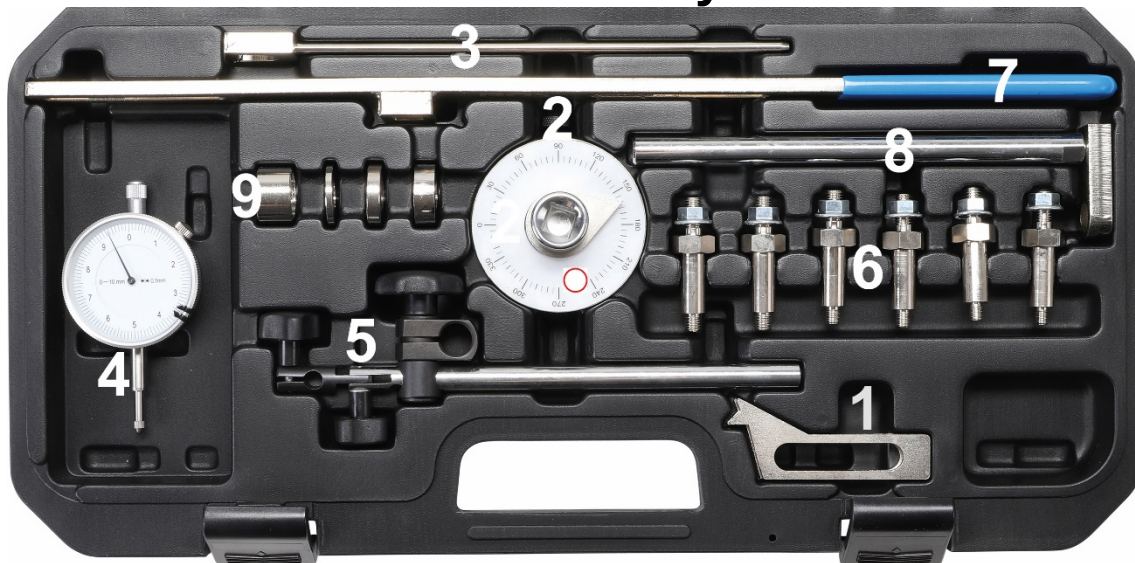


Testing Tool for Dual-Mass Flywheel



TOOLS

- 1 Flywheel locking tools
- 2 Angular dial indicator (tilting tolerance measurement)
- 3 Locking tool for angular dial indicator
- 4 Dial indicator (clearance measurement)
- 5 Dial indicator arm
- 6 Mounting bolts / plug gauge
- 7 Lever
- 8 Holder for dial indicator arm or angular dial indicator locking tool
- 9 Distance sleeve

ATTENTION

Read the operating instructions and all safety instructions contained therein carefully before using the product. Use the product correctly, with care and only according to the intended purpose. Non-compliance of the safety instructions may lead to damage, personal injury and to termination of the warranty. Keep these instructions in a safe and dry location for future reference. Enclose the operating instructions when handing over the product to third parties.

INTENDED USE

This tool kit is suitable for testing clearance angles and tilting tolerances on double-mass flywheels. Procedures that are necessary whenever you want to replace a clutch because a worn out or damaged double-mass flywheel will damage the replaced clutch and/or other engine parts. After disassembling the clutch disc, testing will be possible on built-in clutches.

SAFETY INFORMATION

- Keep children and other persons away from the working area.
- Do not allow children to play with this tool or its packaging.
- Do not use the tool if parts are missing or damaged.
- Use the tool for the intended purpose only.
- Never place the tool on the vehicle battery. There is a risk of a short circuit.
- Be careful when working on running engines. Loose clothing, tools and other objects can be caught by rotating parts and cause serious injury.
- Be careful when working on hot engines because of the risk of burn injuries!.

SAFETY INFORMATION

- If you remove the ignition key before repairing, you can prevent the engine from being started accidentally and resulting in engine damage and personal injuries.
- This manual serves as a brief guide and does not replace a workshop manual. Always refer to the vehicle-specific service literature, particularly the technical data such as torque values and instructions for disassembly/assembly, etc.

ENVIRONMENTAL PROTECTION

Recycle unwanted materials instead of disposing of them as waste. Packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. Contact your local solid waste authority for recycling information.



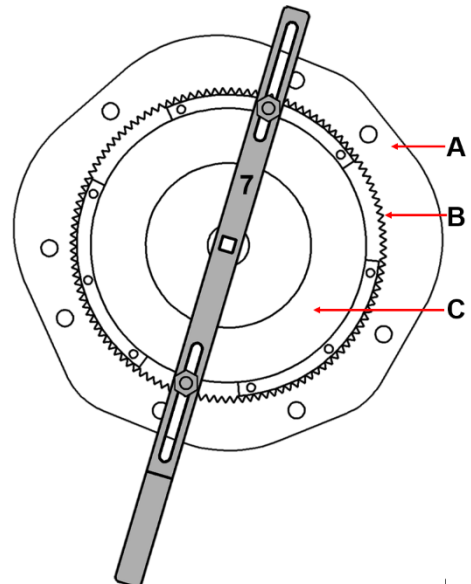
METHODS OF MEASUREMENT

With double-mass flywheels that come with an **even** number of bolts at the clutch pressure plate, apply the lever at the center and measure the clearance by using the torque setting angular gauge. This method works with most double-mass flywheels and should be preferred.

With double-mass flywheels that come with an **odd** number of bolts at the clutch pressure plate, don't apply the lever at the center and measure the clearance by counting the teeth on the cranking ring.

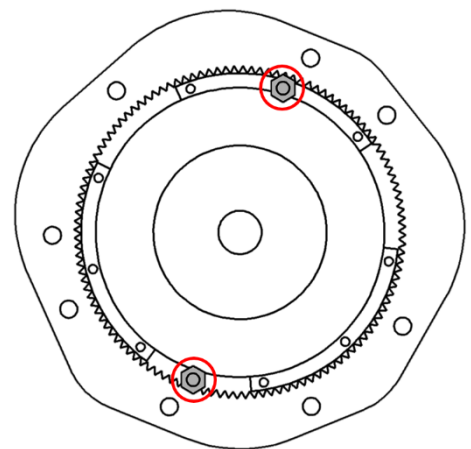
7 Tool

- A Sheet between gearbox and engine
- B Flywheel gear rim for starter
- C Dual-Mass flywheel (friction surface)



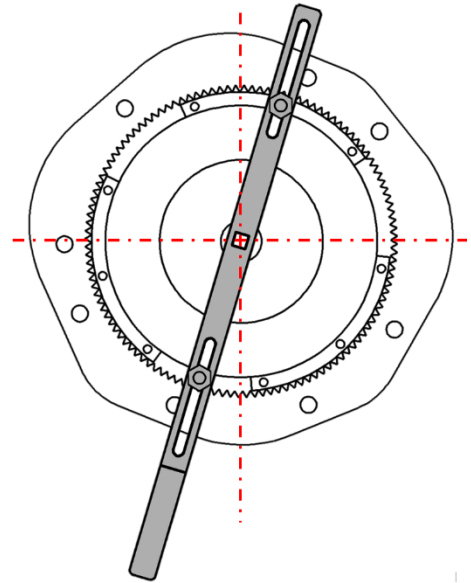
MEASURING THE CLEARANCE BY USING ANGULAR DIAL INDICATOR

1. Install two suitable mounting bolts (6) opposite each other in the threads for the clutch pressure plate.



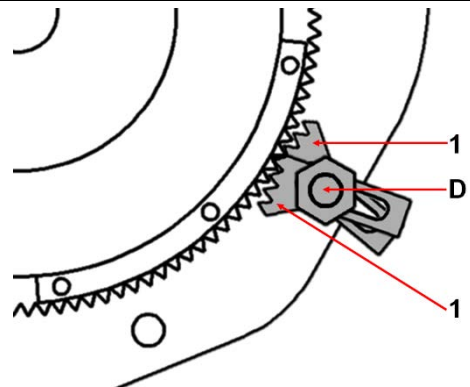
MEASURING THE CLEARANCE BY USING ANGULAR DIAL INDICATOR

2. Apply the lever (7) so that the square adaptor is located over the center of the flywheel.

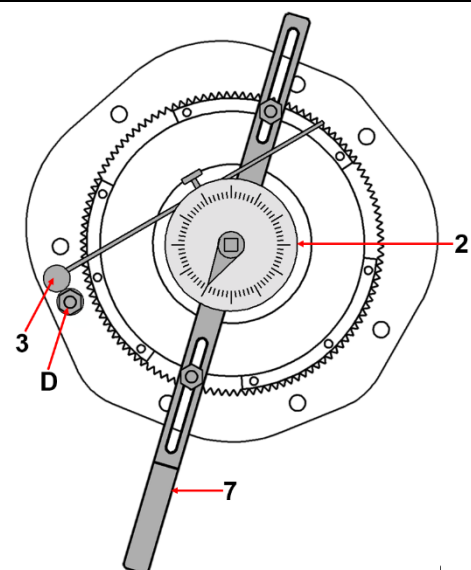


3. Block the flywheel by using the locking tools (1).

D=Fixing screw

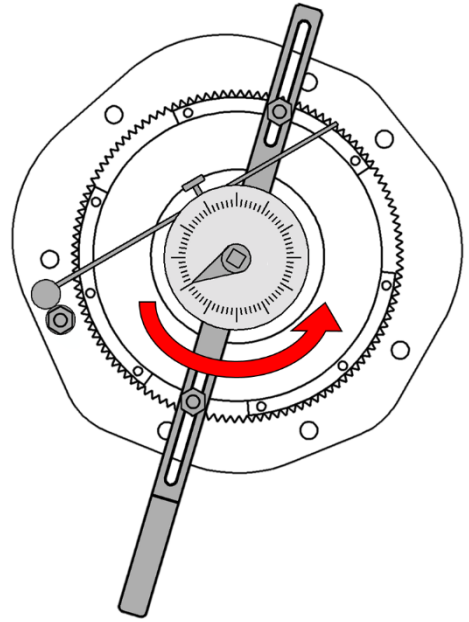


4. Install the angular dial indicator (2), using the locking tool for angular dial indicator (3) and holder (4).

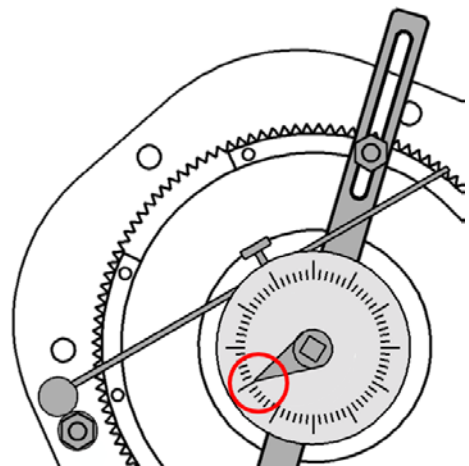


MEASURING THE CLEARANCE BY USING ANGULAR DIAL INDICATOR

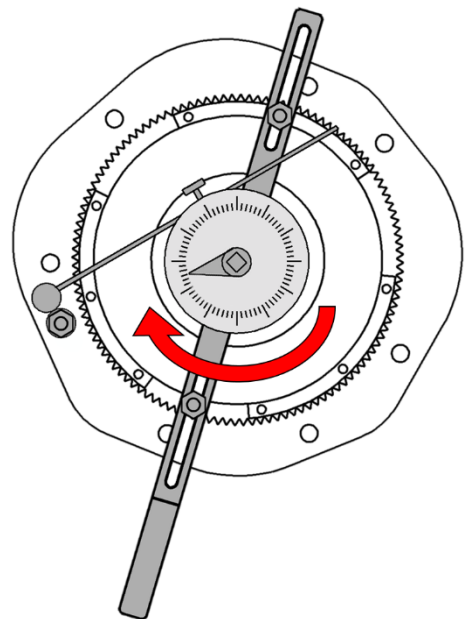
5. Turn the secondary flywheel disc with the lever counter-clockwise until you can feel the bow springs tensioning.



6. Release the lever slowly until the springs are unwound again.
7. Set the dial of the torque setting angular gauge to "ZERO".

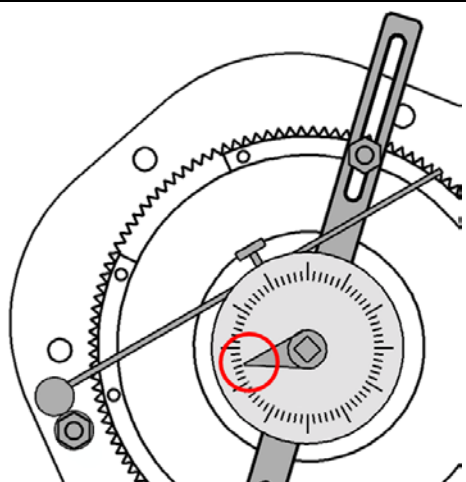


8. Turn the secondary flywheel disc with the lever clockwise until you can feel the bow springs tensioning.

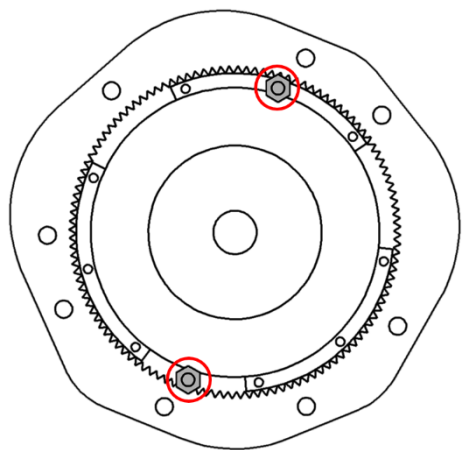


MEASURING THE CLEARANCE BY USING ANGULAR DIAL INDICATOR

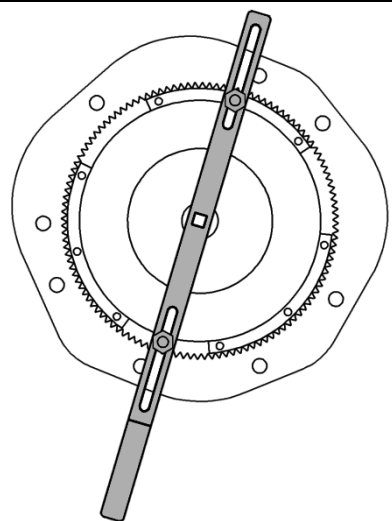
9. Release the lever slowly until the springs are unwound again.
10. Compare the measured value with the manufacturer's specifications.

**MEASURING THE CLEARANCE BY COUNTING TEETH**

1. Install two suitable mounting bolts (6) opposite each other in the threads for the clutch pressure plate.



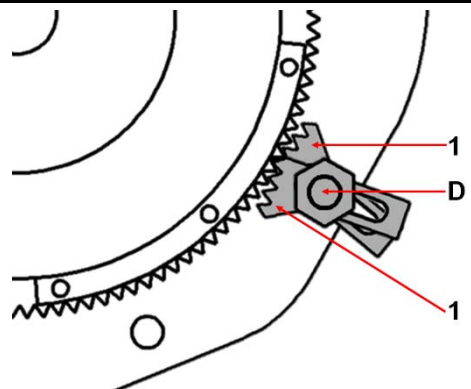
2. Mount the lever (7) onto the double-mass flywheel.



MEASURING THE CLEARANCE BY COUNTING TEETH

3. Block the flywheel by using the locking tools (1).

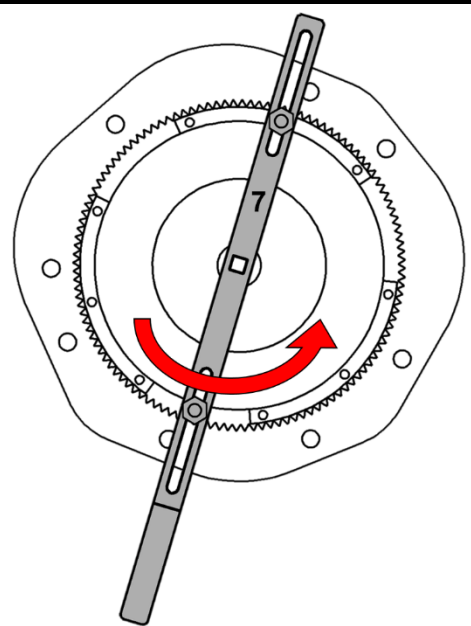
D=Fixing screw



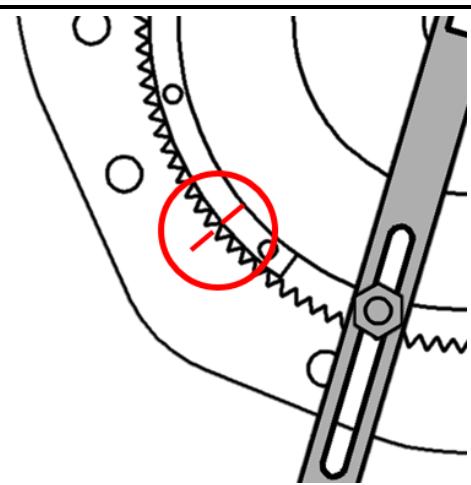
4. Turn the secondary flywheel disc with the lever counter-clockwise until you can feel the bow springs tensioning.

CAUTION

When turning a double-mass flywheel that is equipped with a rubbing control plate, you can and may sense an abrupt mechanical stop. In this case you will have to turn the secondary flywheel disc with an extra effort for a few millimeters in both directions over this mechanical stopping point until you can actually feel the bow springs tensioning. By doing so, the rubbing control plate will be rotated as well.

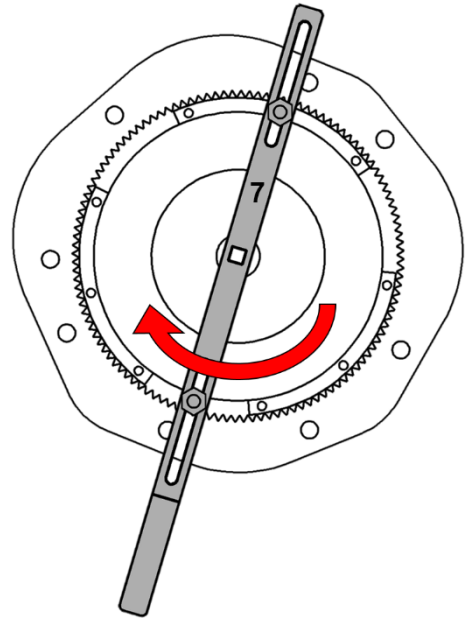


5. Release the lever slowly until the springs are unwound again.
6. Mark the secondary and primary (cranking ring) flywheel disc abreast.

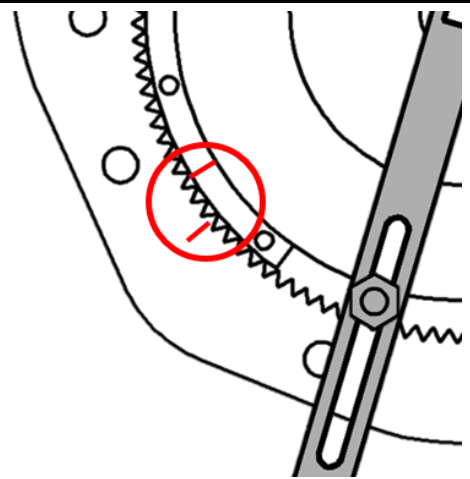


MEASURING THE CLEARANCE BY COUNTING TEETH

7. Turn the secondary flywheel disc with the lever counter-clockwise until you can feel the bow springs tensioning.

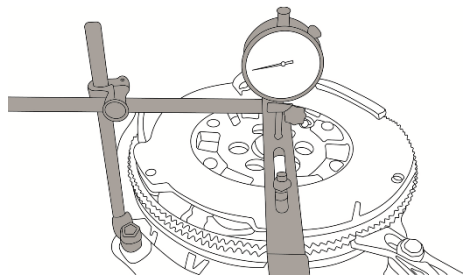


8. Release the lever slowly until the springs are unwound again.
9. Count the exact number of teeth on the cranking ring in between both markings and compare that with the nominal value..

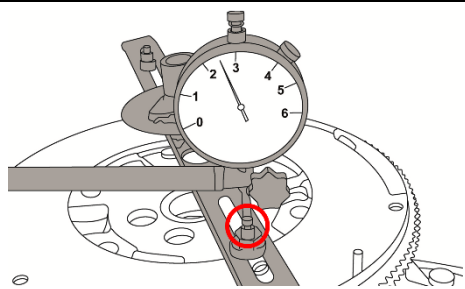


MEASURING THE TILTING TOLERANCE

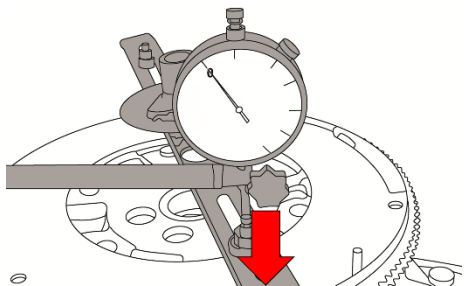
1. Fasten the gauge to the engine block.



2. Set the gauge to the center of the adaptor and preload it appropriately.



3. **CAUTION:** The measurement must be followed through very carefully. Excessive force will distort the measurement and may damage the bearing.
4. Move the lever slowly in the direction of the engine until you can sense a drag. Hold the lever exactly in this position and set the dial of the gauge to "ZERO".



5. Move the lever slowly in the opposite direction until you can sense a drag. Compare the measured value with the manufacturer's specifications.

