



Ferrari North America

Technical Information

Date: April 2017
Bulletin #: 2396
Campaign #:
Supersedes:
Section: 3

Model Type: 458 Italia/Spider/Speciale/Speciale A, FF, F12 Berlinetta
Model Year: All
Subject: E-Diff Replacement for DCT gearbox

Please find attached the correct procedure for replacing the E-DIFF unit on the DCT gearbox in **458 Italia/Spider/Speciale/SpecialeA, FF and F12berlinetta** vehicles after performing the necessary pre-diagnosis procedures and verifying that the E-DIFF itself is faulty or noisy.

▪ Protocol for Managing Gearbox Repairs

- Prior to any procedure, appropriate diagnosis and documentation must be sent to the FNA HelpDesk via Red Online (ROL) to obtain authorization to order the requested kit.
- In order to do this, the Dealer must compile the “DCT Gearbox Pre-Diagnosis Form” attached to Technical Information **2389**.
- This form must be attached to a new ROL with appropriate first level diagnosis, and once approved the part can be ordered through NewModis.

Replaced parts must be kept for at least 6 months, so that they may be returned if requested or authorized for scrapping by SAT.

- IMPORTANT -

Only Trained Technicians at Authorized Ferrari Dealers that have completed the course on Level 4 DCT gearbox are authorized to perform this procedure.

- IMPORTANT -

After completing first level diagnosis, you are required to compile the “DCT Gearbox Pre-Diagnosis Form” attached to Technical Information 2389, and include it in the ROL



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- IMPORTANT -

From the March 2017 update to the Technical Documentation, the S.T. Schedule for each of the models involved includes a specific table indicating the corresponding operation codes for the procedures performed, which are necessary to request reimbursement under warranty.

The tools and equipment already specified in TI 2076 are required to perform the following procedure.

Depending on the vehicle model, the part installed in this procedure is as follows:

- **DIFFERENTIAL KIT (W) Part No. 70003929 Q.ty 1**

This spare part number may be ordered for vehicles with a valid manufacturer's warranty or extended coverage, **ONLY after opening an ROL (Red On Line) and receiving authorization from the Technical Service Department.**

The part numbers of the kits required for this procedure are indicated in the following table.

The following kits must be ordered by you directly from our Spare Parts Department in the quantities needed.

	458 Italia 458 Spider 458 Speciale 458 SpecialeA	FF	F12berlinetta
Replacing E-DIFF	70003929	70003929	70003929



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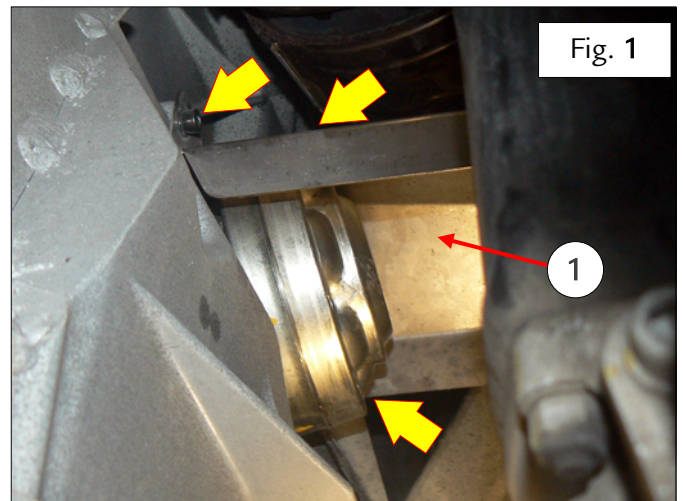
Procedure

458 Italia, 458 Spider, 458 Speciale and 458 SpecialeA

- Drain the 75W-90 GL5 gear oil from the gearbox (as described in the Workshop Manual).
- Remove the complete RH suspension assembly (as described in the Workshop Manual), without disconnecting the brake caliper from the brake system.
- Remove the E-DIFF pipe as indicated in step [9. Removing E-DIFF pipe](#) in Technical Information **2076** of February 2013.
- Remove the RH differential flange as described in step [1. Removing differential Corteco rings and flanges](#) in Technical Information **2076** of February 2013.
- Ensure that the Park Lock and park brake are deactivated before continuing.

Note that while some of the following photographs were taken with the differential cover and the differential on the work bench to illustrate the relative operations more clearly, this procedure must be performed with the gearbox still in the car as per the following instructions.

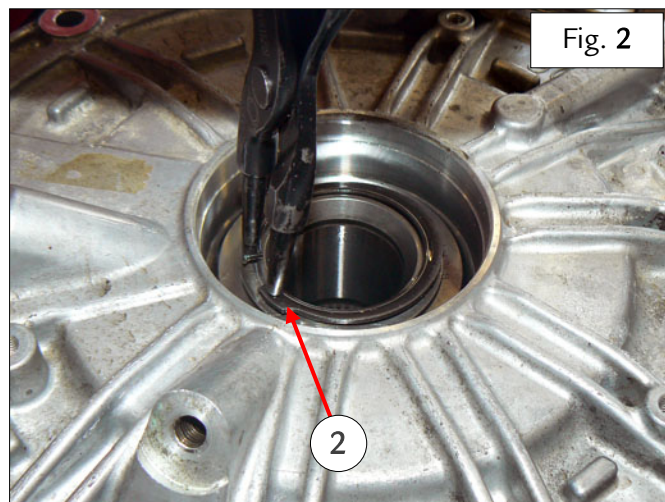
- Remove the heat shield **1**, undoing the three indicated screws – Fig. 1.



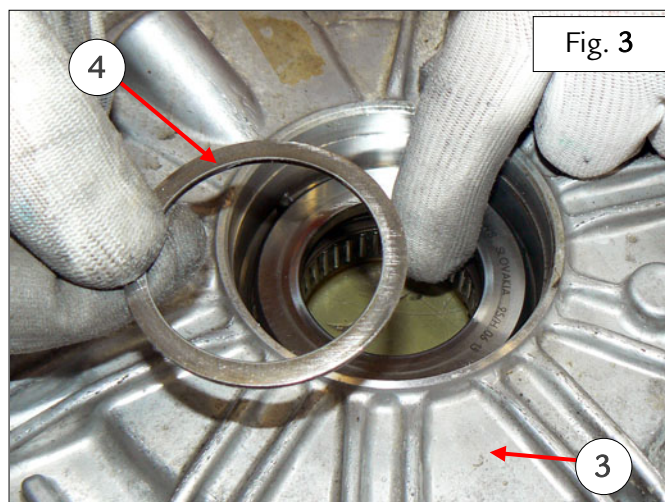


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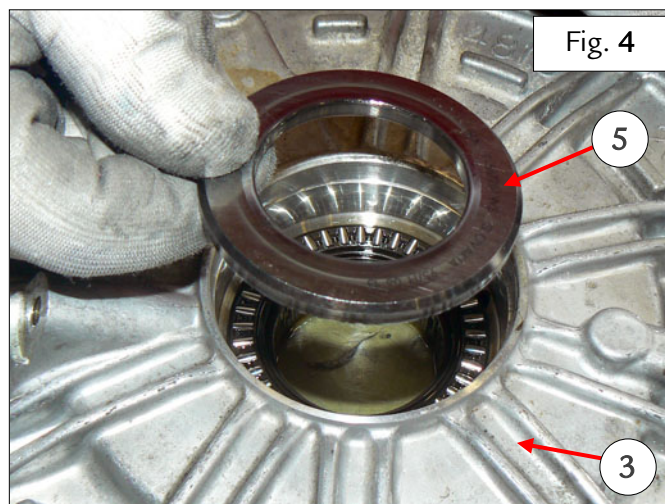
Working in the wheel bay, remove the circlip (2) – Fig. 2.



➤ Remove the adjuster shim (4) from the differential cover (3) – Fig. 3.



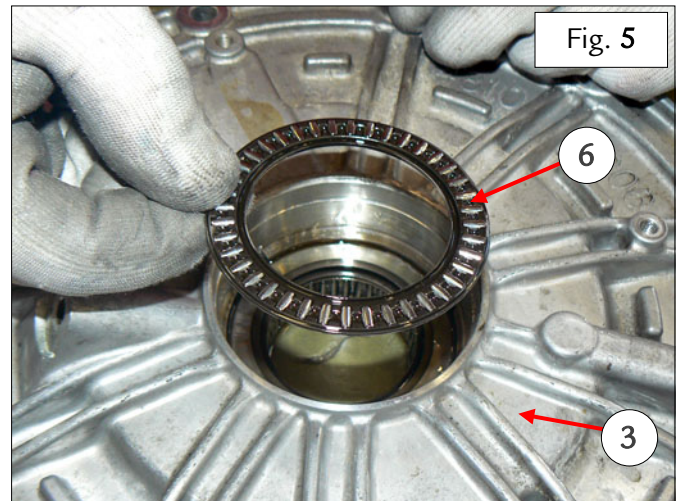
➤ Remove the upper part (5) of the roller bearing from the differential cover (3) – Fig. 4.



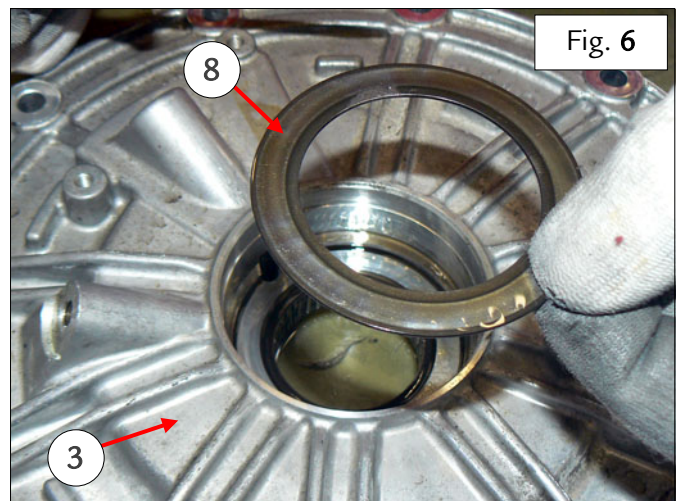


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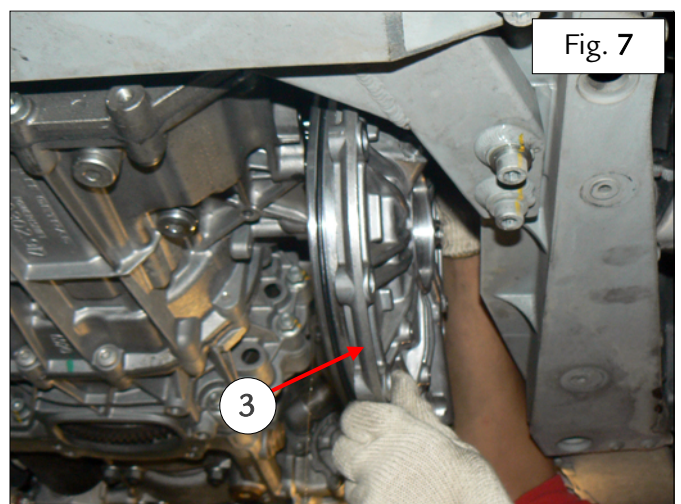
- Remove the roller bearing cage (6) from the differential cover (3) – Fig. 5.



- Remove the lower part (8) of the roller bearing from the differential cover (3) – Fig. 6.



- Remove the differential cover as described in step 2. [Replacing gasket on differential cover](#) in Technical Information 2076 of February 2013.
- Leaving the crown wheel and differential assembly on the gearbox, remove the differential cover (3) from underneath– Fig. 7.

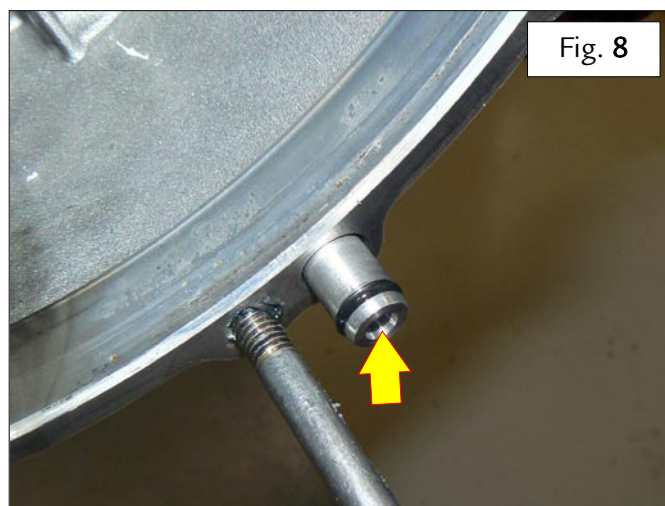




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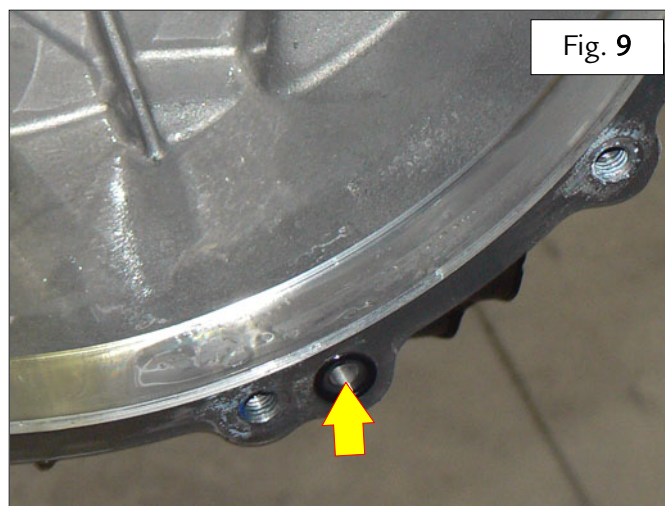
OLD SOLUTION

- Plug the indicated hole in the differential housing appropriately – Fig. 8.

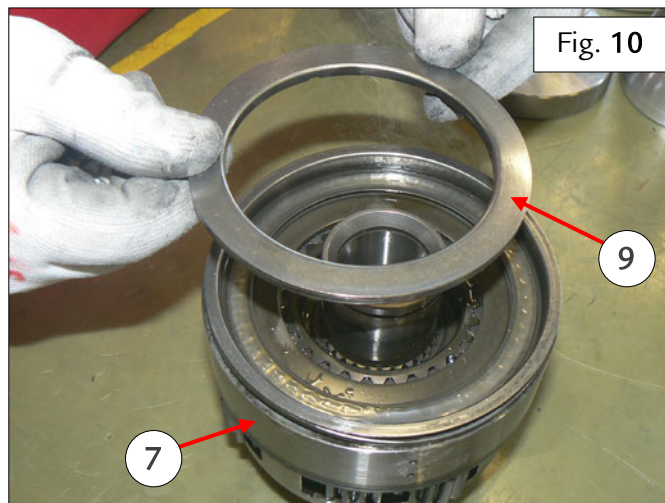


NEW SOLUTION

- Plug the indicated hole in the differential housing appropriately – Fig. 9.



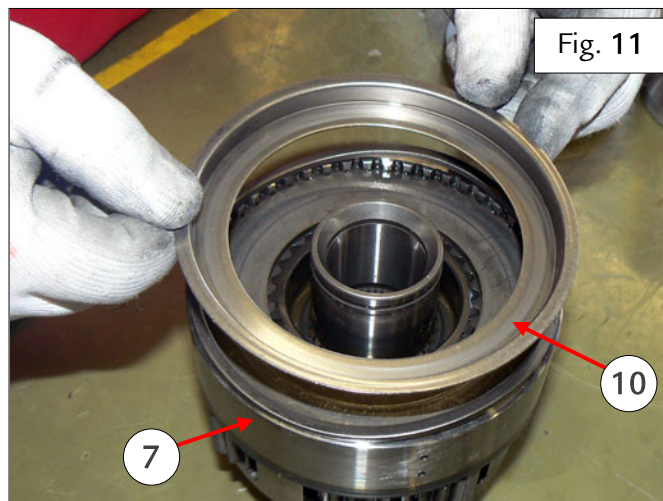
- With the differential (7) still on the gearbox, remove the piston axial bearing (9) – Fig. 10.



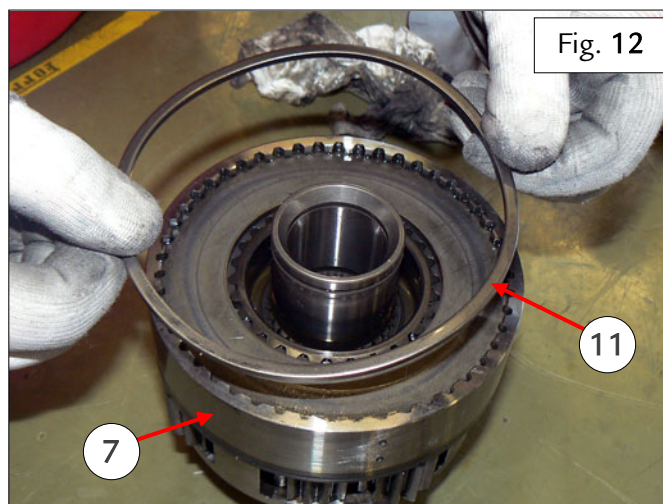


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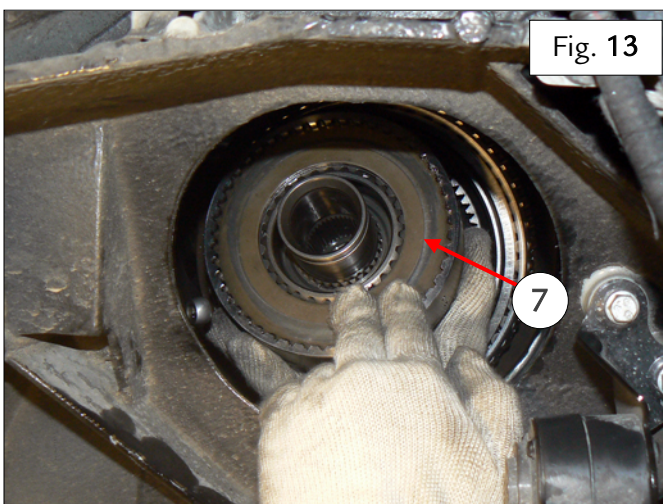
- Remove the “Z” ring (10) from the differential (7) – Fig. 11.



- Remove the circlip (11) from the differential (7) – Fig. 12.



- Remove the differential (7) via the aperture in the chassis in the RH wheel bay – Fig. 13.
- Replace the differential (7) – Fig. 13.

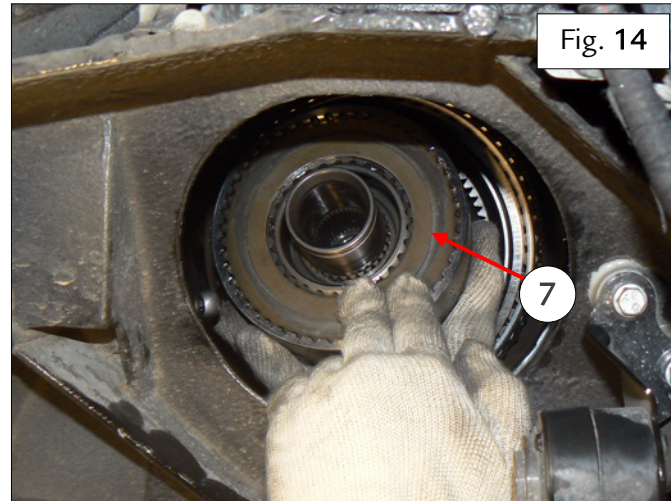


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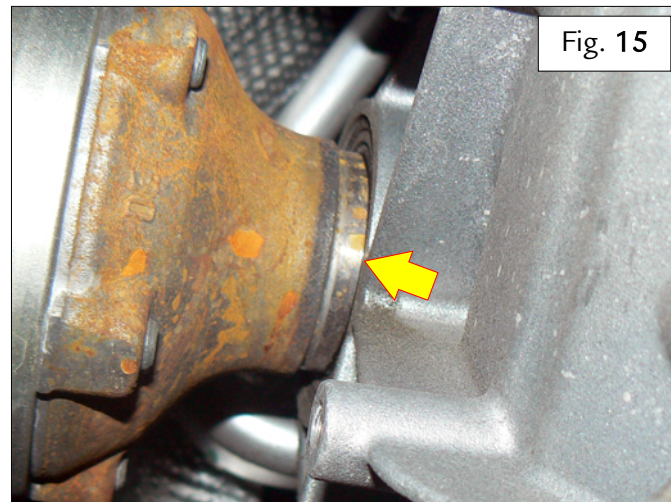


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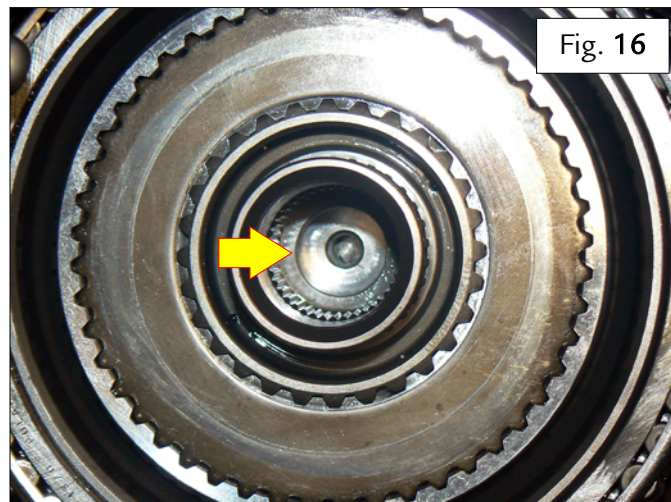
- Fit the new differential (7) in its relative seat on the crown wheel – Fig. 14.



- When fitting the differential in its seat, make sure that the LH flange does not come out of its seat in the position indicated – Fig. 15.



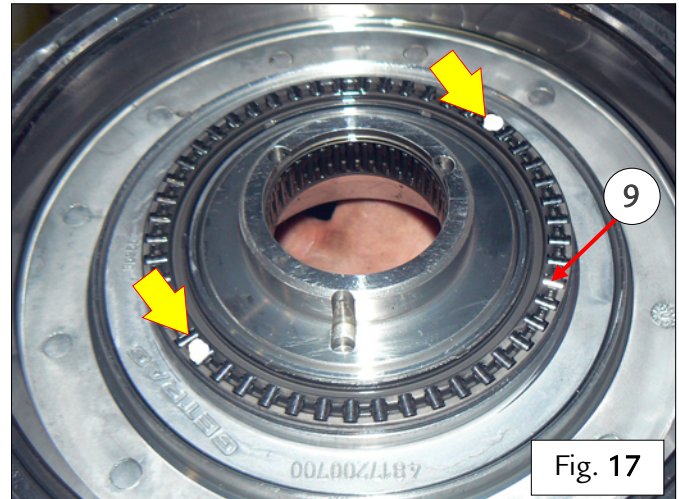
- Once the differential is installed, check that the LH flange is installed fully in its relative seat in the position indicated – Fig. 16.



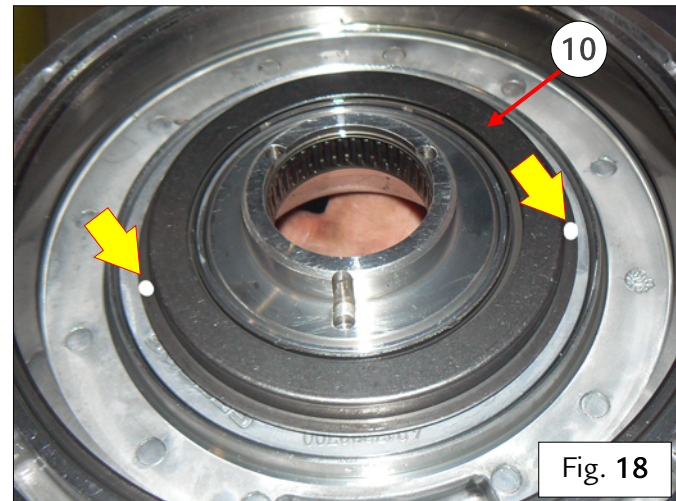


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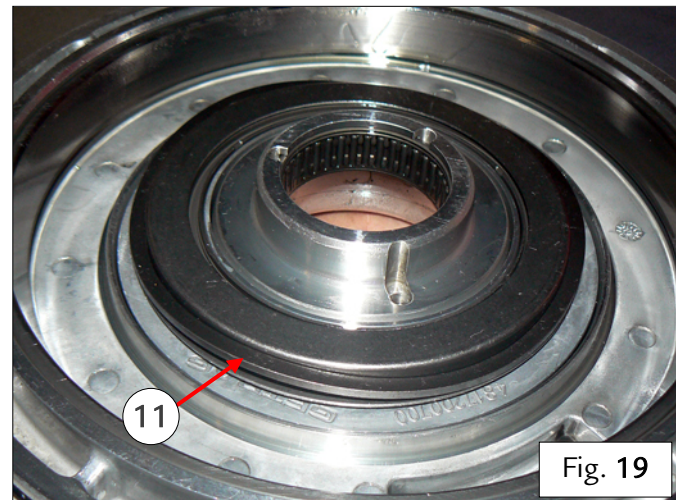
- Install the piston axial bearing (9) on the differential cover, oriented correctly as shown in the photo – Fig. 17.
- Apply two small drops of petroleum jelly in opposing positions on the bearing (9), as shown in the photo aside – Fig. 17.



- Install the “Z” ring (10) on the piston axial bearing, oriented correctly as shown in the photo – Fig. 18.
- Apply two small drops of petroleum jelly in opposing positions on the “Z” ring (10), as shown in the photo aside – Fig. 18.



- Install the spring ring (11) on the “Z” ring – Fig. 19.
Note: The circlip (11) has a side with a tapered edge; this side must face towards the “Z ring”.





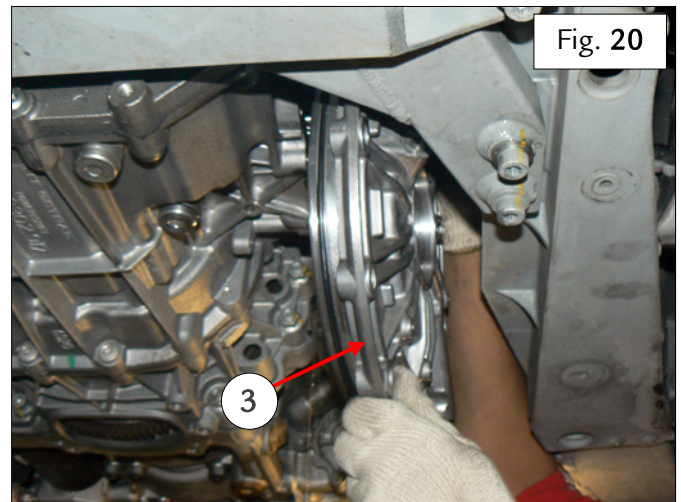
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- Remove the plug fitted previously to close the hole on the differential housing.
- Replace the relative gaskets as described in step [2. Replacing gasket on differential cover](#) in Technical Information **2076** of February 2013.

- IMPORTANT -

During the following steps to install the differential cover in its seat on the gearbox, it is **IMPERATIVE** that the components fitted onto the differential cover during the previous steps remain correctly in place. Listen carefully for the sound of components falling out of place until the differential cover is completely installed in its seat.

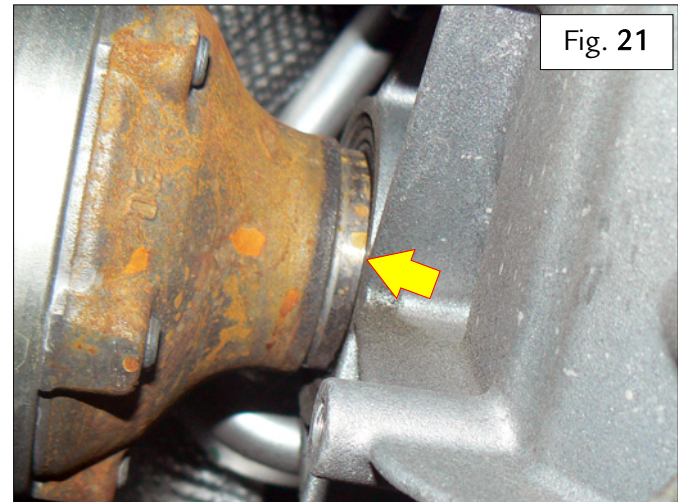
- Gently fit the complete differential cover (3) in the relative seat on the gearbox, listening carefully for the sound of components falling out of place as described previously – Fig. 20.



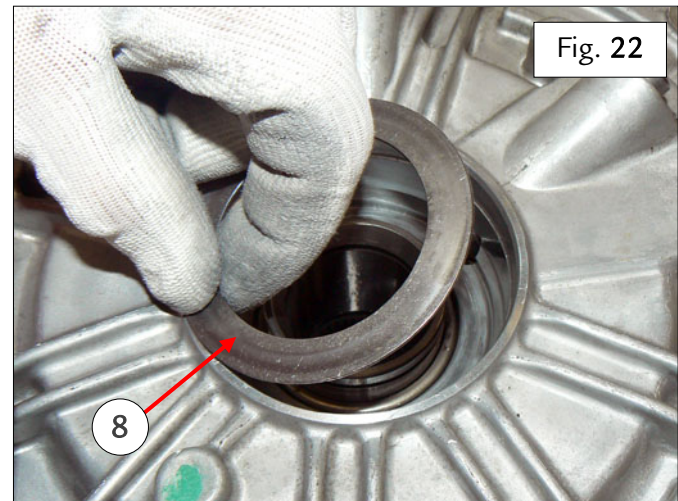


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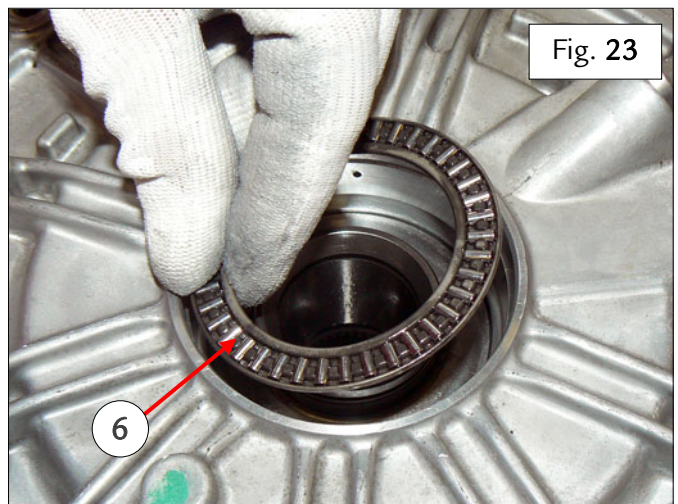
- When fitting the differential cover in its seat, make sure that the LH flange does not come out of its seat in the position indicated – Fig. 21.



- Hand tighten and then securely tighten four new screws in opposed positions on the differential cover, tightening in a crossed pattern.
- Fit the lower part (8) of the roller bearing onto the differential cover – Fig. 22.



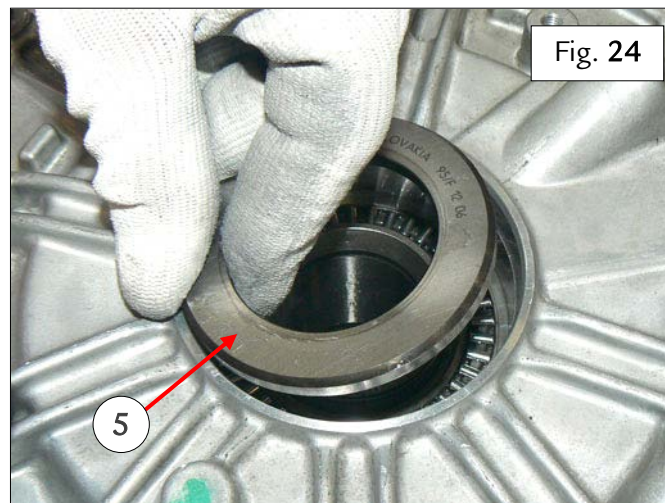
- Fit the roller bearing (6) onto the differential cover – Fig. 23.



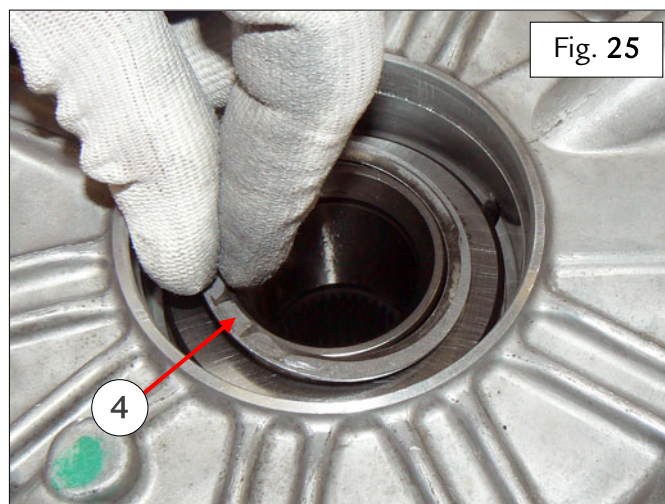


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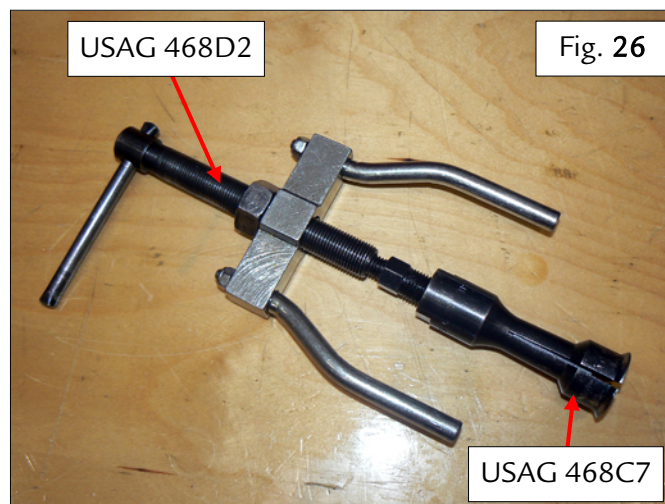
- Fit the top part (5) of the roller bearing, with the bevelled side facing outwards, onto the differential cover – Fig. 24.



- Fit the adjustment shim (4) onto the differential cover – Fig. 25.



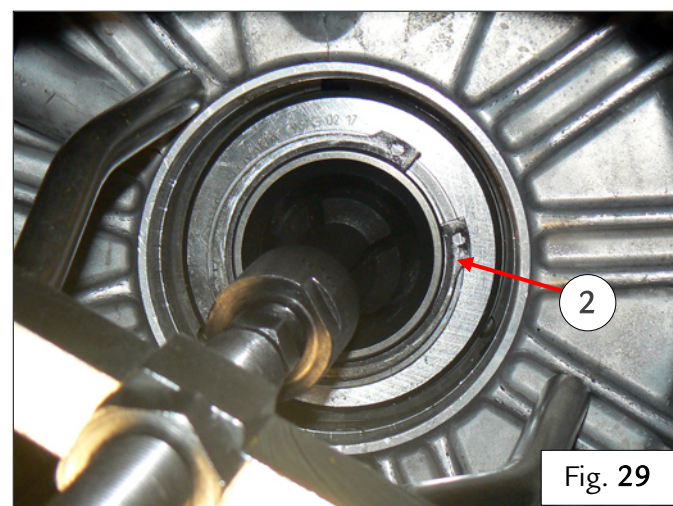
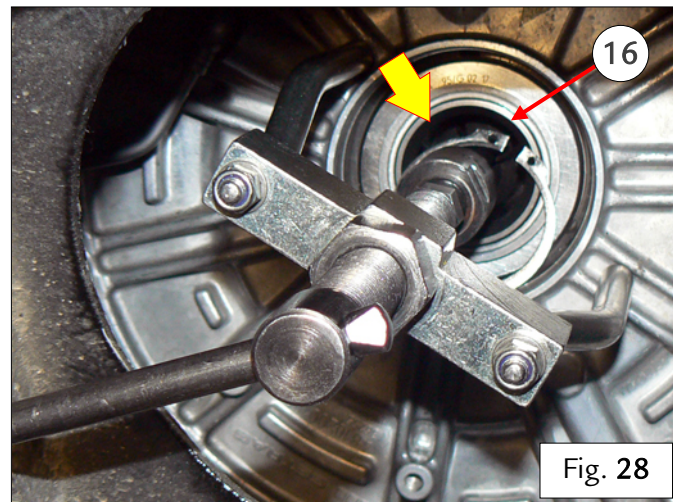
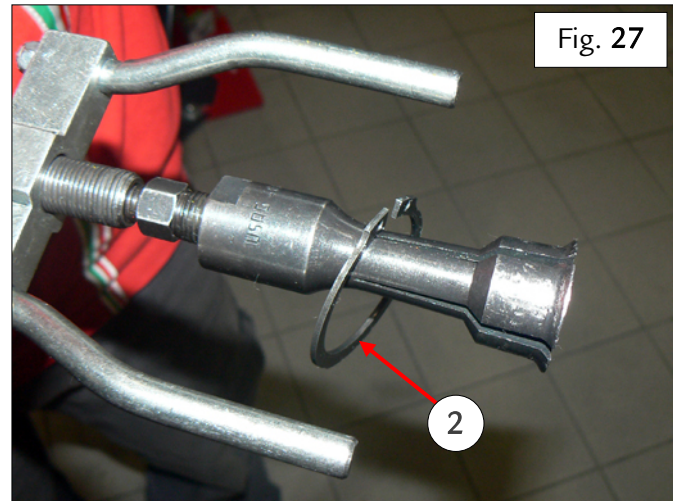
- Assemble the extractor tool USAG 468 D2 onto the inside expansion puller USAG 468 C7 (30-38 mm) as shown in the photo aside – Fig. 26.





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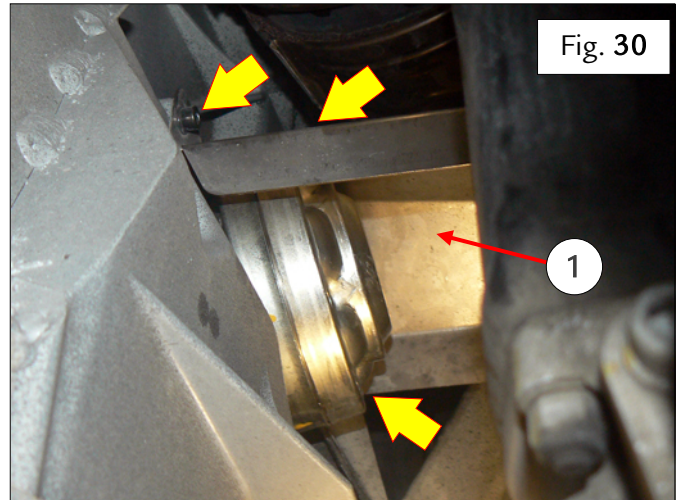
- Fit the new circlip (2) on the extractor tool – Fig. 27.
- Fit the inside expansion puller so that it grips onto the indicated groove on the differential shank (16) – Fig. 28.
- Turn the handle of the inside expansion puller to push against the differential cover in the positions indicated in the photo aside and pull out the shank (16) until the grooved seat of the circlip is exposed – Fig. 28.
- Fit the circlip (2) in its seat, ensuring that it is installed correctly – Fig. 29.
- Remove the extractor tool – Fig. 29.





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- Complete the procedure to fasten the differential cover as described in step **2. Replacing gasket on differential cover** in Technical Information **2076** of February 2013.
- Fasten the heat shield (1) by tightening the three screws indicated – Fig. 30.



- Activate the Park Lock and the parking brake.
- Refit the RH differential flange as described in step **1. Removing differential Corteco rings and flanges** in Technical Information **2076** of February 2013.
- Refit the E-DIFF pipe as indicated in step **9. Refitting E-DIFF pipe** in Technical Information **2076** of February 2013.
- Refit the complete RH suspension assembly (as described in the Workshop Manual).
- Fill system with 75W-90 GL5 gear oil (as described in the Workshop Manual).
- Check the DCT F-3 ATF level in the hydraulic clutch system (as described in the Workshop Manual).

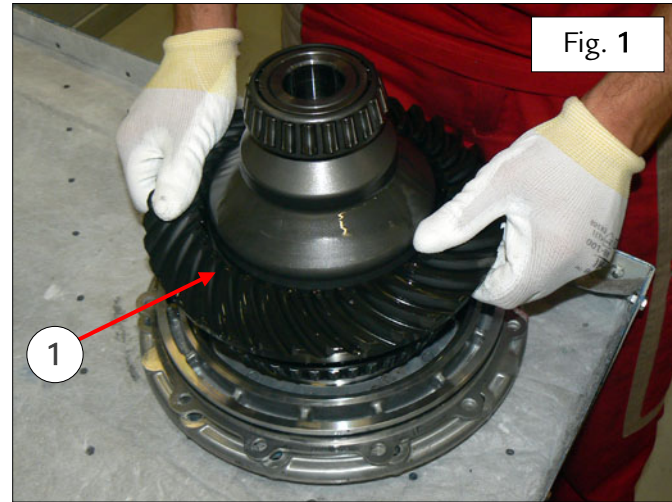
FF and F12berlinetta

- Remove the complete DCT gearbox from the vehicle (as described in the Workshop Manual).
- Remove the RH differential flange as described in step **1. Removing differential Corteco rings and flanges** in Technical Information **2076** of February 2013.

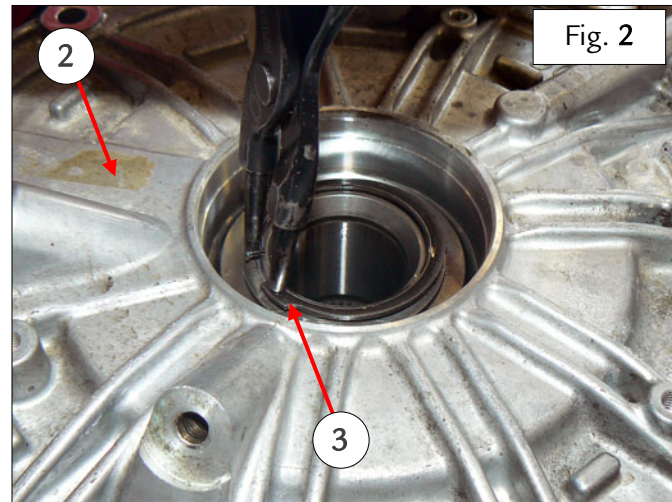


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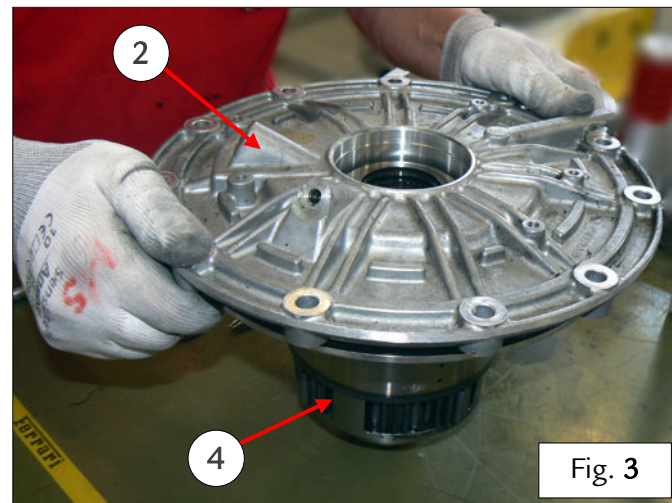
- Remove the differential cover as described in step [2. Replacing gasket on differential cover](#) in Technical Information **2076** of February 2013.
- Remove the differential crown (1) – Fig. 1.



- Turn the differential cover over– Fig. 2.
- While pressing down on the differential cover (2) remove the circlip (3) and then release the differential cover (2) – Fig. 2.



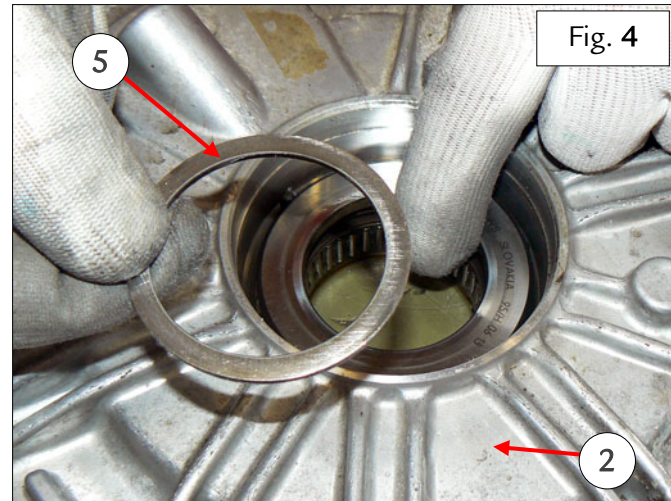
- Extract the differential cover (2) from the differential (4) – Fig. 3.



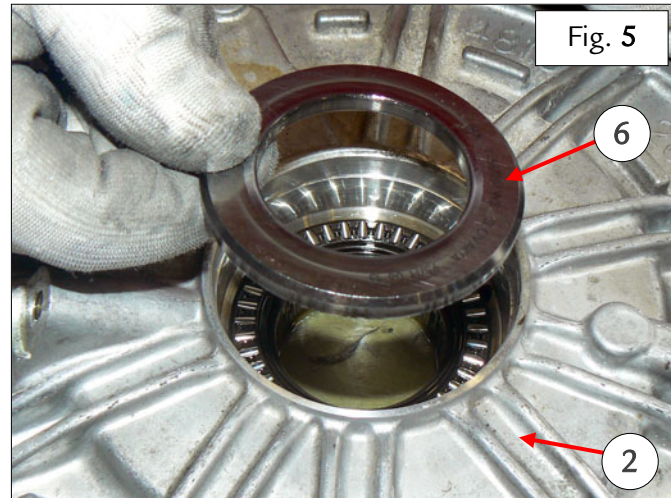


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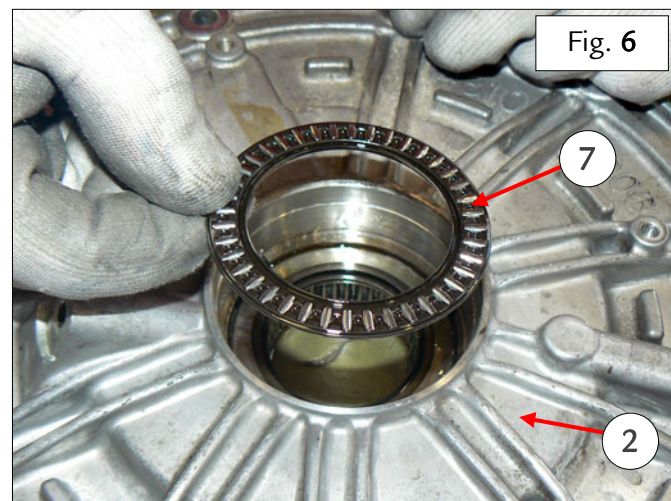
- Extract the adjusting shim (5) from the differential cover (2) – Fig. 4.



- Extract the top part (6) of the roller bearing from the differential cover (2) – Fig. 5.



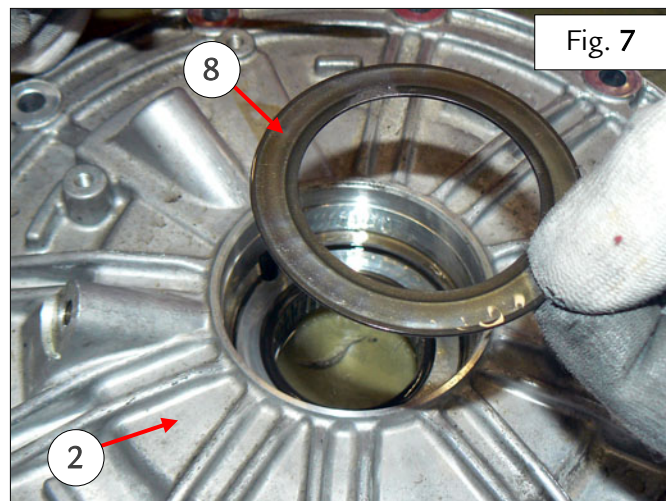
- Remove the roller bearing cage (7) from the differential cover (2) – Fig. 6.



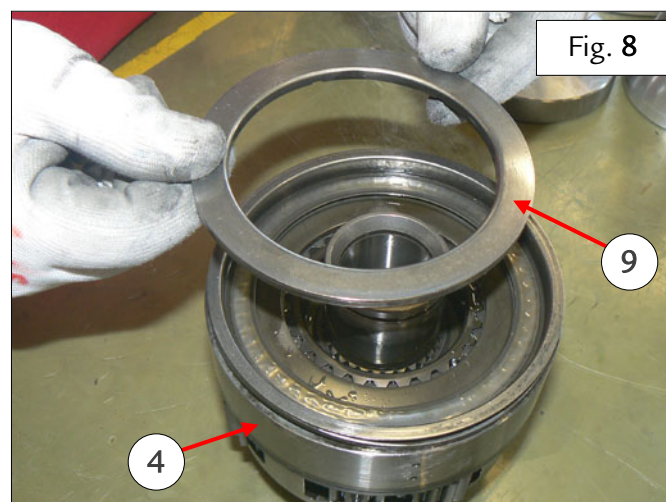


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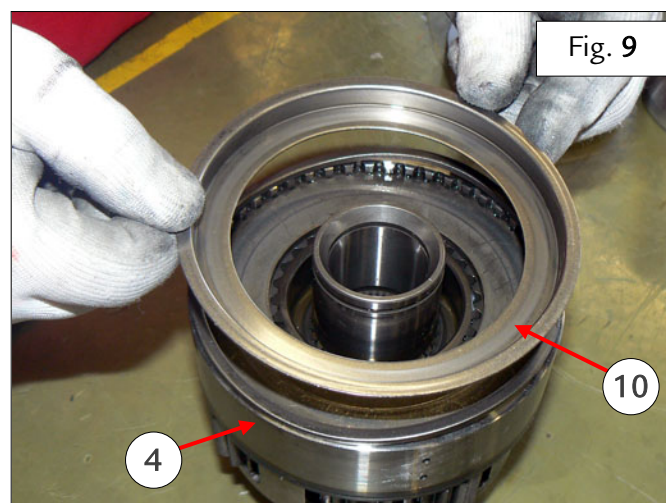
- Extract the bottom part (8) of the roller bearing from the differential cover (2) – Fig. 7.



- Extract the piston axle bearing (9) from the differential (4) – Fig. 8.



- Remove the “Z” ring (10) from the differential (4) – Fig. 9.

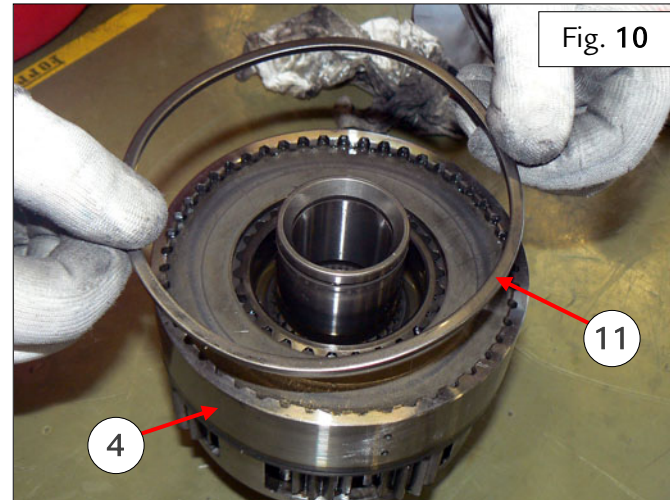




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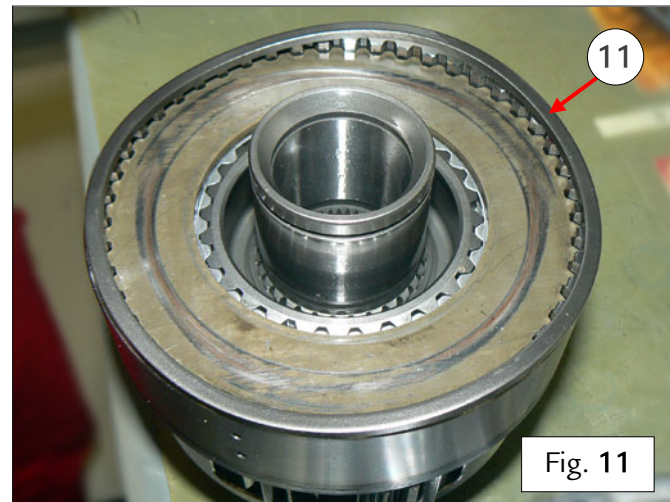
Remove the circlip (11) from the differential (4) – Fig. 10.

➤ Replace the differential (4) – Fig. 10.

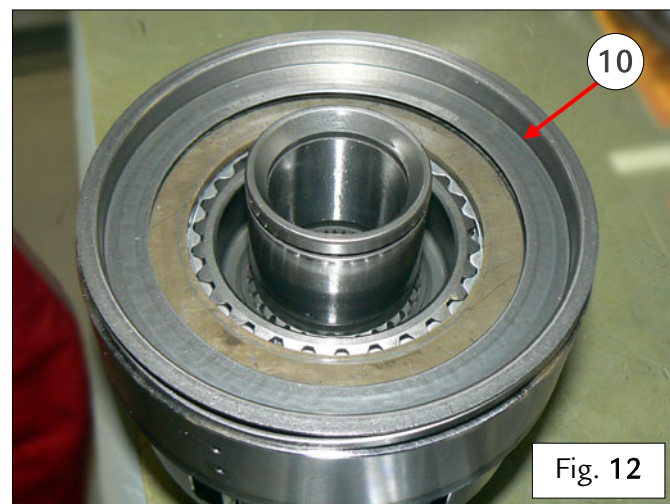


➤ Install the spring ring (11) onto the new differential – Fig. 11.

Note: The circlip (11) has a side with a tapered edge; this side faces upwards, meaning towards the “Z” ring.



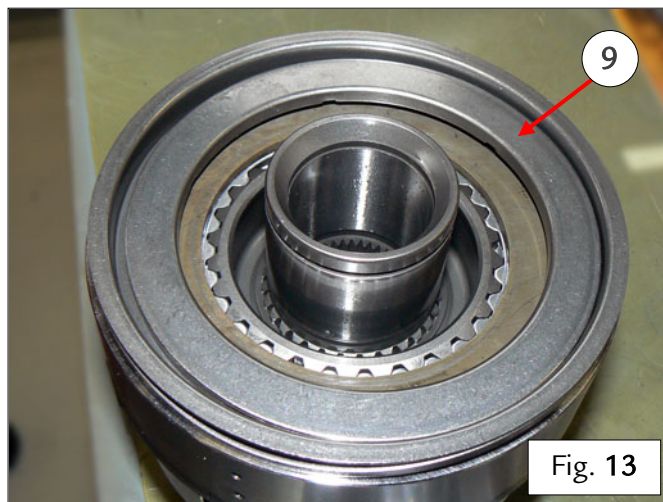
➤ Fit the “Z” ring (10) onto the differential – Fig. 12.



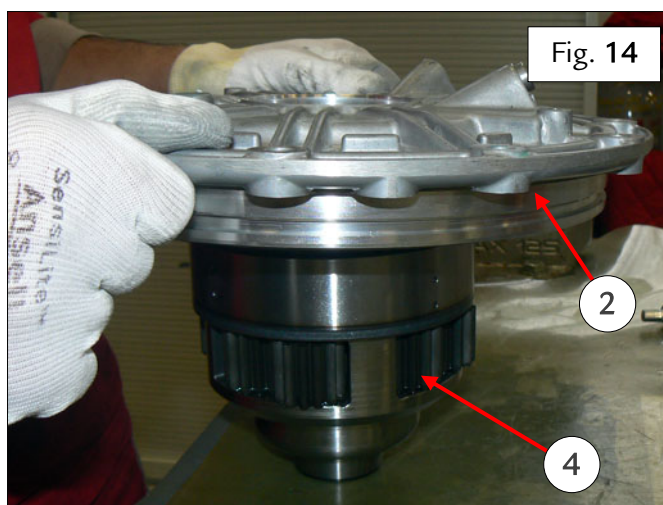


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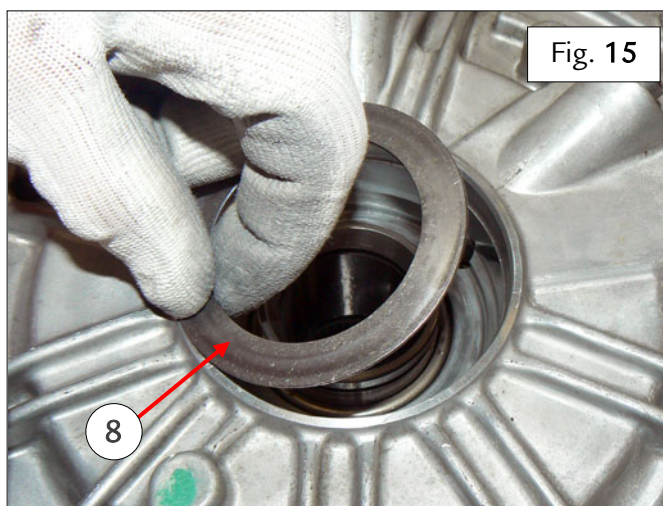
- Install the piston axial bearing (9) onto the "Z" ring – Fig. 13.



- Fit the differential cover (2) onto the differential (4) – Fig. 14.



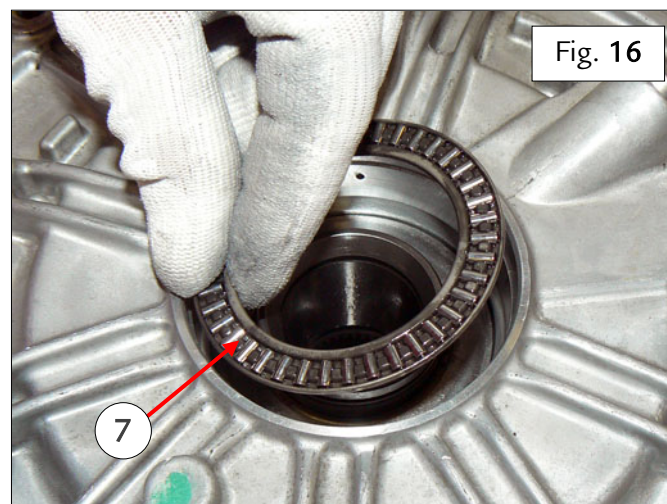
- Fit the lower part (8) of the roller bearing onto the differential cover – Fig. 15.



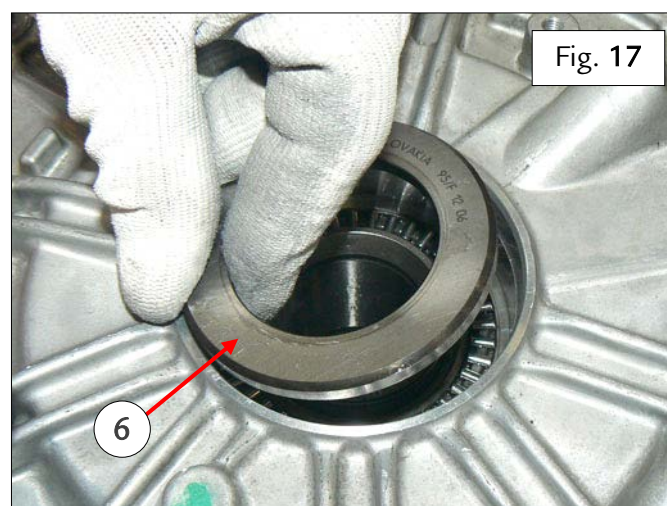


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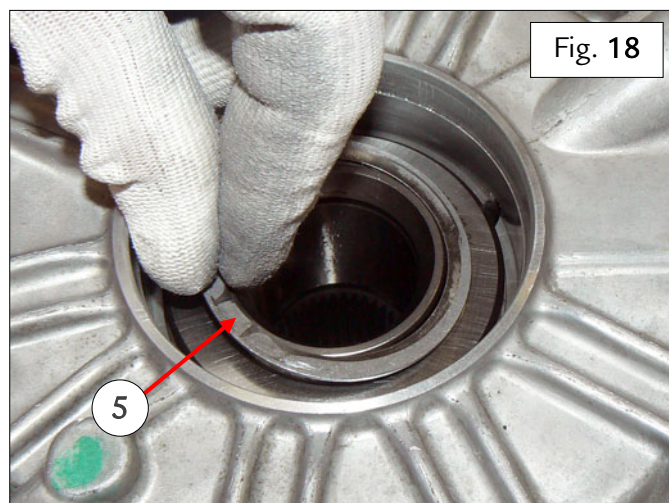
- Fit the roller bearing (7) onto the differential cover – Fig. 16.



- Fit the top part (6) of the roller bearing, with the bevelled side facing upwards, onto the differential cover – Fig. 17.



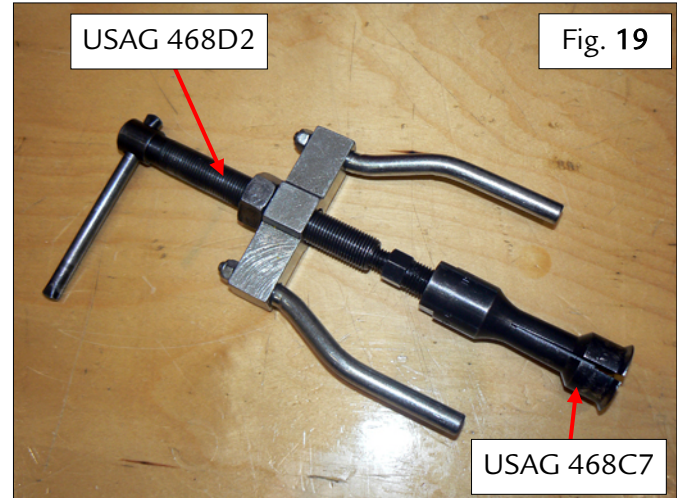
- Fit the adjustment shim (5) onto the differential cover – Fig. 18.



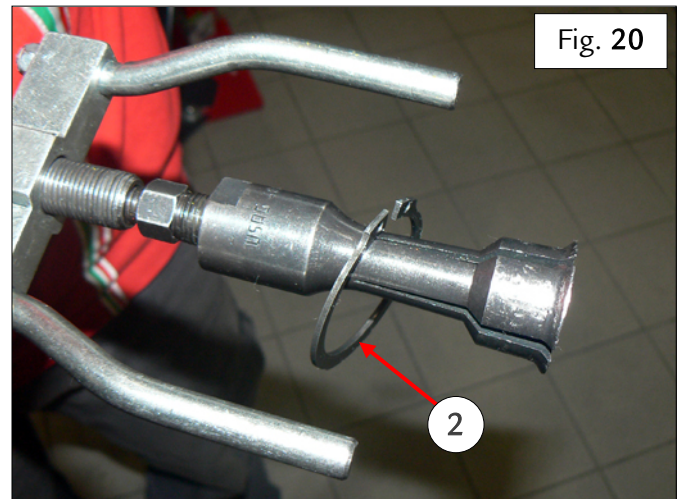


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- Assemble the extractor tool **USAG 468 D2** onto the inside expansion puller **USAG 468 C7 (30-38 mm)** as shown in the photo aside – Fig. 19.



- Fit the new circlip (2) on the extractor tool – Fig. 20.

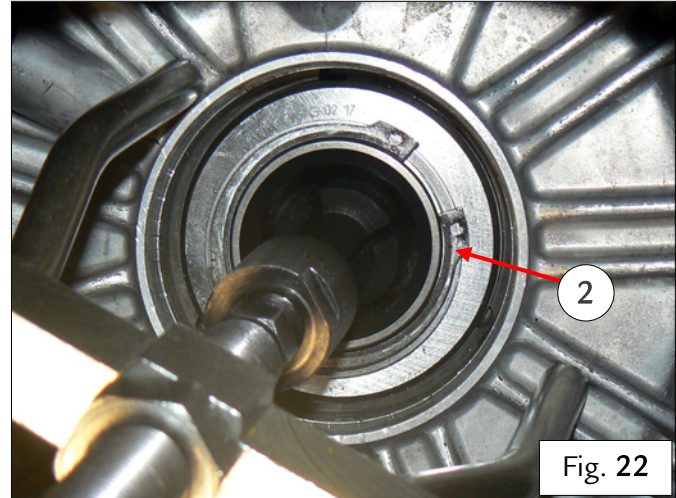


- Fit the inside expansion puller so that it grips onto the indicated groove on the differential shank (16) – Fig. 21.
- Turn the handle of the inside expansion puller to push against the differential cover in the positions indicated in the photo aside and pull out the shank (16) until the grooved seat of the circlip is exposed – Fig. 21.

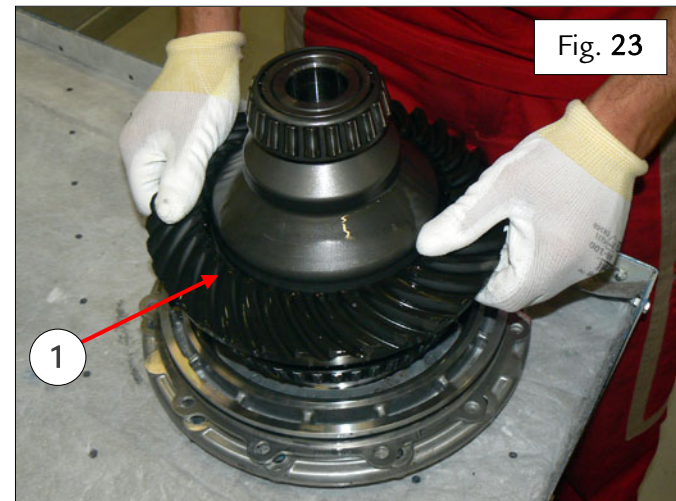


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- Fit the circlip (2) in its seat, ensuring that it is installed correctly – Fig. 22.
- Remove the extractor tool – Fig. 22.



- Fit the differential crown wheel (1) onto the differential cover – Fig. 23.



OLD SOLUTION

- If applicable, refit the external shim (12) onto the differential cover – Fig. 24.

- Refit the differential cover as described in step [2. Replacing gasket on differential cover](#) in Technical Information **2076** of February 2013.
- Refit the differential flanges as described in step [1. Removing differential Corteco rings and flanges](#) in Technical Information **2076** of February 2013.
- Refit the complete DCT gearbox in the vehicle (as described in the Workshop Manual).

Thank you for your co-operation.