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Coding Information

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Title: A26 Rocker Arm Inspection and Replacement Guidelines

Applies To: A26 Engines built prior to 4-4-2018 with Engine Serial Number 4505507 and below

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

01/08/2019 - Added post repair instructions at the bottom of the article
 09/04/2018 - Changed statement regarding oil & filter change requirement
 08/30/2018 - Coding change
 08/08/2018 - Added warning to follow the Service Manual for the valve cover and base torque specs and tightening sequences to avoid oil leaks.
 08/03/2018 - Feedback Response regarding questions on the ESN range

DESCRIPTION

This document will guide the user through rocker arm inspection and replacement guidelines for the A26 and N13 engine. The instructions below will help to identify any premature roller pin wear (**Figure #1**). This document also provides reusability guidelines for the camshaft and roller follower assemblies.

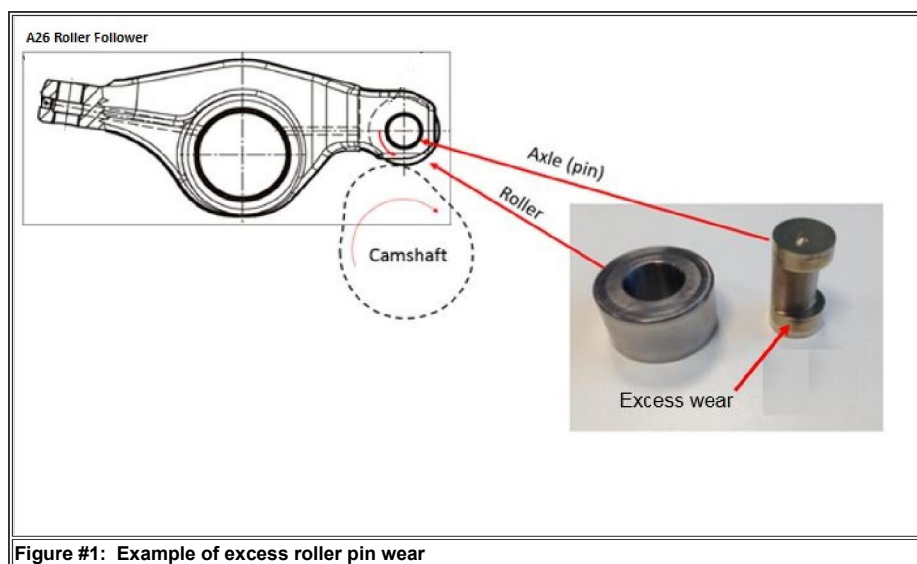


Figure #1: Example of excess roller pin wear

SYMPTOM(s)

Diagnostic Trouble Code(s) & Dashboard Indicator Light(s):

Below are some POSSIBLE DTC's that may be present. NOTE that there may not always be codes present with a roller pin wear issue.

DTC/Light	Description
SPN 1322 FMI 14	Engine misfire for multiple cylinders
SPN 188 FMI 18	

Engine Speed at idle, Point 1: Data valid but below normal operating range

Customer Observations or Concerns:

The customer may experience some or all of the following conditions:

Check engine light

Misfire and running rough

Trouble idling or stalling

Ticking noise heard in the top of the engine

SERVICE PARTS INFORMATION

Kit Description	Part Number	Quantity	Notes
ARM ASSY ROCKER INTAKE & EXH	62042006057	As Needed	
ARM ASSY ROCKER INTAKE	62042016195	As Needed	
ARM ASSY ROCKER EXHAUST	62042016196	As Needed	
VALVE BRIDGE, EXHAUST SIDE WITH ENGINE BRAKE	3007627C1	As Needed	
VALVE BRIDGE, INTAKE	62041200019	As Needed	Also used on exhaust side for engines WITHOUT Engine Brakes
SEAL, UPPER VALVE COVER	3018366C2	As Needed	**See Reusability Notes Below
SEAL, LOWER VALVE COVER BASE	3018365C2	As Needed	**See Reusability Notes Below
ASSEMBLY, ENGINE CAMSHAFT	3016477C1	As Needed	
KIT, OIL FILTER	3007498C94	As Needed	

REPAIR STEP(s)

WARNING! To prevent property damage, personal injury, and / or death, park vehicle on a hard, flat surface, turn the engine off, set the parking brake, and install wheel chocks to prevent the vehicle from moving in either direction.

WARNING! To prevent property damage, personal injury, and / or death, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

WARNING! To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

WARNING! To prevent property damage, personal injury, and / or death, keep flames or sparks away from vehicle and do not smoke while servicing the vehicle's batteries. Batteries expel explosive gases.

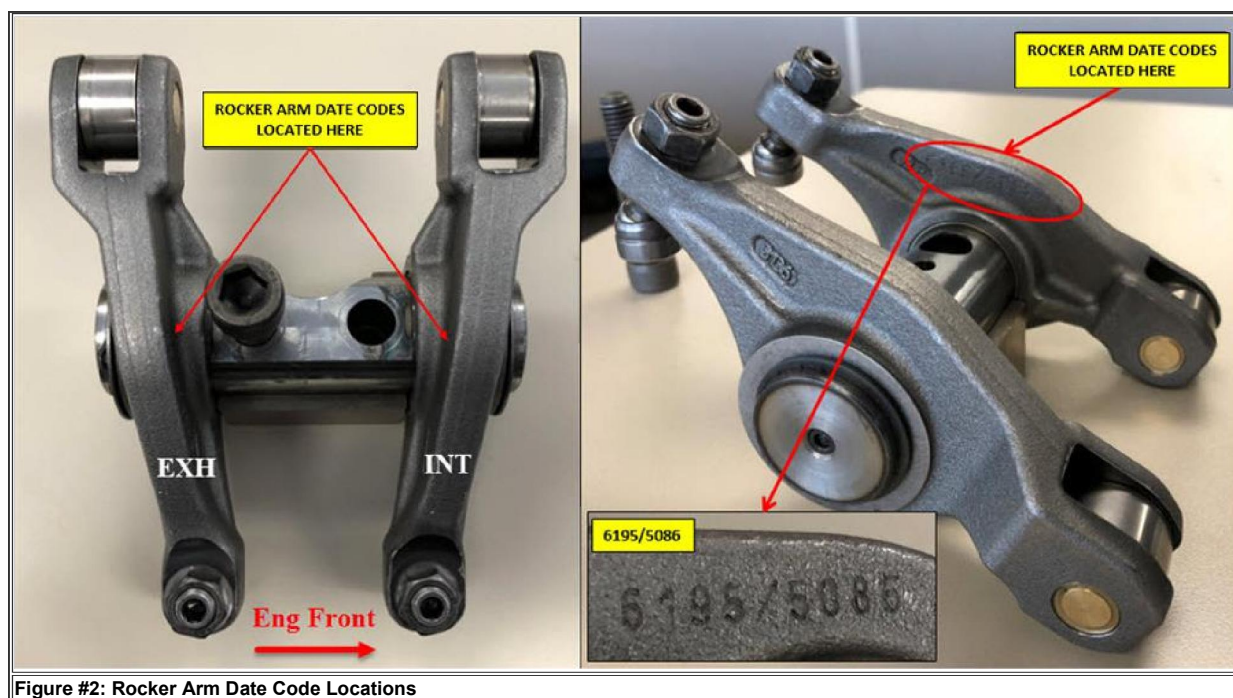
WARNING! To prevent property damage, personal injury, and / or death, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.

INITIAL DATA COLLECTION FROM THE VEHICLE

1. Retrieve a current Health Report using either HeRo or Accelerator Tablet
 - For HeRo - See [IK2700079](#)
 - For Accelerator - See [IK2700102](#)
2. Note if any operational complaint is present such as rough running, misfire, or if any ticking noise is heard from the top end.

INSPECTION GUIDELINES

3. Remove the valve cover.



4. Engines **WITHOUT Engine Brakes** - record intake and exhaust rocker arm date codes (**Figure #2**) onto the linked [Measurement Worksheet](#) (See figures #5 and #6 for examples), then proceed to step 6.
5. Engines **WITH Engine Brakes** - Perform measurements outlined in step 6 and 7 first. If rocker arm replacement is needed, the date codes can be recorded once the engine brakes are off for rocker arm replacement.
- INTAKE Date Format will be 6195 / XXXX
 - EXHAUST Date Format will be 6196 / XXXX

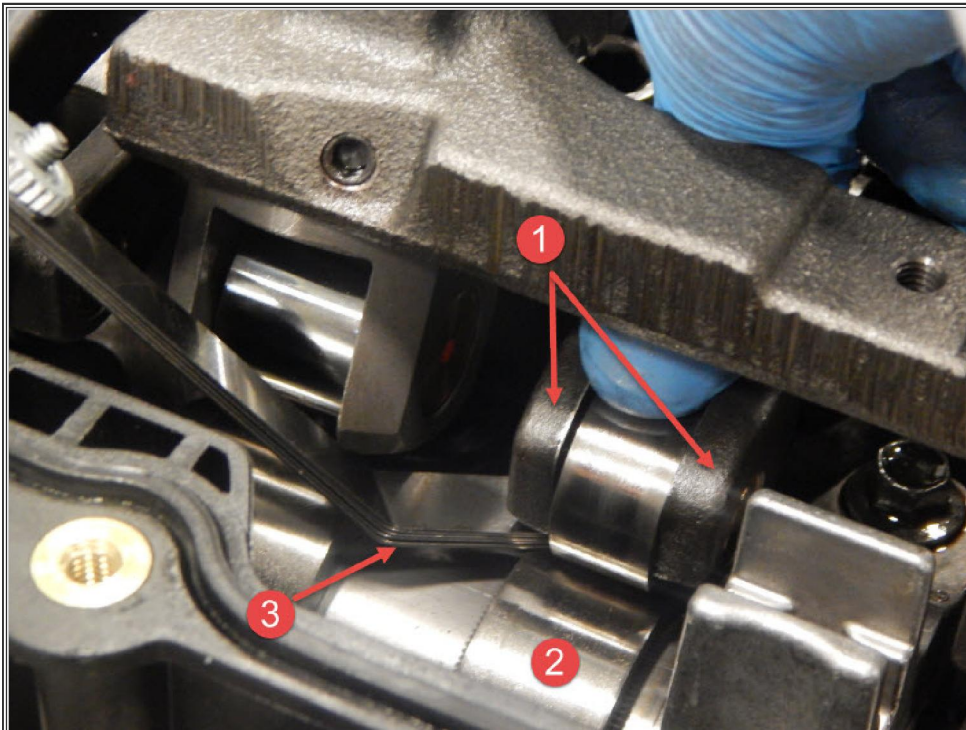


Figure #3: Component Identification

Item 1: Rocker Arm Forging Fork
Item 2: Base Circle of Camshaft
Item 3: .090" (2.3mm) Feeler Gauge

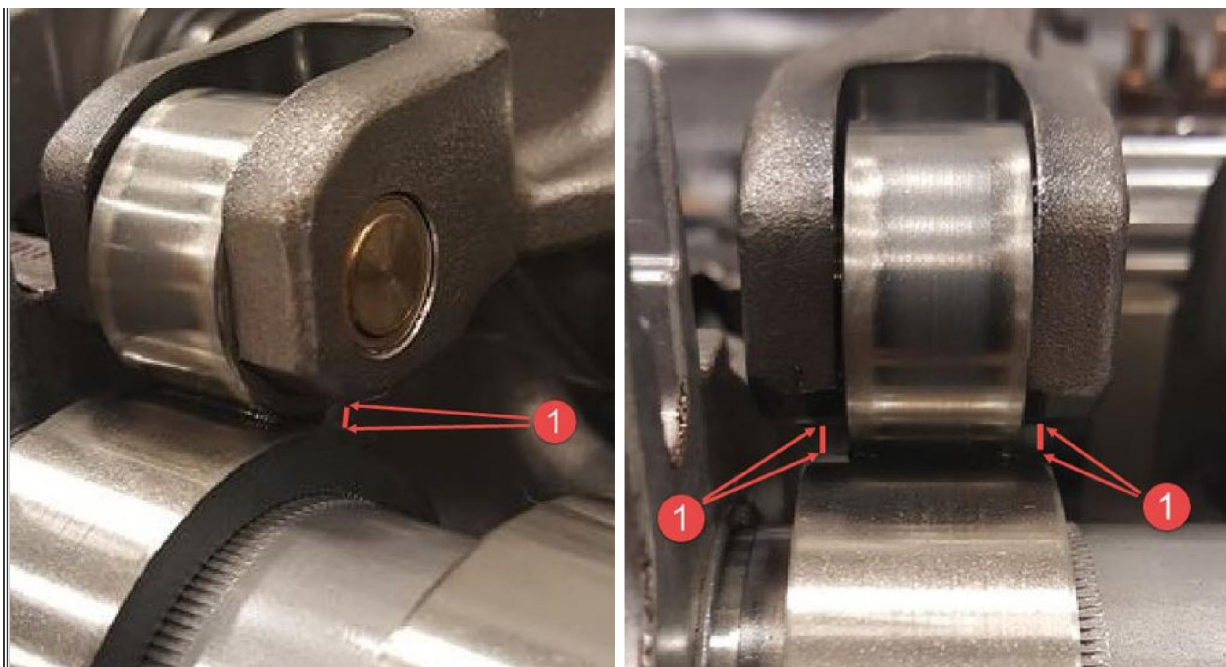


Figure #4: Location to Measure Clearances

Location 1: Rocker arm FORGING fork to base circle of camshaft

6. Rotate the engine so the roller is against the base circle of the camshaft (**Figure #3 Item 2**) and the valves are closed. Spin each roller by hand at least one full revolution to check for any binding.

- Roller spins freely - Continue to step 7.
- Roller sticks and does not spin freely - Replace the individual rocker arm and mark it as to it's location on the engine and continue to the next rocker arm.

7. While still on the base circle of the camshaft, apply light downward pressure on the forging (**Figure #3 Item 1**) at the roller end of the rocker arm. Using a feeler gauge (**Figure #3 Item 3**) measure the clearance between the base circle of the cam, and the rocker arm forging "fork" (**Figure #4 Location 1**). **DO NOT measure between the roller itself and the camshaft lobe.** Record the results onto the linked [Measurement Worksheet](#). **Be certain to record the actual measured value** (Figures #6).

- **NOTE:** It is acceptable to stack feeler gauges to obtain the desired measurement thickness. Example, combining a .029", .030" and .031" feeler gauge equals the desired .090".
- **NOTE:** Only one measurement location is required.

8. **The minimum gap measured at figure #3, location 1 should be NO LESS than 0.090" (2.3mm).**

9. If any are found to be out of specification, **ONLY** replace the individual intake or exhaust rocker arm as needed based on measurement results.

10. If any cam lobes or rollers are found to be questionable during the inspection, please see IK1201416 ***Camshaft and Roller Follower Reusability Guideline*** linked below.

MEASUREMENT WORKSHEET EXAMPLES

Below are examples of correct and incorrect data provided in the measurement worksheet

NOTE:

The measurement data worksheet is REQUIRED to be attached to the case file or warranty claim. These critical measurements are needed for accurate failure analysis investigations. Failure to provide accurate data may delay claim payment.

Rocker Arm Date Codes and Fork Casting to Camshaft Measurements														
Chassis #	Miles		1 Int	1 Exh	2 Int	2 Exh	3 Int	3 Exh	4 Int	4 Exh	5 Int	5 Exh	6 Int	6 Exh
		Date Codes												
		Rocker Casting to Cam Meas.	P	P	P	P	P	P	P	P	P	P	P	P
USE FEELER GAGE TO MEASURE MINIMUM SPACE BETWEEN THE ROCKER ARM FORK CASTING AND BASE CIRCLE OF CAM LOBE														

Figure #5: Example of **INCORRECT** Measurement Documentation

In this example measurement fields only indicate pass or fail. Other examples of incorrect documentation may be <0.90" or >0.90", OK or NOT OK etc. The chassis number, mileage, and date code fields are also blank. See (Figure #6) for an example of the documentation that is required.

Rocker Arm Date Codes and Fork Casting to Camshaft Measurements														
Chassis #	Miles		1 Int	1 Exh	2 Int	2 Exh	3 Int	3 Exh	4 Int	4 Exh	5 Int	5 Exh	6 Int	6 Exh
KN123456	35,123	Date Codes	5085	5096	5097	5066	5073	5085	5096	5074	5085	5082	5076	5096
		Rocker Casting to Cam Meas.	.095	.105	.090	.095	.090	.105	.110	.105	.095	.095	.110	.105
USE FEELER GAGE TO MEASURE MINIMUM SPACE BETWEEN THE ROCKER ARM FORK CASTING AND BASE CIRCLE OF CAM LOBE														

Figure #6: Example of **CORRECT** measurement documentation

In this example actual measured values are given for each rocker arm. This sheet must also include the chassis number, mileage, and date codes of any failed rocker arms.

ASSEMBLY NOTES AND INSTRUCTIONS

CAUTION:

Prior to installing any NEW rocker arms, it is recommended to submerge the roller end of the rocker arm in clean engine oil. Spin the roller several times to allow the clean oil to enter between the new pin and roller.

NOTE:

If any rocker arms are replaced, identify on each assembly what cylinder it came off of using a paint marker or equivalent. Save all parts replaced as they may be requested back for analysis.

11. If any rocker arms were replaced, assemble the engine in reverse order following the [A26 Engine Service Manual](#).

VALVE COVER AND LOWER VALVE COVER BASE SEAL REUSABILITY

In situations where the lower base is removed for camshaft replacement, it is recommended to replace the lower base seal (3018365C2). The rubber seal for the valve cover (3018366C2) is reusable, and can be reused if no visible damage is present and is still pliable.

VALVE COVER AND VALVE COVER BASE INSTALLATION



WARNING:

It is CRITICAL to follow the engine [Service Manual](#) for the correct installation procedure of both the lower valve cover base (Figure #7 Item 2) and the upper valve cover (Figure #7 Item 1). Failure to follow the published torque specifications and tightening sequences WILL RESULT IN AN OIL LEAK very soon after the repair.

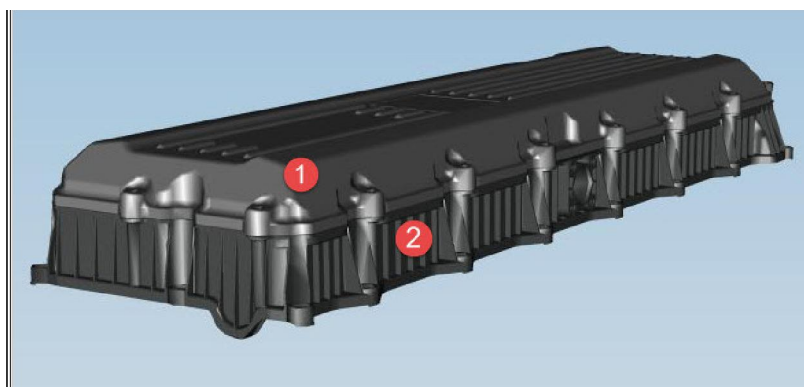


Figure #7: A26 Upper and Lower Valve Cover and Base

Item 1: Upper Valve Cover

Item 2: Lower Valve Cover Base

12. If a failure has occurred that has damaged the camshaft, the engine oil and filter must be replaced.

POST REPAIR GUIDELINES

Once the failed rocker arm(s) are replaced and any rough running or misfire complaints have been addressed, there are a couple of procedures that must be done to eliminate repeat operational complaints.

1. Perform a stationary regen - This will aid in removal of any excess fuel from the intake and exhaust system that may have collected from a misfiring cylinder.
2. Perform the Crankshaft Position Sensor Relearn Procedure - Once the regen is complete, perform this final test as outlined in the Diagnostic Manual (Test linked [HERE](#)). Be certain to follow it exactly as described, including the road testing and idle time after in steps 8 and 9. Failure to follow it to completion may result in continued rough running complaints or misfire DTC's.

CAMSHAFT and ROLLER FOLLOWER REUSABILITY GUIDELINES

Please see [IK1201416](#) for the Camshaft and Rocker Arm Reusability Guide if any reusability questions arise during these inspections. Many times components are unnecessarily replaced when there are no material defects present. This guide is to aid the technician in determining what is acceptable for reuse.

WARRANTY INFORMATION

Warranty Claim Coding:

Group:	12000 - Engines
Noun:	308 - Arm and Bushing, Rocker

Standard Repair Time(s):

Refer to the [SRT Manual](#) for Repair Times

OTHER RESOURCES

[Master Service Information Site](#)

For engines with rough idle, misfires, and poor performance that are in excess of 100K miles you can reference [IK1201430](#) if no valve train failures are present.

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