



Ferrari North America Technical Information

Date: January 2020
 Bulletin #: 2619
 Campaign #:
 Supersedes:
 Section: 3

**This Technical Information Cancels and Replaces
 the previous TIs 2326, 2393, 2395 and 2330.**

Model Type:



Model Year: All



Subject: Replacement of SAP on DCT gearbox

The procedure for replacing the **SAP** on the DCT gearbox of the aforementioned models is described as follows. The part numbers of the kits necessary for this procedure are indicated in the following table, organized by model. Note that these kits are only applicable for vehicles with valid warranty coverage.

Models	SAP Kit Part No.
458 Italia 458 Spider 458 Speciale 458 Speciale A California FF	70002996
California T	70003855
F12berlinetta	70003003
F12 TDF 488 GTB 488 Spider 488 Pista 488 Pista Spider GTC4 Lusso GTC4 Lusso T 812 Superfast Portofino F8 Tributo Monza SP1/SP2	70004637



Ferrari North America

Protocol for Managing DCT Gearbox Repairs

- IMPORTANT -

Prior to carrying out the procedure, the dealer must compile the “DCT Gearbox Pre-Diagnosis form” on pages 45-47 of this document and attach it to a new ROL.

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

Tools and equipment necessary for replacement of SAP

- Swivel-head base Part. No. 95972621 (AV 2621)
- Gearbox overhaul support Part. No. 95977314 (AM 107314)
- Rear cover extractor Part. No. 95978603 (AV 8603)
- 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)
- Internal gearbox plug Part. No. 95978611 (AV 8611)
- External gearbox pressurizing plugs Part. No. 95978612 (AV 8612)
- Cap and punch for rear gearbox cover Part. No. 95978613 (AV 8613)
- Tool for tightening bevel gear set ring nut Part. No. 95978619 (AV 8619)
- Bevel gear set extractor Part. No. 95978620 (AV 8620)
- Adapter for rear gearbox cover extractor Part No. 95978626 (AV 8626)

- IMPORTANT -

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



Ferrari North America

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.

- IMPORTANT -

In the replacement procedures described as follows, ALL gaskets removed must be discarded and REPLACED WITH NEW COMPONENTS during reassembly.

- IMPORTANT -

Check the expiration date of all products used in the following procedures before use. NEVER use EXPIRED products.

Preparations for procedures

The SAP is replaced with the gearbox on the work bench. It is therefore necessary to remove the DCT gearbox from the vehicle, preparing and fitting the support tool as described as follows.

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 relative paragraph 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).



Ferrari North America

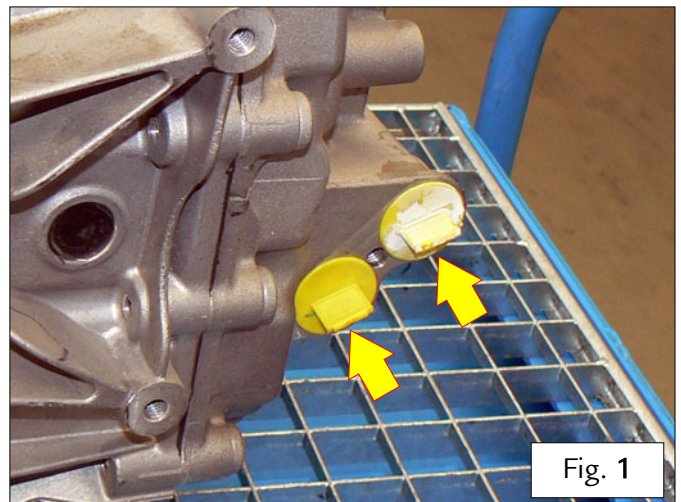
- For the **488 Pista, 488 Pista Spider, F8 Tributo, Monza SP1, Monza SP2 and Portofino**, drain the DCT gearbox gear lubrication system (as described in the Workshop Manual).

Removing the complete DCT gearbox

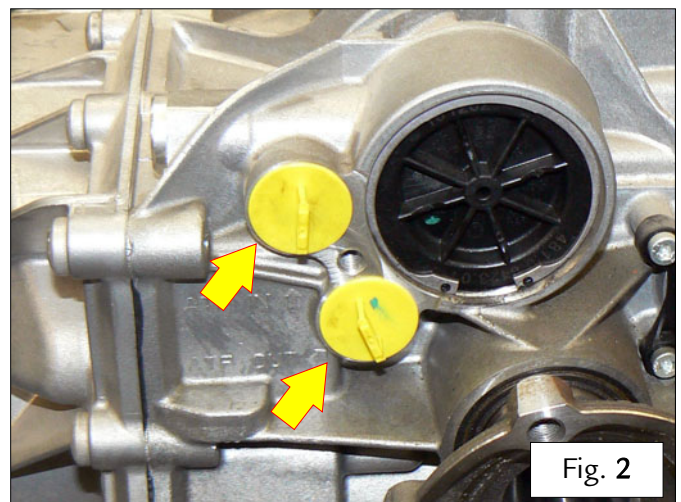
- For the **458 Italia, 458 Spider, 458 Speciale, 458 Speciale A, FF, F12 Berlinetta, F12 TDF, GTC4 Lusso, GTC4 Lusso T, 488 GTB, 488 Spider, 812 Superfast, California T, California, 488 Pista, 488 Pista Spider, F8 Tributo, Monza SP1, Monza SP2 and Portofino**, remove the complete DCT gearbox from the vehicle (as described in the Workshop Manual).

Preliminary procedure for installation

- Using a lint-free cloth and heptane, thoroughly clean the area surrounding the **GL oil inlet orifices** and fit seal plugs in the indicated positions – Fig. 1.



- Using a lint-free cloth and heptane, thoroughly clean the area surrounding the **ATF fluid inlet orifices** and fit seal plugs in the indicated positions – Fig. 2.





Ferrari North America

- On the left hand side of the DCT gearbox, undo and remove the indicated screw – Fig. 3.

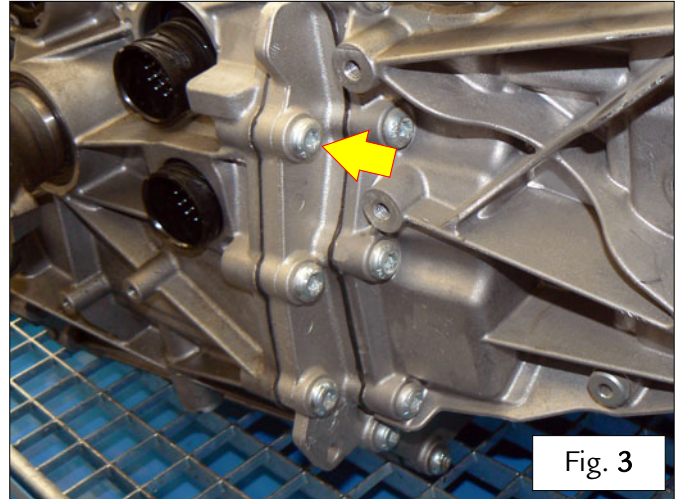


Fig. 3

- On the right hand side of the DCT gearbox, undo and remove the indicated screws – Fig. 4.

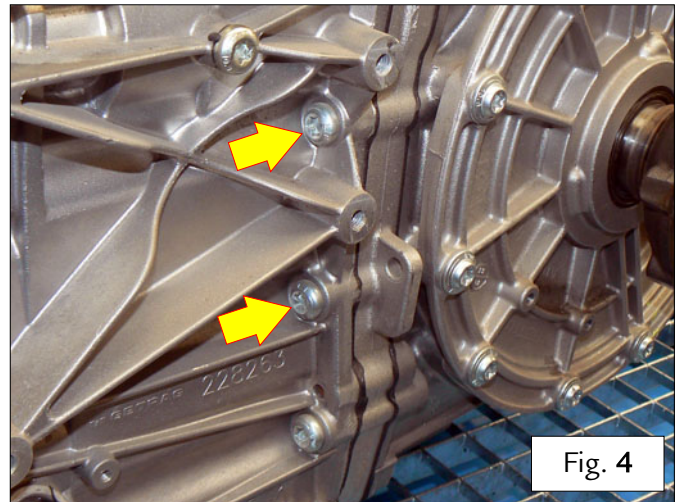


Fig. 4

- On the right hand side of the DCT gearbox, undo and remove the indicated nuts – Fig. 5.

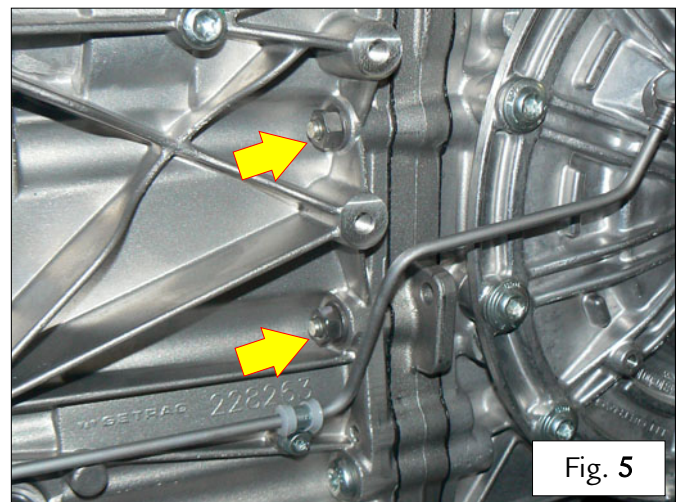
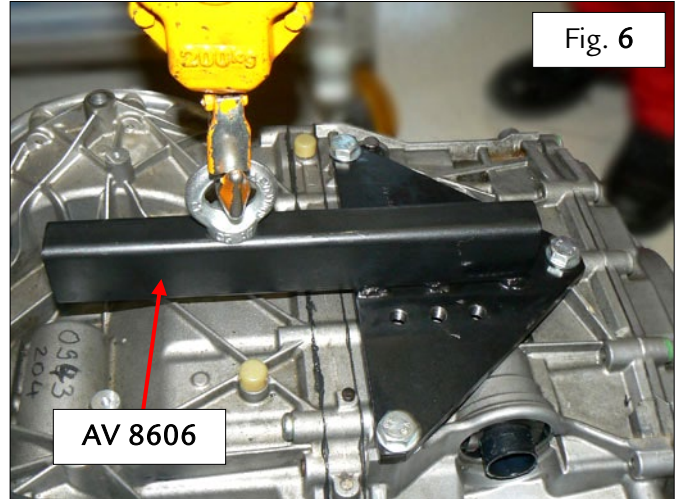


Fig. 5

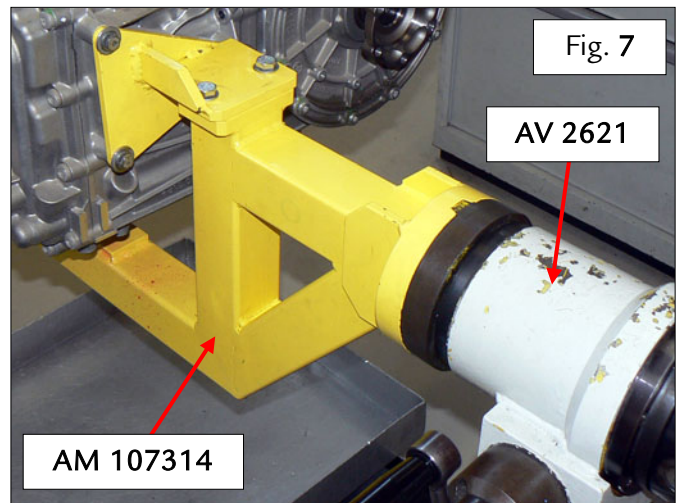


Ferrari North America

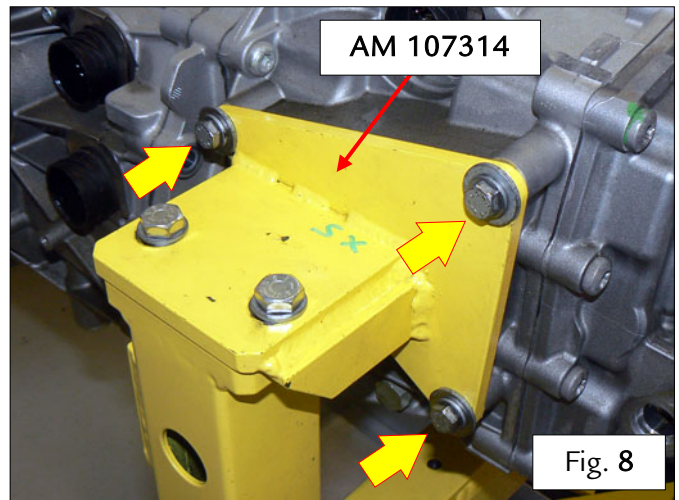
- Install the lift bracket **AV 8606** (95978606) on the gearbox – Fig. 6.
- Hitch a lift hook to the eye bolt on bracket **AV 8606**, then lift the DCT gearbox – Fig. 6.



- Assemble the gearbox overhaul support **AM 107314** (95977314) onto the swivel-head base **AV 2621** (95972621) – Fig. 7.



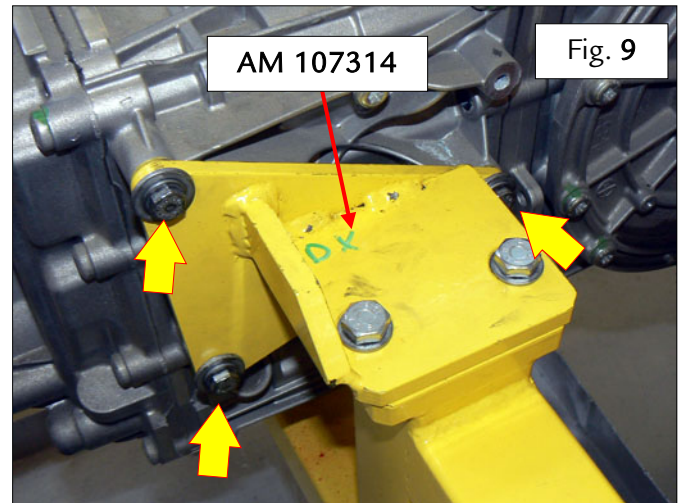
- Using the lift bracket **AV 8606** (95978606), bring the gearbox over the lift equipment prepared previously – Fig. 8.
- On the left hand side, fasten the gearbox to the support **AM 107314**, tightening the screws with the relative washers as indicated – Fig. 8.





Ferrari North America

- On the right hand side, fasten the gearbox to the support **AM 107314**, tightening the screws with the relative washers as indicated – Fig. 9.

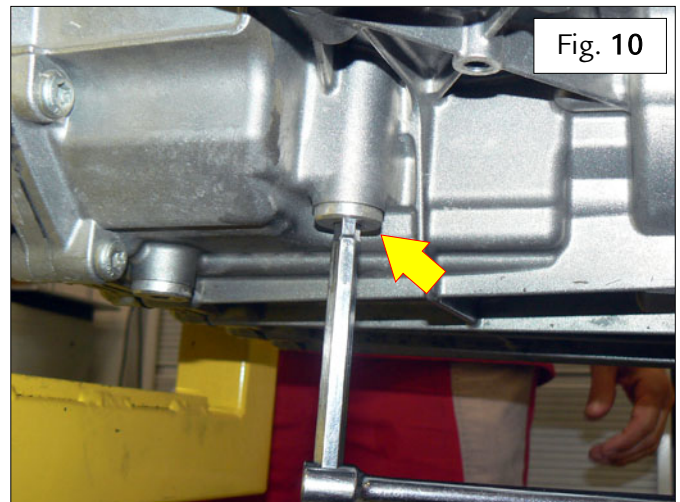


- Ensure that the gearbox is fastened securely to the relative support, then remove the lift bracket **AV 8606**.

- 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.

GL GEAR OIL

- Place a container for collecting the oil under the front GL gear oil drain plug orifice – Fig. 10.
- Undo the front GL gear oil drain plug indicated – Fig. 10.



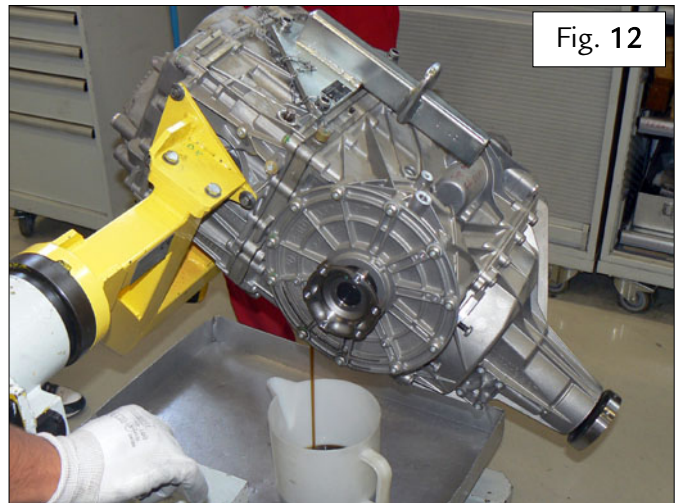
- Wait for the GL gear oil to drain completely into the container – Fig. 11.



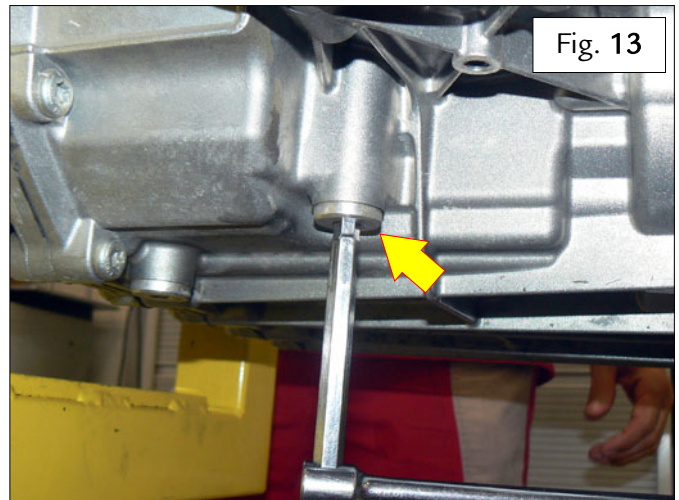


Ferrari North America

- Rotate the gearbox clockwise to empty all the GL gear oil – Fig. 12.

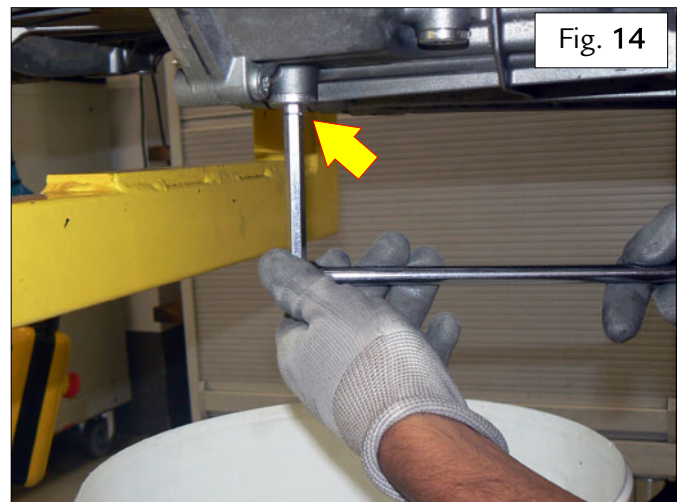


- Replace the indicated plug and tighten to a torque of 25 Nm class B – Fig. 13.



ATF CLUTCH HYDRAULIC SYSTEM FLUID

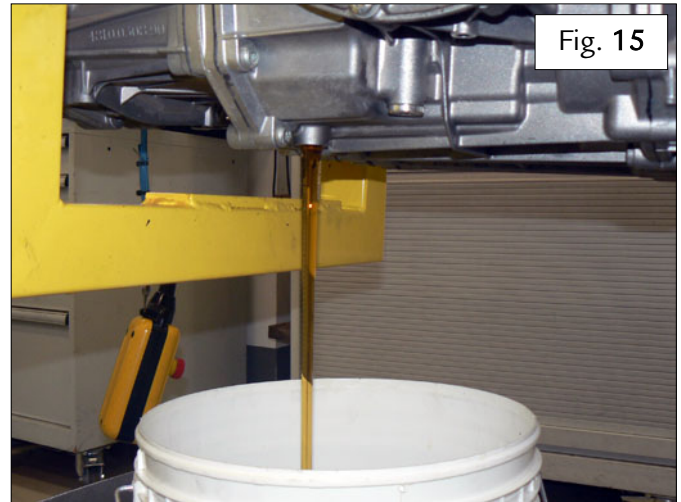
- Place a container for collecting the fluid under the ATF clutch fluid drain plug orifice – Fig. 14.
- Undo the ATF clutch fluid drain plug indicated – Fig. 14.



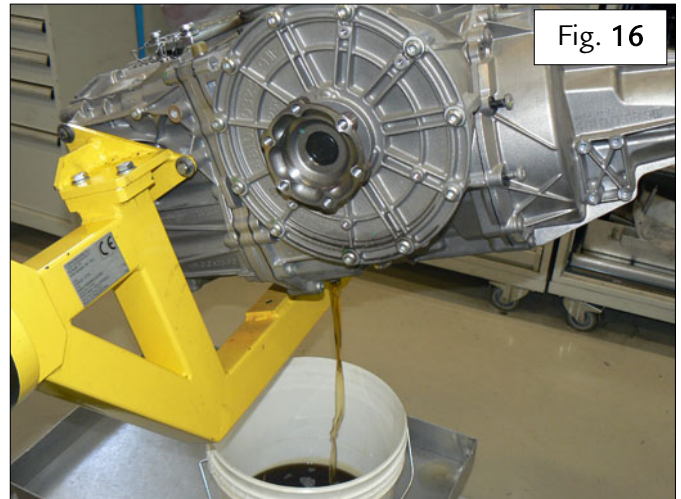


Ferrari North America

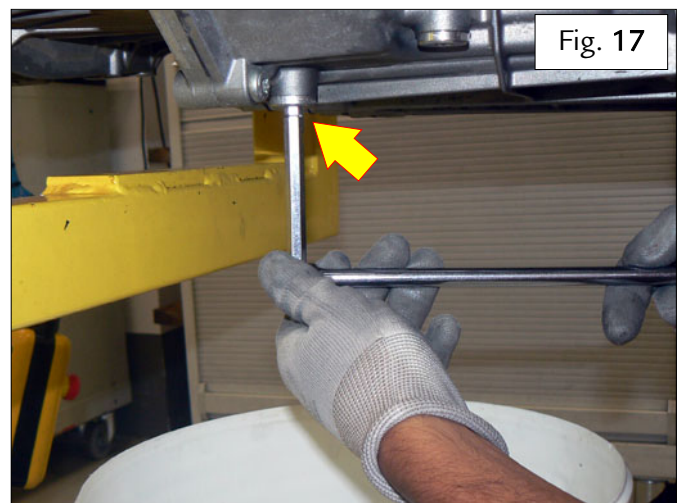
- Wait for the ATF clutch fluid to drain completely into the container – Fig. 15.



- Rotate the gearbox counter - clockwise to empty all the ATF clutch fluid – Fig. 16.



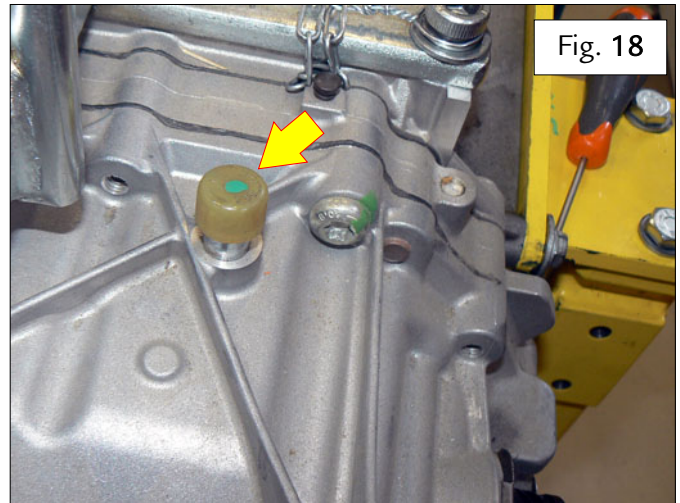
- Fit and tighten the indicated plug – Fig. 17.



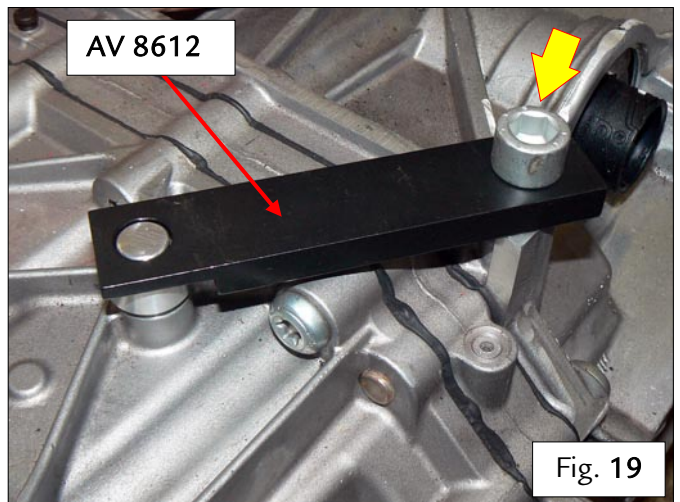


Ferrari North America

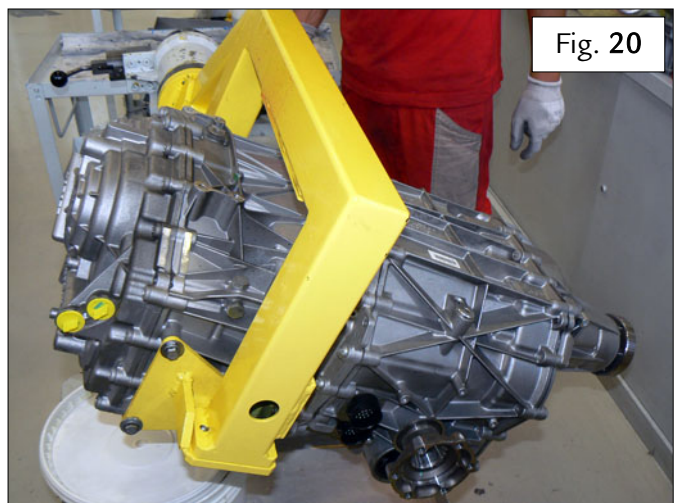
- In preparation for turning the DCT gearbox upside-down, remove the plug on the ATF hydraulic clutch system breather shown in Fig. 18.



- 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. 19.



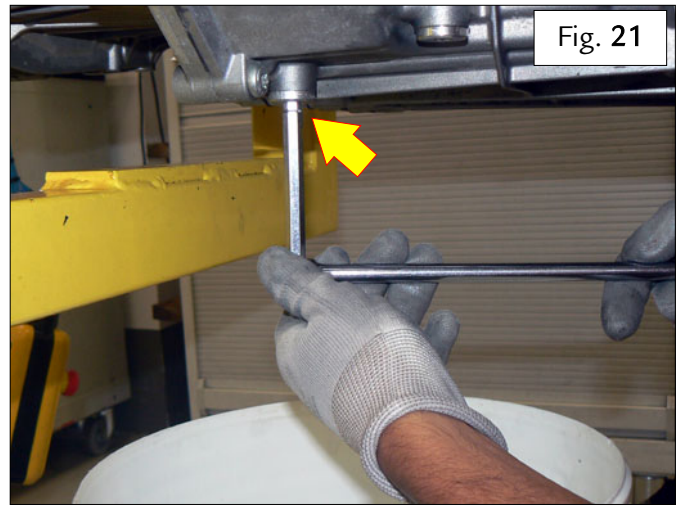
- Turn the DCT gearbox upside-down as shown in the figure by rotating counter-clockwise – Fig. 20.



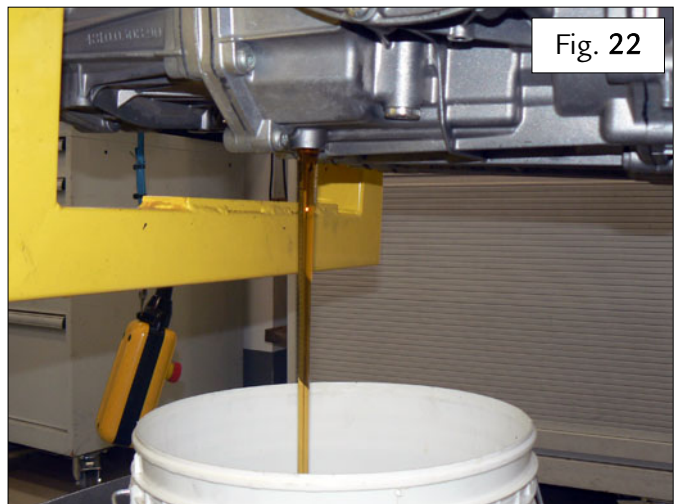


Ferrari North America

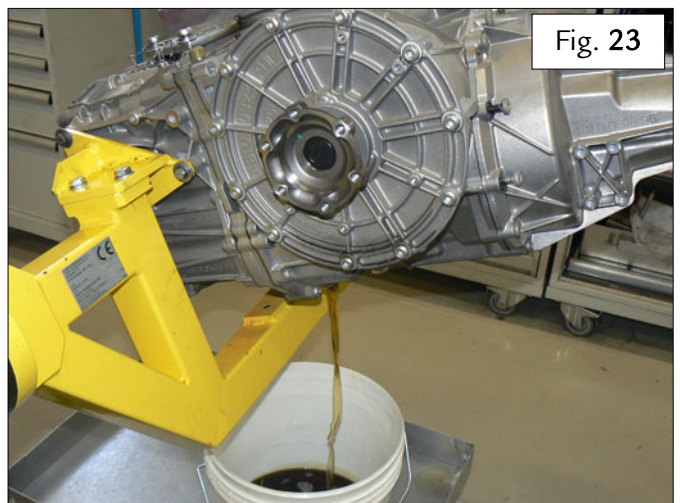
- Return the DCT gearbox to the upright position by turning clockwise – Fig. 21.
- Remove the tool AV 8612 (95978612) fitted previously.
- Undo the ATF clutch fluid drain plug indicated – Fig. 21.



- Wait for the ATF clutch fluid to drain completely into the container – Fig. 22.



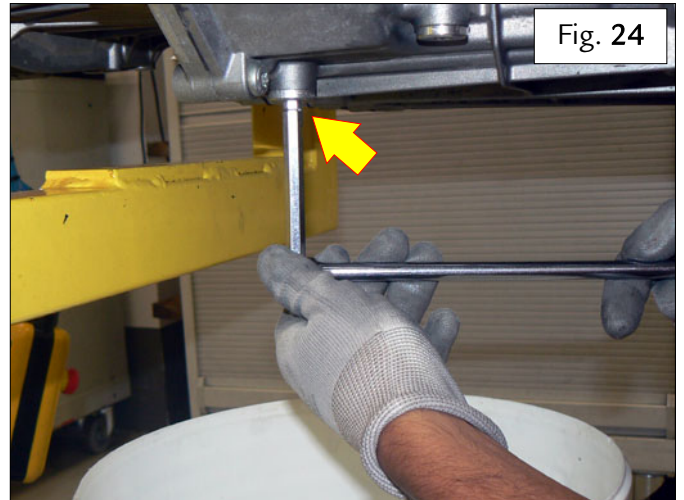
- Rotate the gearbox counter-clockwise to empty all the ATF clutch fluid completely – Fig. 23.



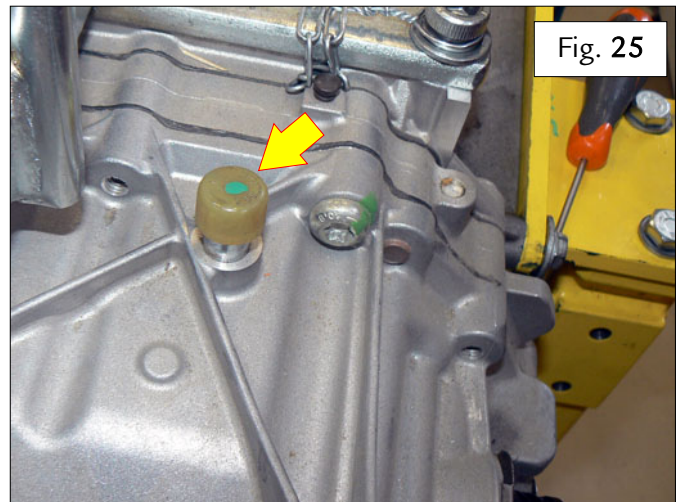


Ferrari North America

- Replace the indicated cap and tighten to a torque of **25 Nm class B** – Fig. 24.

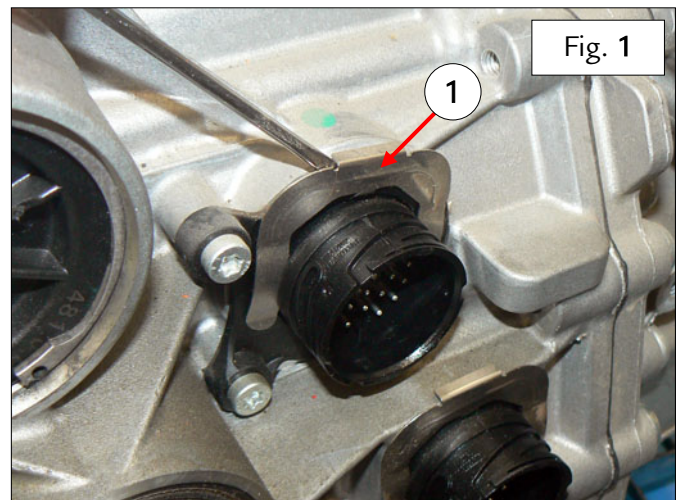


- Refit the original plug as indicated – Fig. 25.



SAP replacement

- Remove the retainer clip (1) from its seat – Fig. 1.





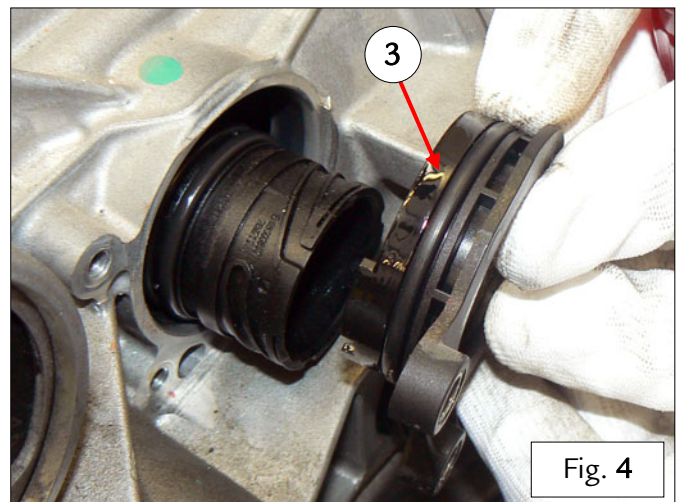
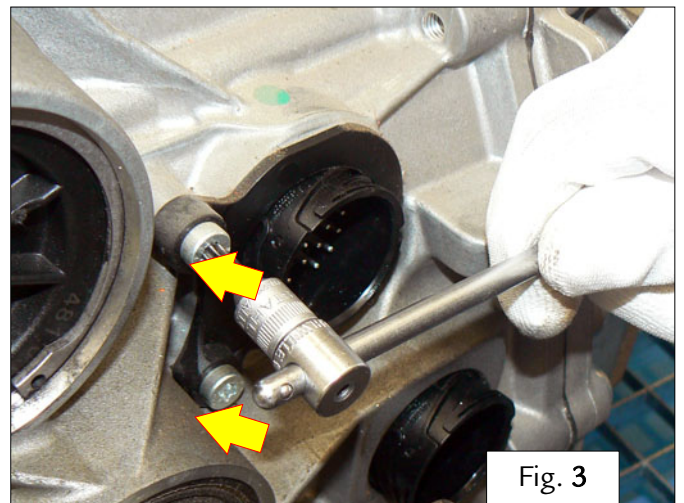
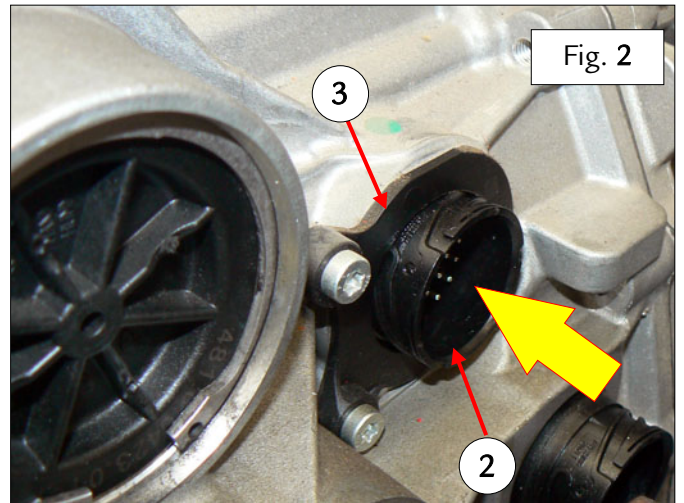
Ferrari North America

Push the connector (2) by hand gently into the gearbox housing by just enough to release it from the adapter (3) – Fig. 2.

Note: Do not force the connector (2) too far into the gearbox housing, as this may damage the sensor on the SAP, situated directly behind the connector itself.

➤ Undo the indicated screws fastening the adapter – Fig. 3.

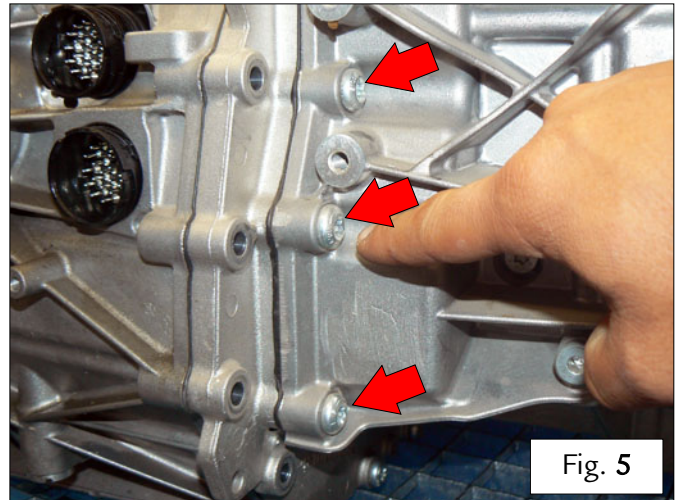
➤ Remove the adapter (3) – Fig. 4.



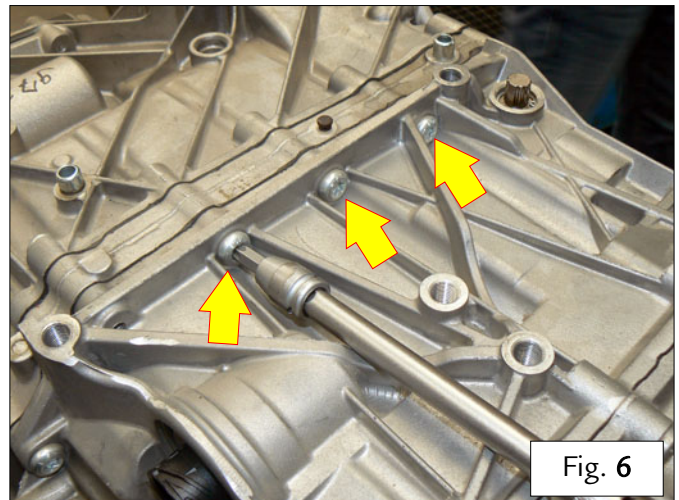


Ferrari North America

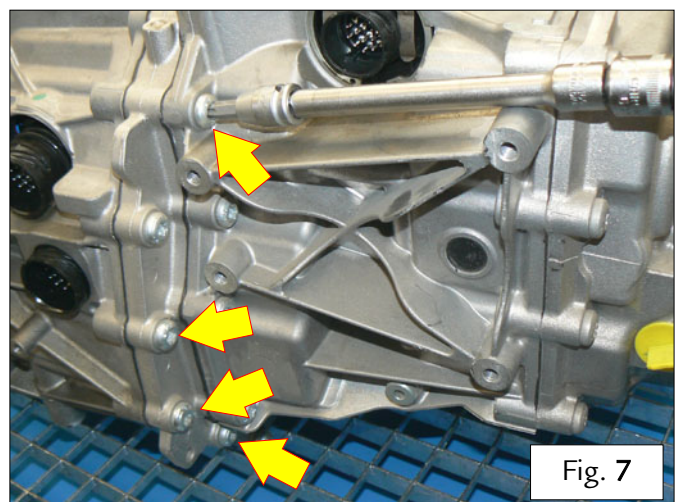
- The next step consists in detaching the differential housing from the gear housing by undoing the **16** fasteners (3 have already been removed previously).
- **DO NOT** undo the indicated screws for any reason – Fig. 5.



- Undo the indicated screws fastening the gearbox to the interface plate – Fig. 6.



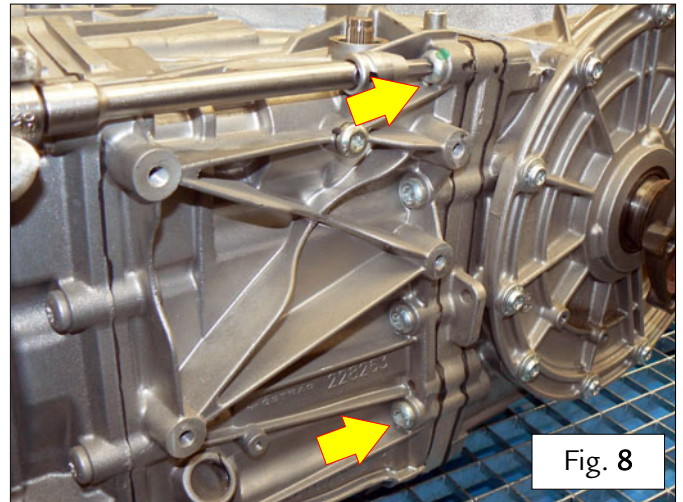
- Undo the indicated screws fastening the gearbox to the interface plate – Fig. 7.



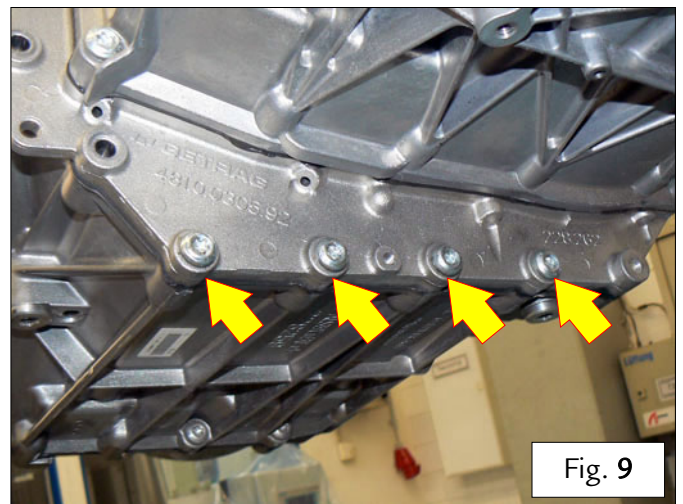


Ferrari North America

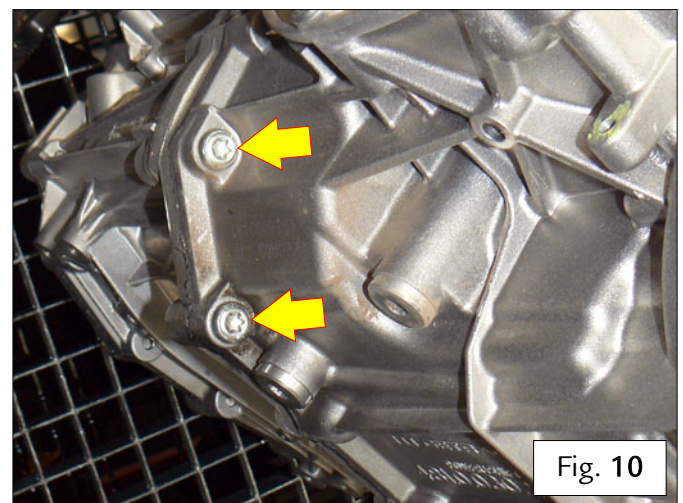
- Undo the indicated screws fastening the gearbox to the interface plate – Fig. 8.



- Undo the indicated screws fastening the gearbox to the interface plate – Fig. 9.



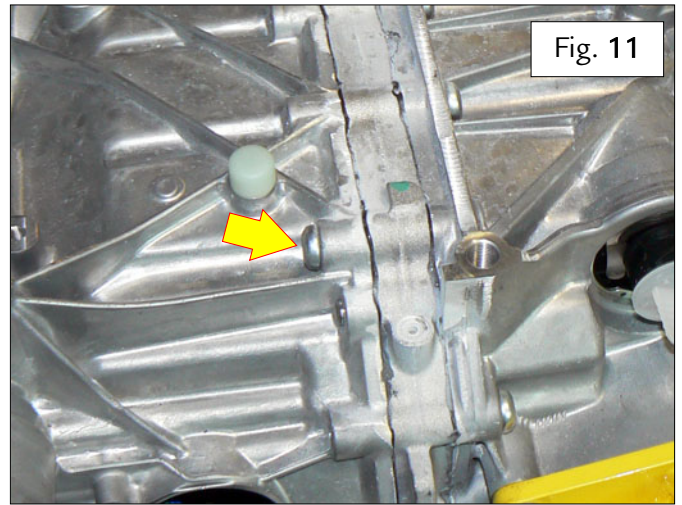
- Undo the remaining screws indicated fastening the gearbox to the interface plate – Fig. 10.



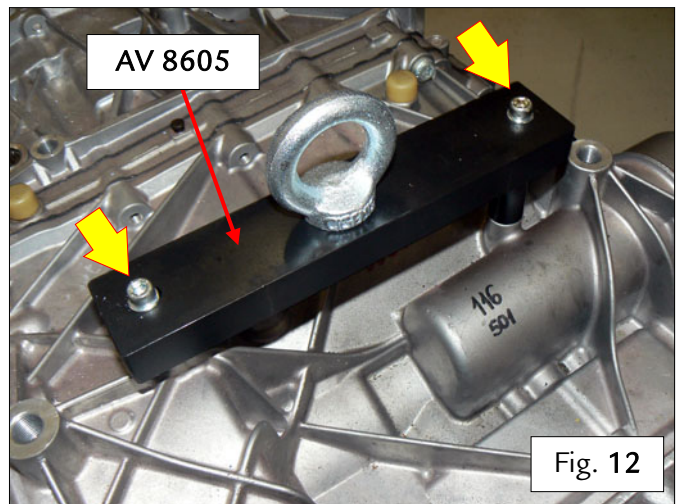


Ferrari North America

- Undo the remaining screws indicated fastening the gearbox to the interface plate – Fig. 11.

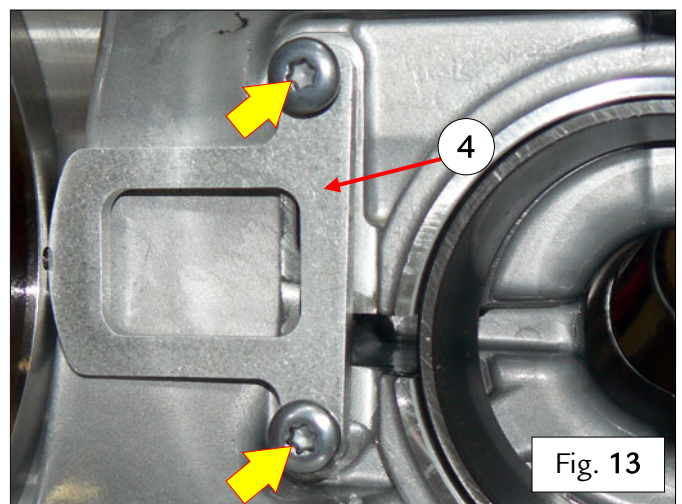


- Fit the support bracket 95978605 (AV 8605) in the relative seat on the differential housing, tightening the indicated screws – Fig. 12.
- Hitch a lift hook to the eye bolt on bracket AV 8605, and tighten the lift straps – Fig. 12.



For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

- Remove the bracket (4), undoing the indicated screws – Fig. 13.





Ferrari North America

For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

- Using the tool 95978619 (AV 8619), undo the ring nut (5) fastening the plate to the differential housing – Fig. 14.

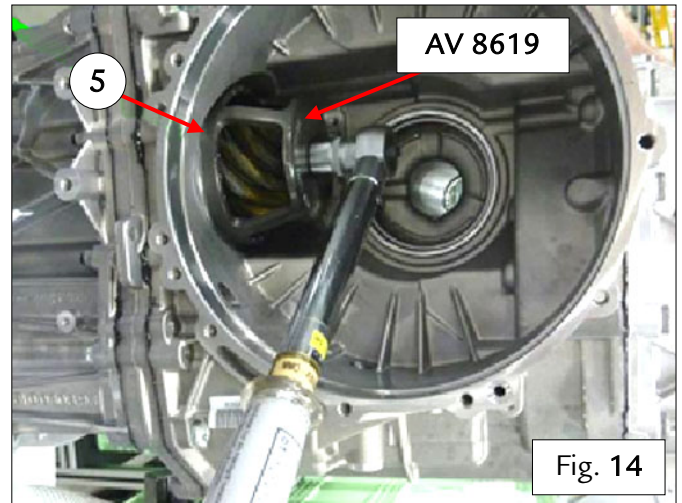


Fig. 14

For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

- Using the extractor tool 95978620 (AV 8620), separate the differential housing from the plate – Fig. 15.

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

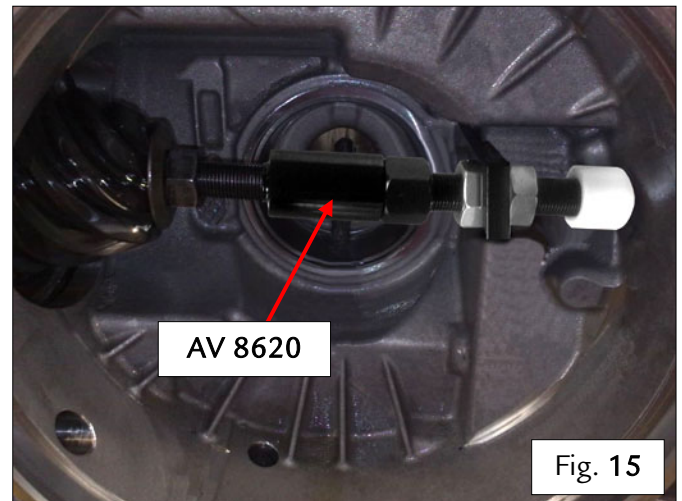


Fig. 15

Using a crowbar placed on the indicated leverage lug on the gearbox, detach the differential casing – Fig. 16.

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

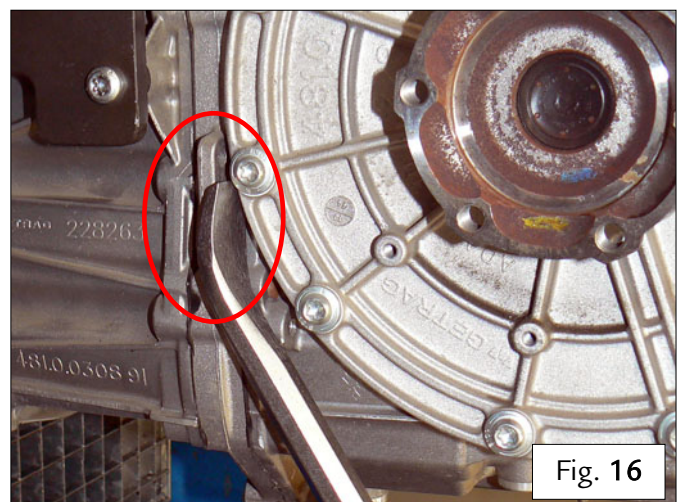
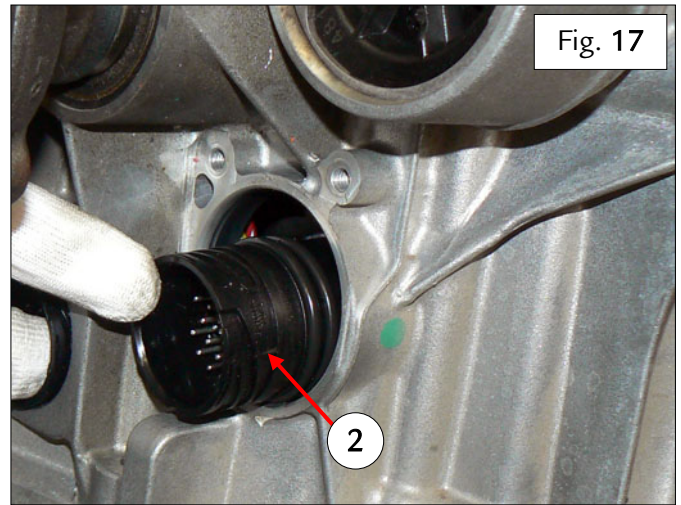


Fig. 16

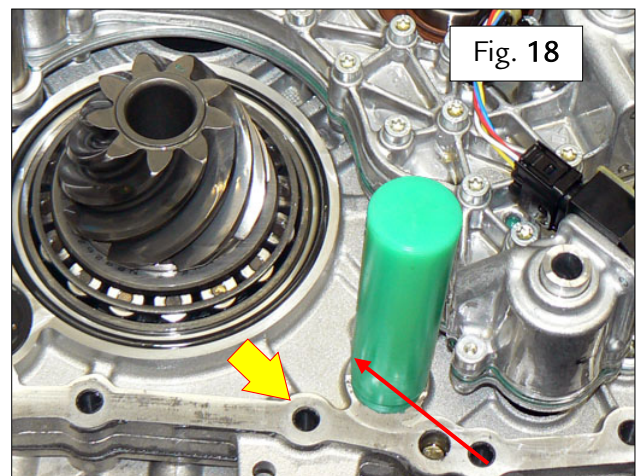


Ferrari North America

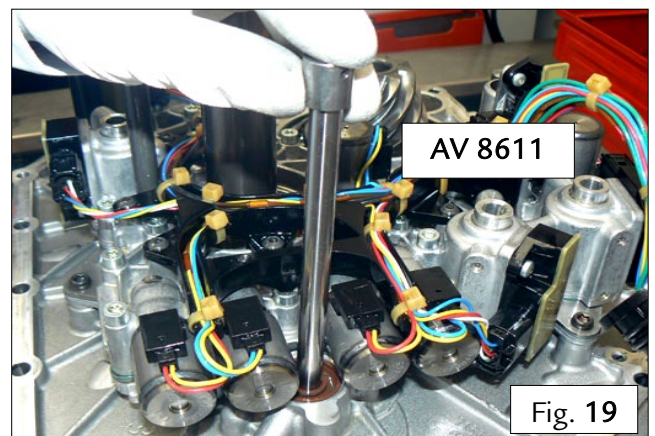
- Separate the differential housing by a few centimeters and push the connector (2) inside through the hole – Fig. 17.



- Remove the differential housing completely and set it down in a clean and safe place.
- Remove the indicated O-ring and close the orifice on the interface plate with the plug 95978611 (AV 8611) – Fig. 18.



- Lift the oil pump spindle out vertically – Fig. 19.

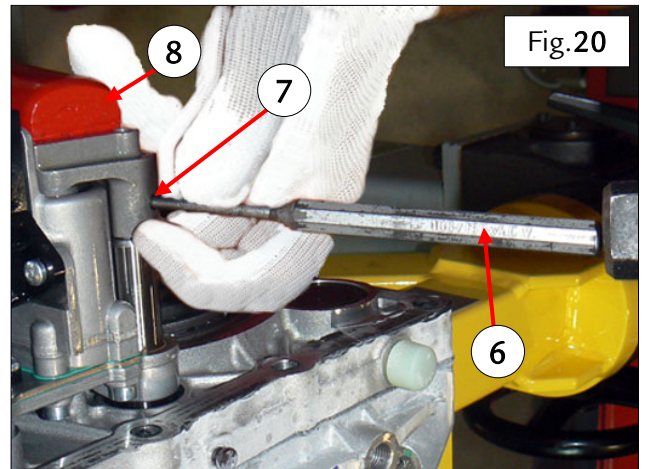




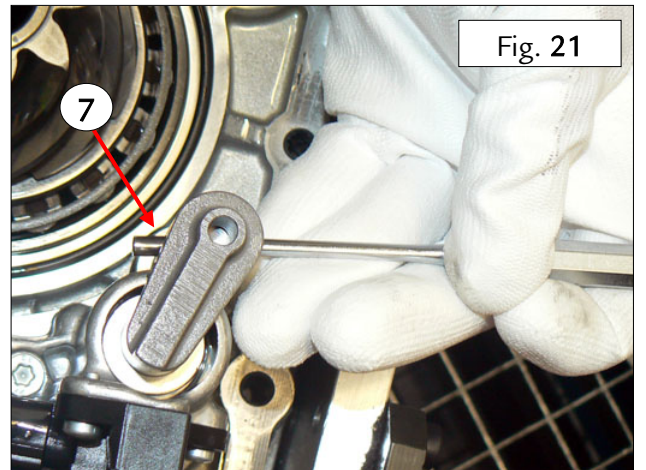
Ferrari North America

- Place the punch (6) on the park lock alignment pin (7), then push the pin inwards using a mallet – Fig. 20.

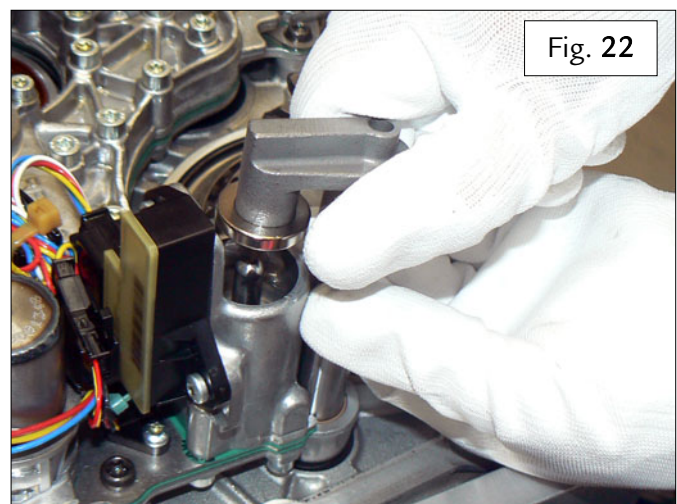
Note: To prevent possible damage to the components, place a tool (8) as shown in the photo aside to oppose the action of the punch.



- Retrieve the park lock alignment pin (7) – Fig. 21.



- Lift the actuator bracket out vertically – Fig. 22.

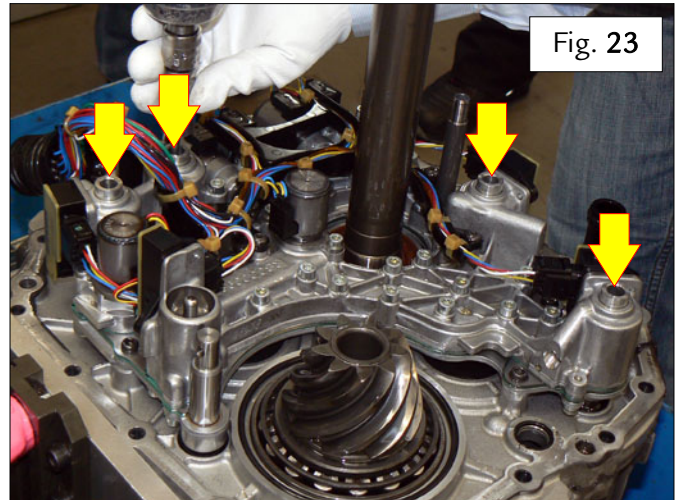




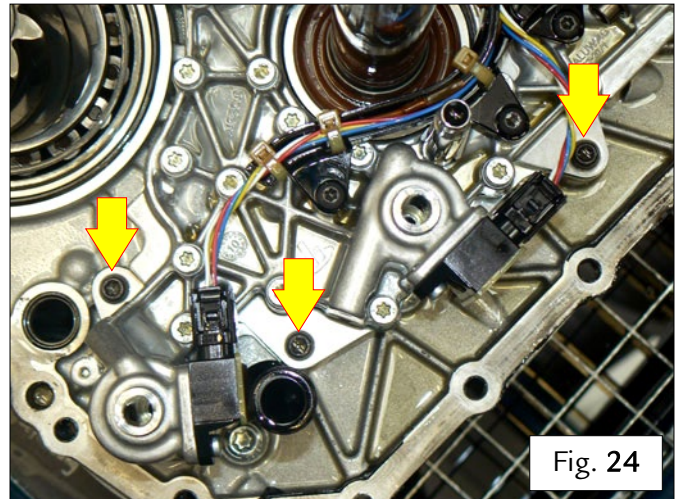
Ferrari North America

- Remove the four screws indicated, retrieving the screw itself and the relative washers with the magnet – Fig. 23.

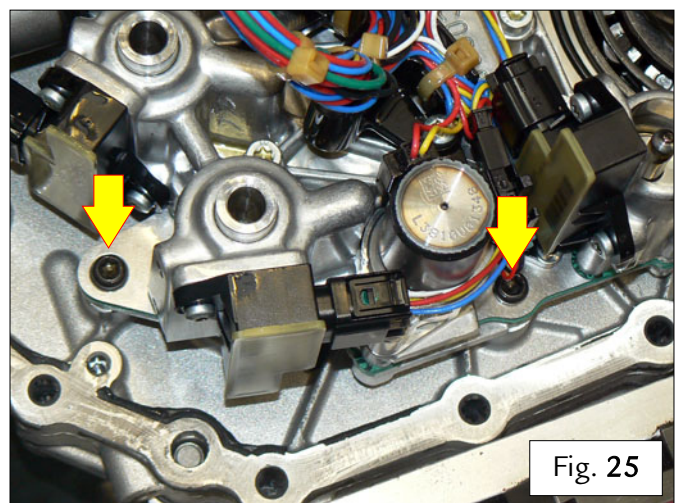
Note: Be careful to not drop the washers into the holes on the SAP.



- Undo the three screws indicated fastening the SAP – Fig. 24.



- Undo the two screws indicated fastening the SAP – Fig. 25.





Ferrari North America

- Remove the SAP from the gearbox, lifting upwards, and replace – Fig. 26.

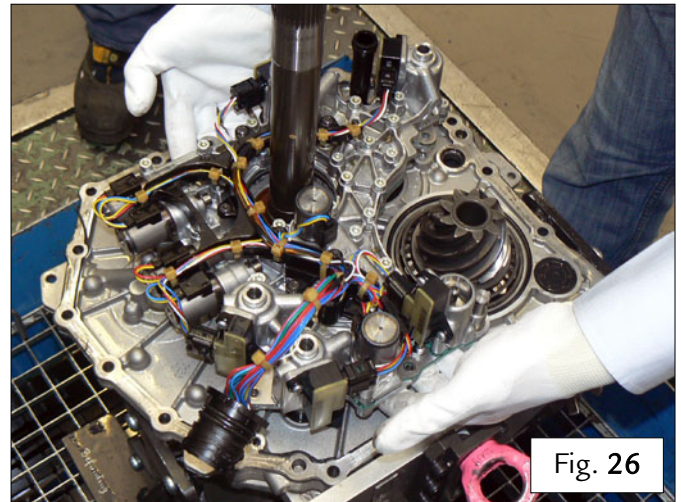


Fig. 26

- Remove the two oil pump spindle seals from the interface plate (9) – Fig. 27.

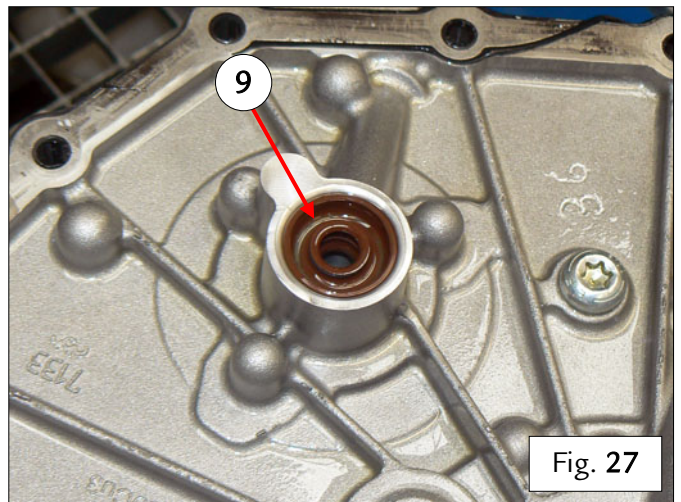


Fig. 27

- Remove the oil return pipe (10), complete with seals, from the plate – Fig. 28.

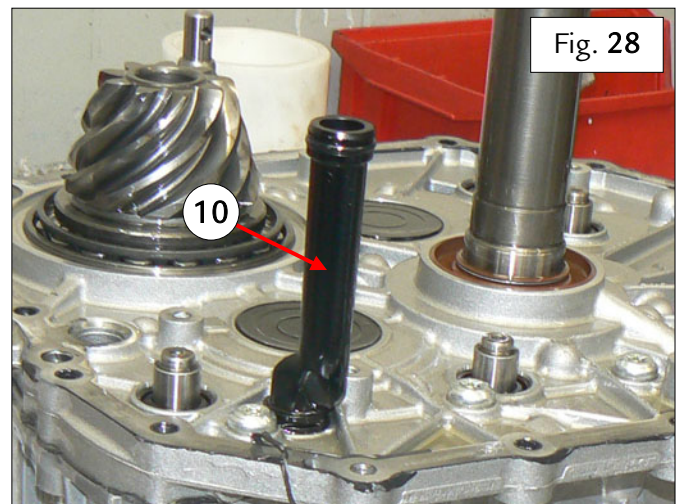
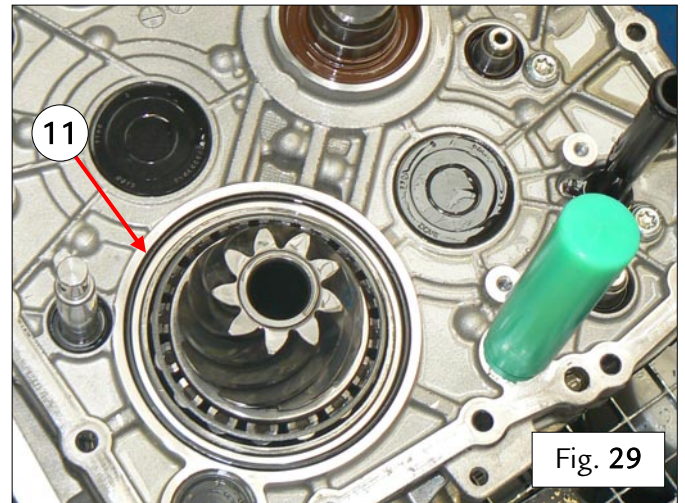


Fig. 28



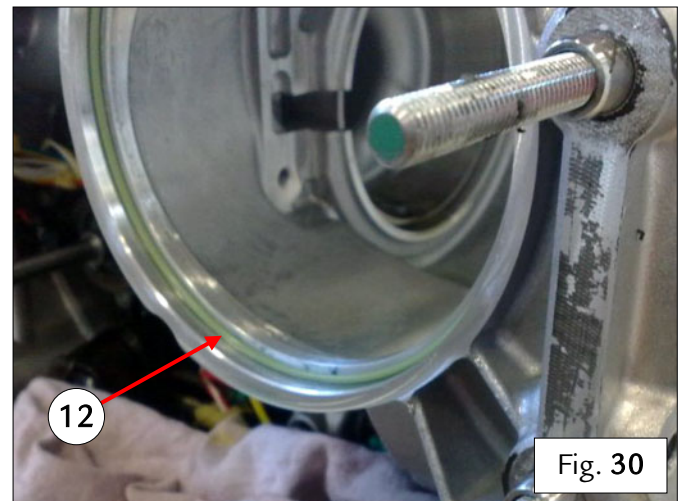
Ferrari North America

Remove the O-ring from the (11) interface plate – Fig. 29.



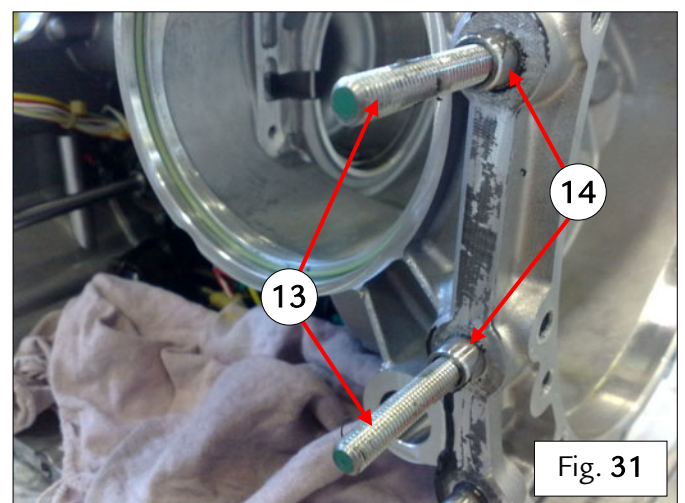
For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

- Remove the seal (12) from the differential housing on the side in contact with the interface plate – Fig. 30.



For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

- Remove the stud bolts (13) and the alignment dowels (14) from the differential housing, on the side in contact with the interface plate – Fig. 31.





Ferrari North America

- Using a Teflon spatula, remove all traces of sealant from the surfaces of the interface plate and the differential housing – Fig. 32.

Note: Be careful to not damage the surfaces of the two housings.

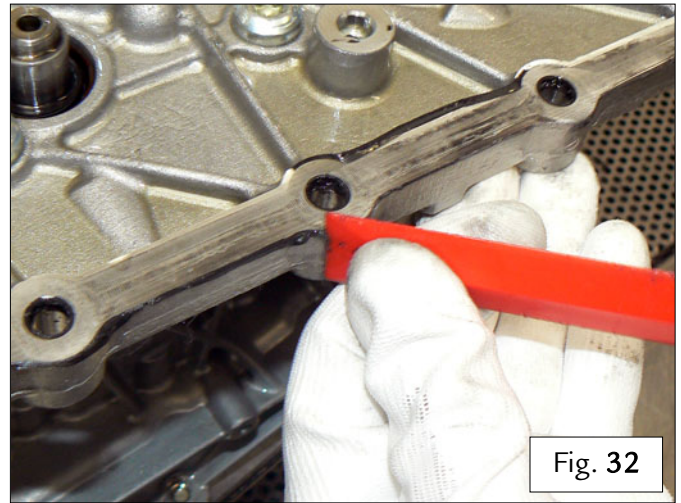


Fig. 32

- Using a Teflon spatula, remove all traces of sealant from the surfaces of the interface plate and the differential housing – Fig. 33.

Note: Be careful to not damage the surfaces of the two housings.

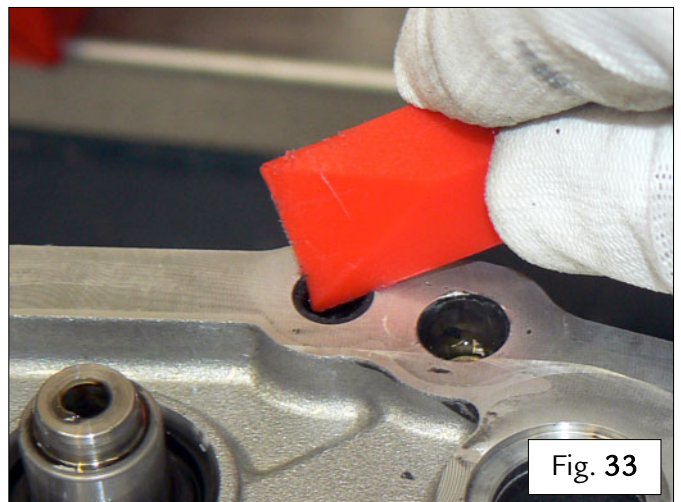


Fig. 33

- Using a lint-free cloth and heptane, remove all traces of adhesive and/or dirt from the surfaces and holes of the interface plate and from the differential housing – Fig. 34.

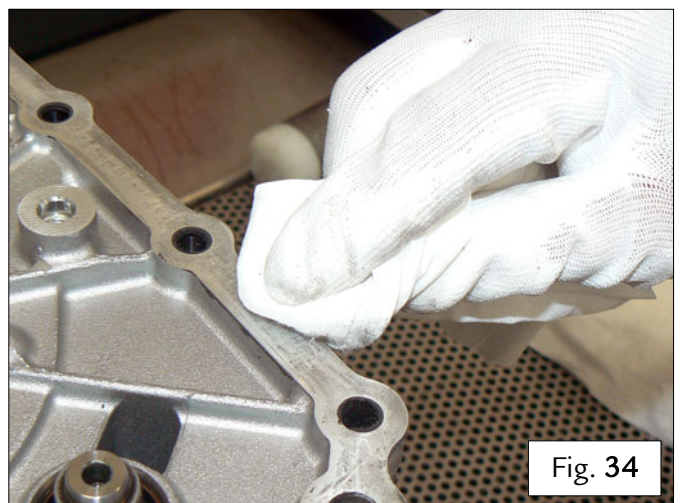


Fig. 34



Ferrari North America

- Aspirate all residue of adhesive and/or dirt from the surfaces of the interface plate and from the differential housing – Fig. 35.

Note: DO NOT blow or use cloths to remove dirt and/or dust.

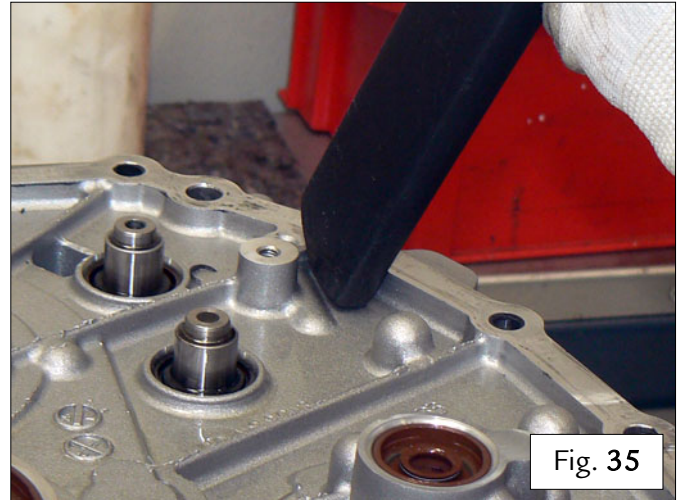


Fig. 35

For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

- Install the new alignment dowels (14) on the differential housing – Fig. 36.
- Install the new stud bolts (13) on the differential housing, tightening to a torque of $15 \text{ Nm} \pm 1 \text{ Nm}$ – Fig. 36.

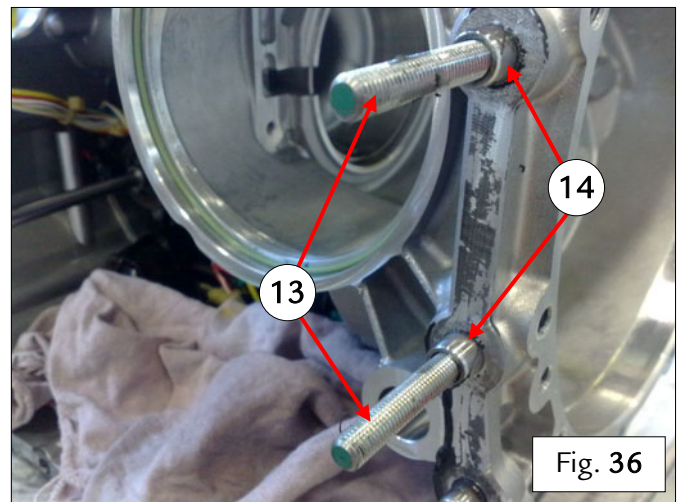


Fig. 36

- Assemble the new seals (9) together – Fig. 37.

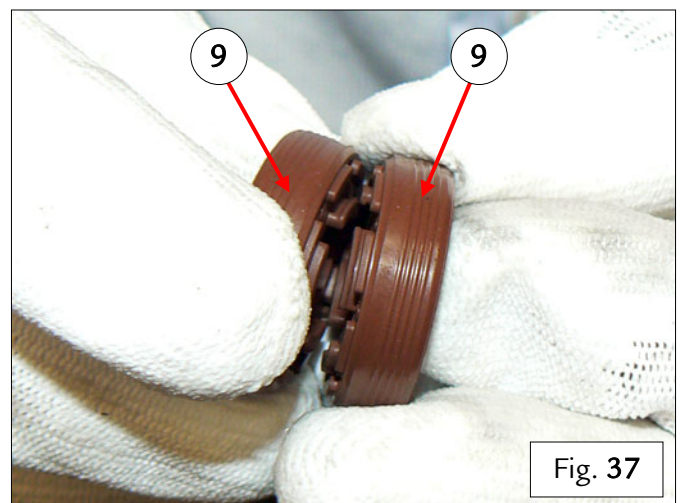


Fig. 37



Ferrari North America

- The image aside shows the two oil pump spindle seals (9) assembled together – Fig. 38.

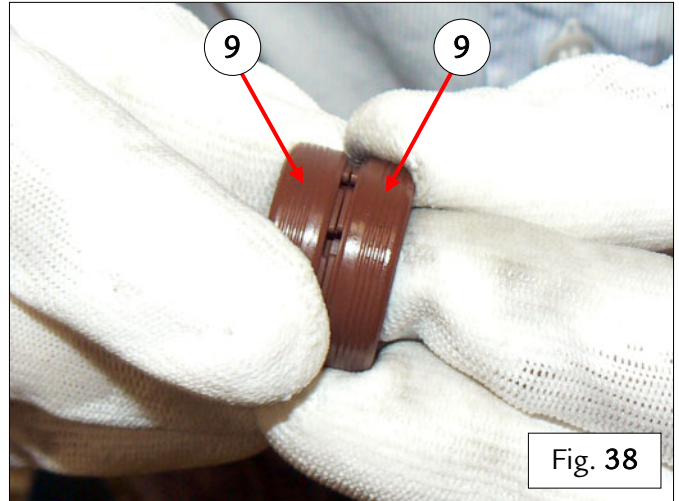


Fig. 38

- Insert the two assembled oil pump spindle seals (9) in the relative seat on the interface plate – Fig. 39.

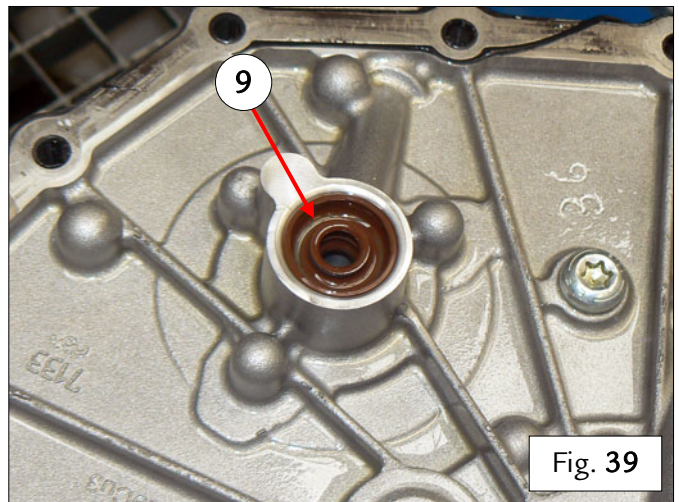


Fig. 39

- Fit the new oil return pipe (10), complete with seals, in the relative seat on the interface plate – Fig. 40.

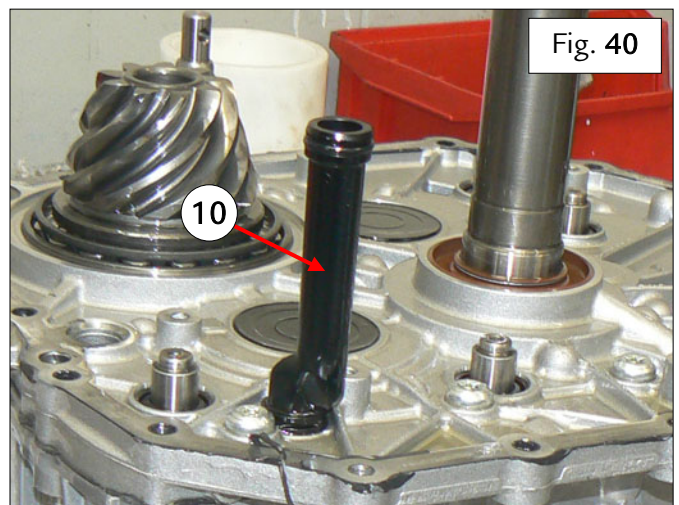
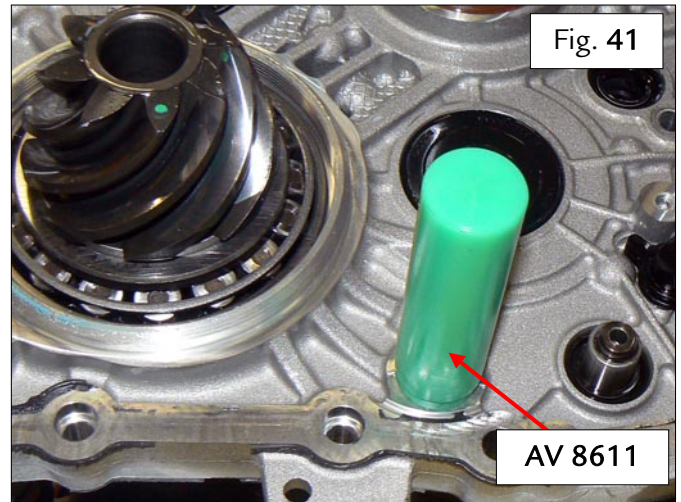


Fig. 40

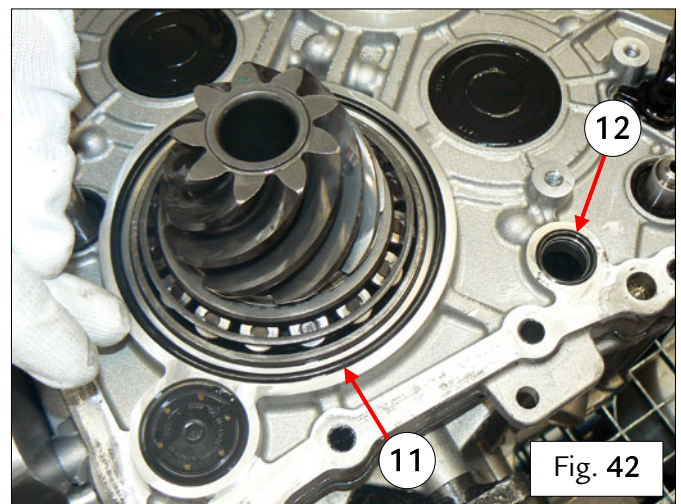


Ferrari North America

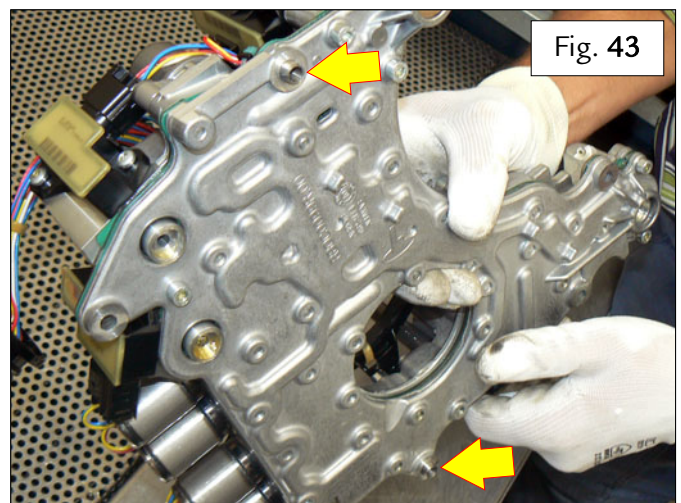
- Remove the plug 95978611 (AV 8611) from the interface plate – Fig. 41.



- Fit the new O-rings (11, 12) in the relative seats on the interface plate – Fig. 42.



- Fit the new pins as indicated in the respective seats on the new SAP – Fig. 43.





Ferrari North America

- Fit the new SAP in the relative seat – Fig. 44.

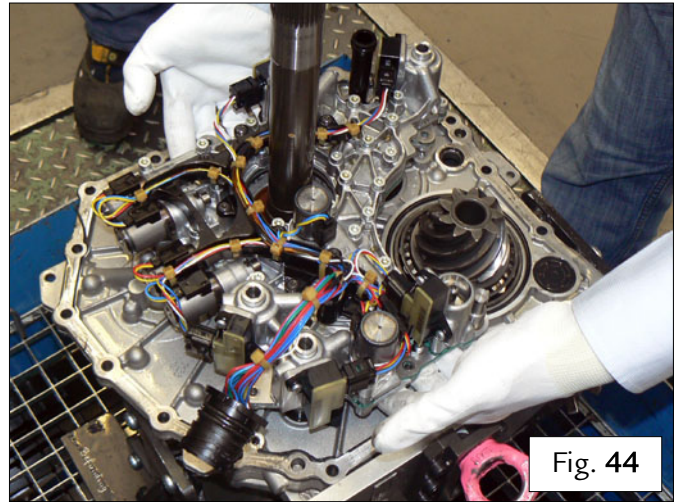


Fig. 44

- While installing the SAP, align the pins with the respective holes in the interface plate – Fig. 45.
- Bring the SAP into contact with the respective mounts – Fig. 45.

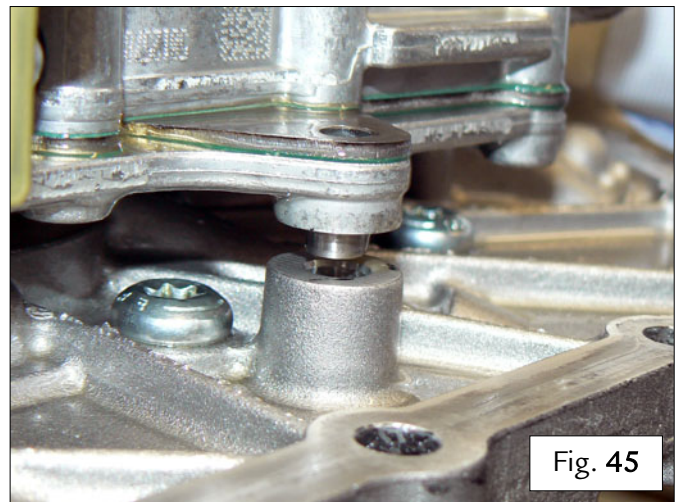


Fig. 45

- If not already applied to the new screws, apply **Loctite 243** on the threads of the screws fastening the SAP – Fig. 46.

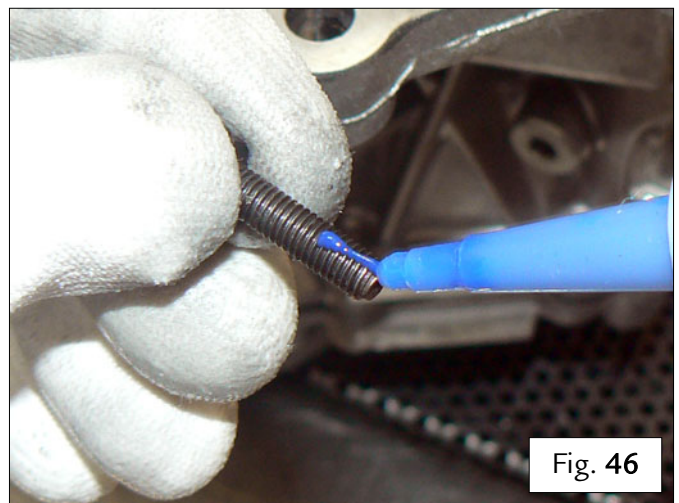
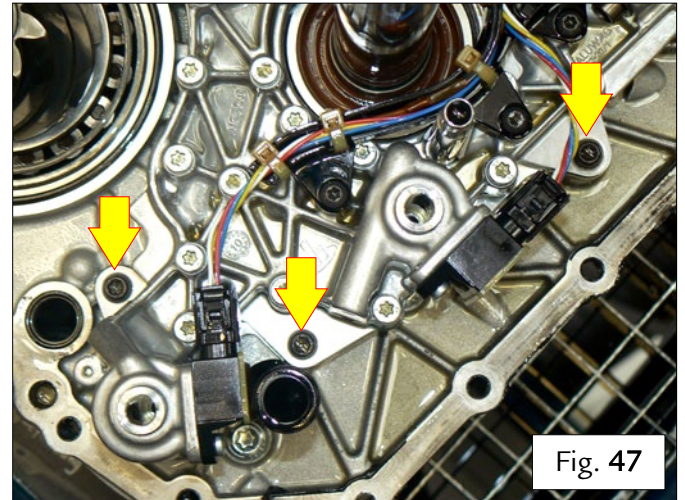


Fig. 46

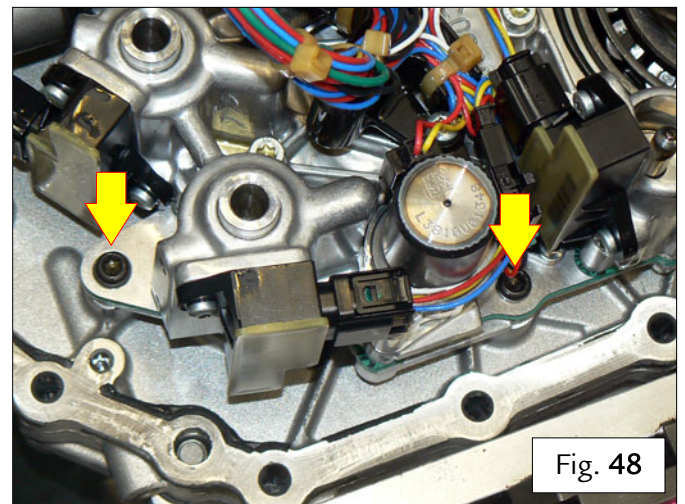


Ferrari North America

- Hand-tighten the three new screws indicated fastening the SAP – Fig. 47.

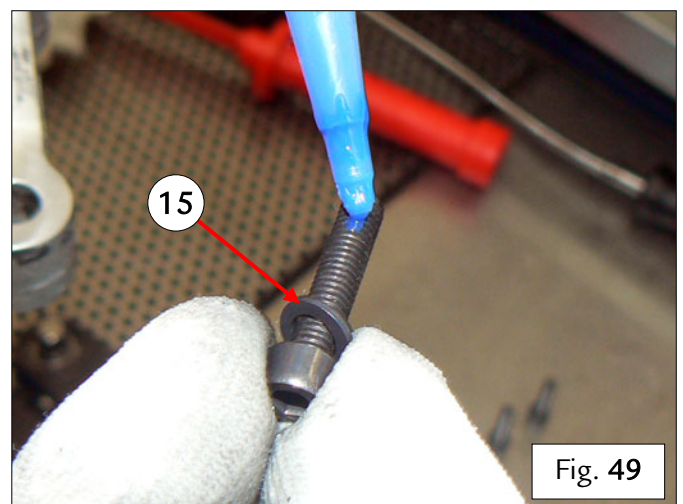


- Hand-tighten the two new screws indicated fastening the SAP – Fig. 48.



- Tighten the screws fitted previously to a torque of 11 - 13 Nm in a cross pattern.

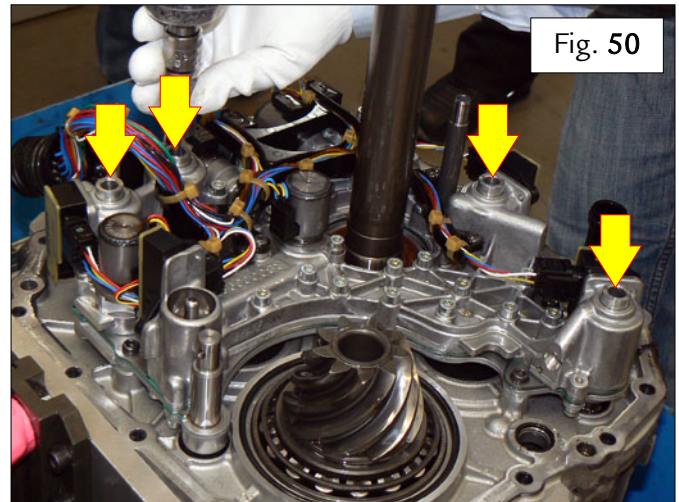
- Select the new fastener screws for the SAP with the respective washers (15), and apply **Loctite 243** to the threads – Fig. 49.



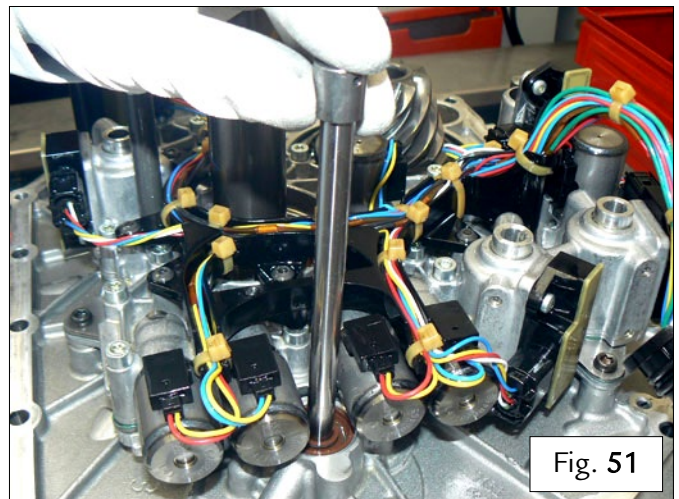


Ferrari North America

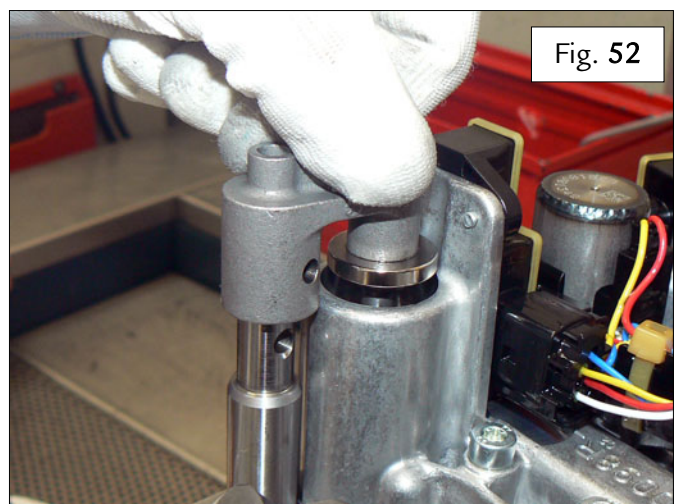
- Hand-tighten the four new screws in the respective seats on the SAP – Fig. 50.
- Tighten the screws to a torque of 6 - 7 Nm in a cross pattern – Fig. 50.



- Lubricate the oil pump spindle and install vertically in the relative seat – Fig. 51.
- Turn the oil pump spindle to engage correctly in its seat: ensure that the spindle is inserted fully – Fig. 51.



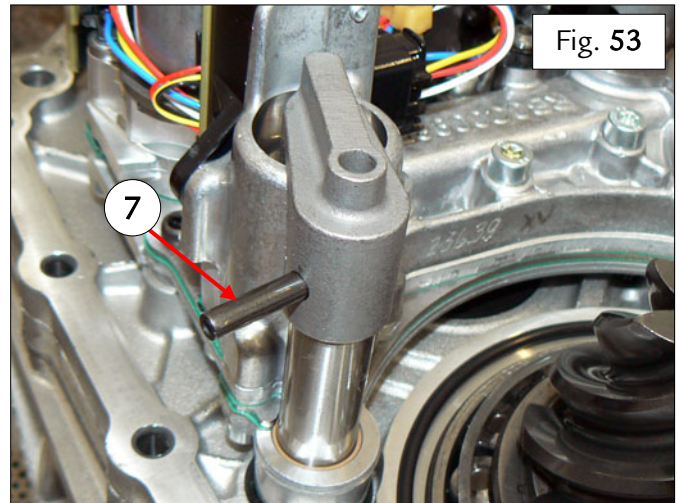
- Install the new actuator bracket vertically – Fig. 52.





Ferrari North America

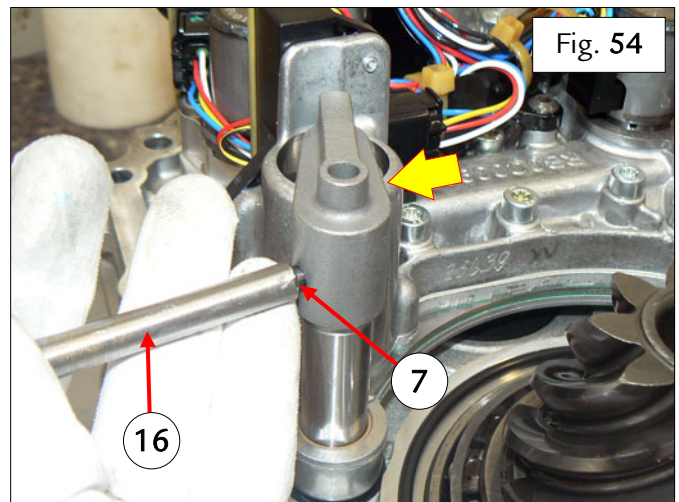
- Fit the new park lock alignment pin (7) in the relative seat, aligning the actuator bracket correctly with its actuator rod – Fig. 53.



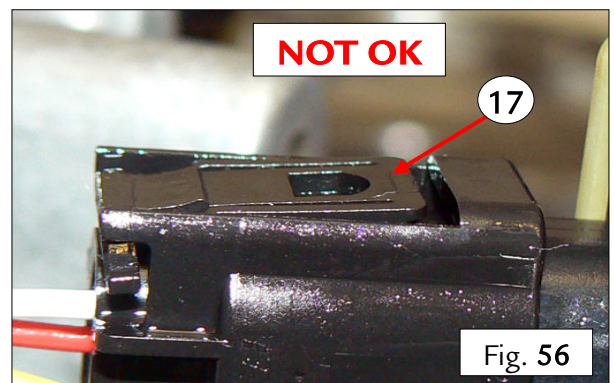
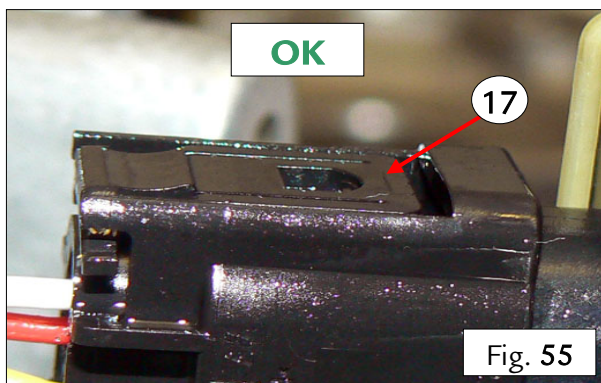
- Using a mallet and a punch (16) with a diameter larger than the park lock alignment pin (7), install the pin in its seat – Fig. 54.

Note: The pin (4) must not protrude from the actuator bracket.

Note: To prevent possible damage to the actuator bracket when tapping it with the mallet, place a tool in the position indicated to oppose the impact of the mallet.



- **DO NOT TOUCH** the retainer clips (17) fastening the connections on the SAP. Check that the connectors are connected correctly on the SAP; there is very little difference in appearance between a connector that is connected correctly to the sensor (Fig. 55) and an incorrectly connected connector (Fig. 56). As it is possible that the connector retainer clip (17) may have been touched inadvertently during the previous operations, check the connectors before installing the differential housing.





Ferrari North America

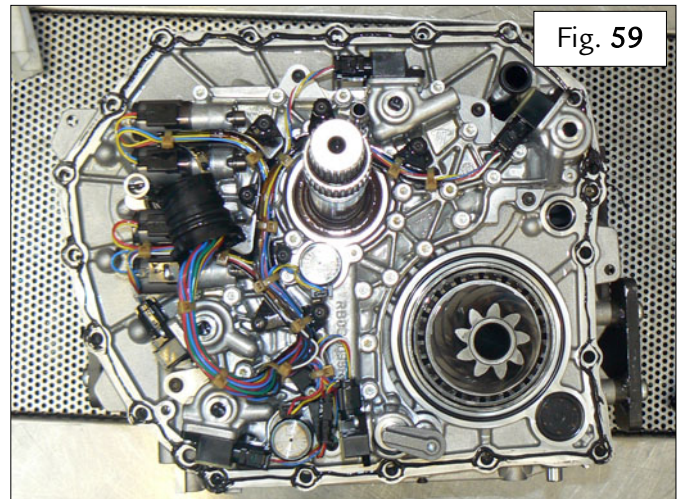
- Apply a continuous bead of **Loctite 5970** to the outer mating surface of the interface plate – Fig. 57.



- Apply a continuous bead of **Loctite 5970** around the holes in the outer mating surface of the interface plate as shown in the photo aside – Fig. 58.



- The continuous bead of **Loctite 5970** must look like the example shown in the photo aside – Fig. 59.

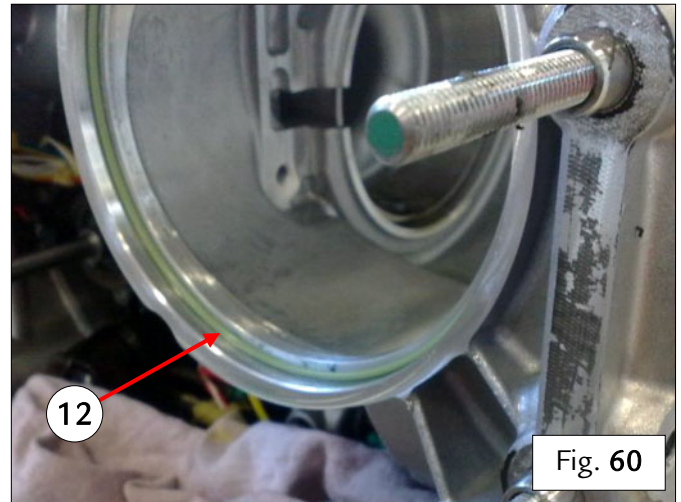




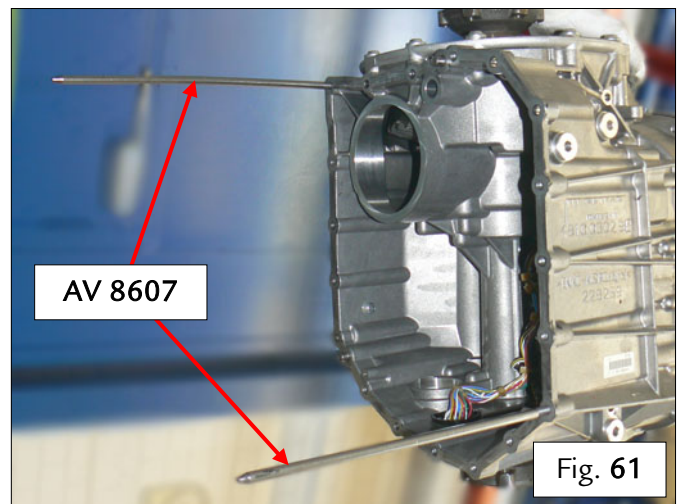
Ferrari North America

For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

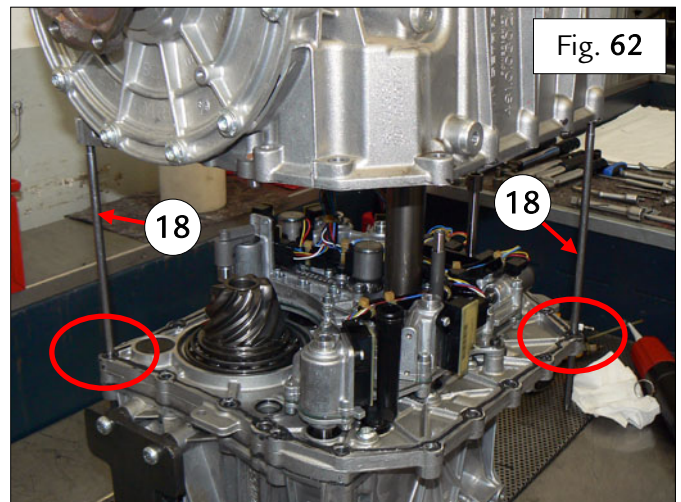
Lubricate then install the new seal (12) in the differential housing, on the side in contact with the interface plate – Fig. 60.



➤ Fit the two alignment pins 95978607 (8607) in the positions on the differential housing indicated in the photo aside – Fig. 61.



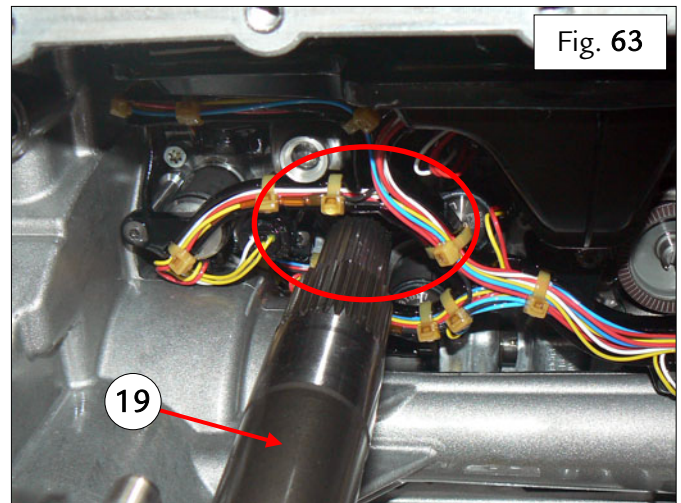
➤ Using the hoist, align the differential housing with the interface plate, aligning the pins (18) of tool AV 8607 in the positions indicated in the photo aside – Fig. 62.





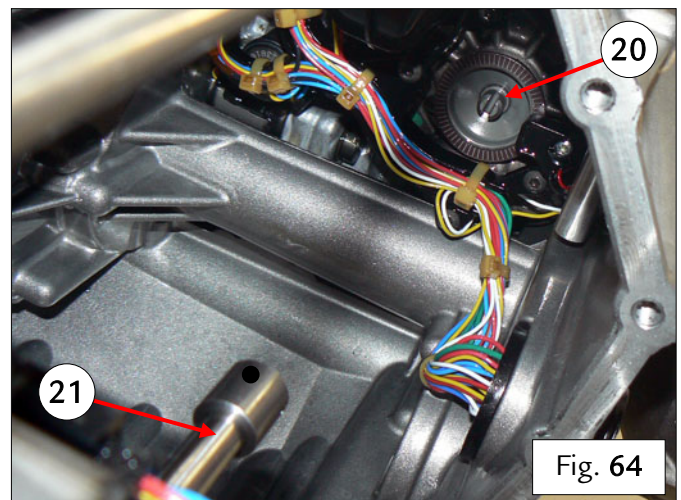
Ferrari North America

- Ensure that as the differential housing is moved forward, the primary shaft (19) does not interfere with the wiring of the CCP in the area indicated in the photo aside – Fig. 63.

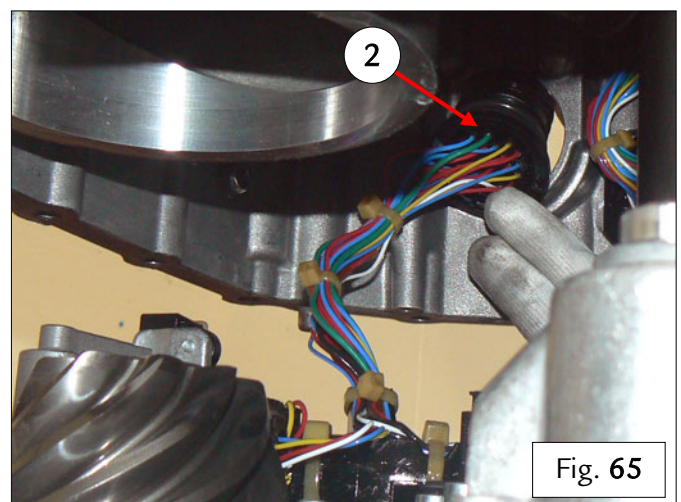


- Rotate the clutch to align the respective seats of the shaft (21) and the oil pump (20) – Fig. 64.

Note: the pin on the oil pump spindle (21) must be aligned in the respective seat on the pump (20). **DO NOT TRY TO FORCE THE PARTS TOGETHER IF RESISTANCE IS ENCOUNTERED.**



- From inside the differential housing, push the SAP connection (2) through the relative hole, fastening in the correct position – Fig. 65.





Ferrari North America

- Continue to move the differential housing forward slowly, proceeding carefully; a few centimeters before the two components come into contact, if necessary, rotate the front flange (23) slightly to align the components – Fig. 66.

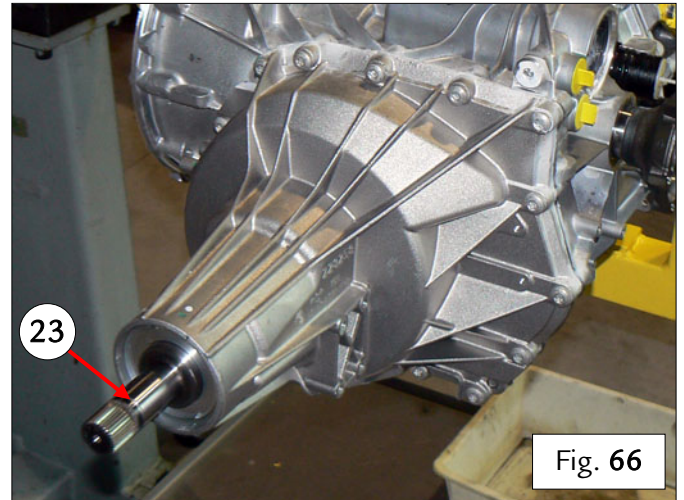


Fig. 66

- IMPORTANT -

DO NOT tighten the screws fastening the two housings until the mating surfaces of the two housings are perfectly in contact.
DO NOT attempt to force the two housings together with a rubber mallet.

- Hand-tighten the new screws indicated fastening the gearbox to the interface plate – Fig. 67.

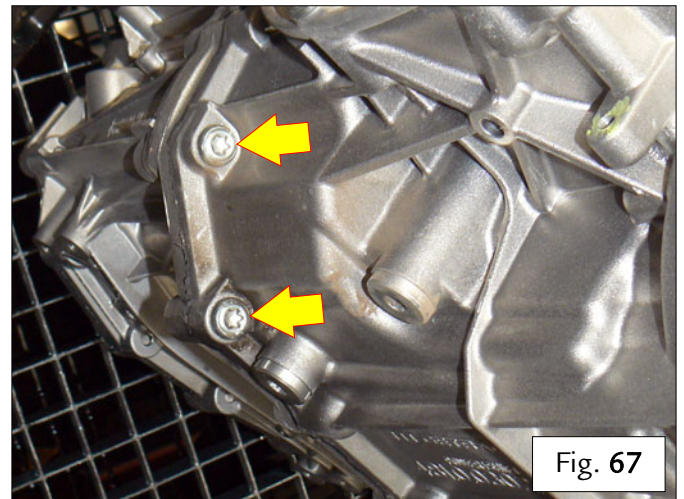


Fig. 67

- Hand-tighten the new screw indicated fastening the gearbox to the interface plate – Fig. 68.

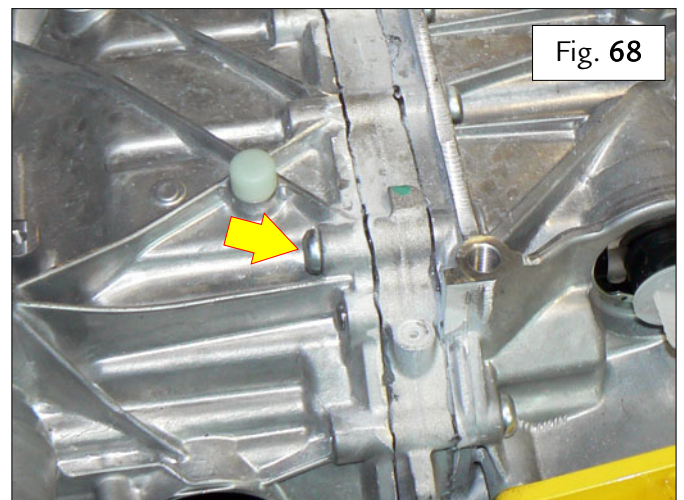
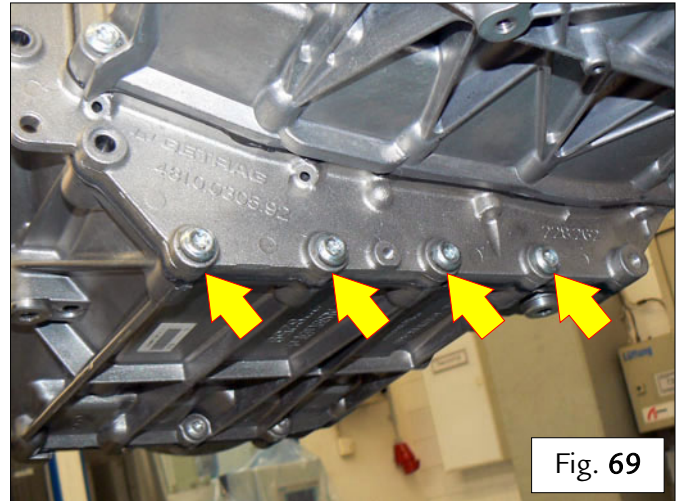


Fig. 68

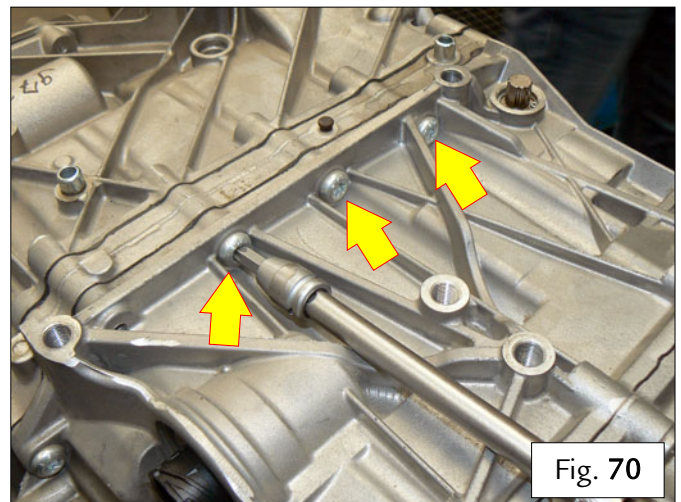


Ferrari North America

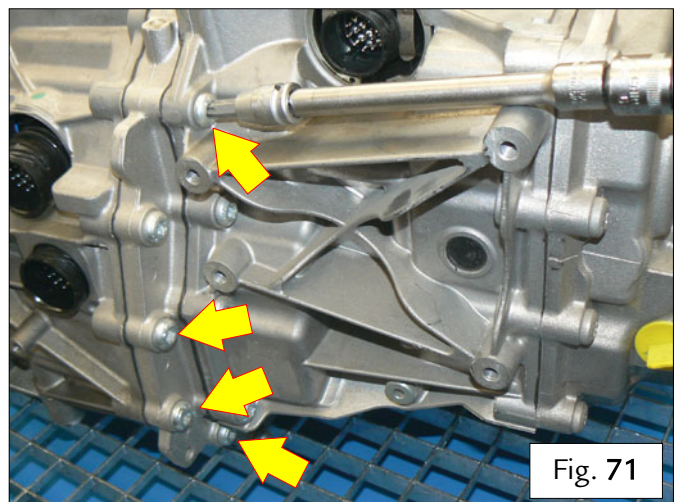
- Remove the alignment pins **95978607 (AV 8607)** from the differential housing.
- Hand-tighten the new screws indicated fastening the gearbox to the interface plate – Fig. 69.



- Hand-tighten the new screws indicated fastening the gearbox to the interface plate – Fig. 70.



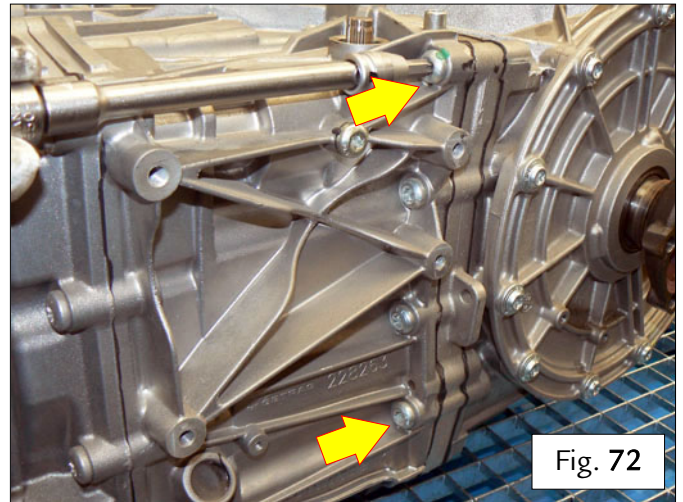
- Hand-tighten the new screws indicated fastening the gearbox to the interface plate – Fig. 71.





Ferrari North America

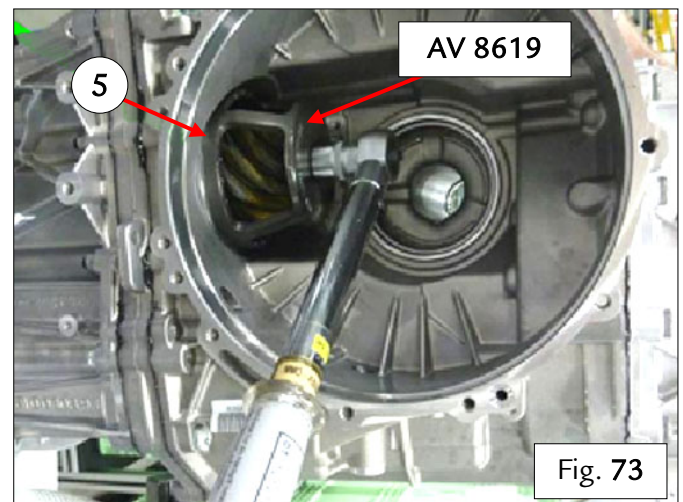
- Hand-tighten the new screws indicated fastening the gearbox to the interface plate – Fig. 72.



- Tighten the nineteen screws fitted previously to a torque of 34 ± 1.2 Nm in a cross pattern.

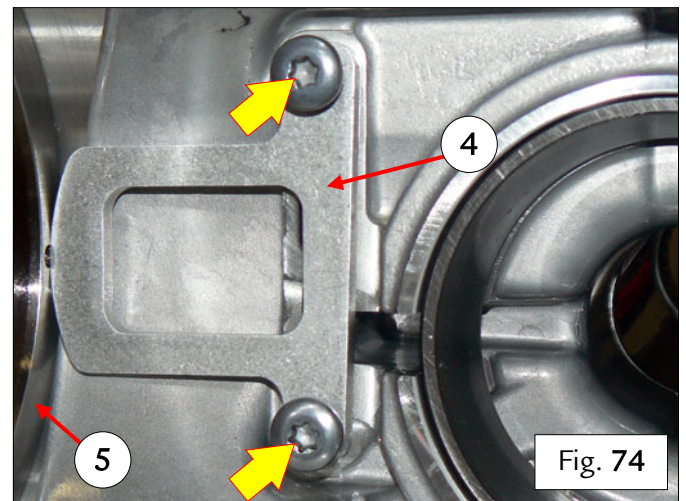
For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

- Hand-tighten the new ring nut (5) in the relative seat – Fig. 73.
- Using the tool 95978619 (AV 8619) tighten the new ring nut (5) fastening the plate to the differential housing to a torque of 30 Nm – Fig. 73.



For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

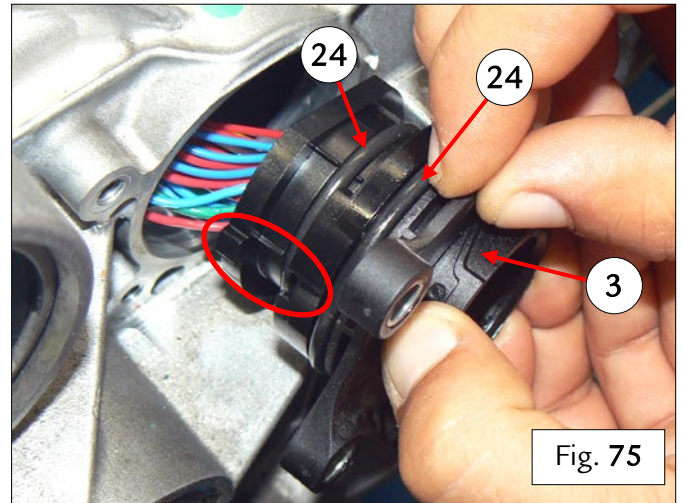
- Fit the new bracket (4) in the relative seat against the ring nut (5), then tighten the new screws indicated to a torque of $9 \text{ Nm} \pm 1 \text{ Nm}$ – Fig. 74.



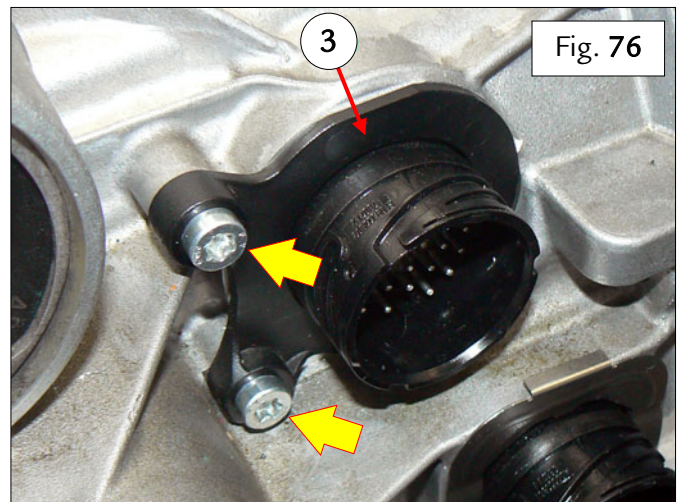


Ferrari North America

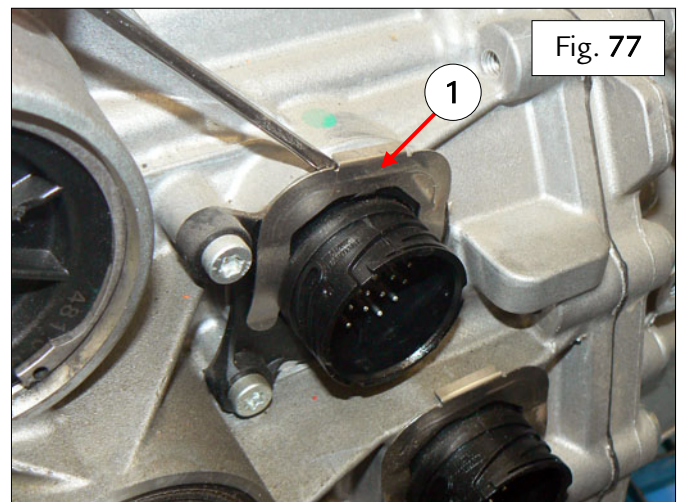
- Visually inspect the seal surface of the adapter (3) in the differential housing – Fig. 75
- Lubricate the two O-rings (24), then fit the adapter (3) onto the respective connector, aligning correctly as indicated in the photo aside – Fig. 75.



- Insert the adaptor (3) (assembled onto the connector) in the respective hole in the differential housing, then fasten by tightening the new screws as indicated to a torque of 10 - 11 Nm – Fig. 76.



- Fit the new retainer clip (1) onto the connector to fasten – Fig. 77.

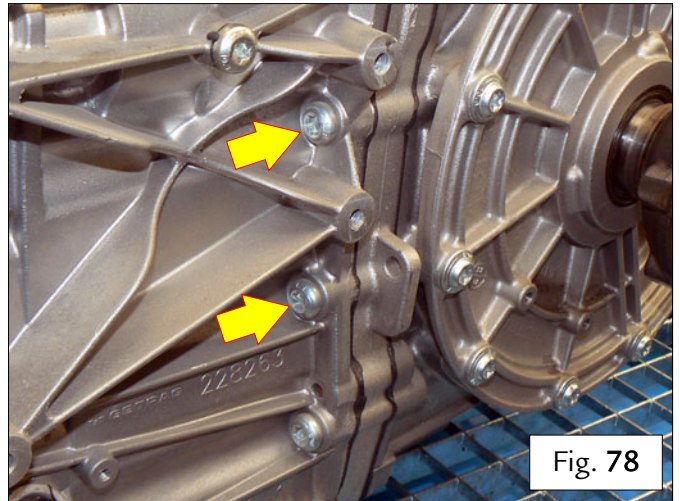




Ferrari North America

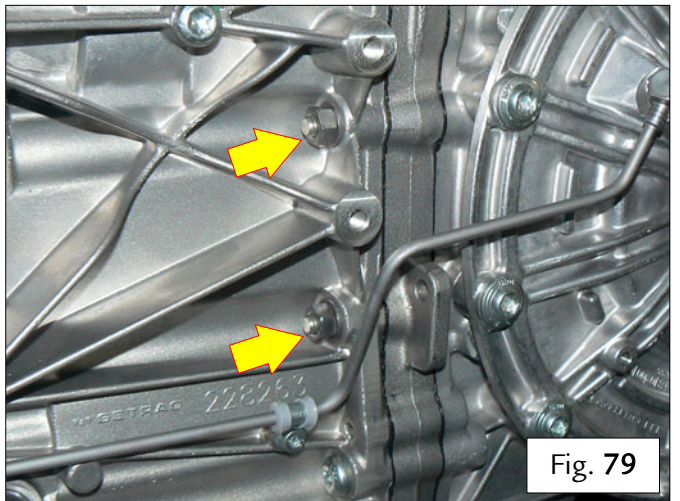
- Using the bracket **AV 8606** and the lift hook, lift and remove the DCT gearbox from the support tool **AM 107314**.

- On the right hand side of the DCT gearbox, tighten the indicated screws to a torque of **34±1.2 Nm** – Fig. 78.

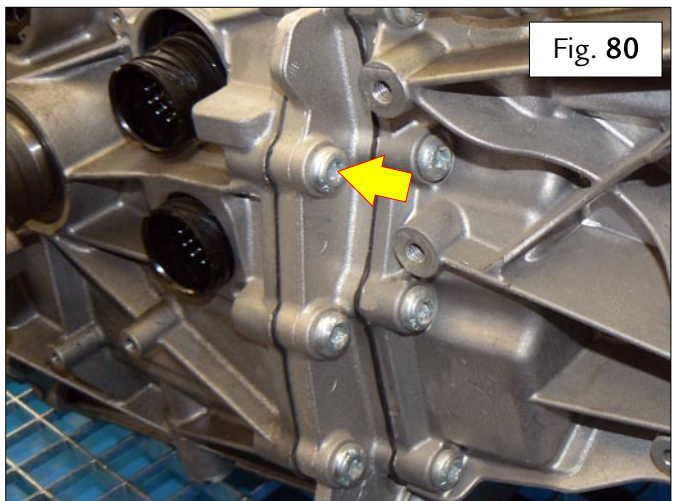


For F12 Berlinetta, Monza SP1, Monza SP2 and 812 Superfast ONLY

- On the right hand side of the DCT gearbox, tighten the indicated nuts to a torque of **34±1.2 Nm** – Fig. 79.



- On the left hand side of the DCT gearbox, tighten the indicated screw to a torque of **34±1.2 Nm** – Fig. 80.





Ferrari North America

System pressurization procedure

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

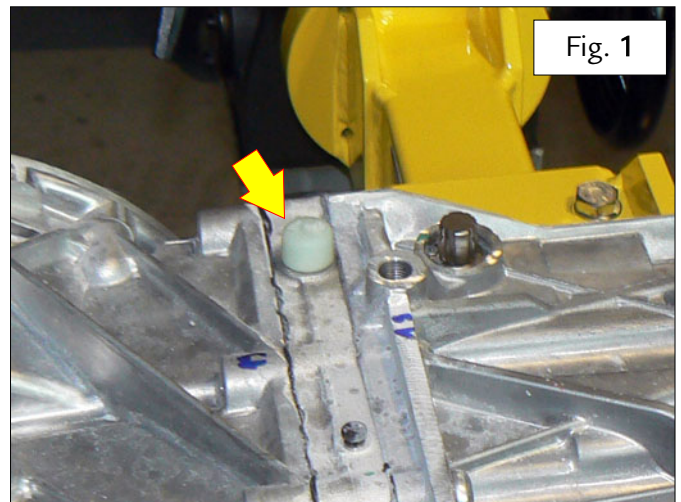
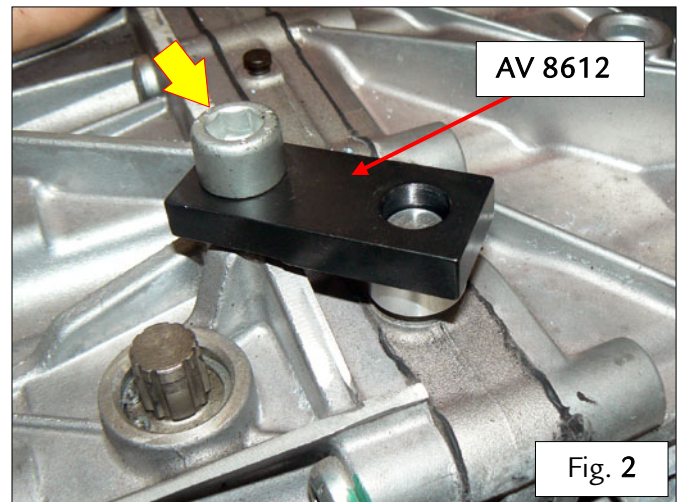


Fig. 1



Ferrari North America

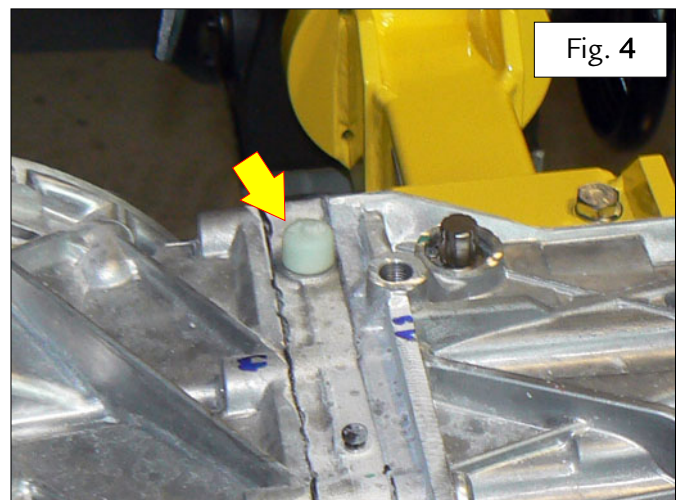
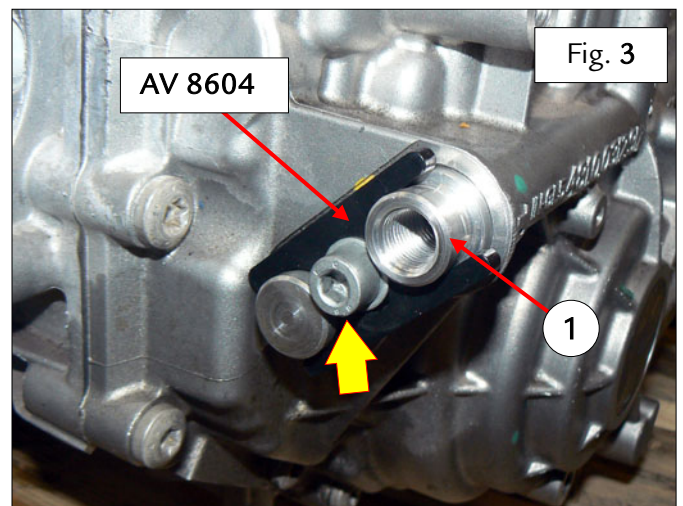
Install the tool AV 8612 (95978612), consisting of a plug with relative O-ring and a bracket fastened with the indicated screw, in the GL oil system breather – Fig. 2.



- Seal the indicated GL oil inlet and outlet orifices on the gearbox with the gearbox pressurizing tool AV 8604 (95978604), 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”.

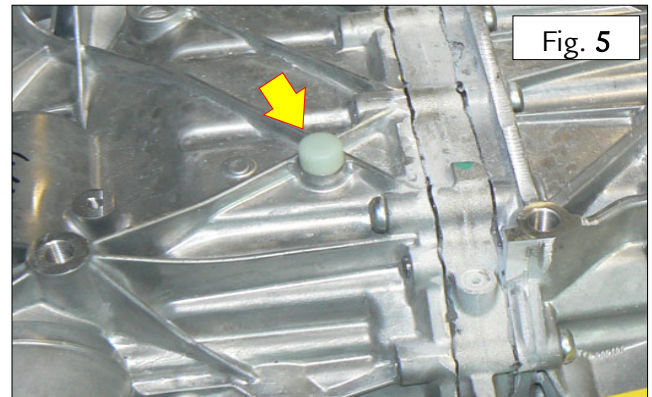
- Connect the pressurizing system to the plug (1) – Fig. 3.
- Pressurize the system to a maximum of **0.5 Bar**.
- Keeping the system pressurized, test the seal tightness of the replaced parts around joints/seams/gaskets/seals using bubble testing liquid.
- After testing, remove all residue of bubble 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.



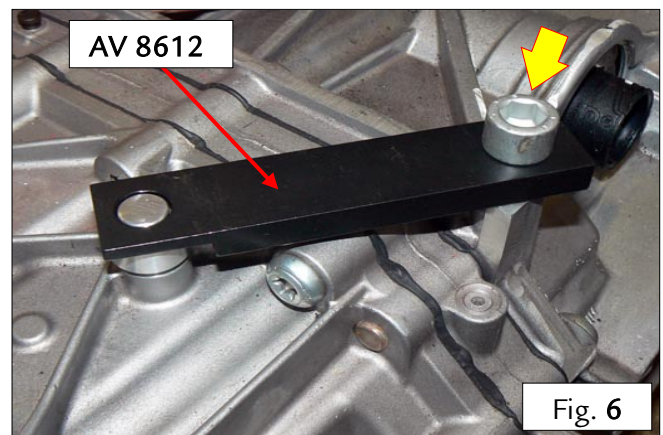


ATF HYDRAULIC CLUTCH SYSTEM

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



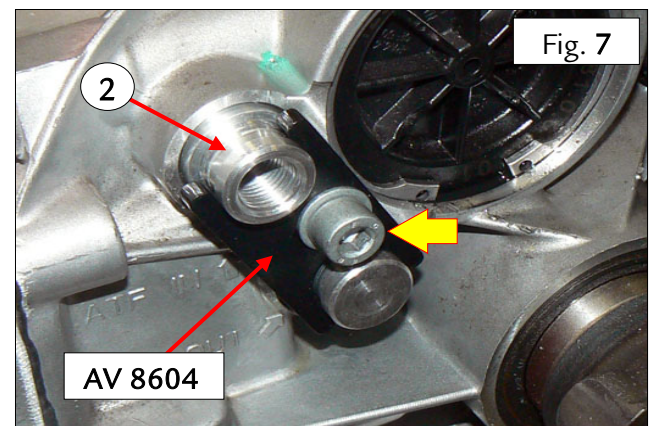
- Install the tool AV 8612 (95978612), consisting of a plug with relative O-ring and a bracket fastened with the indicated screw, in the ATF oil system breather – Fig. 6.



Seal the indicated ATF oil inlet and outlet orifices on the gearbox with the gearbox pressurizing tool AV 8604 (95978604), 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”.

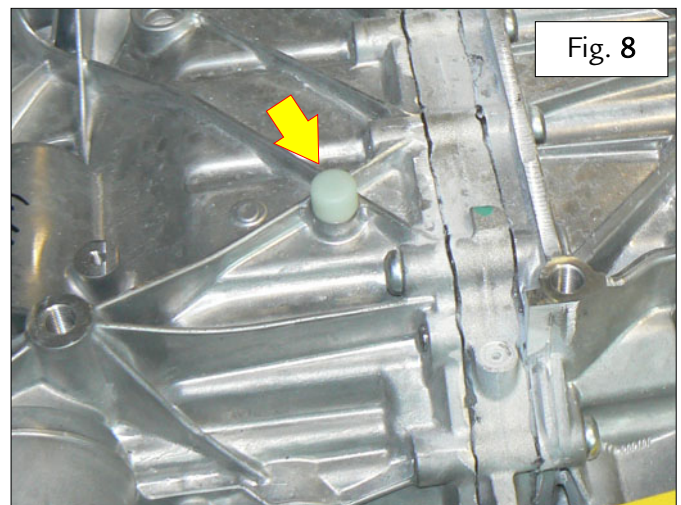
- Connect the pressurizing system to the plug (2) – Fig. 7.





Ferrari North America

- 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.



- Using the bracket **AV 8606** and the lift hook, mount the DCT gearbox again on the support tool **AM 107314**, and perform the **procedure for pressurizing the repaired system** as described at the end of this document.
- Using the bracket **AV 8606** and the lift hook, lift and remove the DCT gearbox again from the support tool **AM 107314**.

Refitting 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**, refit the complete DCT gearbox in the vehicle (as described in the Workshop Manual).

- IMPORTANT -

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.



Ferrari North America

Filling the hydraulic clutch system with oil

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

Filling with gear oil

- For the **California, 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 and California T**, fill the gear oil system with 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**, fill the DCT gearbox gear lubrication system (as described in the Workshop Manual).

Self-acquisition procedure

After replacing the SAP and/or CCP, reinstalling the gearbox in the vehicle and filling all oil circuits correctly, the following self-acquisition procedure must be performed to allow the system to reacquire all operating parameters necessary.

1. Connect the DEIS diagnostic tester to the vehicle.
2. Start the engine and run until the gearbox gear oil reaches operating temperature;
3. Check the gearbox gear oil level and the clutch hydraulic system oil level (as described in the Workshop Manual).

- IMPORTANT -

If any fault warning indicators illuminate or any errors are generated during the aforementioned procedures, stop the procedure and diagnose the cause of the error.

4. Perform the cycle “**40 NCR Valve cleaning test**” with the DEIS tester.
5. Test drive the vehicle normally for **30 minutes**, checking if any fault warning indicators illuminate or any gearbox malfunctions are noted during the test drive.



Ferrari North America

6. Upon returning to the service center, check that:

- no fault warning indicators are lit;
- there are no signs of gearbox malfunction such as a slipping clutch, excessively harsh gear engagement or noise from the gearbox;
- there are no errors indicated on the DEIS diagnostic tester;
- there are no leaks.

- IMPORTANT -

- If any error codes relative to internal components of the gearbox are generated, diagnose the cause of the fault.
- If error “P193F” is generated after replacing the CCP, perform the DEIS cycle “30 NCR Calibration”;
- If error “P193F” is generated after replacing the SAP, perform the DEIS cycle “50 Gearbox Position Self-acquisition”.

Note: All DEIS calibration cycles must be performed with the vehicle on a flat surface with the longitudinal accelerometer calibrated correctly (with DEIS cycle “20 NCR Accelerometer self-acquisition”), and waiting at least 30 seconds between steps.

Thank you for your co-operation.

DCT Gearbox Pre-Diagnosis Form



Model	Updated on
<i>458 ITALIA 458 SPIDER 458 SPECIALE SPECIALE A California</i> <i>F12 tdf F12 berlinetta FF 488 PISTA SPIDER California T</i> <i>488 SPIDER 488 PISTA Portofino GTC4LUSSO</i> <i>F8 TRIBUTO MONZA SPI MONZA SP2 812 superfast</i>	<p>October 2019</p>

VEHICLE FILE																			
Date:	Chassis number:																		
Model:	Dealer:																		
Market:	Vehicle Km/mi:																		
Gearbox No.:	ROL No. (if available):																		
Warranty start date:	Warranty end date:																		
Prior procedures on DCT gearbox (date and type of procedure):																			
DIAGNOSTIC FILE																			
Provide description of oil leakage found (attach photos), specifying number of leaks, in reference to the drawings from page 2 to 4 of Technical Information 2622:																			
List any DTC errors in NCR (in reference to the list from page 7 to 15 of Technical Information 2622):																			
<p><u>In the event of NOISE from gearbox/differential, specify:</u></p>																			
Conditions in which noise occurs:																			
Vehicle speed:																			
Gear selected:	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 0 10px;">N</td> <td style="padding: 0 10px;">1st</td> <td style="padding: 0 10px;">2nd</td> <td style="padding: 0 10px;">3rd</td> <td style="padding: 0 10px;">4th</td> <td style="padding: 0 10px;">5th</td> <td style="padding: 0 10px;">6th</td> <td style="padding: 0 10px;">7th</td> <td style="padding: 0 10px;">R</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	N	1st	2nd	3rd	4th	5th	6th	7th	R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N	1st	2nd	3rd	4th	5th	6th	7th	R											
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
During gear shift?	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 0 40px;">YES</td> <td style="padding: 0 40px;">NO</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	YES	NO	<input type="checkbox"/>	<input type="checkbox"/>														
YES	NO																		
<input type="checkbox"/>	<input type="checkbox"/>																		
If noise occurs during gear shifting, specify:	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 0 40px;">Upshifts <input type="checkbox"/></td> <td style="padding: 0 40px;">Downshifts <input type="checkbox"/></td> </tr> <tr> <td style="padding: 0 40px;">Automatic mode <input type="checkbox"/></td> <td style="padding: 0 40px;">Manual mode <input type="checkbox"/></td> <td style="padding: 0 40px;">Performance mode <input type="checkbox"/></td> </tr> </table>	Upshifts <input type="checkbox"/>	Downshifts <input type="checkbox"/>	Automatic mode <input type="checkbox"/>	Manual mode <input type="checkbox"/>	Performance mode <input type="checkbox"/>													
Upshifts <input type="checkbox"/>	Downshifts <input type="checkbox"/>																		
Automatic mode <input type="checkbox"/>	Manual mode <input type="checkbox"/>	Performance mode <input type="checkbox"/>																	

DCT Gearbox Pre-Diagnosis Form



Model	Updated on
<i>458 ITALIA</i> <i>458 SPIDER</i> <i>458 SPECIALE SPECIALE</i> <i>458 A</i> <i>California</i> <i>F12 tdf</i> <i>F12 berlinetta</i> <i>FF</i> <i>488 PISTA SPIDER</i> <i>California T</i> <i>488 SPIDER</i> <i>488 PISTA</i> <i>Portofino</i> <i>GTC4LUSSO T</i> <i>GTC4LUSSO</i> <i>F8 TRIBUTO</i> <i>MONZA SPI</i> <i>MONZA SP2</i> <i>812superfast</i>	<p>October 2019</p>

If noise occurs with gear engaged, specify when:	Under acceleration	When lifting off throttle	Constant throttle (cruise)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise is heard when:	Driving straight	Turning right	Turning left
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Describe the type of noise heard:	Negotiating traffic circle	Negotiating tight bend	Negotiating wide bend
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Describe the type of noise heard:	Whistle	Rumble	Gear noise
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check the levels of the clutch hydraulic oil system (ATF) and the gearbox gear oil system (GL)	Differential bevel gear	Vibration	Clunking
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil level (ATF)	Too high	Too low	OK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil level (GL)	Too high	Too low	OK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is metal debris found on plug?			
JOB FILE			
Job performed:			
Kit Part Nos. ordered:			

DCT Gearbox Pre-Diagnosis Form



Model	Updated on
	<p>October 2019</p>

Job performed on:	
<u>CCP</u>	<u>SAP</u>
Identification No. of old CCP:	Identification No. of old SAP:
Identification No. of new CCP:	Identification No. of new SAP:
Any faults noted during repair procedure:	

Task performed by (Dealer):

Technical Manager:

First name _____
(Print)

Last name _____
(Print)

Company stamp

Full signature