Ferrari North America Technical Information

Date:	December 2019
Bulletin #:	2612
Campaign #:	
Supersedes:	
Section:	3

This Technical Information Cancels and Replaces
the previous TIs 2076, 2325, 2392, 2394 and 2395.

Model Type:

Model Year: All

Subject: **Repairs for DCT gearbox – Oil leaks**

Please find enclosed the specific procedures for resolving different types of oil leakage from the DCT gearbox on the aforementioned models. The part numbers of the kits necessary for these procedures are indicated in the following tables, organized by model. Note that these kits are only applicable for **vehicles with valid warranty coverage**.

458 Italia - 458 Spider - 458 Speciale - 458 Speciale A	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002806
Replacement of gaskets on differential casing	70002747 70002808
Replacing the ATF oil filter	70002747
Rear rubber cap replacement	70002747
Replacing front flange/front shaft	70002747
Replacing Corteco seal ring on connector casing	70002747
Oil cap replacement	70002747
Replacing seal caps	70002747
E-DIFF pipe	70002747
Replacing air breather caps	70002747

California	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002807
Replacement of gaskets on differential casing	70002747 70002809
Replacing the ATF oil filter	70002747
Rear rubber cap replacement	70002747
Replacing front flange/front shaft	70002747 70002804
Replacing Corteco seal ring on connector casing	70002747
Oil cap replacement	70002747
Replacing seal caps	70002747
E-DIFF pipe	70002747
Replacing air breather caps	70002747

California T	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002807
Replacement of gaskets on differential casing	70002747
Replacing the ATF oil filter	70002809
Rear rubber cap replacement	70002747
Replacing front flange/front shaft	70002747
Replacing Corteco seal ring on connector casing	70002747
Oil cap replacement	70002805
Replacing seal caps	70002747
E-DIFF pipe	70002747
Replacing air breather caps	70002747

FF	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002806
Replacement of gaskets on differential casing	70002747 70002808
Replacing the ATF oil filter	70002747
Rear rubber cap replacement	70002747
Replacing front flange/front shaft	70002747 70002805
Replacing Corteco seal ring on connector casing	70002747
Oil cap replacement	70002747
Replacing seal caps	70002747
E-DIFF pipe	70002747
Replacing air breather caps	70002747

F12berlinetta	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002806
Replacement of gaskets on differential casing	70002747 70002808
Replacing the ATF oil filter	70002747
Rear rubber cap replacement	70002747
Replacing front flange/front shaft	70002747 70002805
Replacing Corteco seal ring on connector casing	70002747
Oil cap replacement	70002747
Replacing seal caps	70002747
E-DIFF pipe	70002747
Replacing air breather caps	70002747

F12 TDF	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002806
Replacement of gaskets on differential casing	70004640 70002808
Replacing the ATF oil filter	70004640
Rear rubber cap replacement	70004640
Replacing front flange/front shaft	70004640 70002805
Replacing Corteco seal ring on connector casing	70004640
Oil cap replacement	70004640
Replacing seal caps	70004640
E-DIFF pipe	70004640
Replacing air breather caps	70004640

488 GTB / Spider – 488 Pista / Pista Spider – F8 Tributo	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002806
Replacement of gaskets on differential casing	70004640 70002808
Replacing the ATF oil filter	70004640
Rear rubber cap replacement	70004640
Replacing front flange/front shaft	70004640
Replacing Corteco seal ring on connector casing	70004640
Oil cap replacement	70004640
Replacing seal caps	70004640
E-DIFF pipe	70004640
Replacing air breather caps	70004640

GTC4 Lusso – GTC4 Lusso T	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002806
Replacement of gaskets on differential casing	70004640 70002808
Replacing the ATF oil filter	70004640
Rear rubber cap replacement	70004640
Replacing front flange/front shaft	70004640 70002805
Replacing Corteco seal ring on connector casing	70004640
Oil cap replacement	70004640
Replacing seal caps	70004640
E-DIFF pipe	70004640
Replacing air breather caps	70004640

812 Superfast – Monza SP1 – Monza SP2	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002806
Replacement of gaskets on differential casing	70004640 70002808
Replacing the ATF oil filter	70004640
Rear rubber cap replacement	70004640
Replacing front flange/front shaft	70004640
Replacing Corteco seal ring on connector casing	70004640
Oil cap replacement	70004640
Replacing seal caps	70004640
E-DIFF pipe	70004640
Replacing air breather caps	70004640

Portofino	Part number to be ordered
Replacing Corteco seal rings and differential flanges	70002806
Replacement of gaskets on differential casing	70004640 70002808
Replacing the ATF oil filter	70004640
Rear rubber cap replacement	70004640
Replacing front flange/front shaft	70004640
Replacing Corteco seal ring on connector casing	70004640
Oil cap replacement	70004640
Replacing seal caps	70004640
E-DIFF pipe	70004640
Replacing air breather caps	70004640

Protocol for Managing DCT Gearbox Repairs

- Open an ROL in the event of any problem related to oil leakage from the level 2 or 3 areas, attaching the photographs taken of the diagnostic module as described on page 50 of this document.

Replaced parts must be kept for at least 60 days, so that they may be returned if requested or authorized for scrapping by SAT.

The following equipment is necessary to carry out the procedures described as follows:

- Swivel-head base **Part. No. 95972621 (AV 2621)**
- Gearbox overhaul support **Part. No. 95977314 (AM 107314)**
- Lev. 1 gearbox overhaul tool kit **Part. No. 70002843**, consisting of:
  - Gearbox presser tool **Part. No. 95978604 (AV 8604)**
  - Lift bracket for central section of gearbox **Part. No. 95978605 (AV 8605)**
  - Lift bracket for rear section of gearbox **Part No. 95978606 (AV 8606)**
  - Gearbox housing alignment pin **Part. No. 95978607 (AV 8607)**
  - Axle shaft oil seal installation punch **Part. No. 95978608 (AV 8608)**
  - Transmission shaft oil seal extractor **Part. No. 95978609 (AV 8609)**
  - Clutch side oil seal installation punch **Part. No. 95978610 (AV 8610)**
  - External gearbox pressurizing plugs **Part. No. 95978612 (AV 8612)**

- IMPORTANT -

If not already in your possession, these tools must be ordered by you directly from our Spare Parts Department in the quantities needed.

Procedure

- IMPORTANT -

The utmost cleanliness must be maintained during all the following operations; always wear clean gloves, replacing them as needed, and use absorbent lint-free cloth and heptane to clean and degrease components.

Preparations for procedures

Draining the hydraulic clutch system oil

- For the **Ferrari California**, **458 Italia**, **458 Spider**, **458 Speciale** e **458 Speciale A**, **488 GTB**, **488 Spider**, **812 Superfast**, **FF**, **F12 Berlinetta**, **F12 TDF**, **GTC4 Lusso**, **GTC4 Lusso T** and **California T**, Drain the DCT F-3 ATF oil from the hydraulic clutch system (as described in the Workshop Manual).
- For the **488 Pista**, **488 Pista Spider**, **F8 Tributo**, **Monza SP1**, **Monza SP2** and **Portofino**, drain the hydraulic actuator system (as described in the Workshop Manual).

Draining gear oil

- For the **458 Italia**, **458 Spider**, **458 Speciale**, **458 Speciale A**, **FF**, **F12 Berlinetta**, **F12 TDF**, **GTC4 Lusso**, **GTC4 Lusso T**, **488 GTB**, **488 Spider**, **812 Superfast**, **California T and Ferrari California**, drain the Shell Transaxle 75W-90 GL5 gear oil (as described in the Workshop Manual).
- For the **488 Pista**, **488 Pista Spider**, **F8 Tributo**, **Monza SP1**, **Monza SP2** and **Portofino**, drain the DCT gearbox gear lubrication system (as described in the Workshop Manual).

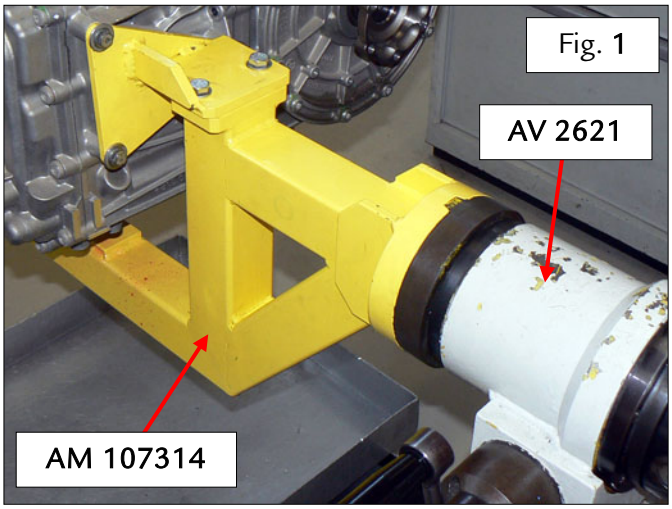
Removing the complete DCT gearbox

- For the **458 Italia**, **458 Spider**, **458 Speciale**, **458 Speciale A**, **FF**, **F12 Berlinetta**, **F12 TDF**, **GTC4 Lusso**, **GTC4 Lusso T**, **488 GTB**, **488 Spider**, **812 Superfast**, **California T**, **California**, **488 Pista**, **488 Pista Spider**, **F8 Tributo**, **Monza SP1**, **Monza SP2** and

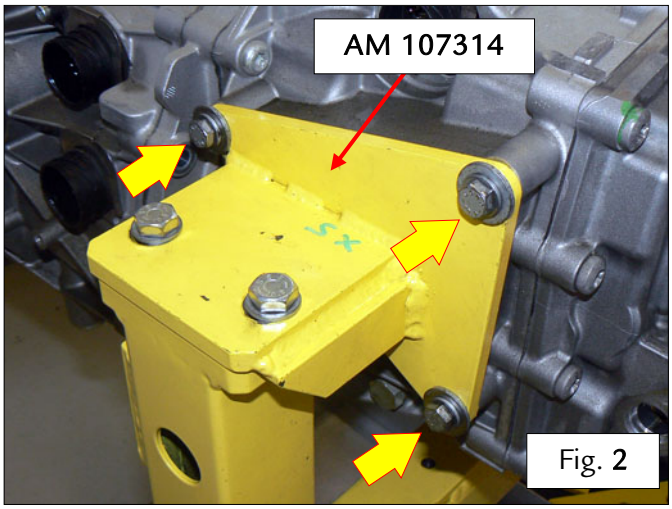
Portofino, remove the complete DCT gearbox from the vehicle (as described in the Workshop Manual).

- Each time removal of the DCT gearbox is indicated in the following operations, the support tools must be installed as described as follows.

- Assemble the gearbox overhaul support **AM 107314** (**95977314**) onto the swivel-head base **AV 2621** (**95972621**) – Fig. **1**.



- Using the hook **AS 107564** (**95977564**), lift the gearbox and position over the previously prepared support tool – Fig. **2**.
- On the left hand side, fasten the gearbox to the support **AM 107314**, tightening the screws with the relative washers as indicated – Fig. **2**.



➢ On the right hand side, fasten the gearbox to the support **AM 107314**, tightening the screws with the relative washers as indicated – Fig. **3**. After ensuring that the gearbox is fixed securely to the relative support, remove the lift hook **AS 107564** from the gearbox.

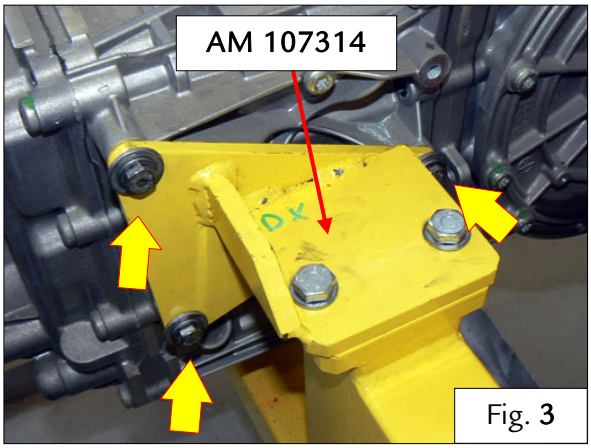


Fig. 3

➢ While the GL gear oil and the ATF clutch hydraulic fluid were already drained previously with the gearbox in the vehicle, there are still considerable quantities of oil and fluid remaining in the gearbox. This oil and fluid must be drained completely before starting any work on the gearbox.

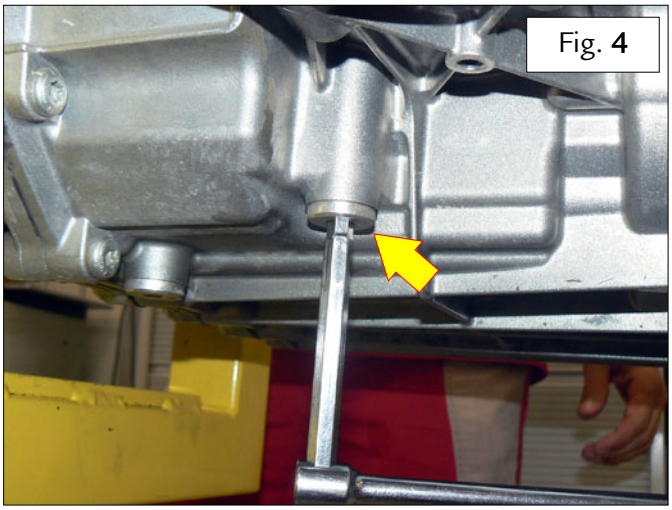


Fig. 4

GL GEAR OIL

➢ Place a container for collecting the oil under the front GL gear oil drain plug orifice – Fig. **4**.

➢ Undo the front GL gear oil drain plug indicated – Fig. **4**.

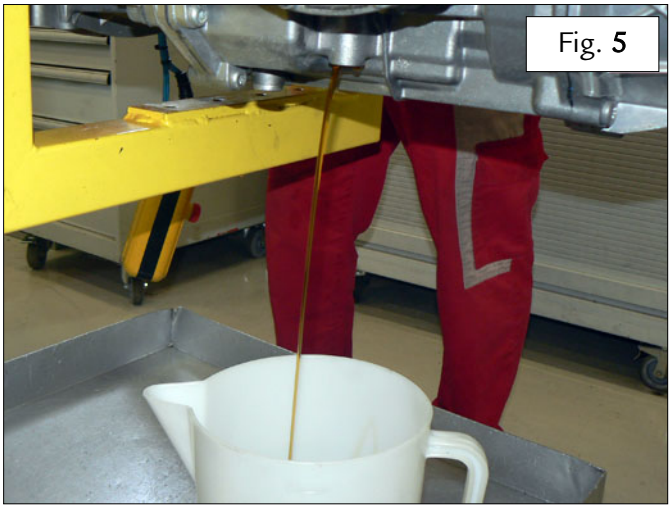


Fig. 5

➢ Wait for the GL gear oil to drain completely into the container – Fig. **5**.

- Rotate the gearbox clockwise to empty all the GL gear oil – Fig. **6**.

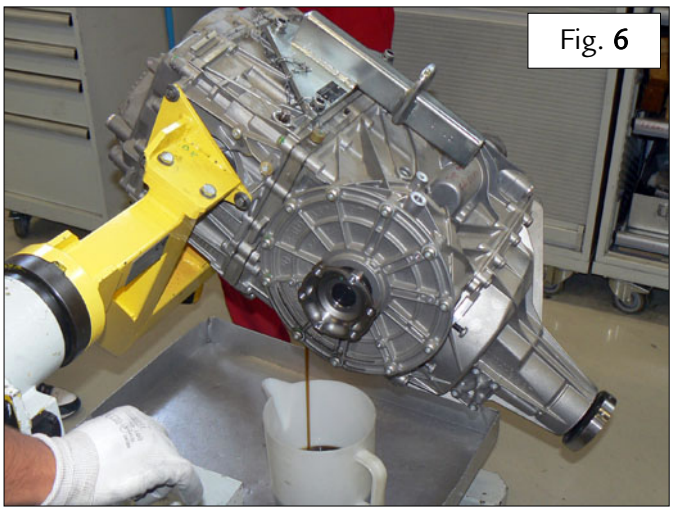


Fig. **6**

- Replace the indicated plug and tighten a torque of **25 Nm** class B – Fig. **7**.

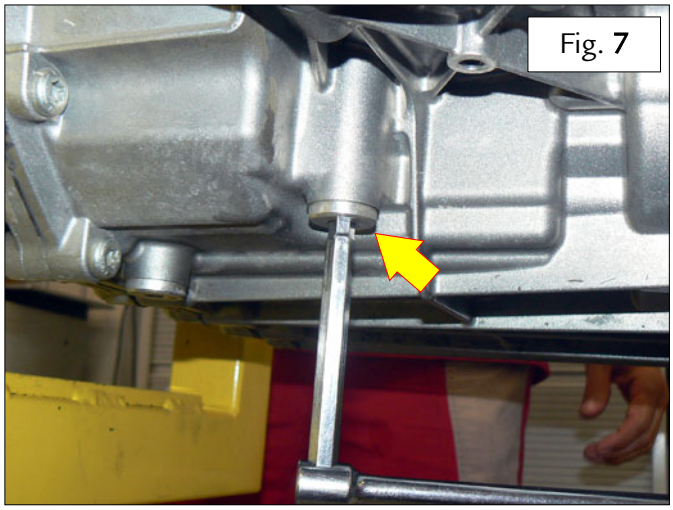


Fig. **7**

ATF CLUTCH HYDRAULIC SYSTEM FLUID

- Place a container for collecting the fluid under the ATF clutch fluid drain plug orifice – Fig. **8**.
- Undo the ATF clutch fluid drain plug indicated – Fig. **8**.

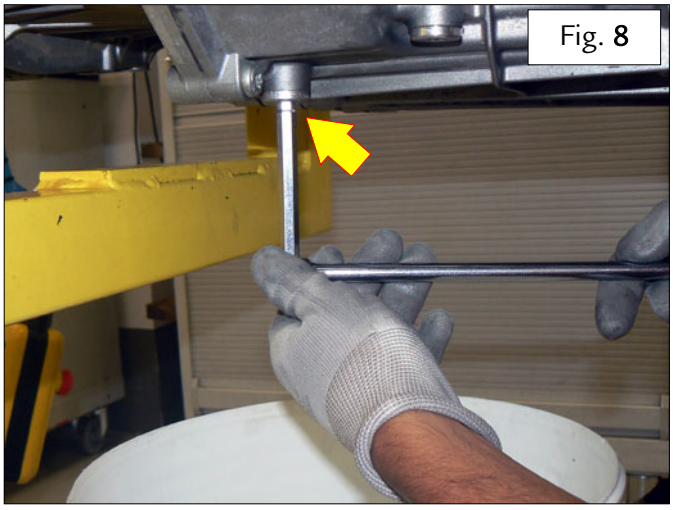


Fig. **8**

- Wait for the ATF clutch fluid to drain completely into the container – Fig. **9**.

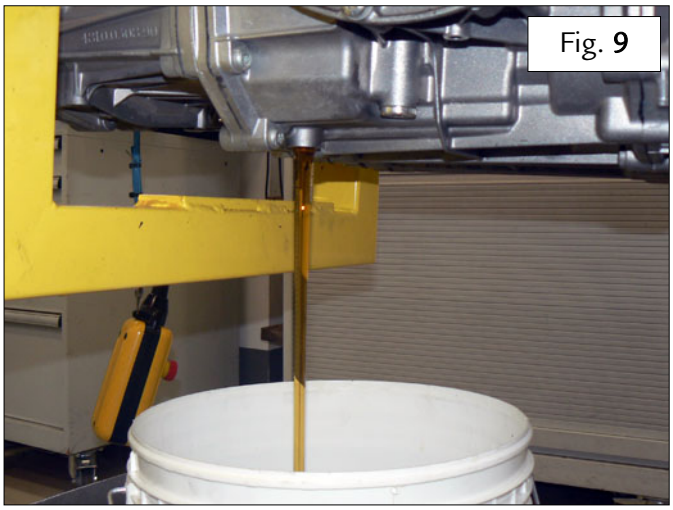


Fig. **9**

- Rotate the gearbox counter-clockwise to empty all the ATF clutch fluid – Fig. **10**.

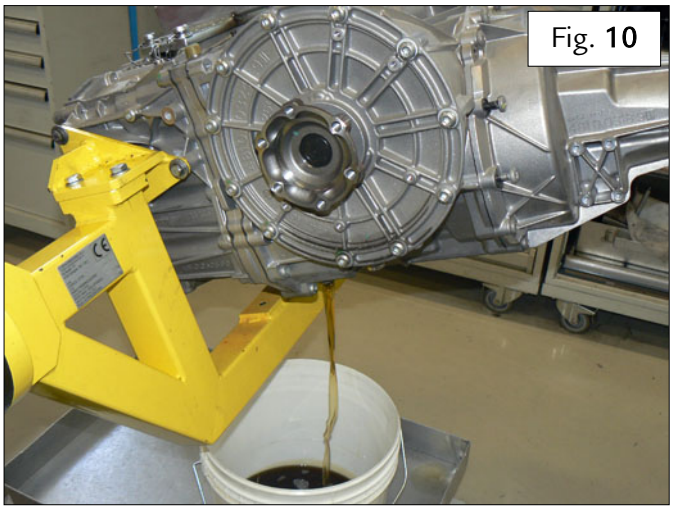


Fig. **10**

- Fit and tighten the indicated plug – Fig. **11**.

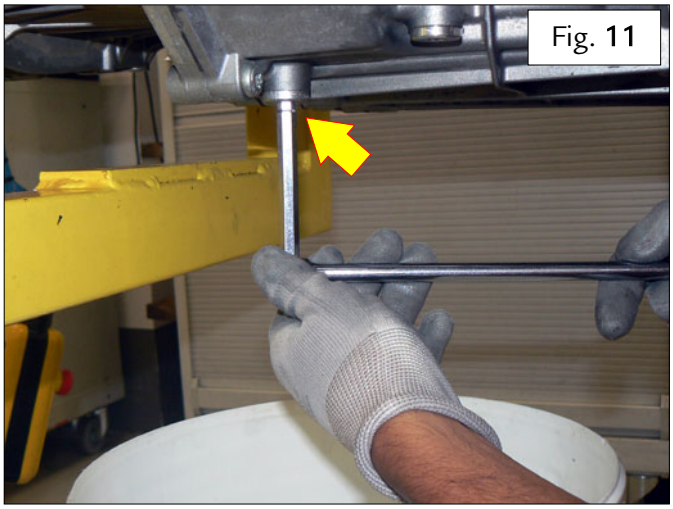
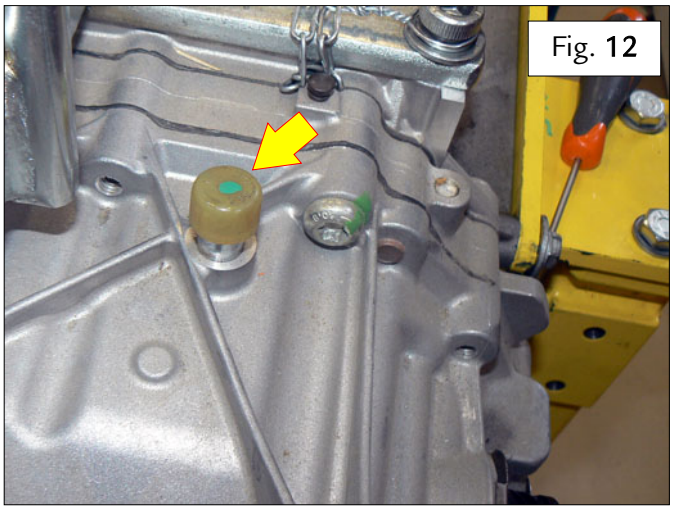
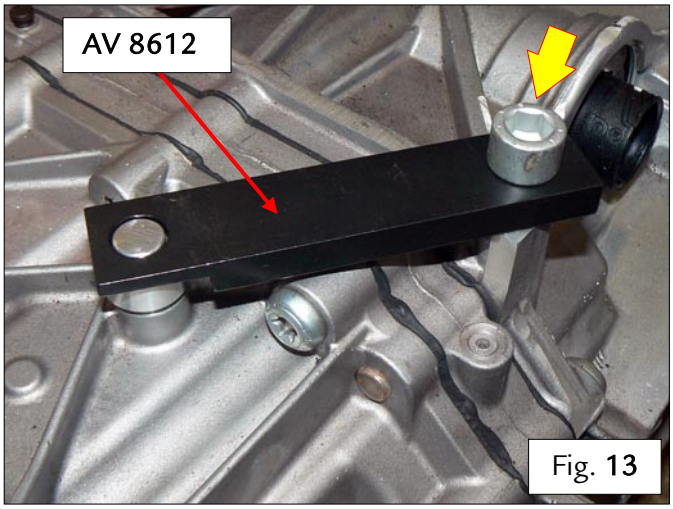


Fig. **11**

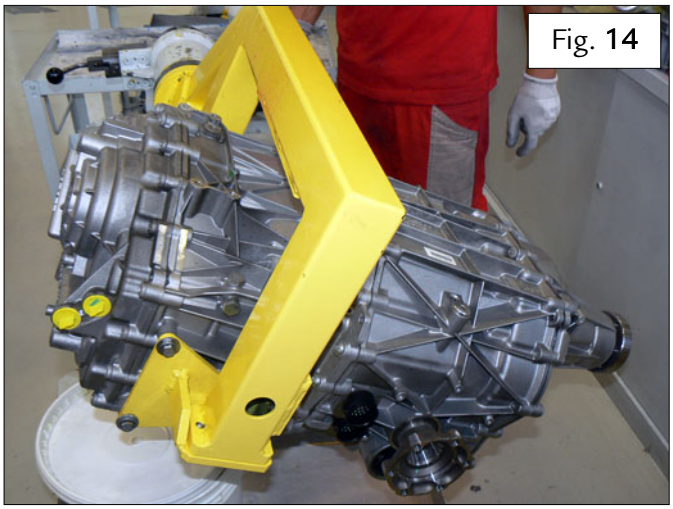
- In preparation for turning the DCT gearbox upside-down, remove the plug on the ATF hydraulic clutch system breather shown in Fig. 12.



- Temporarily fit the tool AV 8612 (95978612), consisting of a plug with relative O-ring and a bracket fastened with the relative screw indicated, in the ATF hydraulic clutch system breather to prevent the fluid from escaping – Fig. 13.



- Turn the DCT gearbox upside-down as shown in the figure by rotating counter-clockwise – Fig. 14.



- Return the DCT gearbox to the upright position by turning clockwise – Fig. **15**.
- Remove the tool **AV 8612** (**95978612**) fitted previously.
- Undo the ATF clutch fluid drain plug indicated – Fig. **15**.

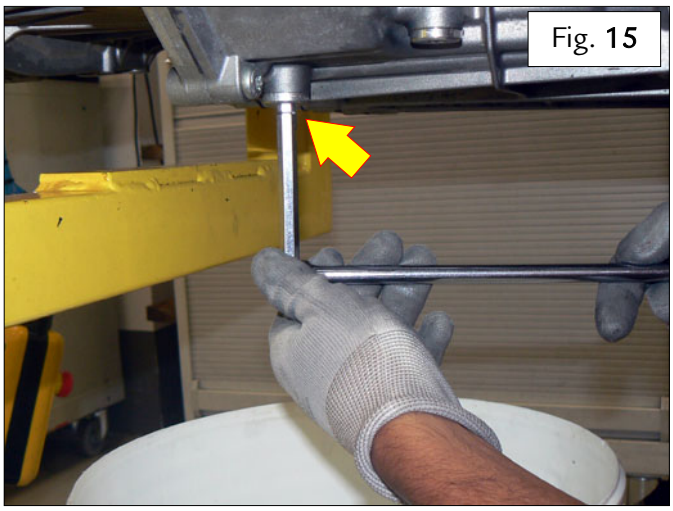


Fig. **15**

- Wait for the ATF clutch fluid to drain completely into the container – Fig. **16**.

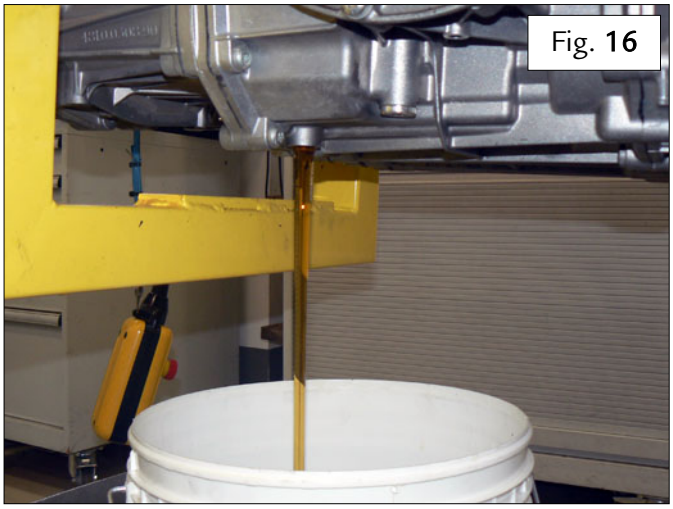


Fig. **16**

- Rotate the gearbox counter-clockwise to empty all the ATF clutch fluid completely – Fig. **17**.

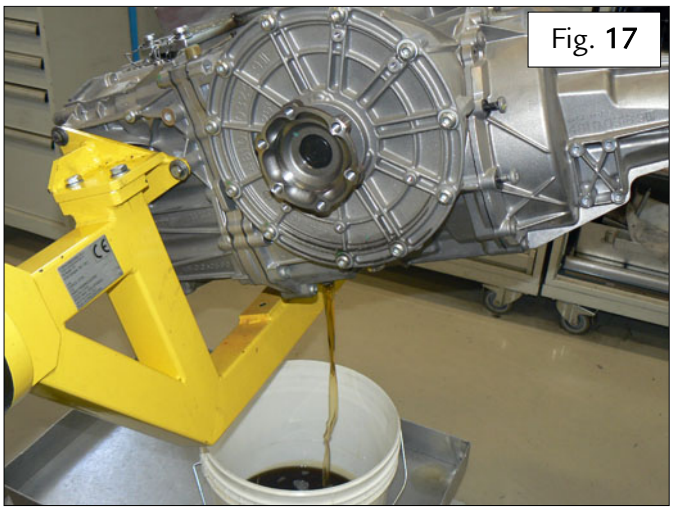


Fig. **17**

- Replace the indicated cap and tighten a torque of **25 Nm** class B – Fig. **18**.

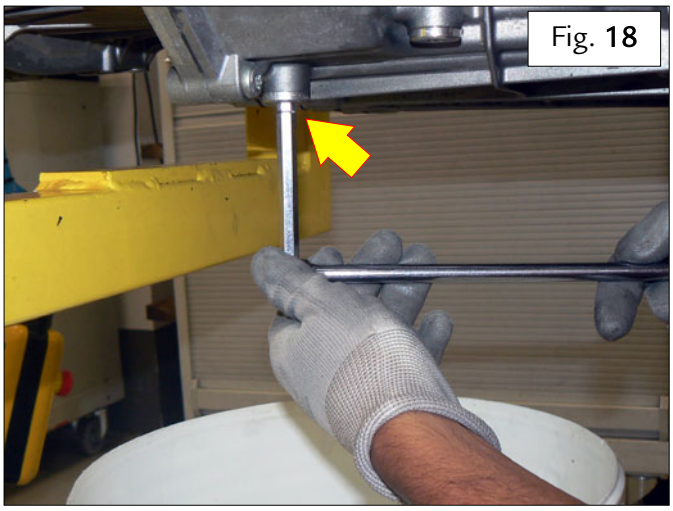


Fig. 18

- Refit the original plug as indicated – Fig. **19**.

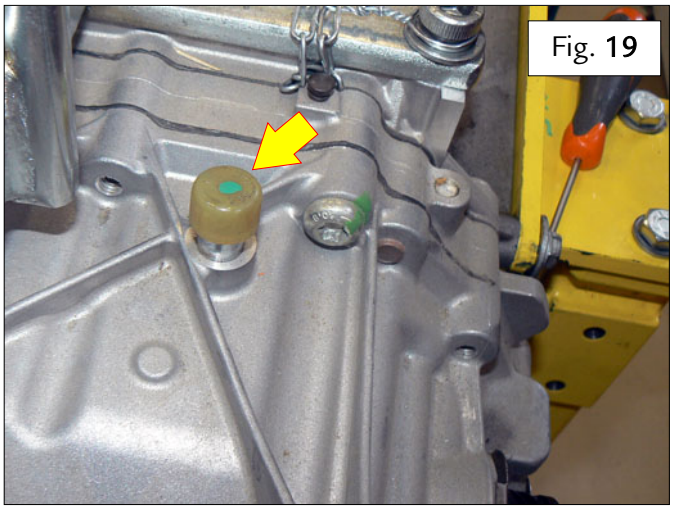


Fig. 19

Replacing Corteco seal rings and differential flanges

- IMPORTANT -

Note that while the following photographs were taken with the gearbox on the work bench to illustrate the relative operation more clearly, this procedure must be performed with the gearbox in the vehicle.

- Remove the complete rear suspension assemblies (as described in the Workshop Manual).

- With something sharp pierce the center of the rubber cap indicated on the right differential flange, then prise it out of its seat – Fig. 1.

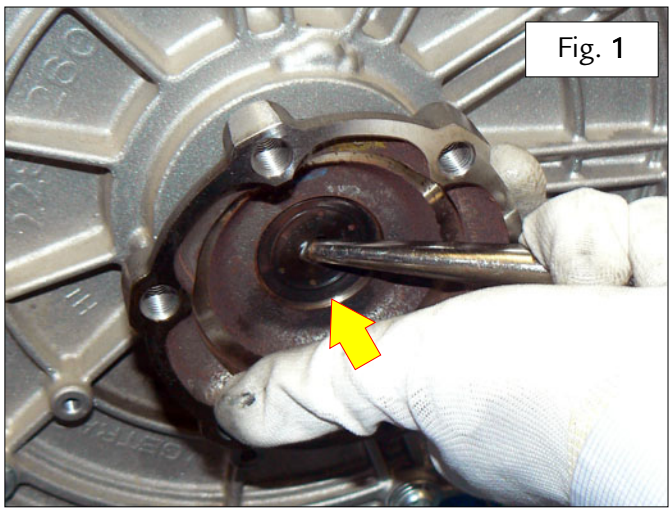


Fig. 1

- Undo the indicated screw fixing the flange – Fig. 2.

Note: Restrain the LH flange appropriately to prevent it from rotating to permit removal of this screw.

Note: DO NOT use the driver tool to undo this screw.

Note: The screw thread is coated with Loctite thread lock compound. Proceed as follows to prevent the thread lock compound from causing the screw thread to seize and, in some cases, causing the screw itself to fail. As soon as any resistance is encountered when loosening the screw, retighten the screw by a few turns, then continue loosening. Repeat as necessary until the screw can be loosened safely. Do not force the screw to loosen as this may cause the screw itself to fail.

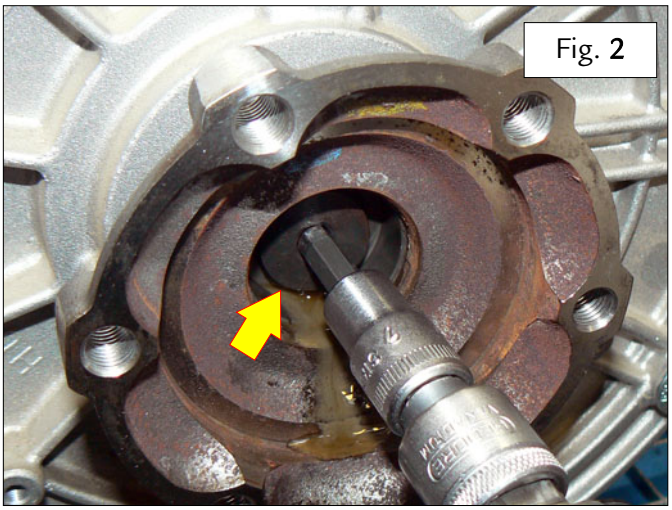


Fig. 2

- If you cannot undo the flange fastener screw and after numerous attempts the hexagon sunk in screw is destroyed, proceed as described below – Fig. 3.
- Weld a suitable nut on the head of the flange fastener screw – Fig. 3.

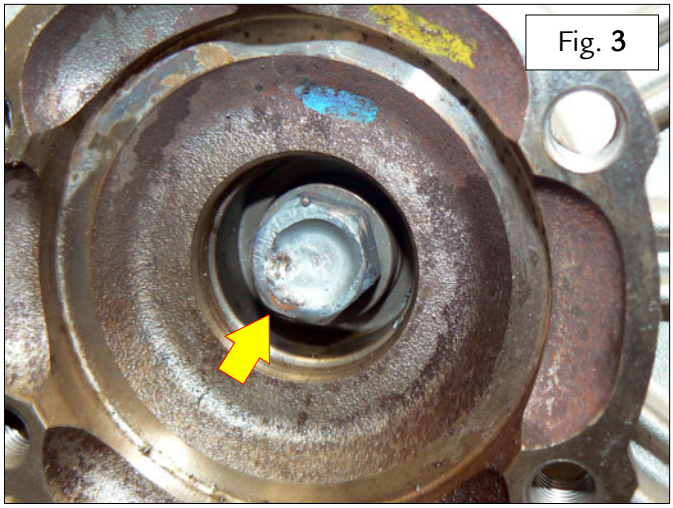


Fig. 3

- Then undo the nut-screw assembly – Fig. 4.

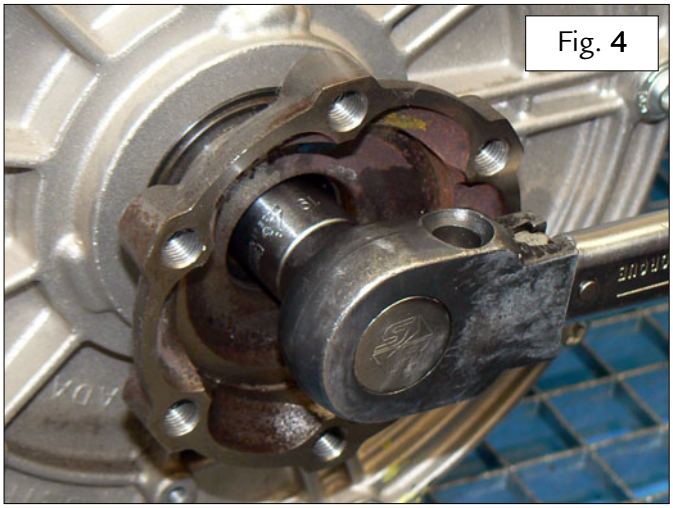


Fig. 4

Remove the RH flange (1) from its seat with a slide hammer extractor – Fig. 5.

Note: A small quantity of oil may be spilled; take all necessary precautions to limit and collect the spillage.

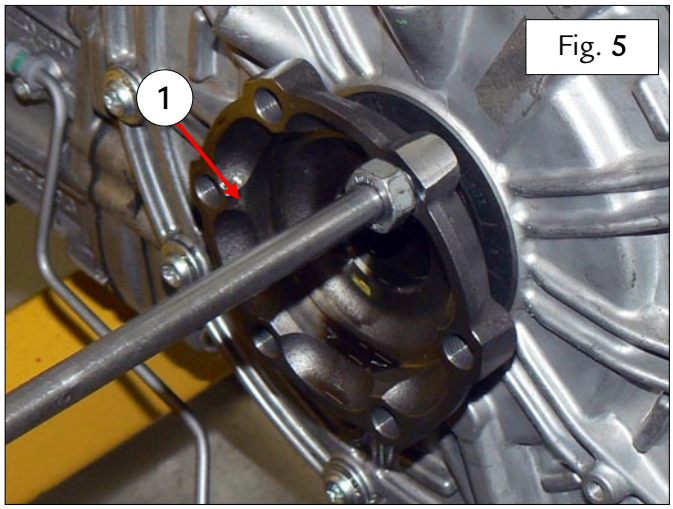


Fig. 5

- Remove the right hand flange (1) with the relative screw (2) – Fig. 6.

  Note: A small quantity of oil may be spilled; take all necessary precautions to limit and collect the spillage.

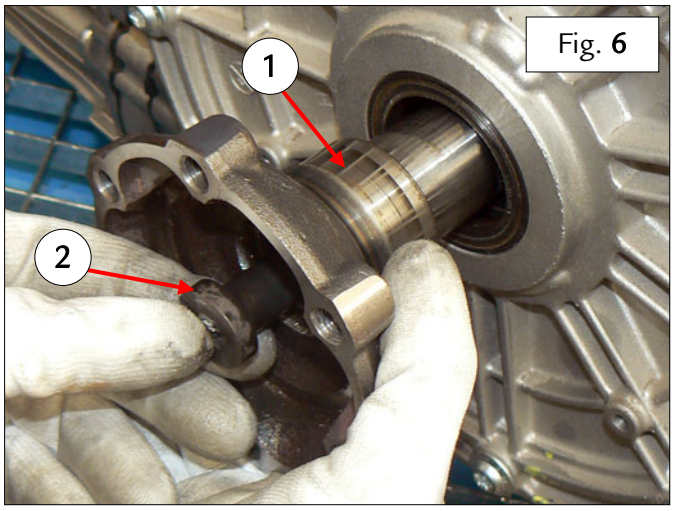


Fig. 6

- Retrieve the washer (3) from the right hand flange (1) – Fig. 7.

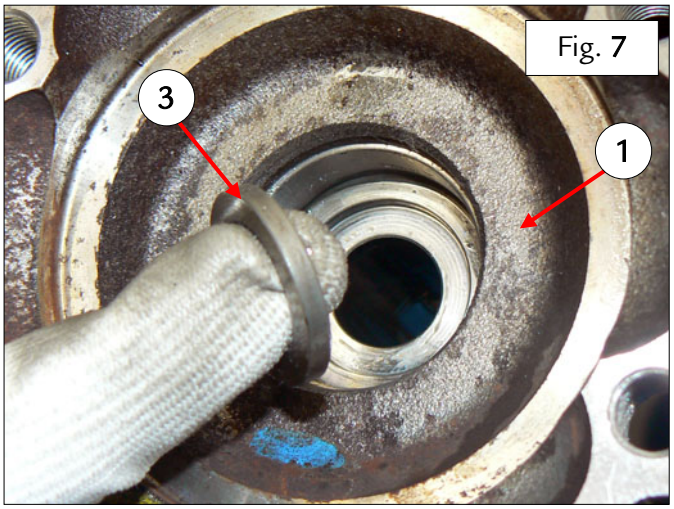


Fig. 7

- Using the tool AV 8609 (extractor and tapered ring (4) for RH side), remove the Corteco seal ring (6) from its seat and replace – Fig. 8.

  Note: Adjust the lateral bolts as necessary to grip the Corteco seal ring internally, then turn the screw on the top of the tool to extract the Corteco seal ring from its seat.

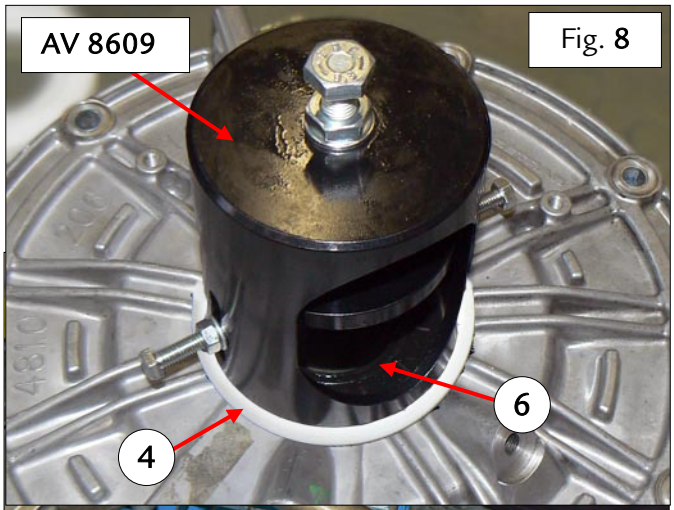
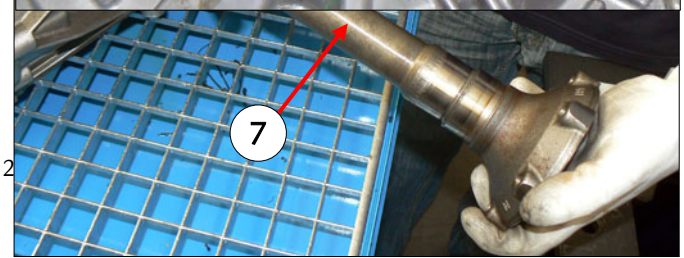


Fig. 8

- Remove the left hand flange (7) – Fig. 9.



Note: A small quantity of oil may be spilled; take all necessary precautions to limit and collect the spillage.

➢ Using the tool **AV 8609** (extractor and cylindrical ring for LH side), remove the Corteco seal ring **(6)** from its seat – Fig. **10**.

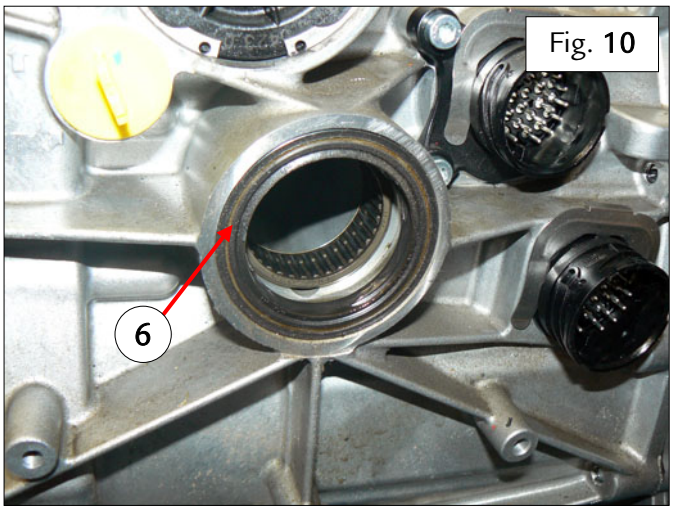


Fig. **10**

Ensure that the retainer ring **(5)** is installed correctly on the right hand flange **(1)** – Fig. **11**.

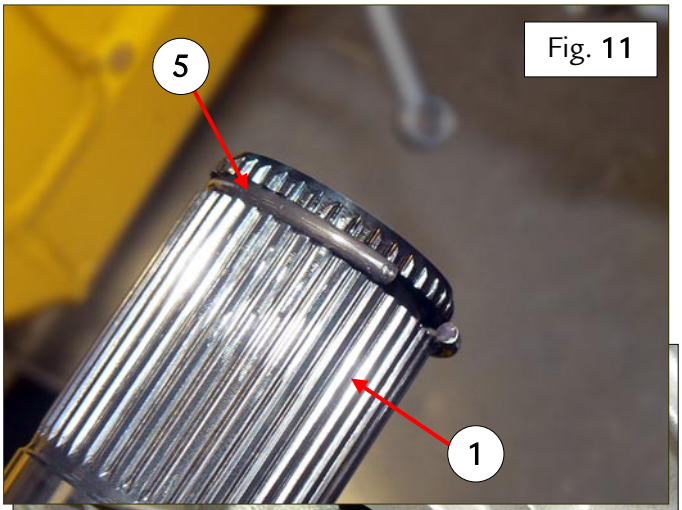
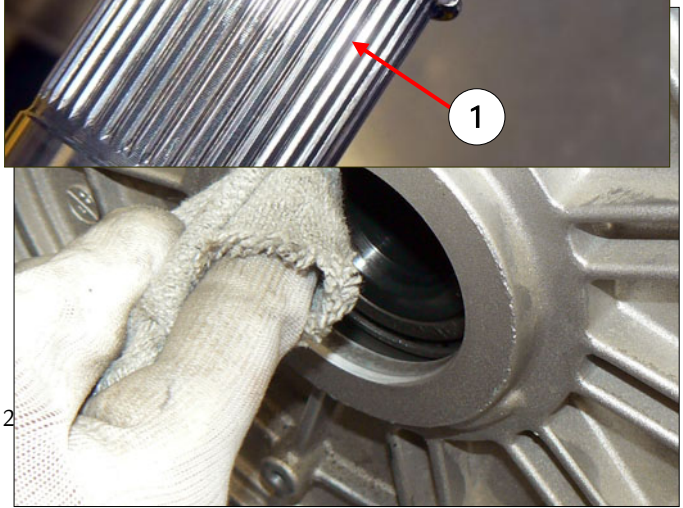


Fig. **11**

➢ Clean the seats of the Corteco seal rings thoroughly with a lint-free cloth – Fig. **12**.



- Using the rubber hammer and bushing **AV 8608** (**95978608**) with the relative smaller diameter collar, insert the new Corteco seal ring **(6)** into the specific LH side seat of the gearbox – Fig. **13**.

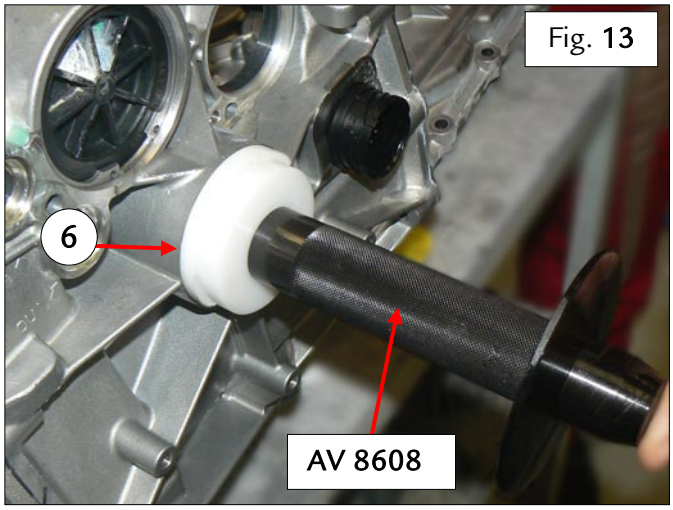


Fig. 13

- Using the rubber hammer and bushing **AV 8608** (**95978608**) with the relative larger diameter collar, insert the new Corteco seal ring **(6)** into the specific RH side seat of the gearbox – Fig. **14**.

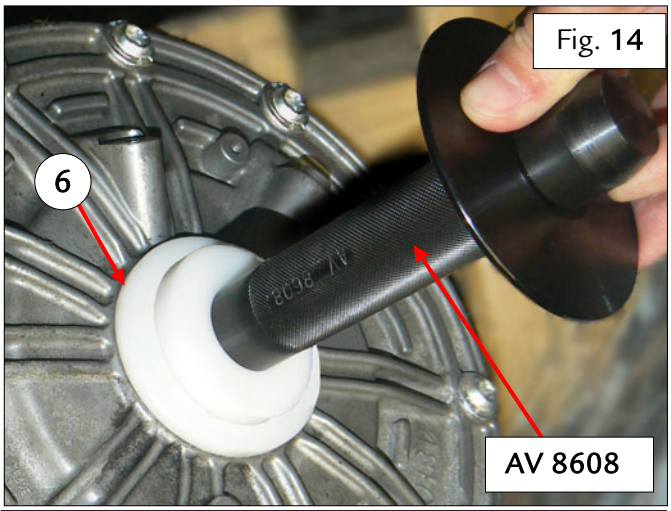


Fig. 14

- Check that the Corteco seal rings are installed correctly **(6)** in their seats – Fig. **15**.

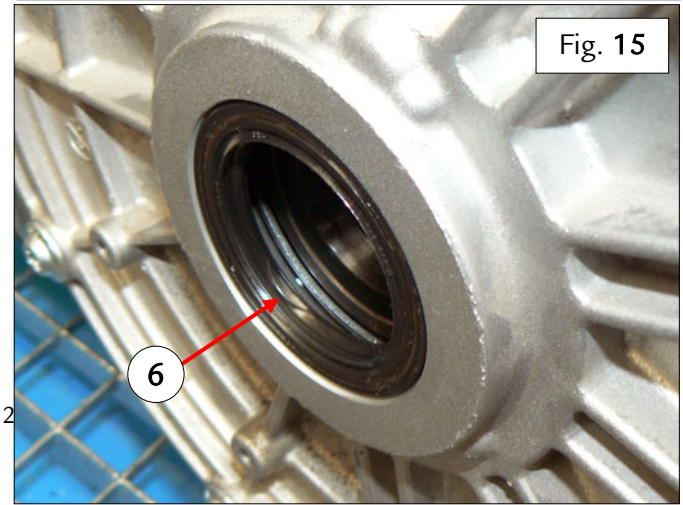


Fig. 15

- Fit the new left hand flange in its seat (7), connecting it on the differential – Fig. 16.

  Note: When inserting the LH flange (7), take particular care that the splines on the flange do not damage the Corteco seal ring (6).

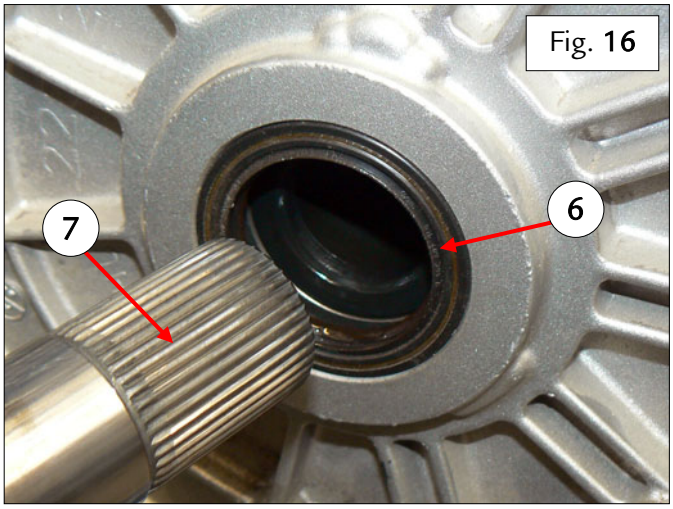


Fig. 16

- Fit the new right hand flange in its seat (1), connecting it on the differential – Fig. 17.

  Note: When fitting the RH flange (1), take care that the grooves on the flange do not damage the Corteco seal ring (6).

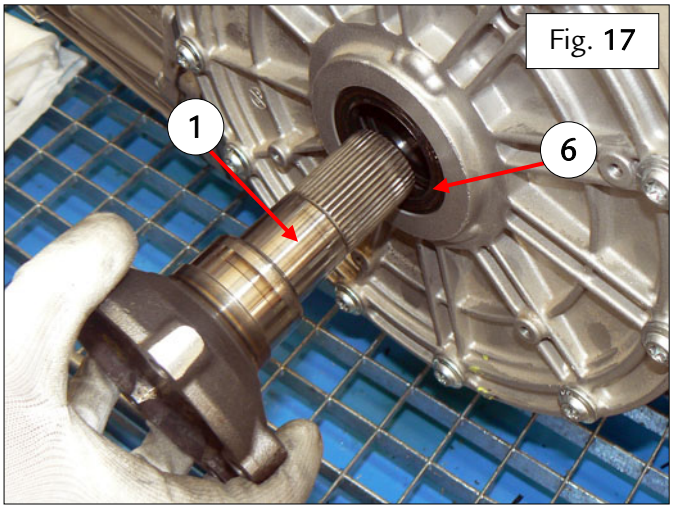


Fig. 17

- Using a rubber mallet, secure the RH flange (1) in its relative seat – Fig. 18.

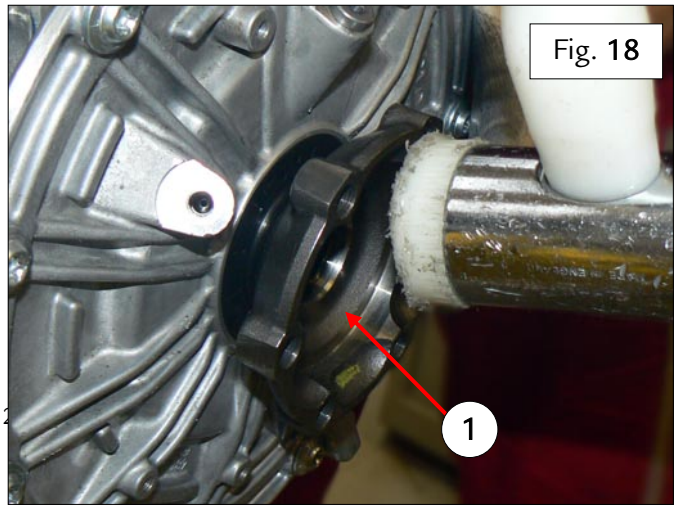


Fig. 18

- Select the new screw (2) with a new washer (3) for fastening the flanges – Fig. 19.

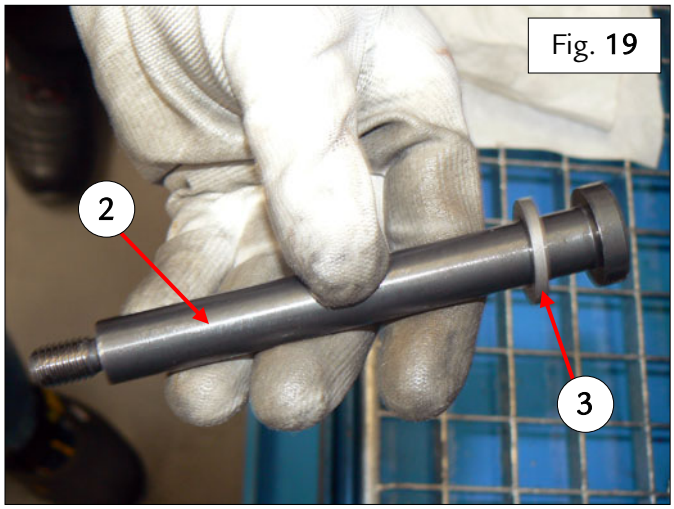


Fig. 19

- Apply **Loctite 270** to the thread of the new screw (2) – Fig. 20.

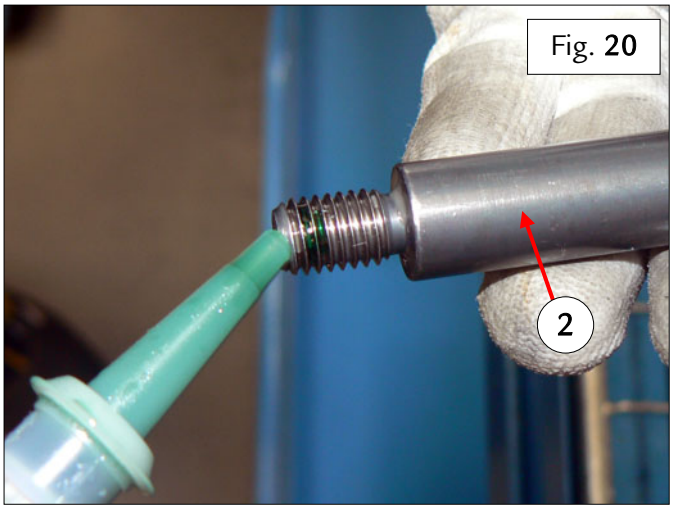


Fig. 20

- Hand-tighten the new screw (2) on the RH flange – Fig. 21.

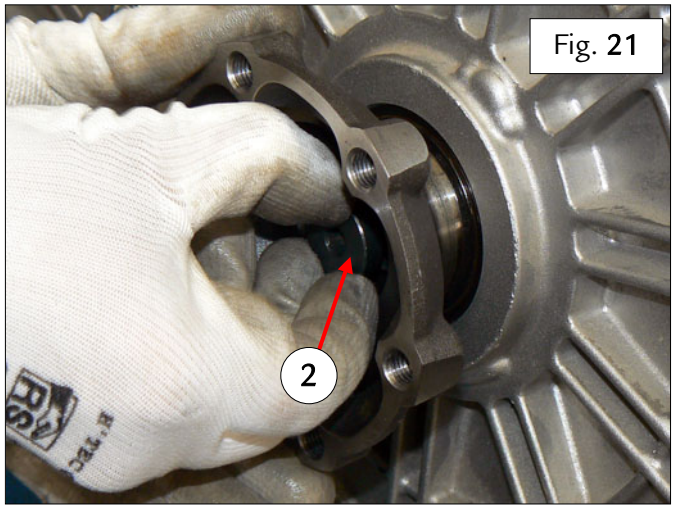


Fig. 21

- Using a calibrated and certified torque wrench, tighten the new screw (2) to a torque of **42 Nm** – Fig. 22.

  Note: Restrain the LH flange appropriately to prevent it from rotating when tightening this screw.

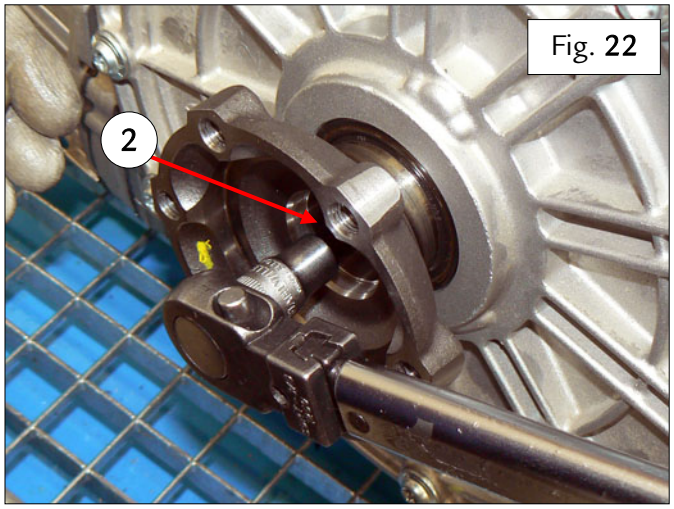


Fig. 22

- Fit a new rubber cap on the right differential flange – Fig. 23.

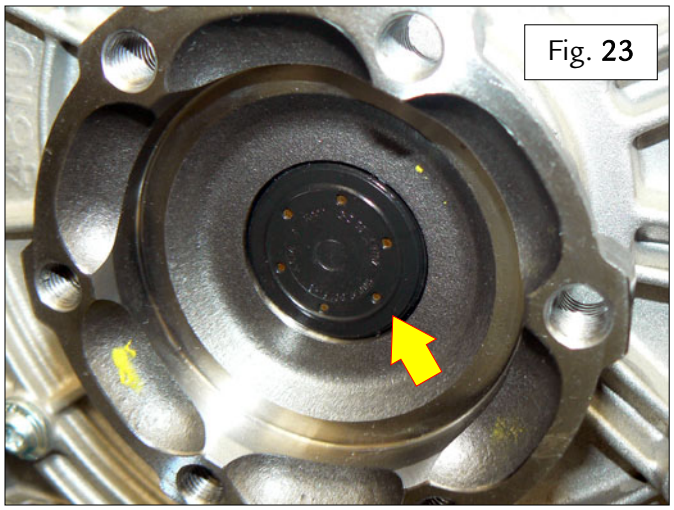


Fig. 23

- Check that the endfloat of each flange in the indicated position is **3-5 mm** – Fig. **24**.

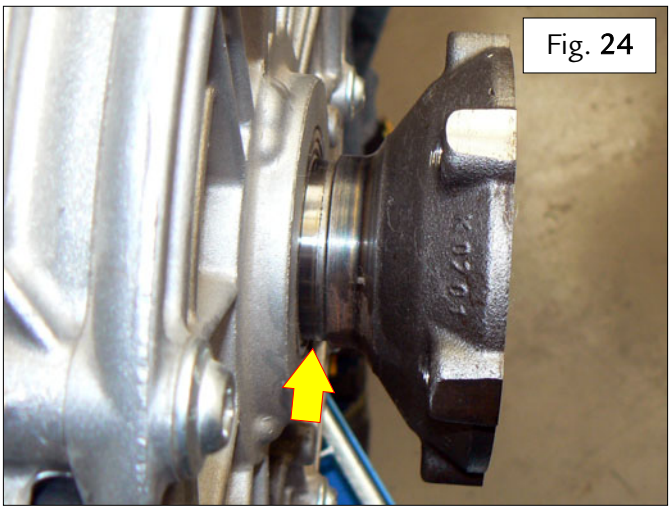


Fig. **24**

- Refit the complete rear suspension assemblies (as described in the Workshop Manual).
- Once the procedure is complete, preferably **test drive** the vehicle for ~6 miles, and check for leaks from the replaced components after returning to the workshop.

Replacement of gaskets on differential casing

- Remove the complete DCT gearbox from the vehicle (as described in the Workshop Manual).
- For the **Ferrari California**, **FF** and **F12berlinetta**, remove the RH heat shield (as described in the Workshop Manual).
- Remove the RH differential flange as described in the step Replacing differential Corteco seal rings and flanges.
- For the **458 Italia**, **458 Spider**, **FF** and **F12berlinetta**, remove the E-DIFF pipe as described in the step Replacing the E-DIFF pipe.

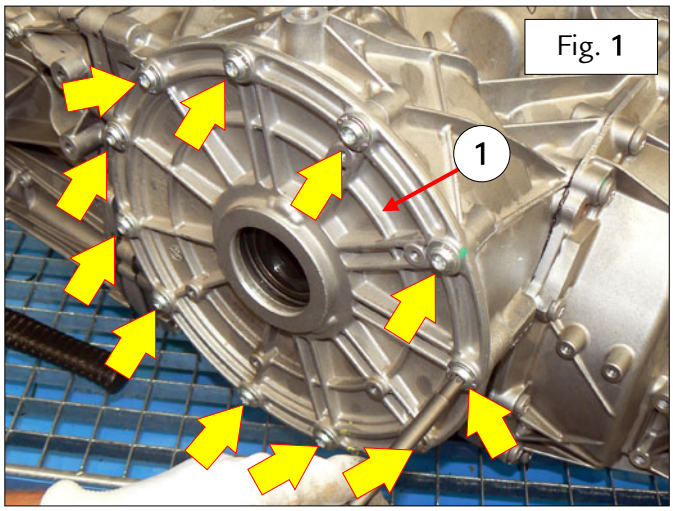


Fig. **1**

- Undo the eleven differential cover fastener screws **(1)** – Fig. **1**.

- Screw the two pins **AV 8607** (**95978607**) into the two opposite holes on the cover – Fig. **2**.

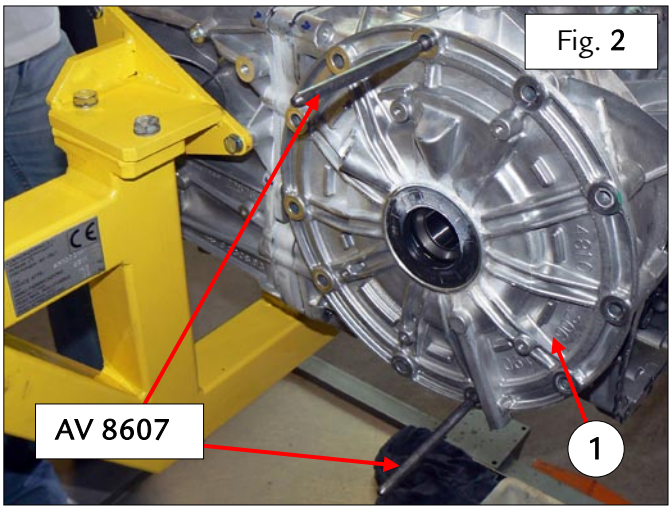


Fig. 2

- Using a lever **(2)** applied in the indicated position, remove the differential cover **(1)** – Fig. **3**.

  Note: There may be some spillage of residual oil when detaching the differential housing; take all necessary precautions to limit and collect the spillage.

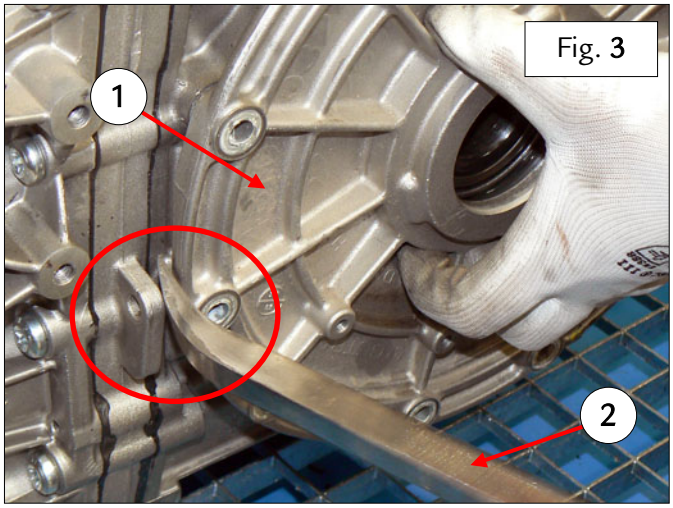


Fig. 3

For Ferrari California ONLY

- Separate the differential cover **(1)** from the gearbox – Fig. **4**.

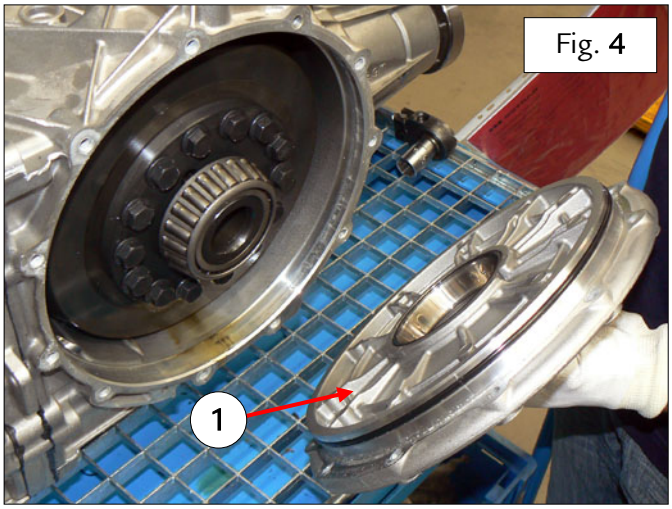


Fig. 4

Using a rubber mallet, separate the cover (1), complete with differential, from the gearbox – Fig. 5.

Note: retrieve the shim between the cover and the differential casing, if present.

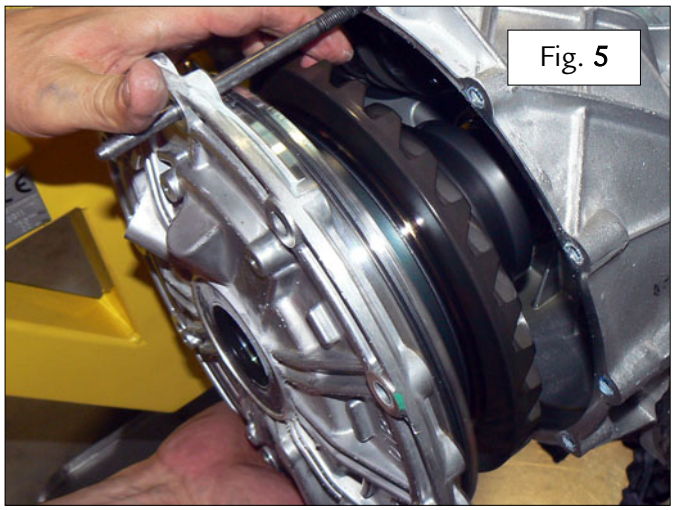


Fig. 5

Carefully clean the differential cover seat with a lint-free cloth – Fig. 6.

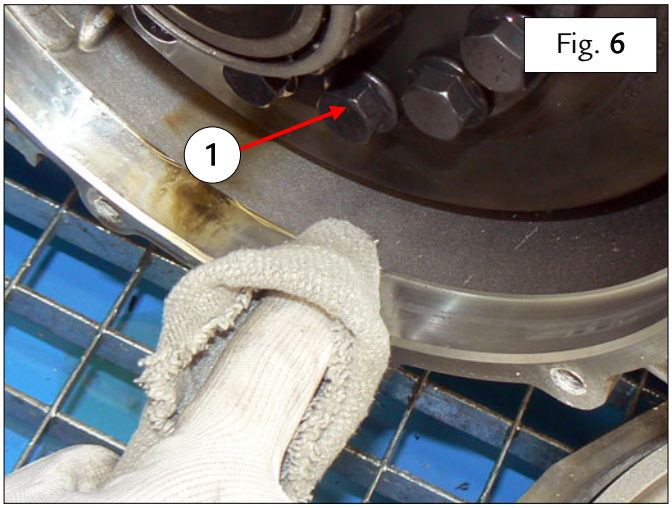


Fig. 6

Remove the seal (3) from the differential flange mating surface on the gearbox – Fig. 7.

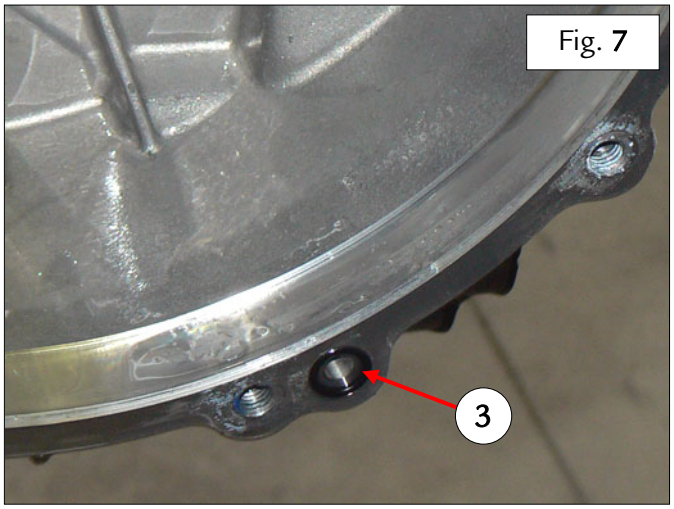


Fig. 7

- Remove the O-ring (4) then carefully clean the mating surface of the differential cover (1) with a lint-free cloth – Fig. 8.

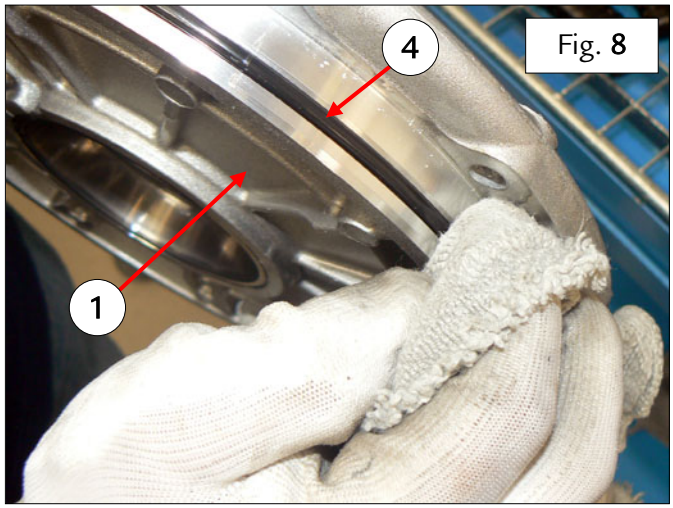


Fig. 8

- Fit a new O-ring (4) on the differential cover (1) then lubricate the O-ring – Fig. 9.

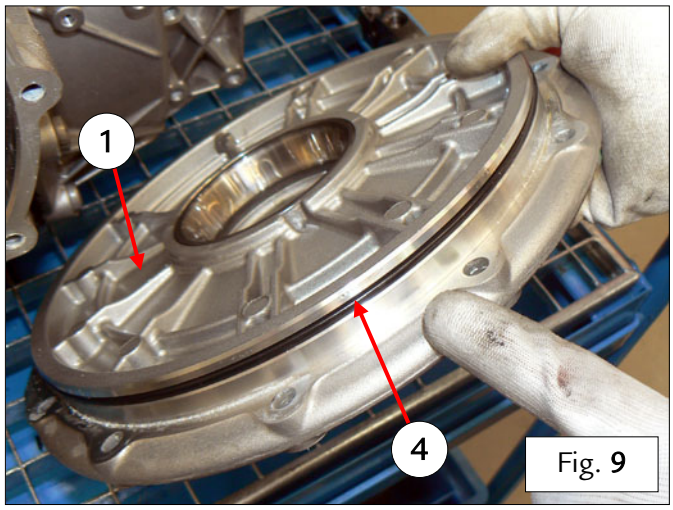


Fig. 9

- Install a new O-ring (3) on the differential cover mating surface on the gearbox, then lubricate – Fig. 10.

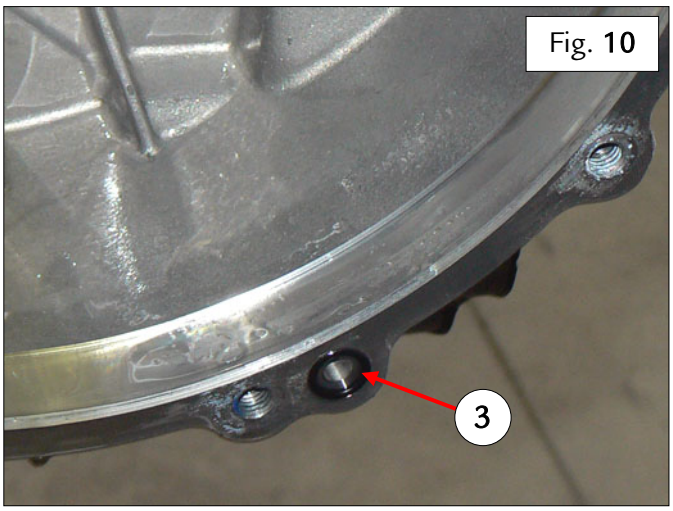


Fig. 10

- When fitting the differential cover **(1)** align the indicated reference notches – Fig. **11**.

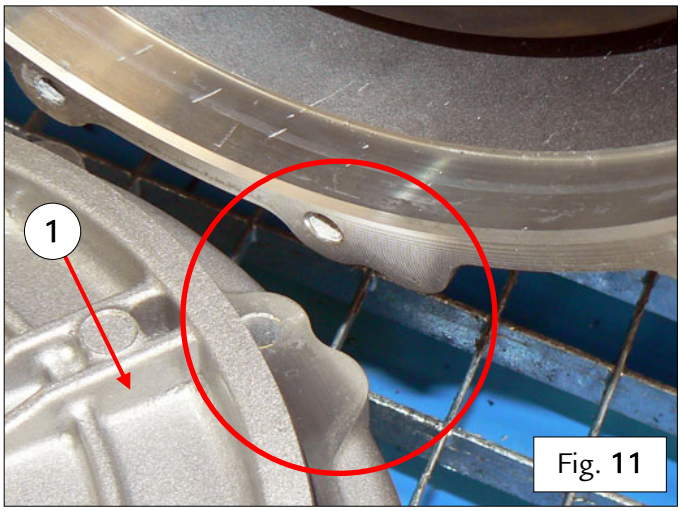


Fig. 11

- Pre-fit the differential cover **(1)** in place, then bring it closer by hand-tightening the eleven fastener screws indicated in a cross pattern – Fig. **12**.

  Note: if thread lock is not already applied to the new screws, apply **Loctite 243** to their threads.

- Tighten the eleven screws to a torque of **34 Nm** in a cross pattern – Fig. **12**.

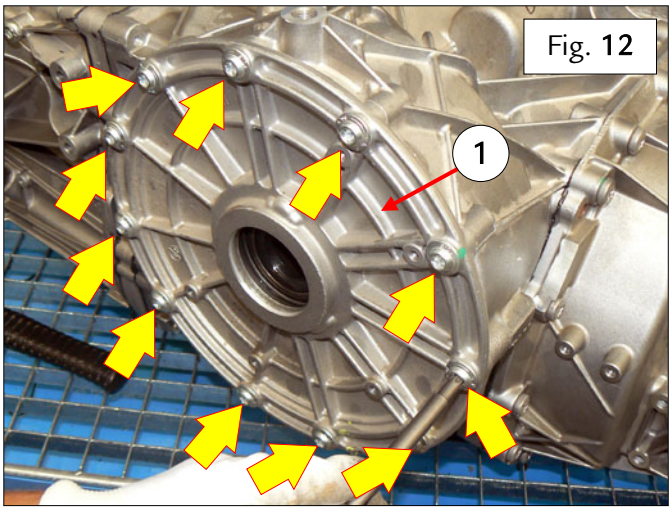


Fig. 12

- For the **458 Italia**, **458 Spider**, **FF** and **F12berlinetta**, refit the E-DIFF pipe as described in the step Replacing the E-DIFF pipe.
- Refit the RH differential flange as described in the step Replacing differential Corteco seal rings and flanges.
- Perform the **procedure for pressurizing the system** as described at the end of this document.
- For the **Ferrari California**, **FF** and **F12berlinetta**, refit the RH heat shield (as described in the Workshop Manual).
- Refit the complete DCT gearbox in the vehicle (as described in the Workshop Manual).

  Note: When refilling the GL oil and ATF fluid and inspecting the relative levels, replace all the oil/fluid plugs and the relative seals removed during the described procedures.

- Once the procedure is complete, preferably **test drive** the vehicle for ~6 miles, and check for leaks from the replaced components after returning to the workshop.

Replacing the ATF oil filter

- Drain the DCT F-3 ATF oil from the hydraulic clutch system (as described in the Workshop Manual).
- Remove the hydraulic clutch system pipes from the gearbox oil heat exchanger (as described in the Workshop Manual).

- Undo the indicated screws fastening the heat shield (1) – Fig. 1.
- Undo the screw fastening the retainer pillory block (2) – Fig. 1.

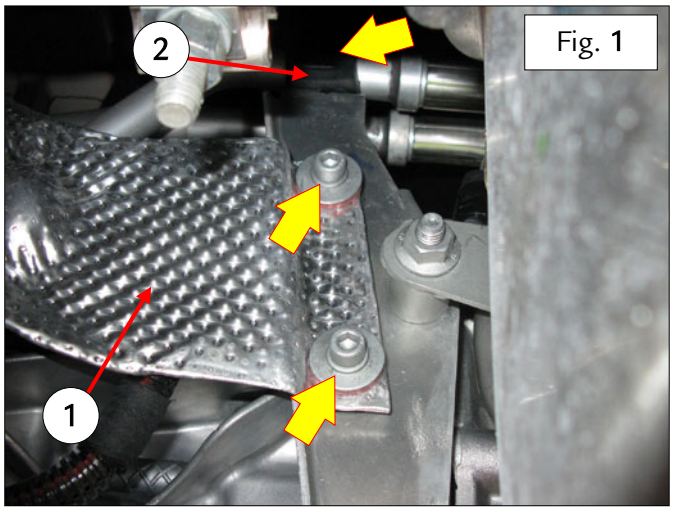


Fig. 1

- Undo the indicated screw/nut fastening the heat shield (1), then remove from the vehicle – Fig. 2.

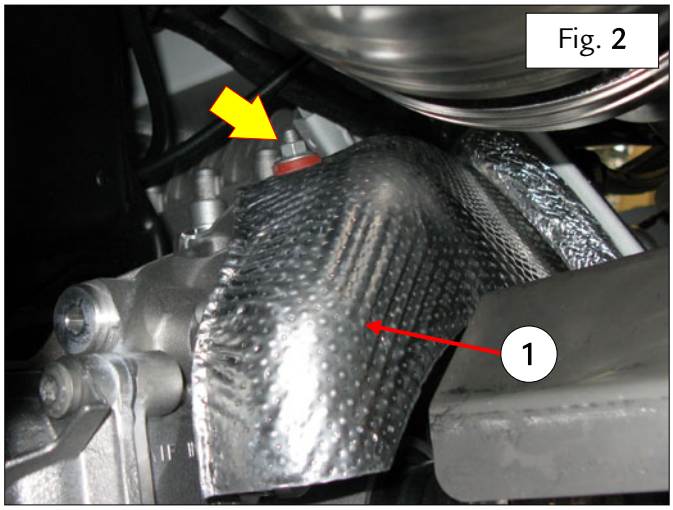


Fig. 2

- Undo the indicated screw on the retainer pillory block (3) – Fig. 3.

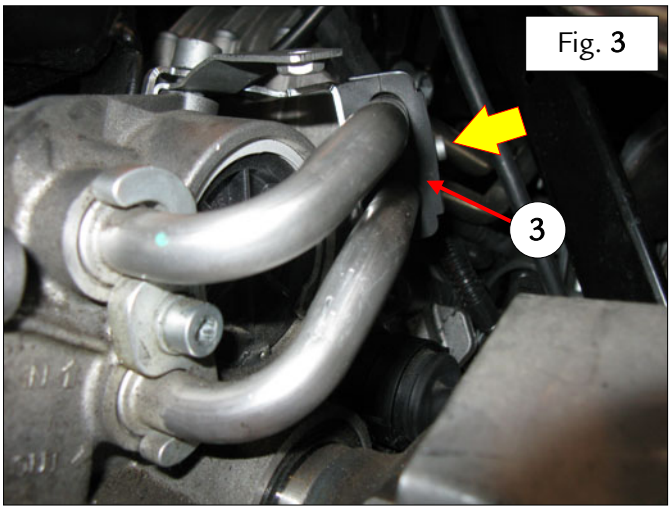


Fig. 3

- Remove the LH axle shaft heat shield (4), undoing the three screws indicated – Fig. 4.

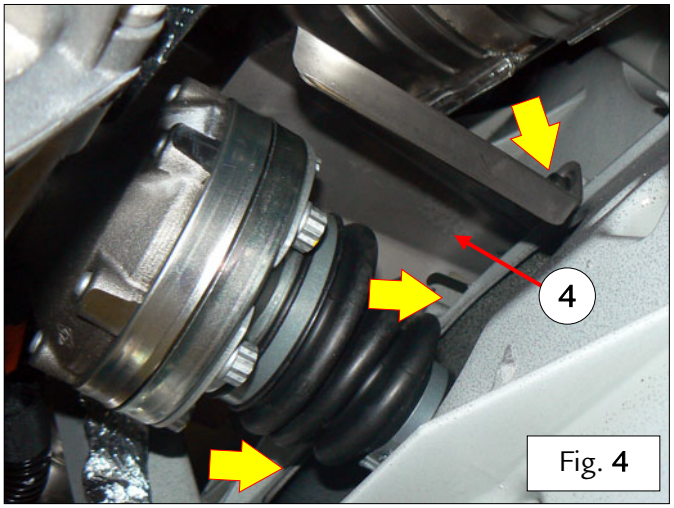


Fig. 4

Clean the area surrounding the fastening points of the clutch hydraulic system pipes on the gearbox thoroughly with a suitable degreaser that does not leave residue – Fig. 5.

- Place a suitable container underneath to collect the clutch hydraulic system fluid – Fig. 5.
- Undo the indicated screw then remove the fork (5) – Fig. 5.
- Disconnect the clutch hydraulic system fluid pipes (6) from the gearbox and plug immediately – Fig. 5.

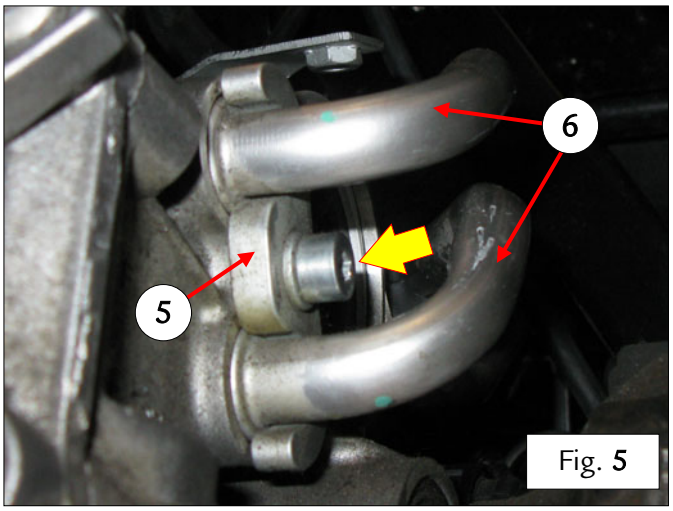


Fig. 5

- Move the clutch hydraulic system pipes (6) away from the front of the oil filter, using caution to not bend the pipes themselves – Fig. 5.

- Remove the circlip (7) on the ATF filter (8) – Fig. 6.

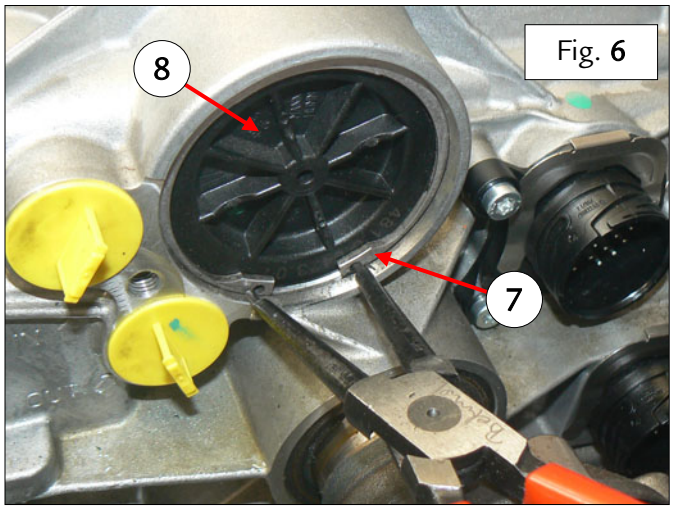


Fig. 6

- Fasten an extractor tool (9) to the oil filter (8) – Fig. 7.
- Extract the oil filter (8) and replace – Fig. 7

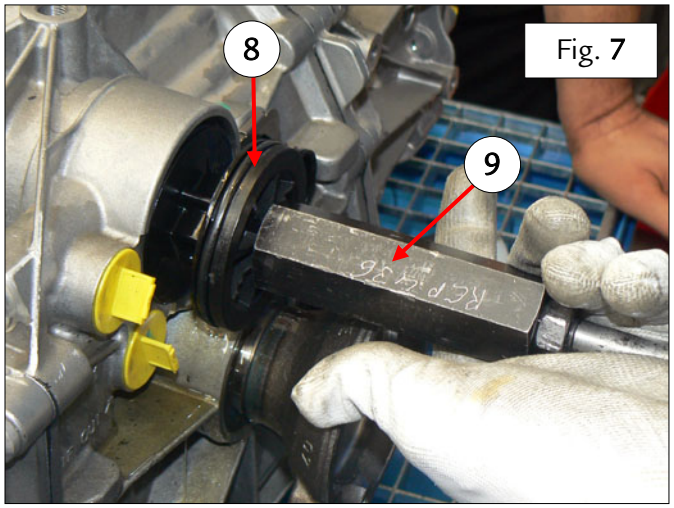


Fig. 7

- Before fitting the new oil filter (8), ensure that the two O-rings are installed correctly in the indicated positions – Fig. 8.

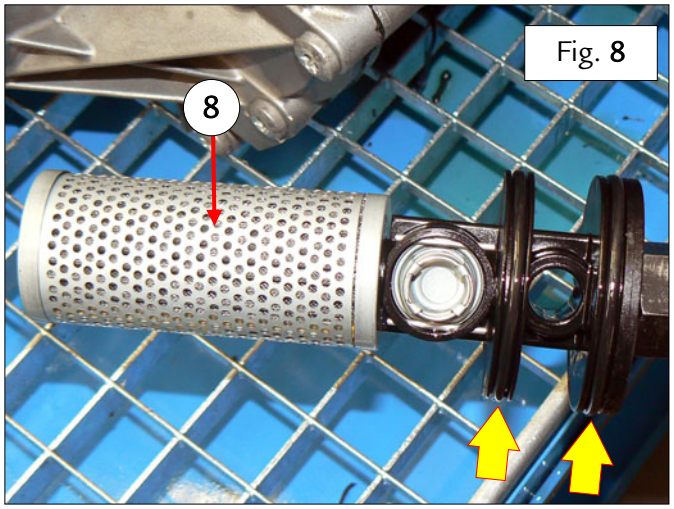


Fig. 8

- Fit the new oil filter (8) manually in the relative seat, with the indicated spring facing downwards (Fig. 9) and aligned with the groove indicated in Fig. 10.

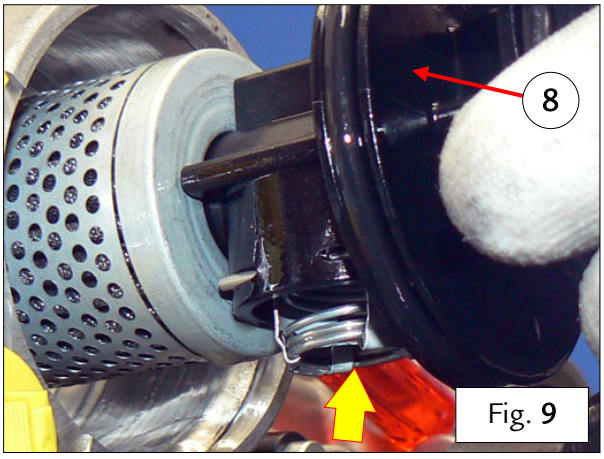


Fig. 9

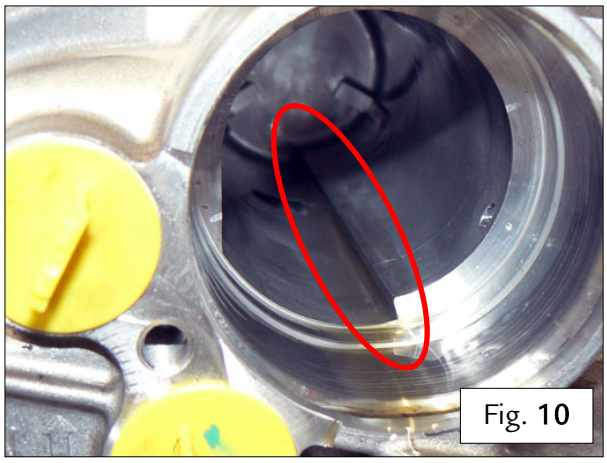


Fig. 10

- Keeping the oil filter (8) in the position described above, insert fully into its seat – Fig. 11.

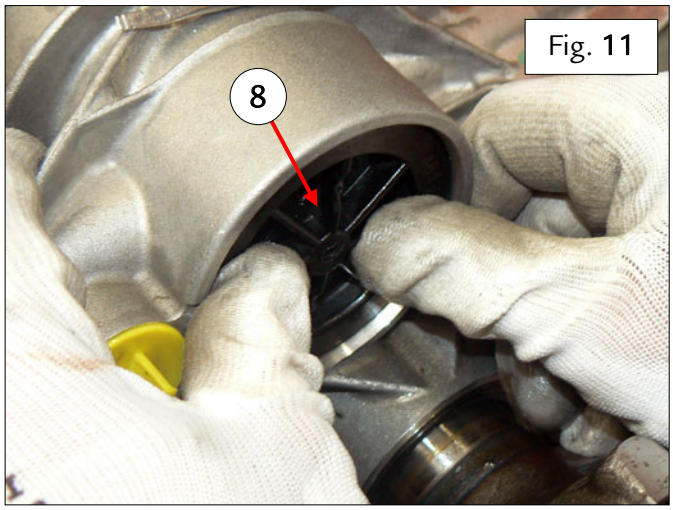


Fig. 11

- Fit the new circlip (7) to fasten the oil filter (8) – Fig. 12.

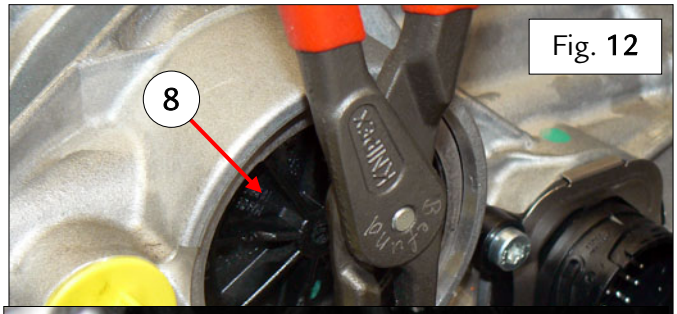


Fig. 12

Remove the plugs fitted previously – Fig. 13.

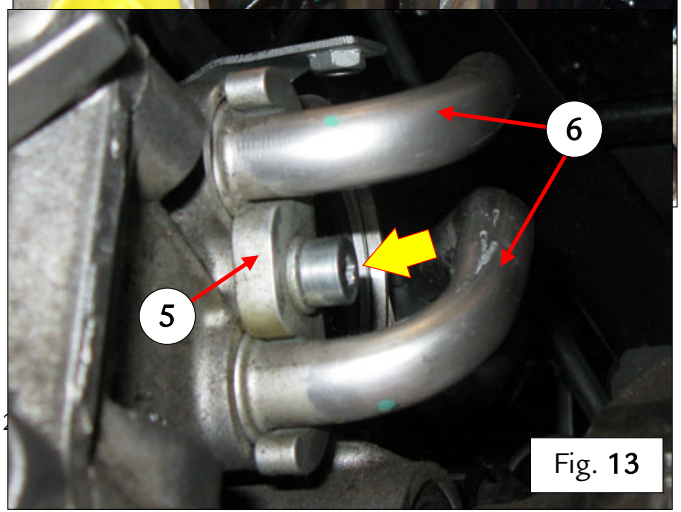


Fig. 13

- Thoroughly clean the area surrounding the fastening points of the clutch hydraulic system pipes on the gearbox with a suitable degreaser that does not leave residue – Fig. 13.
- Replace the seals on the pipes (6), lubricating them with the specified clutch system oil – Fig. 13.
- Connect the pipes (6) – Fig. 13.
- Fit the fork (5) – Fig. 13.
- Tighten the indicated screw – Fig. 13.

- Tighten the indicated screw on the retainer pillory block (3) – Fig. 14.

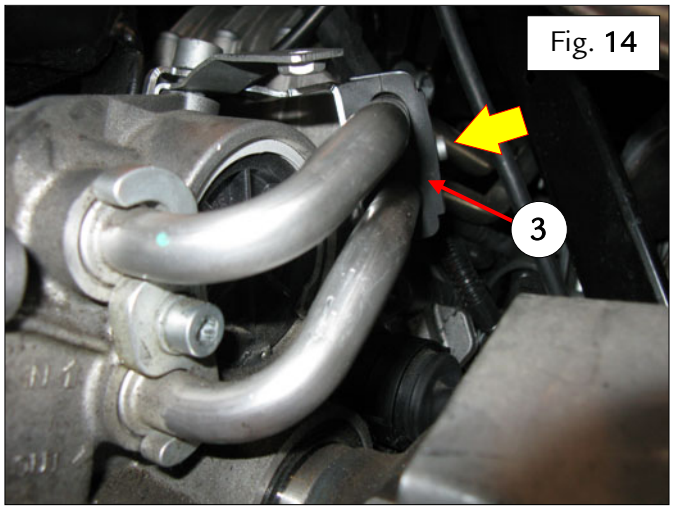


Fig. 14

- Tighten the screw fastening the retainer pillory block (2) – Fig. 15.

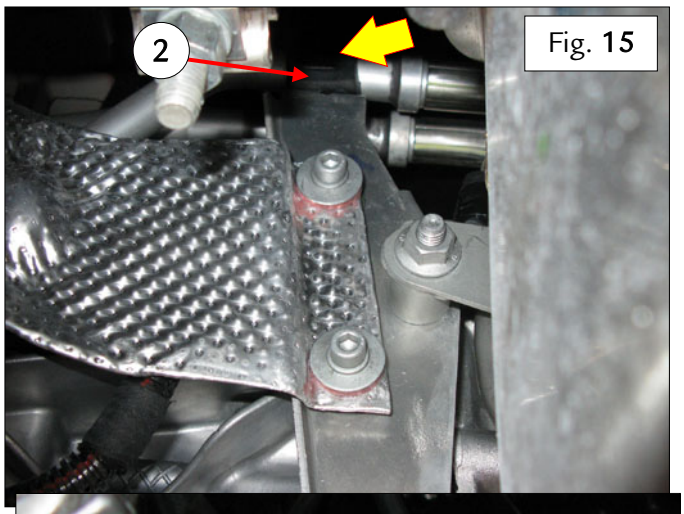


Fig. 15

- Tighten the indicated screw to a torque of 20 Nm class A – Fig. 16.
- Partially loosen the indicated screw – Fig. 16.

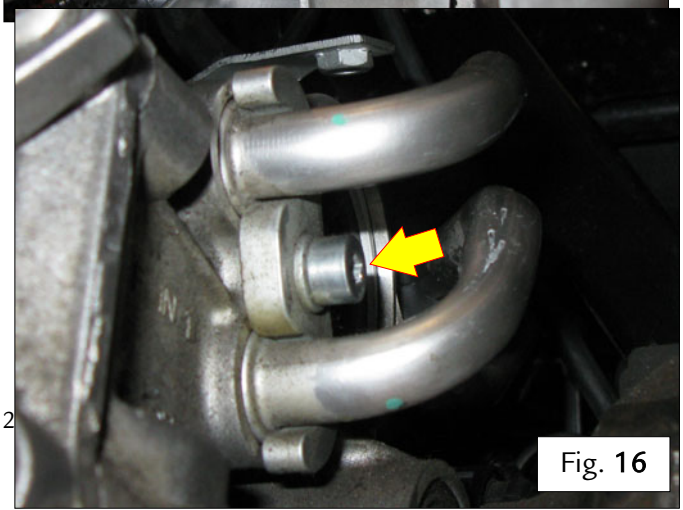


Fig. 16

- Tighten the screw fastening the retainer pillory block (2) to a torque of 8 Nm class B – Fig. 17.

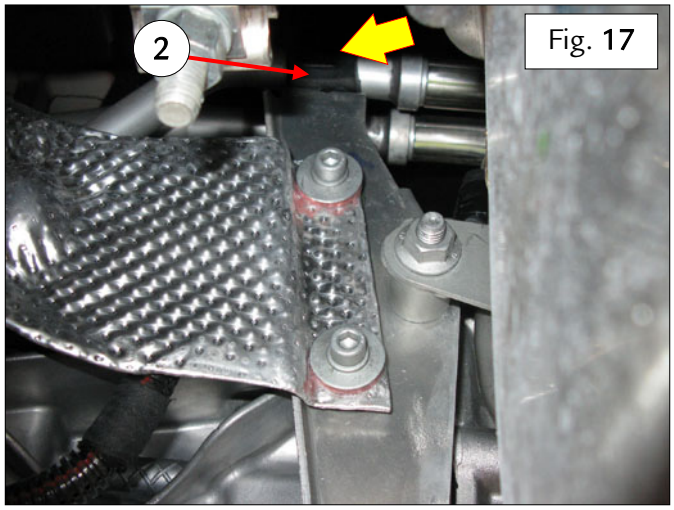


Fig. 17

- Tighten the indicated screw on the retainer block (3) to a torque of 8 Nm class B – Fig. 18.
- Retighten the screw indicated by the red arrow to a torque of 20 Nm class A – Fig. 18.

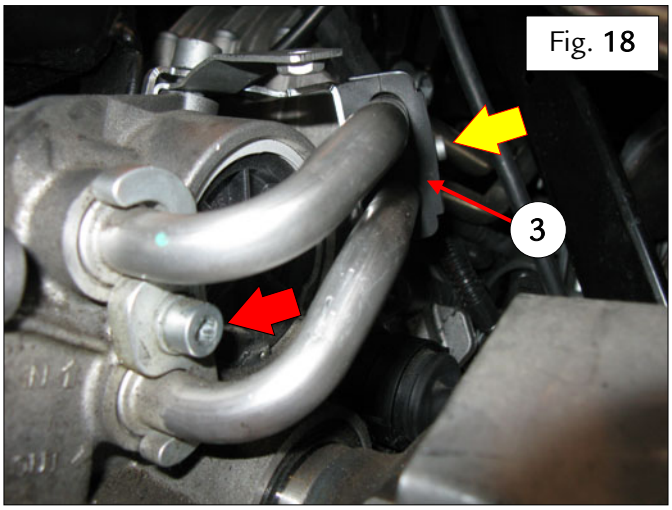


Fig. 18

- Fit the heat shield (1) in the relative seat – Fig. 19.
- Tighten the indicated screws fastening the heat shield (1) – Fig. 19.

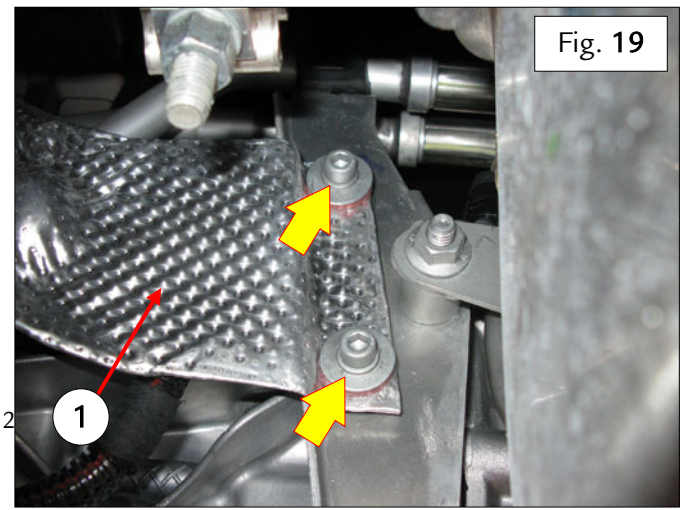


Fig. 19

- Tighten the indicated screw/nut fastening the heat shield (**1**) – Fig. **20**.

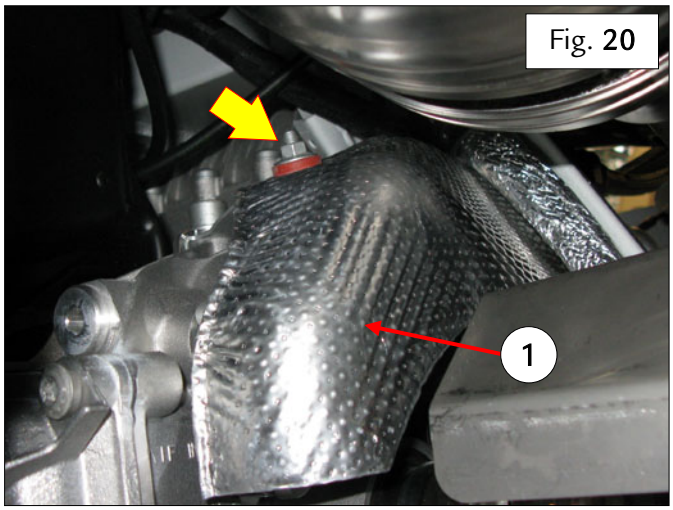


Fig. 20

- Fit the LH axle shaft heat shield (**4**) and fasten by tightening the three screws indicated – Fig. **21**.

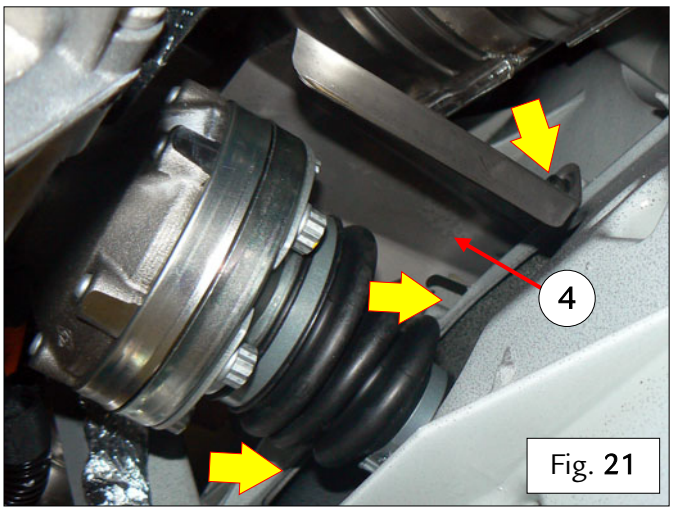


Fig. 21

- Refit the hydraulic clutch system pipes onto the gearbox-single oil heat exchanger (as described in the Workshop Manual).
- Fill the hydraulic clutch system with DCT F-3 ATF oil (as described in the Workshop Manual).
- Once the procedure is complete, preferably test drive the vehicle for 10 Km, and check for leaks from the replaced components after returning to the workshop.

Replacing the front flange/front shaft (for front engine vehicles only)

- Drain the DCT F-3 ATF oil from the hydraulic clutch system (as described in the Workshop Manual).

For Ferrari California ONLY

- Remove the circlip (1) fastening the front flange to the connection box (2) – Fig. 1.

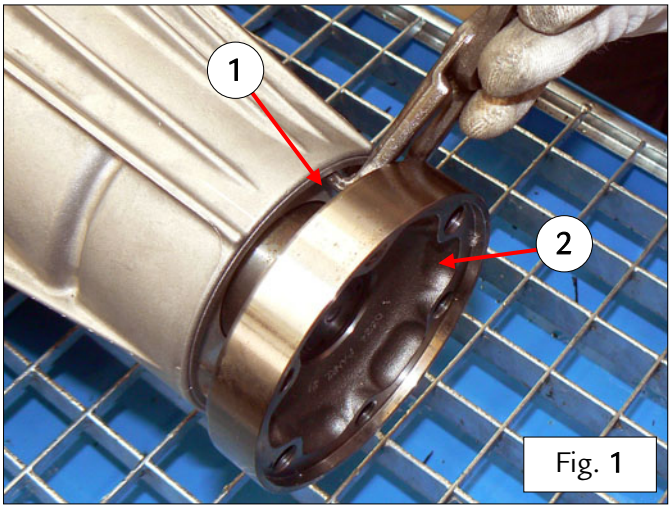


Fig. 1

- Remove the circlip (1) fastening the front flange (2) to the connection box – Fig. 2.
- Remove the front shaft (2) using the nut as a hook (3) – Fig. 2

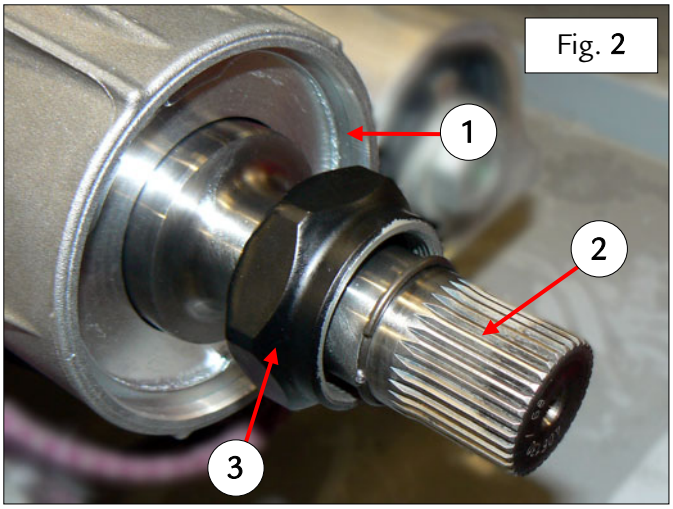


Fig. 2

➢ Retrieve the spacer (4) from the relative seat on the connector casing – Fig. 3.

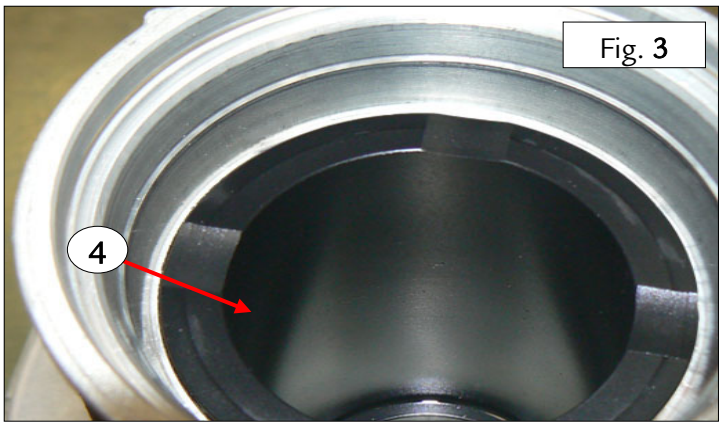


Fig. 3

Once the front shaft is removed from the gearbox, remove the retainer ring (5) then remove the nut (3) – Fig. 4.

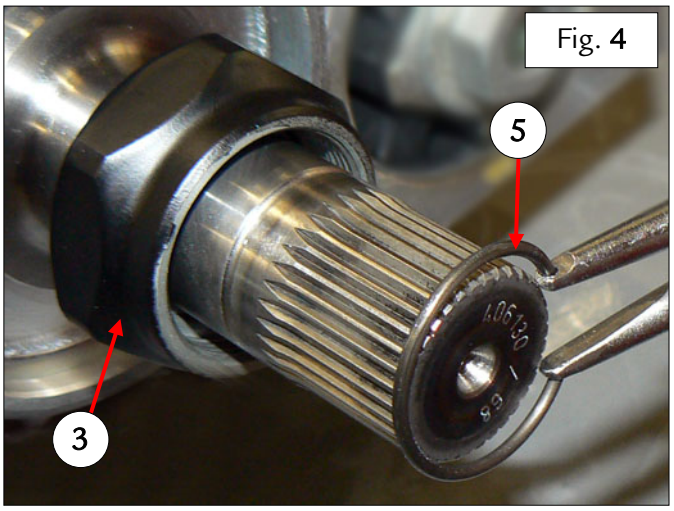


Fig. 4

For Ferrari California ONLY

➢ Remove the front flange (2) from the connector casing using a rubber mallet – Fig. 5.

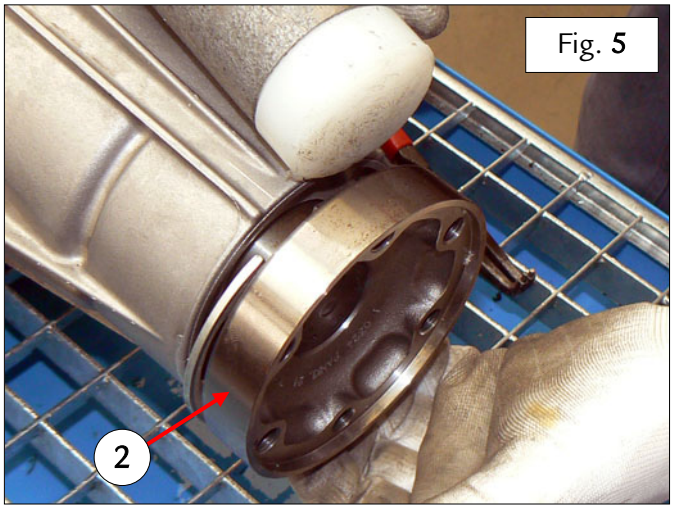


Fig. 5

- Use a lint-free cloth to carefully clean the contact seats of the front flange/front shaft on the connection box – Fig. **6**.

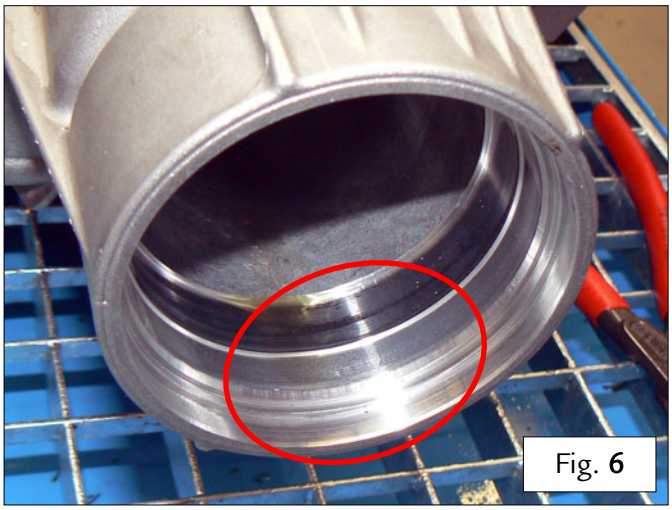


Fig. 6

- Ensure that the indicated O-ring is fitted correctly on the new front flange/shaft **(2)** – Fig. **7**.

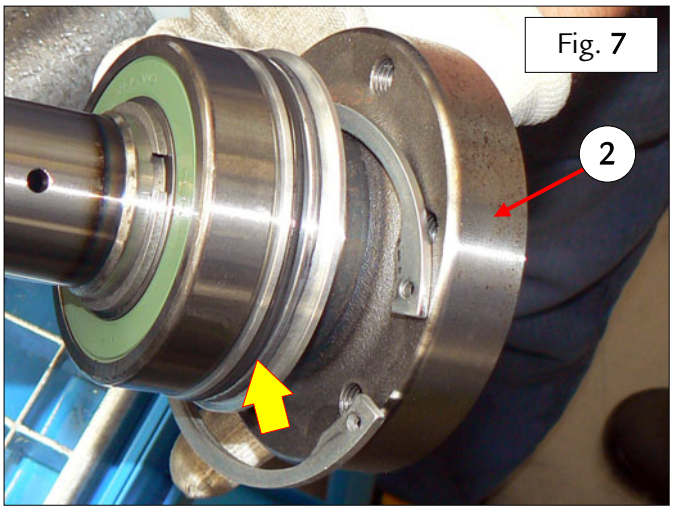


Fig. 7

Fit the spacer **(4)** in the relative seat on the connector casing – Fig. **8**.

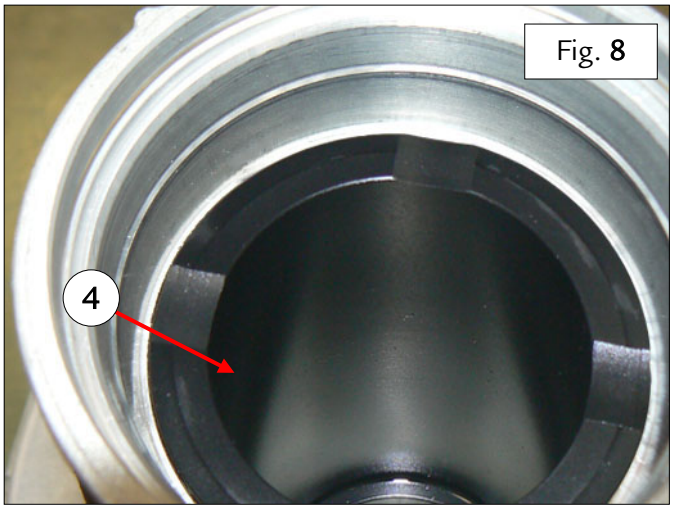


Fig. 8

➢ Install the new front flange/front shaft (2) in the relative seat on the connector casing, engaging with the clutch shaft – Fig. 10.

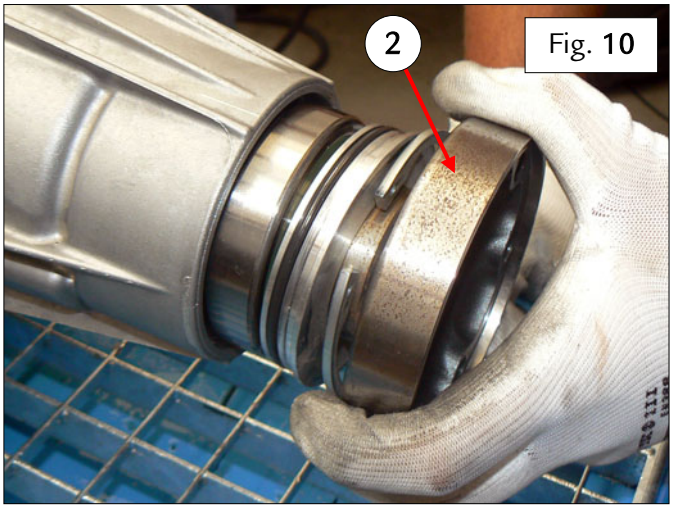


Fig. 10

Using two punches (6) applied in opposite positions on the mating surface (7) as indicated, and a rubber mallet, gradually install the new front flange/front shaft into its seat until fully engaged – Fig. 11.

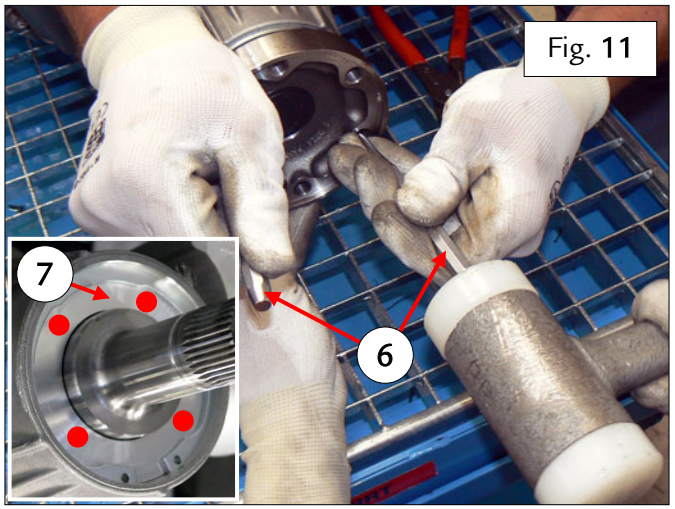
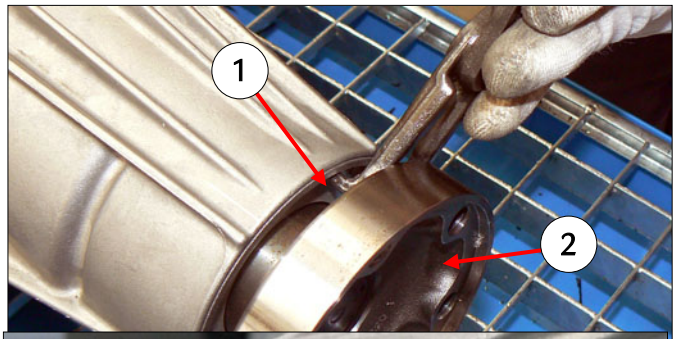


Fig. 11

For Ferrari California ONLY

➢ Fit the new circlip (1) fastening the front flange to the connector casing (2) – Fig. 12.



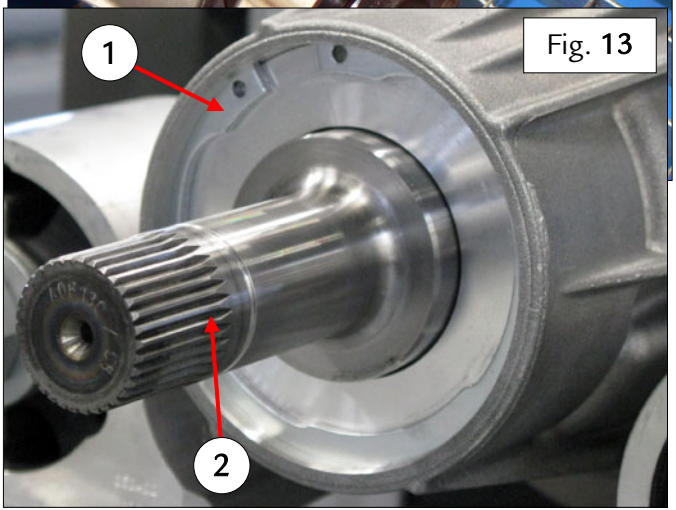


Fig. 13

- Fit the new circlip (1) fastening the front flange (2) to the connector casing – Fig. 13.

- Fit the nut (3) then the new retainer ring (5) – Fig. 14.

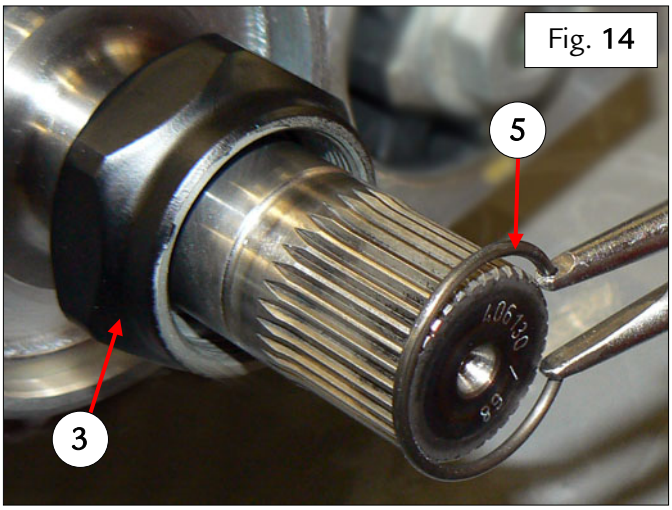


Fig. 14

- Fill the hydraulic clutch system with DCT F-3 ATF oil (as described in the Workshop Manual).
- Once the procedure is complete, preferably **test drive** the vehicle for 10 Km, and check for leaks from the replaced components after returning to the workshop.

Replacing Corteco seal ring on connector casing (for rear mid-engine vehicles only)

- Use the tool **AV 8609** (extractor and cylindrical ring (2)) to remove the Corteco seal ring (1) from its seat on the connector casing – Fig. 1.

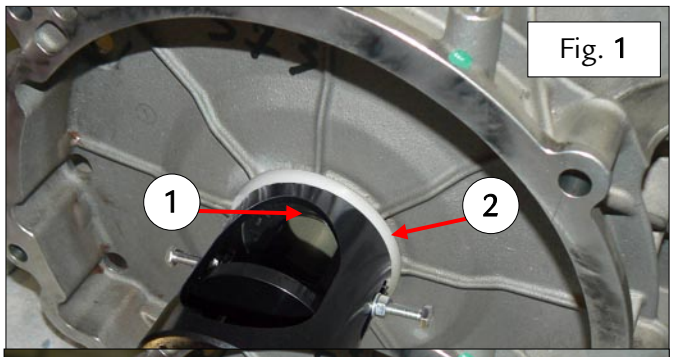


Fig. 1

- Use the punch **AV 8610** and the relative ring to drive the new Corteco ring (1) into its

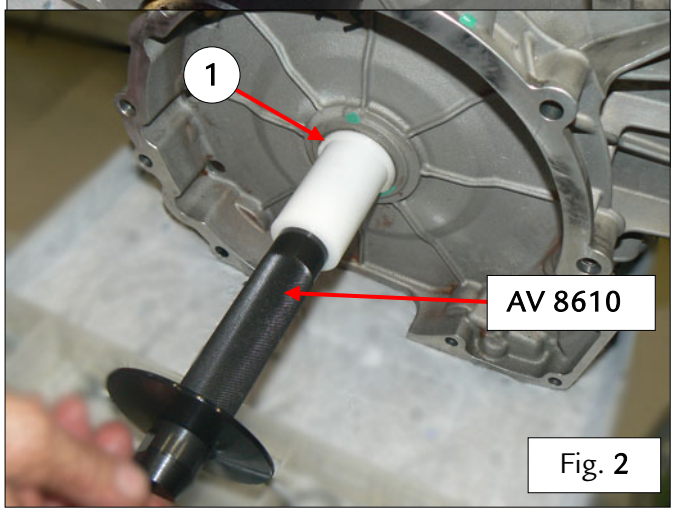


Fig. 2

seat, and then check that the ring is installed correctly – Fig. 2.

- Perform the **procedure for pressurizing the system** as described at the end of this document.
- Once the procedure is complete, preferably **test drive** the vehicle for ~6 miles, and check for leaks from the replaced components after returning to the workshop.

E-DIFF pipe

- Drain the Shell Transaxle 75W-90 GL5 gear oil (as described in the Workshop Manual).

- Undo the indicated screws fastening the RH heat shield (1) onto the axle shaft – Fig. 1.
- Move the RH heat shield (1) as far away from the gearbox as possible – Fig. 1

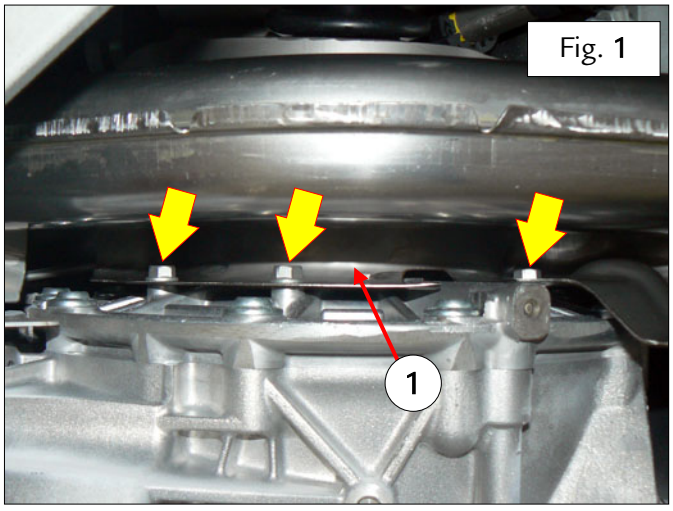


Fig. 1

- Working from the wheel bay, undo the indicated screw on the heat shield (2) – Fig. 2.

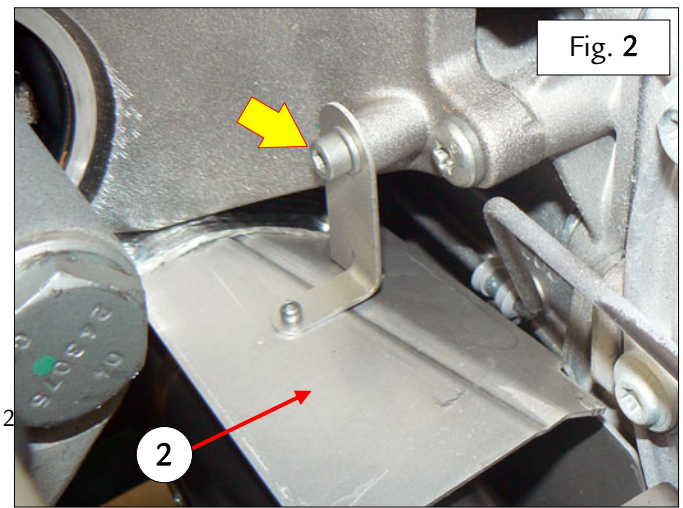


Fig. 2

- Undo the two indicated screws fastening the heat shield (2) – Fig. 3.
- Undo the nut indicated by the red arrow on the clamp (3) – Fig. 3.
- Move the heat shield (2) as far away from the gearbox as possible – Fig. 3
- Undo the indicated nut on the clamp (4) – Fig. 3

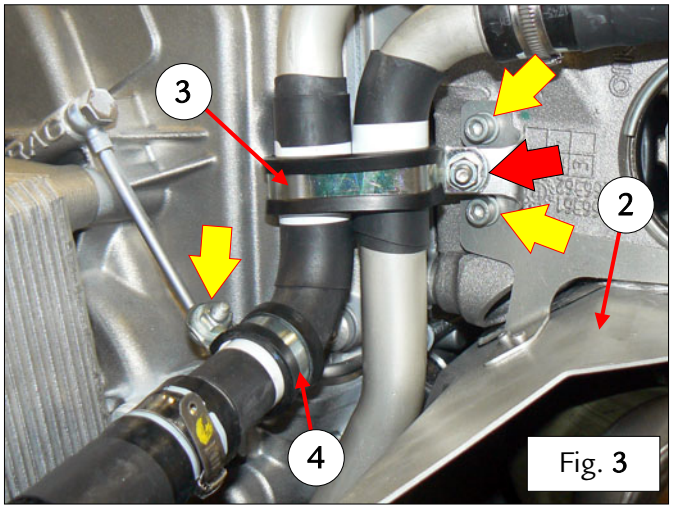


Fig. 3

- Undo the indicated screw then retrieve the clamp (4) and the mounting bracket (5) – Fig. 4.

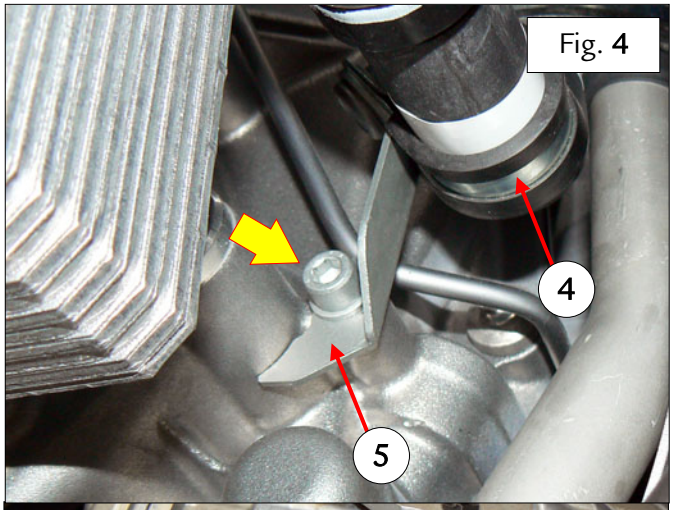


Fig. 4

- Undo the unions indicated by the yellow arrows then retrieve the relative seals – Fig. 5.
- Undo the screws on the clamps indicated by the red arrows then remove the E-DIFF pipe (3) – Fig. 5.

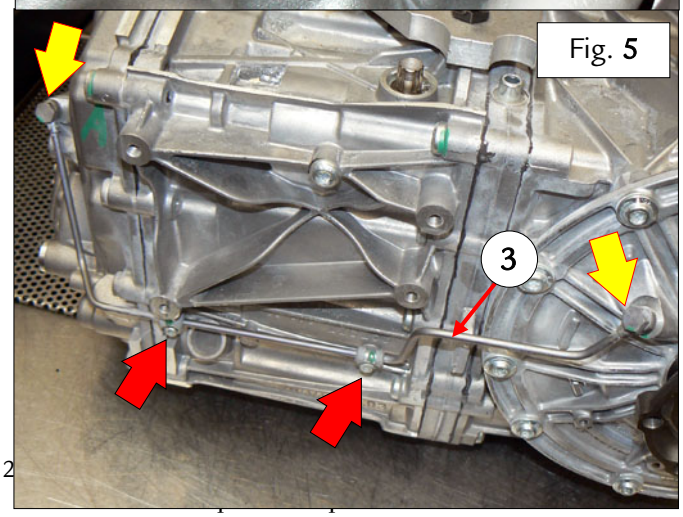


Fig. 5

- Remove the E-DIFF pipe (3) from the vehicle, taking particular care not to bend or damage the pipe – Fig. 5

- Fit the new E-DIFF pipe (3) in the relative seat on the gearbox, taking particular care not to bend or damage the pipe – Fig. 6.
- Fit the two new seals as indicated, then hand-tighten the new union (16) – Fig. 6.

  Note: The indicated seals have a bevelled edge on one side (A) and a right-angled edge on the other side (B); **The side with the bevelled edge (A) MUST be the side in contact with the pipe (3).**
- Repeat the procedure on the other end of the E-DIFF pipe (3) – Fig. 6.

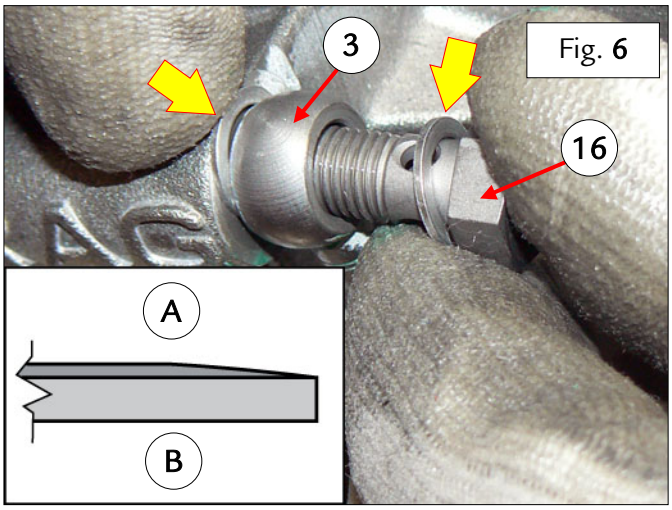


Fig. 6

Fit the clamps indicated by the red arrows on the E-DIFF pipe (3), then tighten the respective screws – Fig. 7.

- Tighten the unions indicated by the yellow arrows to a torque of **8 Nm** – Fig. 7.

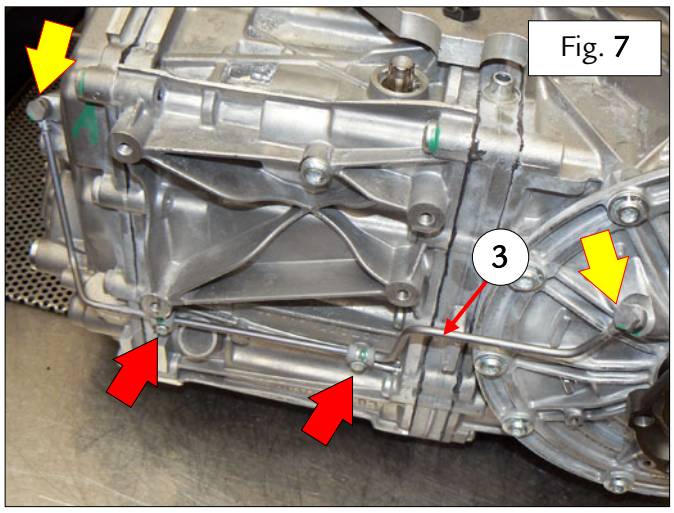


Fig. 7

- Fit the clamp (4) on the pipe, then fit the mounting bracket (5), fastening by tightening the indicated screw to a torque of **8 Nm** class B – Fig. 8.

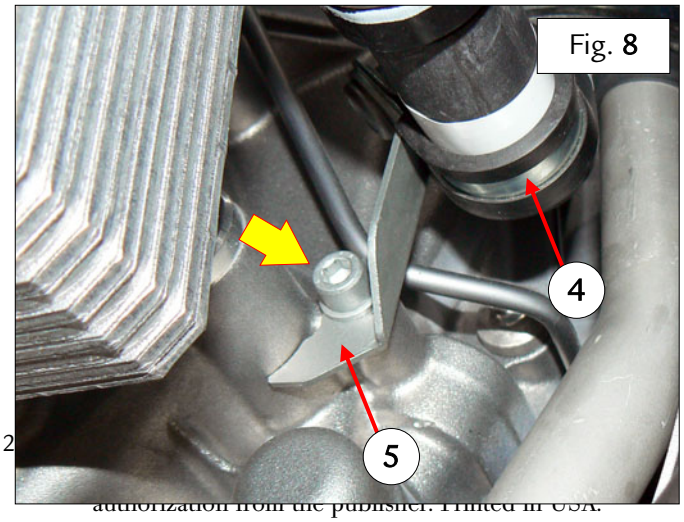


Fig. 8

➢ Fasten the heat shield (2), tightening the indicated screw– Fig. 9.

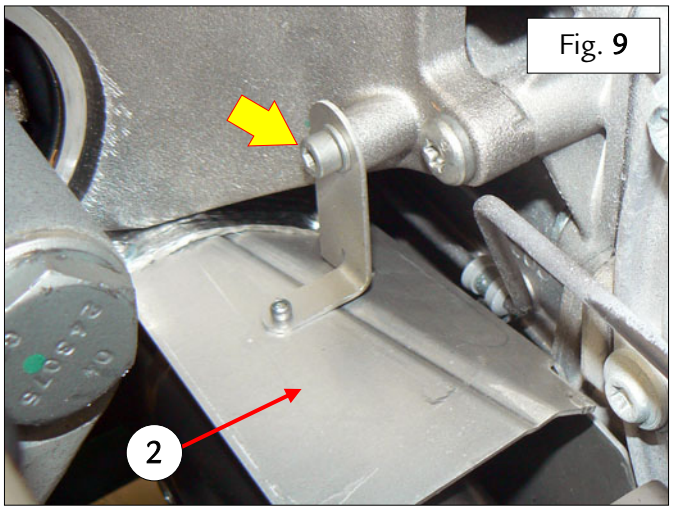


Fig. 9

Fasten the heat shield (2) by tightening the two screws indicated – Fig. 10.

➢ Tighten the indicated screw on the clamp (4) to a torque of 8 Nm class B – Fig. 10.

➢ Fasten the clamp (3) on the cooling pipes, tightening the nut indicated by the red arrow to a torque of 8 Nm class B – Fig. 10.

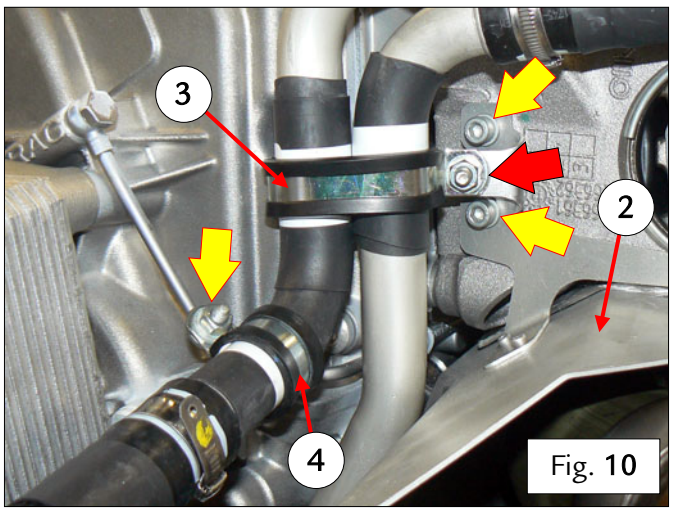


Fig. 10

➢ Fasten the RH heat shield (1) onto the axle shaft, tightening the indicated screws – Fig. 11.

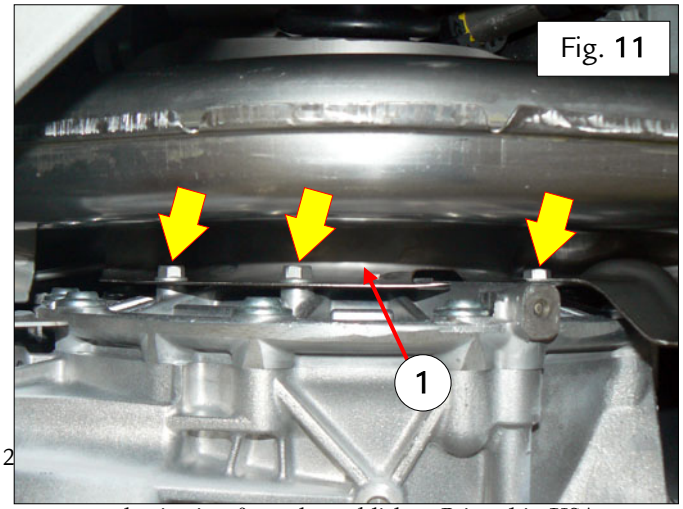


Fig. 11

- Fill the system with Shell Transaxle 75W-90 GL5 gear oil (as described in the Workshop Manual).
- Once the procedure is complete, preferably **test drive** the vehicle for ~6 miles, and check for leaks from the replaced components after returning to the workshop.

Replacing air breather caps

- For the **458 Italia**, **458 Spider, 488 GTB, 488 Spider, 488 Pista, 488 Pista Spider and F8 Tributo**, open the engine compartment lid to access the caps.
- For the **Ferrari California**, **FF**, **F12berlinetta**, **812 Superfast**, **GTC4 Lusso, GTC4 Lusso T, Monza SP1, Monza SP2 and Portofino**, remove the removable gearbox carrier subframe from the vehicle (as described in the Workshop Manual).

- Remove the plugs from the relative breather orifices and replace – Fig. **1**.
- When refitting the plugs, check that they are securely fastened – Fig. **1**.

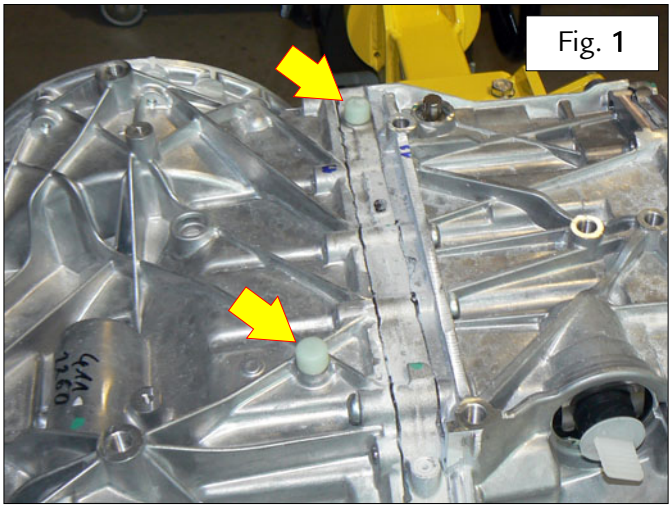


Fig. 1

- For the **Ferrari California**, **FF**, **F12berlinetta**, **812 Superfast**, **GTC4 Lusso, GTC4 Lusso T, Monza SP1, Monza SP2 and Portofino**, refit the removable gearbox carrier subframe in the vehicle (as described in the Workshop Manual).

System pressurization procedure

The system pressurization test described as follows must be performed before starting the procedure.

- IMPORTANT -

The utmost cleanliness must be maintained during all the following operations; always wear clean gloves, replacing them as needed, and use absorbent lint-free cloth and heptane to clean and degrease components.

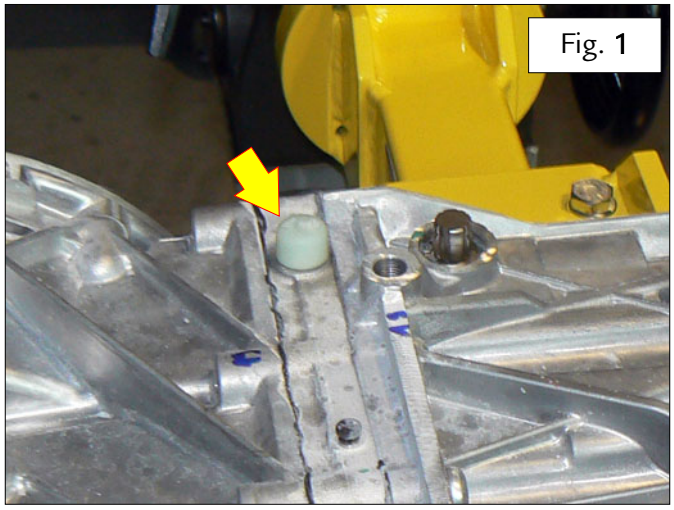
When performing any of the above procedures with the gearbox on the workbench, before reinstalling the gearbox in the vehicle and filling the gearbox with oil and fluid, the gearbox systems must be pressurized.

- IMPORTANT -

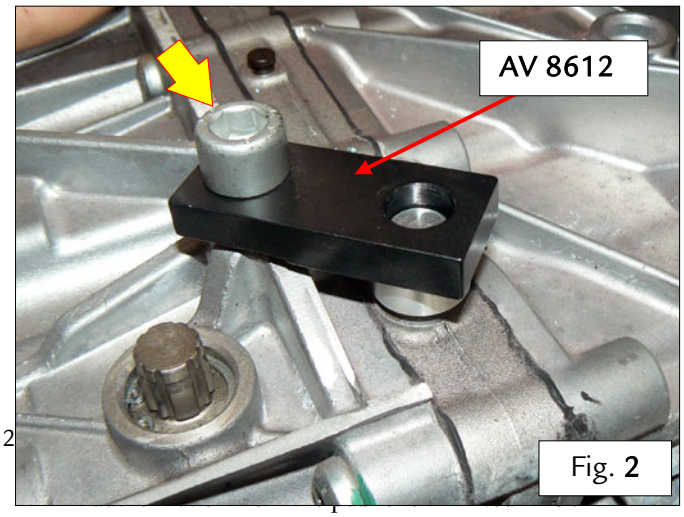
This procedure must only be performed with the gearbox completely empty (containing no oil or fluid).

GEAR OIL SYSTEM

- Remove the gear oil breather plug indicated – Fig. 1.



- Install the tool **AV 8612** (**95978612**), consisting of a plug with relative O-ring and a bracket fastened with the indicated screw, in the GL oil system breather – Fig. 2.



- Seal the indicated GL oil inlet and outlet orifices on the gearbox with the gearbox pressurizing tool **AV 8604**, and then fasten by tightening the indicated screw – Fig. **3**.

  Note: The open plug **(1)** must be fitted in the orifice on the gearbox marked "**IN**".

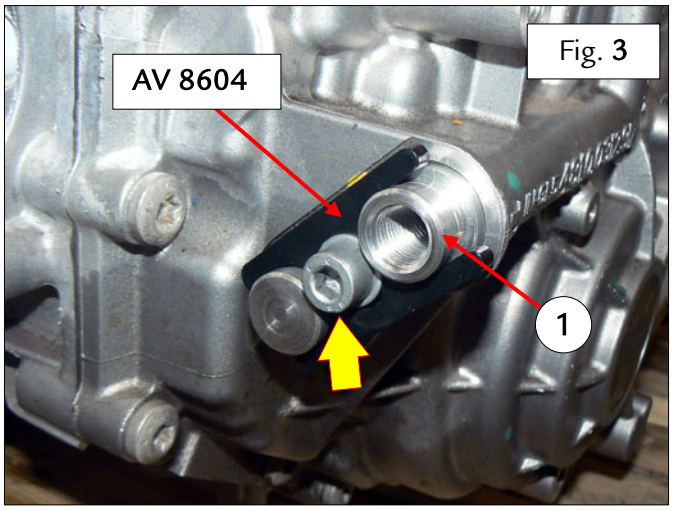


Fig. 3

- Connect the pressurizing system to the plug **(1)** – Fig. **3**.
- Pressurize the system to a maximum of **0.5 Bar**.
- Keeping the system pressurized, test the seal of the replaced parts around joints/seams/gaskets/seals using bubble testing liquid.
- After testing, remove all residue of bubble testing liquid from the gearbox with a clean, lint-free cloth.
- Once the procedure is complete, remove the gearbox pressurizing tools **AV 8604** and **AV 8612**.

- Refit the indicated breather plug – Fig. **4**.

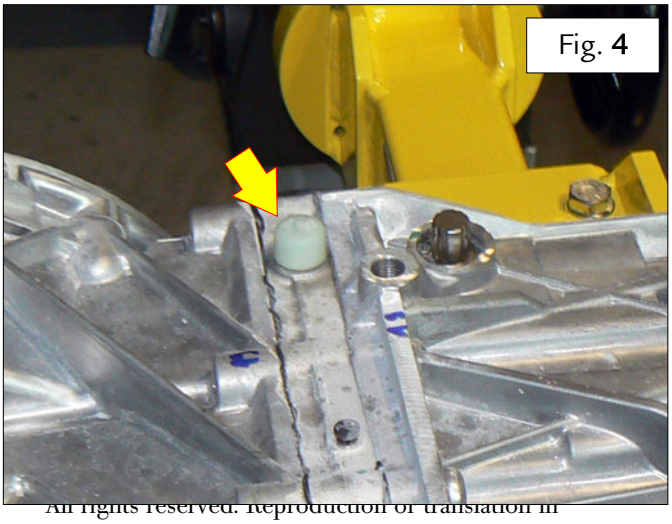
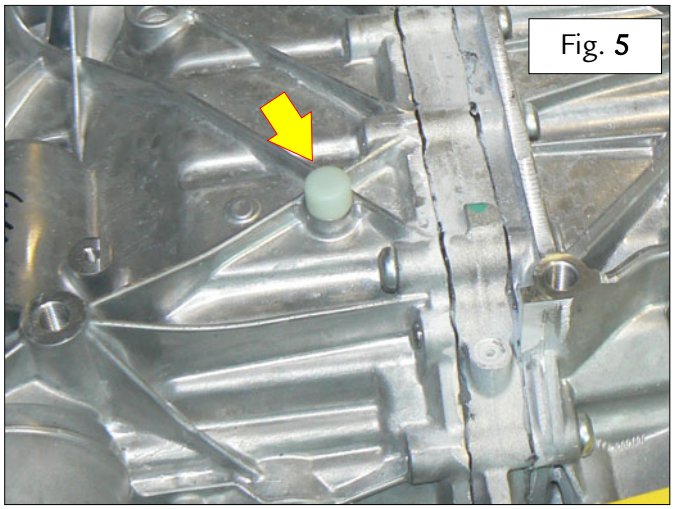


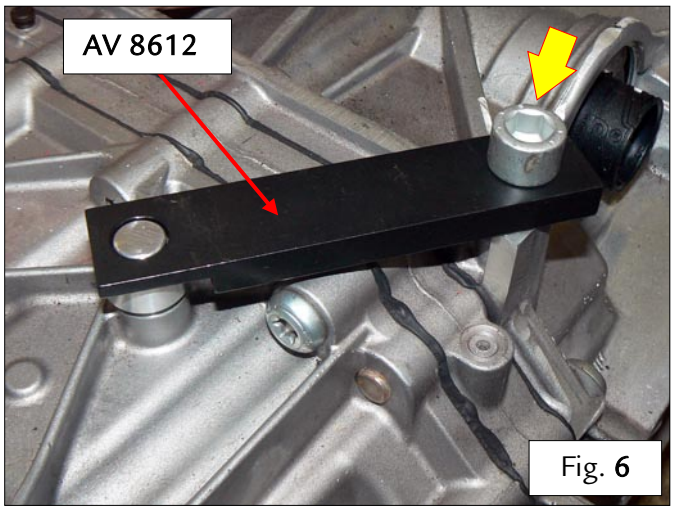
Fig. 4

ATF HYDRAULIC CLUTCH SYSTEM

- Remove the hydraulic clutch system oil breather plug indicated – Fig. **5**.



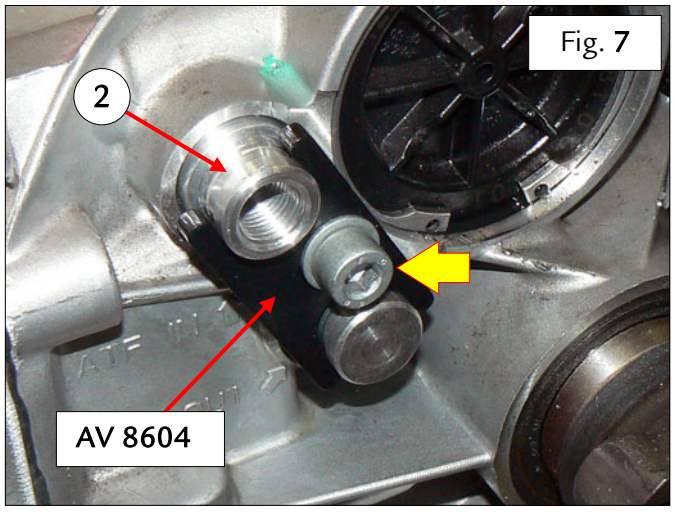
- Install the tool **AV 8612**, consisting of a plug with relative O-ring and a bracket fastened with the indicated screw, in the ATF oil system breather – Fig. **6**.



- Seal the indicated ATF oil inlet and outlet orifices on the gearbox with the gearbox pressurizing tool **AV 8604**, and then fasten by tightening the indicated screw – Fig. **7**.

  Note: the open plug **(2)** must be fitted in the orifice on the gearbox marked "**IN**".

- Connect the pressurizing system to the plug **(2)** – Fig. **7**.



- Pressurize the system to a maximum of **0.5 Bar**.
- Keeping the system pressurized, test the seal of the replaced parts around joints/seams/gaskets/seals using bubble testing liquid.
- After testing, remove all residue of bubble testing liquid from the gearbox with a clean, lint-free cloth.
- Once the procedure is complete, remove the gearbox pressurizing tools **AV 8604** and **AV 8612**.
- Refit the indicated breather plug – Fig. **8**.

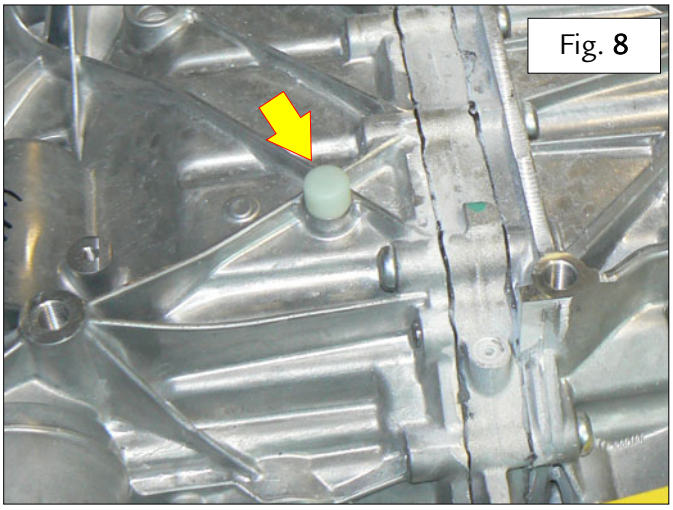


Fig. 8

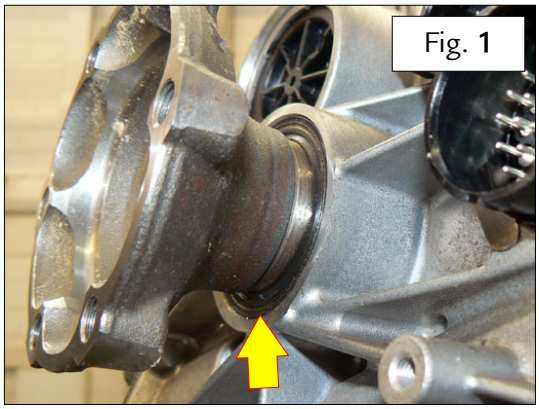
Thank you for your co-operation.

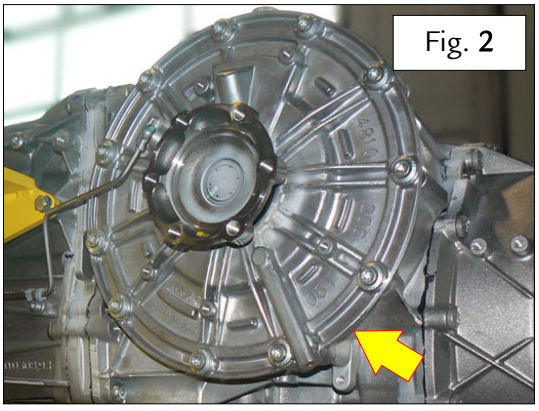
Diagnosis Form for DCT gearbox oil leaks

Model	Updated on
458 ITALIA, 458 SPIDER, 458 SPECIALE, 458 SPECIALE A, California, F12 tdf, F12 berlinetta, FF, 488 PISTA SPIDER, California T, 488 SPIDER, 488 PISTA, Portofino, GTC4 LUSSO T, GTC4 LUSSO, F8 TRIBUTO, MONZA SP1, MONZA SP2, 812 superfast	**October 2019**

As mentioned previously, when opening the ROL, photographs must be taken of the leak as described as follows and attached to the ROL:

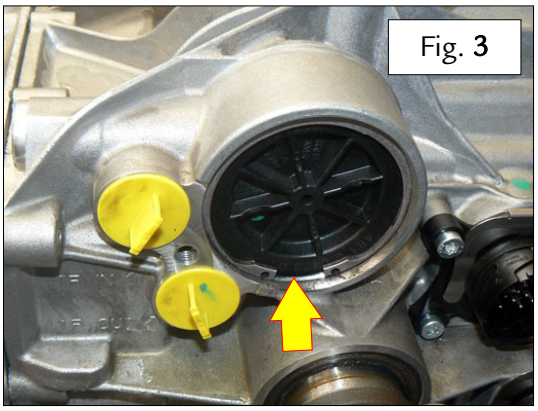
- A **PHOTO** of the leak on the gearbox and a **PHOTO** of the flat undertray, if fouled with oil;
- Clean the leak area thoroughly with heptane and lint-free clean cloths;
- Apply leak detection powder to the area of the gearbox where the leak was noted;
- Test drive the vehicle for ~6 miles;
- Check for the leak again upon returning to the workshop. If the leak still exists, take another **PHOTO** of the leak.

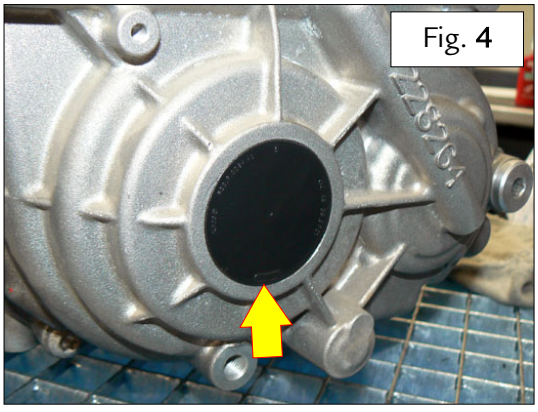
Oil leaks from Corteco seal rings/differential flanges		
Fault	**Procedure**	
Oil leaks from Corteco seal rings/differential flanges (Fig. 1)	➢ Replacing Corteco seal rings and differential flanges.	 Fig. 1

Oil leak from differential casing cover		
Fault	**Procedure**	
Oil leakage from differential cover (Fig. 2)	➢ Replace O-ring on differential cover.	 Fig. 2

Diagnosis Form for DCT gearbox oil leaks

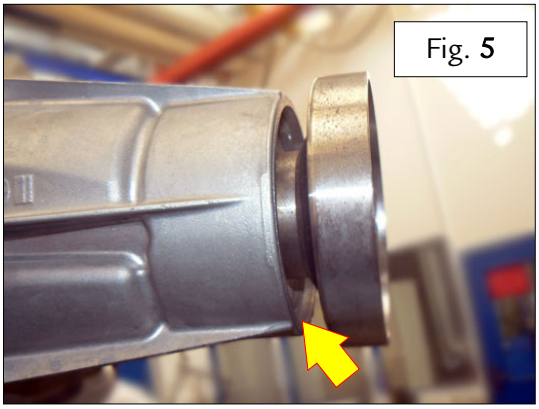
Model	Updated on
458 ITALIA · 458 SPIDER · 458 SPECIALE · 458 SPECIALE A · California · F12 tdf · F12 berlinetta · FF · 488 PISTA SPIDER · California T · 488 SPIDER · 488 PISTA · Portofino · GTC4 LUSSO · GTC4 LUSSO T · F8 TRIBUTO · MONZA SP1 · MONZA SP2 · 812 superfast	October 2019

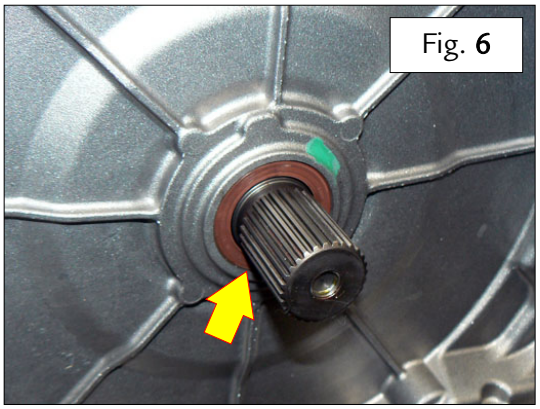
Fluid leak from ATF oil filter		
Fault	**Procedure**	
Fluid leakage from ATF oil filter (Fig. 3)	➢ Replace the ATF oil filter.	 Fig. 3

Oil leak from rear plug		
Fault	**Procedure**	
Oil leakage from rear gearbox plug (Fig. 4)	➢ Replace rear plug.	 Fig. 4

Diagnosis Form for DCT gearbox oil leaks

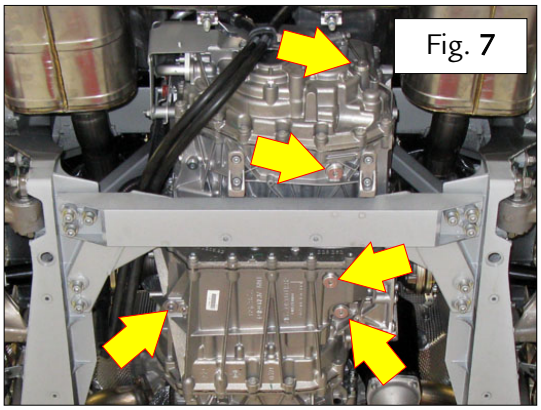
Model	Updated on
458 ITALIA · 458 SPIDER · 458 SPECIALE · 458 SPECIALE A · California · F12 tdf · F12 berlinetta · FF · 488 PISTA SPIDER · California T · 488 SPIDER · 488 PISTA · Portofino · GTC4 LUSSO T · GTC4 LUSSO · F8 TRIBUTO · MONZA SP1 · MONZA SP2 · 812 superfast	October 2019

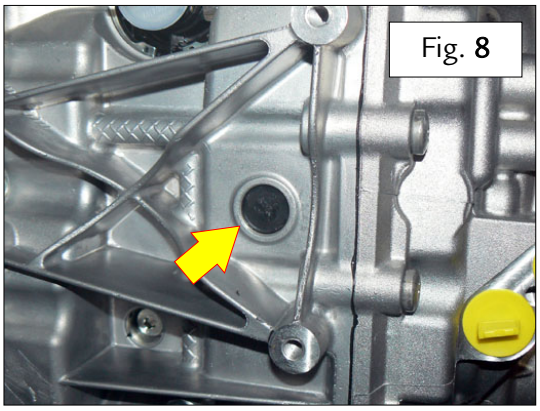
Leakage from flange/front shaft		
Fault	**Procedure**	
Oil leakage from flange/front shaft (Fig. 5)	➢ Replace front flange/shaft.	 Fig. 5

Oil leakage from front connector casing		
Fault	**Procedure**	
Oil leakage from Corteco seal ring on front connector casing (Fig. 6)	➢ Replacing Corteco seal ring.	 Fig. 6

Diagnosis Form for DCT gearbox oil leaks

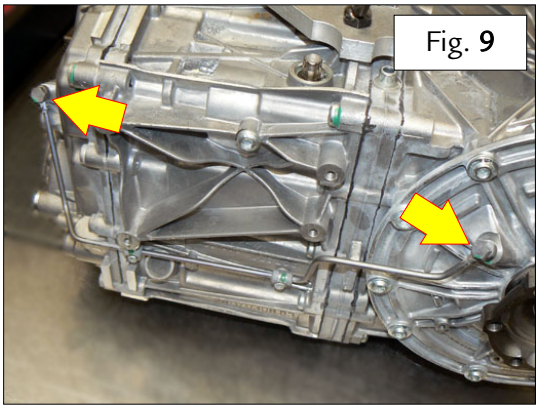
Model	Updated on
458 ITALIA, 458 SPIDER, 458 SPECIALE, 458 SPECIALE A, California, F12 tdf, F12 berlinetta, FF, 488 PISTA SPIDER, California T, 488 SPIDER, 488 PISTA, Portofino, GTC4 LUSSO T, GTC4 LUSSO, F8 TRIBUTO, MONZA SP1, MONZA SP2, 812 superfast	October 2019

Leakage from oil plugs on gearbox		
Fault	**Procedure**	
Oil leakage from gearbox oil plugs (Fig. 7)	➢ Replace the plug.	 Fig. 7

Leakage from seal plugs		
Fault	**Procedure**	
Oil leakage from the three oil plugs (Fig. 8)	➢ Replace the seal plug.	 Fig. 8

Diagnosis Form for DCT gearbox oil leaks

Model	Updated on
458 ITALIA · 458 SPIDER · 458 SPECIALE · 458 SPECIALE A · California · F12 tdf · F12 berlinetta · FF · 488 PISTA SPIDER · California T · 488 SPIDER · 488 PISTA · Portofino · GTC4 LUSSO · GTC4 LUSSO T · F8 TRIBUTO · MONZA SP1 · MONZA SP2 · 812 superfast	October 2019

Oil leakage from E-DIFF connectors/E-DIFF pipe failure		
Fault	**Procedure**	
Oil leakage from E-DIFF unions or failure of E-DIFF pipe (Fig. 9)	➢ Replace unions with relative seals and replace the E-DIFF pipe.	 Fig. 9