQUIPMENT REQUIRED:



**Safety Goggles**

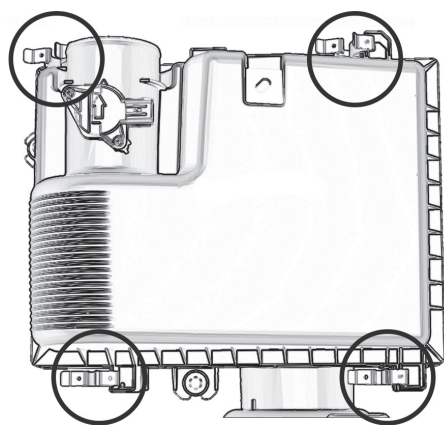


**Noise Protection**

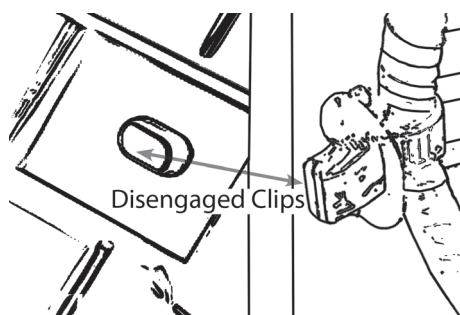


**Gloves**

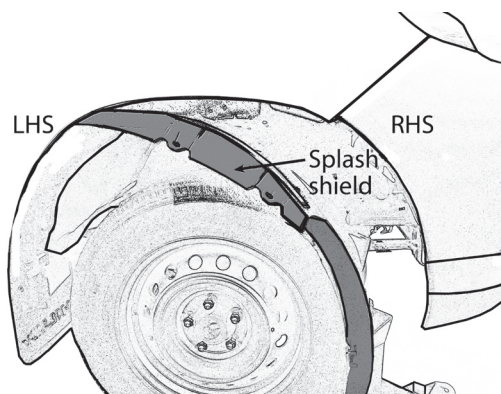
## INITIAL PREPARATION



A



B



C

Ensure that the vehicle is clean around all areas being worked on.

1. Disengage the air cleaner clips **(A)** and lift the top air cleaner cover so it provides clear access to air cleaner base bolts.
2. Unclip the air cleaner harness clips from air cleaner base using a suitable clip removal tool **(B)**.
3. Remove the mounting bolts from the air cleaner base cover. Remove base cover and store in a safe place.
4. Once vehicle is raised on hoist, remove the drivers side wheel to provide additional access. Cover the brake and hub assembly with a cloth to protect it from swarf during the upcoming drilling operations.
5. Remove the bolts/grommets retaining the RHS front fender splash shield sub assembly **(C)**.

Note: it is not necessary to remove the entire splash shield. Only remove the clips that retain the right side of the wheel arch as shown **(C)**.

### ADVICE

Retain and store the bolts in a safe place for reuse

## REMOVAL OF FITTINGS/PARTS

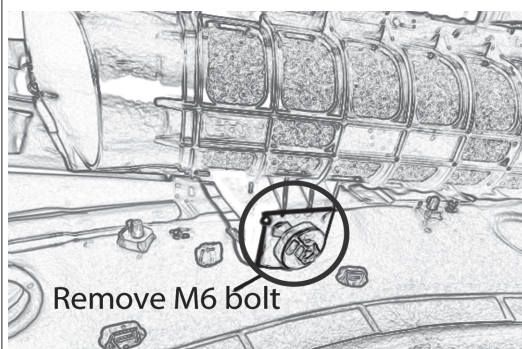


Fig. 6a



Fig. 6b

### STEP 1:

#### 1.1

Remove the bolt fixing the original air inlet duct to the vehicle, and remove the duct from inside the wheel arch area.



**ATTENTION:** Please retain this bolt, sleeve and grommet (fitted to the duct) for re-use later.

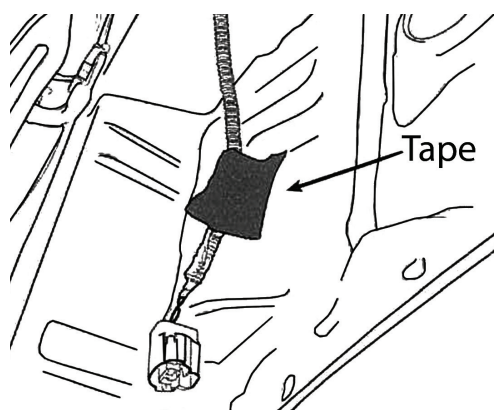


Fig. 7

### STEP 2:

#### 2.1

Disconnect the RHS indicator harness (if applicable) from the fender and secure it away with duct tape below the area to be drilled.



**ATTENTION:** Note any other looms or obstructions.

#### 2.2

Cover any sharp edges on the apron with protective masking tape to prevent any injury.

## INSTALLATION PROCESS

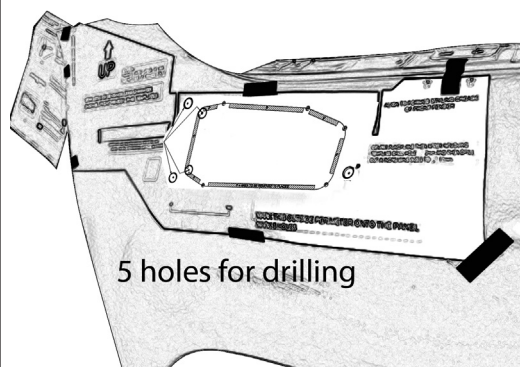


Fig. 8a

### STEP 3:



**ATTENTION:** 3.1 is critical in the installation process.



Use tape at the shown locations.

#### 3.1

Accurately position the supplied drilling template onto the RHS fender as shown, and fix it in position with tape. Ensure template is aligned with fender and ready to centre punch (**Fig. 8a**).

#### ADVICE

Take extra care with template alignment.

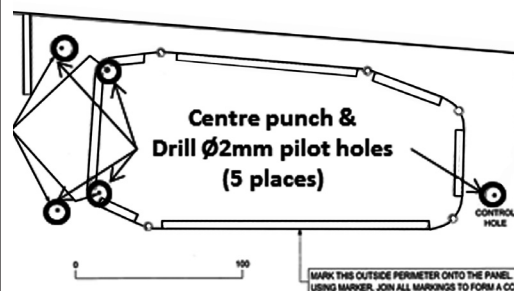


Fig. 8b

#### 3.2

Centre punch 5 holes as shown on the template (**Fig. 8b**). When done, drill 2mm pilot holes on all 5 points. Using a permanent marker, mark outline of pentagonal shape as shown on the template. The template may now be removed from the fender surface. Join up the gaps using a rule. (**Fig. 8c**).

#### 3.3

Enlarge all 5 holes gradually using 7, then 11mm drill bits, or a suitably sized step drill.

#### 3.4

Drill 13mm holes at the 4 holes as shown, and de-bur (**Fig. 8c**).

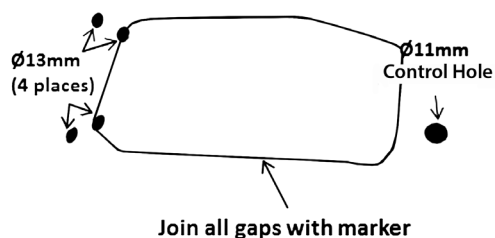


Fig. 8c



**CAUTION:** Panel is thin, do not apply excessive force.



## INSTALLATION PROCESS (Continued)

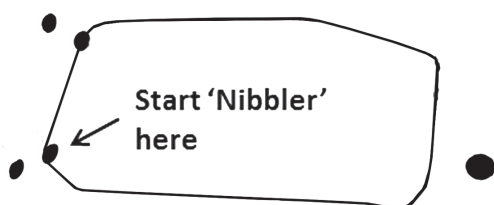


Fig. 9a

### STEP 4:

#### 4.1

Start the nibbler tool at the shown location (**Fig. 9a**), accurately cutting on the marked, continuous line.



**ATTENTION:** Use caution when operating the nibbler tool.

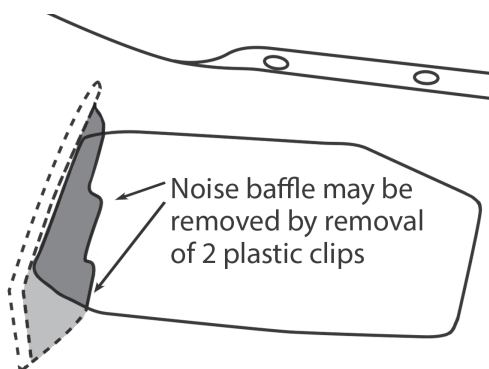


Fig. 9b

There is a noise baffle located behind the fender near the rear edge of the pentagonal shape. The baffle is not required when a Snorkel is fitted and may be removed if necessary to provide a clear path for the nibbler tool. The baffle is difficult to remove and the clips will need to be cut and damaged when removing (**Fig. 9b**).

#### 4.2

De-bur opening, removing any sharp edges (**Fig. 9c**).

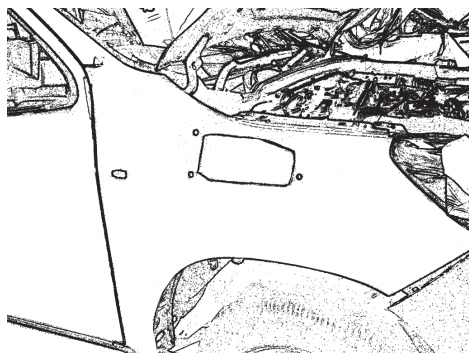


Fig. 9c

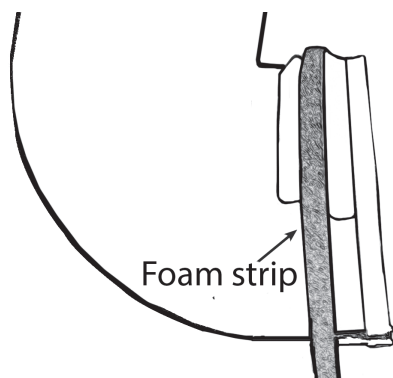


Fig. 10

### STEP 5:

#### 5.1

Fix foam strip within grooves to inlet duct outer diameter surface (air cleaner side only)

## INSTALLATION PROCESS (Continued)

### STEP 6:

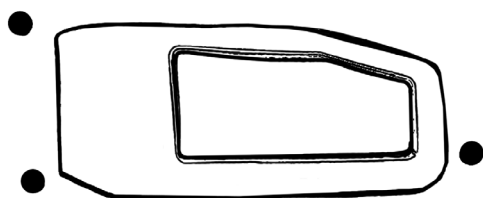


Fig. 11a

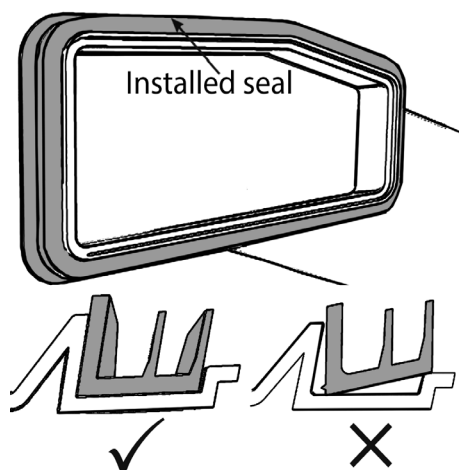


Fig. 11b



**ATTENTION:** 6.1 is critical to the installation process.

#### 6.1

Fit the 5 sided seal within the channel of the inlet duct, ensuring the seal is correctly seated all around the duct (**Fig.11b**).

To aid the seal fitment, the seal shoulder can be pulled to lift and position the seal within the duct channel.

#### 6.2

Fit inlet duct to vehicle inner body using original vehicle bolt and grommet removed earlier (refer to installation step 1).



**ADVICE**

Do not tighten the bolt at this stage as it is important that there is some free play for the following steps. Ensure the seal is correctly oriented (**Fig.11b**).

### STEP 7:

#### 7.1

Fit A-Pillar bracket to snorkel Body using 2 M8 bolts provided.

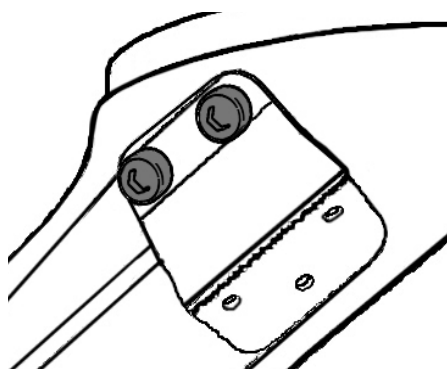


Fig. 12



**ATTENTION:** Bolts should be finger tight only.



## INSTALLATION PROCESS (Continued)

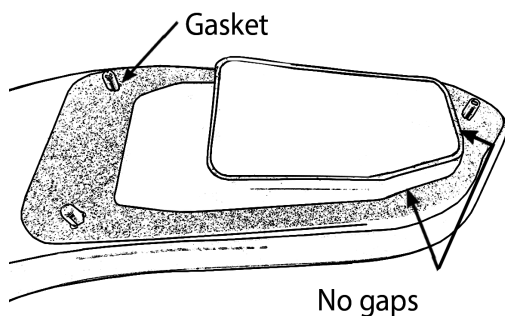


Fig. 13

### STEP 8:

#### 8.1

Screw in the 3 studs using a torque wrench and allen key.

#### 8.2

Carefully stick the self-adhesive foam gasket to the snorkel body with the holes properly aligned. To minimise visible gasket overhang once installed, the gasket should be fitted so that there are no gaps at the locations shown (Fig. 13).

### ADVICE

Tighten to 7 Nm.

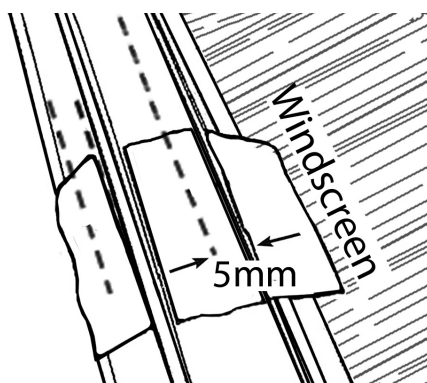


Fig. 14

### STEP 9:

#### 9.1

Apply protective tape to 'A' pillar, windscreen and window areas where the A' pillar bracket will be installed, to avoid any scratches to the vehicle. The protective tape position can be estimated by holding the snorkel body carefully along side the vehicle.

#### 9.2

Mark a parallel line 5mm from the windscreen edge. This line is for the outside edge position of the bracket (Fig. 14 & Fig. 16).

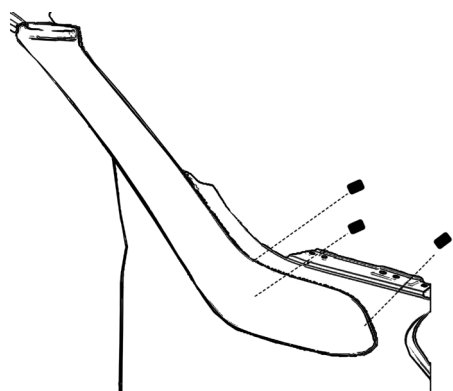


Fig. 15

### STEP 10:

#### 10.1

Temporarily install Snorkel body and slightly tighten the three nuts on the previously installed studs, from within the fender.

### ADVICE

Nuts should be tight but not fully torqued to 10 Nm.

## INSTALLATION PROCESS (Continued)

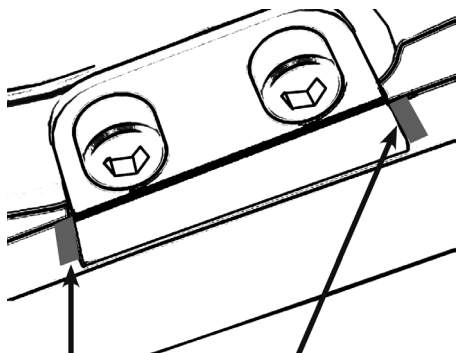


Fig. 16

### STEP 11:

#### 11.1

Line up the outside bracket edge onto the previously marked line on the A-Pillar protective tape. Once correctly positioned, mark the upper and lower edges of the bracket from the windscreen side of the Snorkel body, ensuring markings are on protective tape.

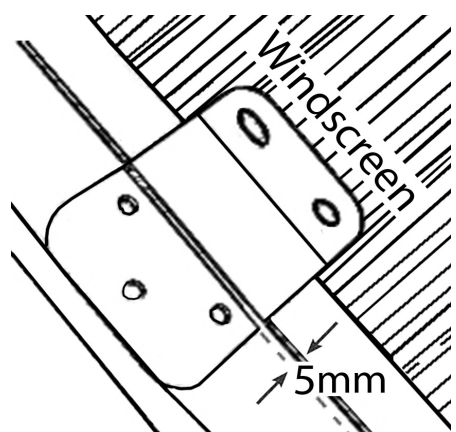


Fig. 17

### STEP 12:

#### 12.1

Remove Snorkel from vehicle.

#### 12.2

Remove 'A' pillar bracket from Snorkel body and place securely on previously marked position on vehicle 'A' pillar.

#### 12.3

Mark and centre punch 3 hole positions on vehicle 'A' pillar and then remove protective tape.

## INSTALLATION PROCESS (Continued)

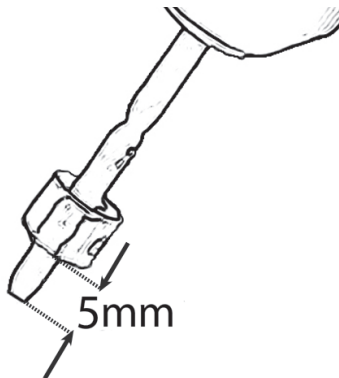
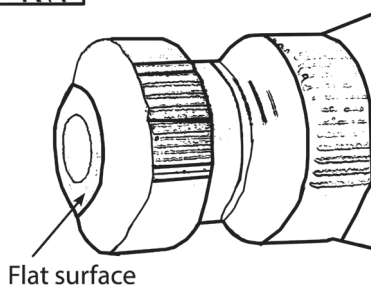


Fig. 18



**ATTENTION:** Prior to step 13, ensure drill stops are used at all times when drilling into the A-Pillar. Set the drill stop to 5mm drill depth (**Fig. 18**).

### STEP 13:

#### 13.1

Drill 3 x 2mm pilot holes on A-Pillar surface and then drill them out to 7mm Ø.

#### 13.2

De-burr 'A' pillar holes.



**ATTENTION:** Ensure no burrs are present behind 'A' pillar holes as this may affect nutsert installation and sealing.

#### 13.3

Apply G16 anti-corrosion grease to all exposed metal hole surfaces ('A' pillar and fender) using a small brush or glove.



- Avoid skin contact.
- Use gloves.
- Remove any oil used during cutting of the fender so grease adheres well to the surface.
- Grease does not need to dry before continuing the following steps.



**ATTENTION:** Before installing the nutserts, ensure the anvil on nutsert tool has a flat leading surface and read step 14.

#### 13.4

Install 3 nutserts into A-Pillar holes with nutsert tool.

## INSTALLATION PROCESS (Continued)



Check Gauge

Fig. 19

### STEP 14:

#### 14.1

To ensure correct fastening of A-Pillar nutserts, use the check gauge provided to verify the pulling depth of each nutsert by simply inserting the plug gauge into each of the installed nutserts (**Fig. 19**).



#### ATTENTION:

ACCEPTABLE INSTALLATION:  $\geq 0.5\text{mm}$  GAP

UNACCEPTABLE INSTALLATION: NO GAP

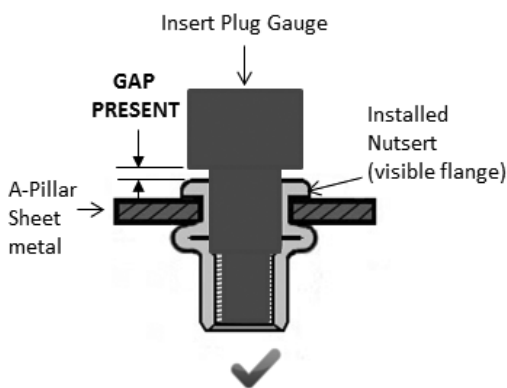


Fig. 20

#### 14.2

For acceptable A-Pillar Nutsert installations, a gap greater than or equal to 0.5mm should be seen between the base of the check gauge and the top of the installed nutsert surface (**Fig. 20**).

#### 14.3

If there is contact between the check gauge and the installed nutsert (ie. No Gap), this indicates the nutsert has not been sufficiently pulled up against the A-Pillar sheet metal.

This may lead to audible rattles or water may potentially leak into the vehicle A-Pillar.

To rectify, use the manual nutsert gun to further pull up the fastener against vehicle's sheet metal.

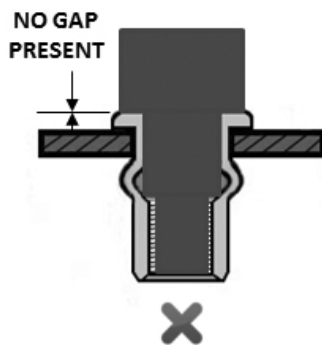


Fig. 21

**NOTE:** Stroke adjustment of the nutsert tool may need to be increased to achieve a good result. Re-examine the nutserts using the same method described above.

## INSTALLATION PROCESS (Continued)

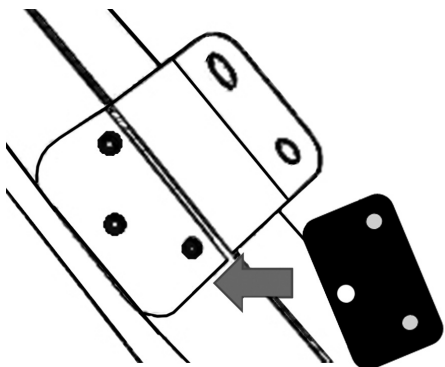


Fig. 22

### STEP 15:

#### 15.1

Fit the A-Pillar seal underneath the A Pillar bracket and attach the bracket to the vehicle using the 3 provided M5 screws .

#### ADVICE

Tightening torque: 3 Nm

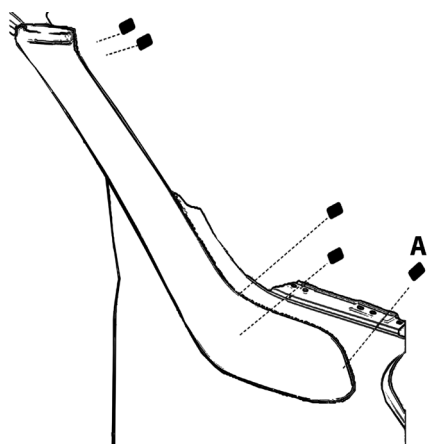


Fig. 23

### STEP 16:

#### 16.1

Re-position the snorkel back onto the fender ensuring it has a proper fit to the inlet duct, inside the fender.

#### 16.2

Put the 3 washers and then the 3 nuts on the studs inside the fender but do not torque them up.

#### 16.3

Fasten the snorkel to A-Pillar bracket using 2 x bolts provided, tightening them to 5 Nm.

#### 16.4

Torque up the 3 nuts on the studs inside the fender to 10 Nm.

#### ADVICE

When installing accessory kit PZQ1289040, an open ended torque spanner can be used to tighten nut (A) in Fig.23 due to limited access.

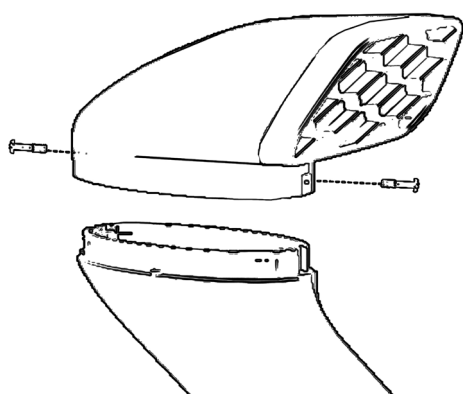


Fig. 24

### STEP 17:

#### 17.1

Screw in the two captive screws into snorkel head.

#### 17.2

Clean/remove any plastic swarf from the screw threads prior to assembly of the head to the body.

#### 17.3

Assemble snorkel head to snorkel body and tighten the two captive screws.

#### ADVICE

Tightening torque: 2 Nm



**ATTENTION:** Take care not to scratch the snorkel surface when tightening captive screws.

## INSTALLATION PROCESS (Continued)

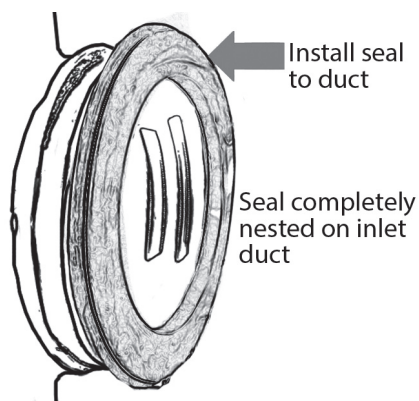


Fig. 25

### STEP 18:

#### 18.1

Fit the round, twin-blade rubber seal to the Inlet Duct (air cleaner end) from inside the engine bay and ensure the seal channel is completely nested onto the duct end.



**ATTENTION:** Proper engagement of the seal onto the duct is crucial for water-tight seal.

#### 18.2

Re-fit the lower part of the air cleaner assembly to the vehicle and assemble the Air Cleaner Inlet to the inlet duct (**Fig. 26**). Ensure the Foam Gasket on the Air Cleaner Assy passes completely over the Inlet Duct Rubber seal (**Fig. 26**). The Rubber Seal should self-centralise with the Air Cleaner assy, ensuring proper sealing (**Fig. 27**).

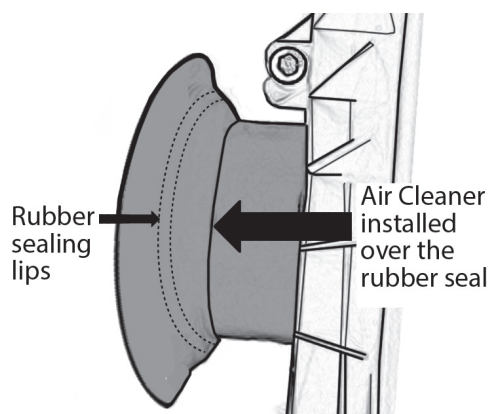


Fig. 26

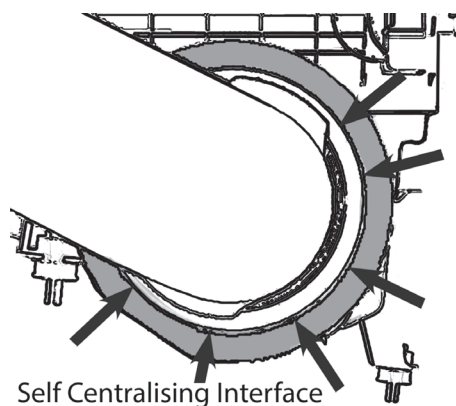


Fig. 27

#### 18.3

Tighten base of air cleaner assembly and re-connect harness clips to side of the cleaner base.

#### ADVICE

Tightening torque: 6 Nm



## INSTALLATION PROCESS (Continued)

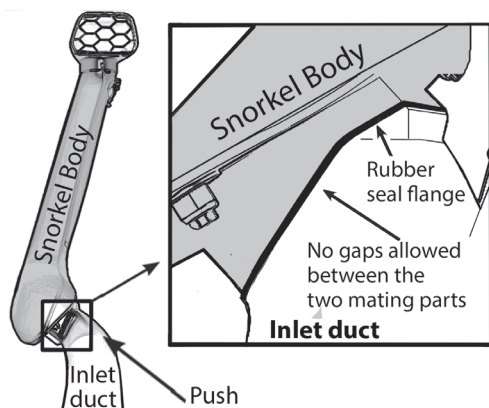


Fig. 28

### STEP 19

#### 19.1

Loosen the Inlet Duct Bolt (refer Step 6.) and push the Inlet Duct outboard towards the fender and snorkel body. Check that the seal is correctly seated as per **Fig.28** and that there is no gap between the Inlet duct and the Snorkel body except for the edge flange of the seal. (This is to ensure water tight sealing).

#### 19.2

Tighten the inlet duct mounting bolt (**Fig.29**).

### ADVICE

Tightening torque: 5 Nm

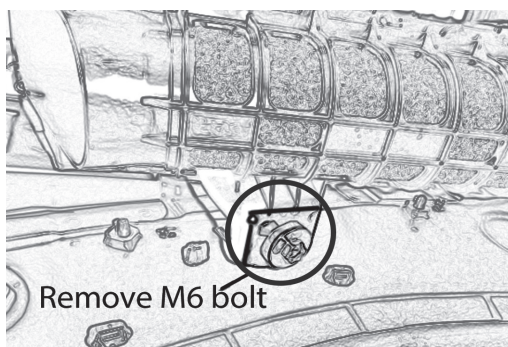
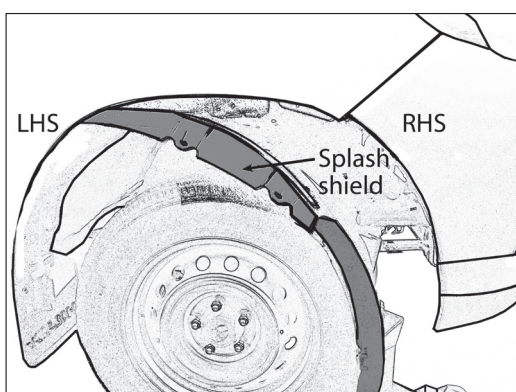


Fig. 29



### STEP 20

#### 20.1

Remove the previously used tape from all locations put in earlier during installation.

### STEP 21

#### 21.1

Re-fit the RHS plastic wheel liner.

### STEP 22

#### 22.1

Remove protection cloth and use an airgun to blow away any drilled swarf away from critical wheel hub areas.

### STEP 23

#### 23.1

Re-fit the driver's side wheel to manufacturers specifications.

**SNORKEL INSTALLATION IS COMPLETE**