

Service Information

Caterpillar Motoren GmbH & Co. KG product support information for medium-speed engines

Engine platform: all

Engine section: driving gear

Engine type: all current engines

Validity: until revoked

No. 0035com - Issue 1; Sep. 08, 2025



Action: For immediate attention!

Piston Pin Safety Checks

We refer to Service Information **No. 0018com**, in which we informed about safety checks for piston pins installed in engine platforms M20, M25, M32, M34, M43, and M46DF.

Based on additional field data, we would like to reiterate that a small number of piston pins installed in our engines have shown signs of crack formation over time. If such cracks remain undetected, the piston pin may eventually fail, potentially causing severe engine damage and posing a safety risk to personnel in the vicinity.

To reduce the risk of piston pin failure, we recommend the following inspections:

M43 / M46DF Engines

At the next opportunity, perform ultrasonic testing on the relevant piston pins in accordance with the attached inspection procedure.

NOTE	
	Relevant spare part number 432601-004: Piston pin marked 43-02, 43-04, 43-02-A or 43-04-A on the side surface.

This test should be conducted at least once for each relevant piston pin and is intended to detect internal cracks that may lead to failure. The ultrasonic inspection must be carried out by a certified ultra sonic inspector holding at least Level 2 certification according to **DIN EN ISO 9712** or an equivalent qualification.

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All engine platforms (including M43 / M46DF Engines)

During each scheduled piston maintenance as outlined in the engine manual, check the piston pins for surface cracks using either dye penetrant testing or magnetic particle testing.

Additionally, carry out all other measures specified in Service Information **No. 0018com**. If piston maintenance was recently performed without these checks, please ensure they are completed at the next suitable opportunity.

In the case of OMD alarm events or unusually frequent flush cycles of the automatic lube oil filters during operation, check the small-end bush for damage. This should be done in addition to the standard checks on liners, connecting rods, main bearings, and other relevant components.



⚠ CAUTION

In this context, we would like to reiterate that, as a general precautionary measure, the personnel should avoid staying directly next to rotating equipment unless required.

The information in this Service Information reflects the status at the time of publication. Minor updates and adjustments are not communicated separately. Therefore, we recommend always using the latest documents. Check regularly, but at the latest before upcoming maintenance work, whether updates are available. The latest manuals can be obtained from your authorized **Caterpillar Motoren** dealer.

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Piston Pin Ultrasonic Checks

Check / Adjustment

D5.05. 02.08.05.11

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See also: A5.05.00.nn

Spare parts sheets: B1.05.02.nn.2680

Personnel requirement: 1 Person

Personnel qualification: **Ultrasonic inspector** must be qualified and certificated according to DIN EN ISO 9712 level 2 or higher

Co-applicable standards: DIN EN ISO 16810 / DIN EN ISO 16811
DIN EN ISO 2223-1,-2,-3 / DIN EN ISO 10228-3

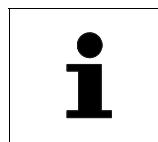
Fuel: Every fuel

Activities:

1. Adjustment and evaluation
2. Test
3. Documentation / Report

Engine type	Tools and auxiliary materials	Item	Tool no.
M 43 / VM 43 M 46 DF / VM 46 DF	Ultrasonic test device: digital, impulse echo technique with DGS according to DIN EN ISO 22232-1,-2,-3	W1	*
	T/R probe 5 to 6 MHz, effective diameter max. 10mm. Recommendation: MSEB5 or equivalent	W2	*
	Straight beam probe 5 to 6 MHz, effective diameter max 10mm. Recommendation: MB5 S / MB6 S or equivalent	W3	*
	Coupling gel, water based with corrosion inhibitors	W4	*

* not illustrated



NOTE

This procedure describes the extent and process of ultrasonic inspection on piston pins type M 43 / VM 43 / M 46 DF/ VM 46 DF for manual test with contact technique, refer to service information No. 0035com.

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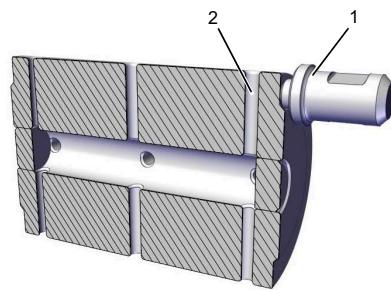
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1. Adjustment and evaluation

1.1 Test and evaluation method is DGS (Distance Gain Size)

1.2 T/R probe (1/1) adjustment:

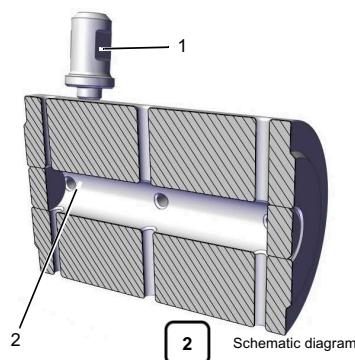
- Reference 1.0 mm circular disc shaped reflector
- Test area 0 - 45 mm
- Sensitivity adjusted at the radial piston pin bore (1/2) (set as backwall) from the face side at the shorter distance (as shown in Fig.1)
- Transfer correction 6 dB
- Recommendation: set screen from 0 to 95 mm to observe also back wall signal (coupling control) and observe moving signals behind the back wall signal to detect possible cracks.



1 Schematic diagram

1.3 Straight beam probe (2/1) adjustment:

- Reference 0.6 mm circular disc shaped reflector
- Test area 30 - 77 mm
- Sensitivity adjusted at the axial piston pin bore (2/2) (set as backwall)
- No transfer correction
- Recommendation: set screen from 30 to 85 mm to achieve good visible resolution of the lateral axis
- Defects close to the axial bore are the most critical.



2 Schematic diagram

1.4 Distance between reference curve and noise must be 6 dB or more in given test area. Reject part, if distance cannot be achieved

1.5 Rejection level: adjusted reference, also every indication exceeding distance greater 6 dB from noise level.

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2. Test

2.1 The test area is 100% of the piston pin volume by radial scanning with straight beam and T/R Probe. The required overlap of the probe track is min. 50% of the probe's effective diameter. The probe scanning direction is circumferential.

3. Documentation / Report

3.1 Engine serial no.

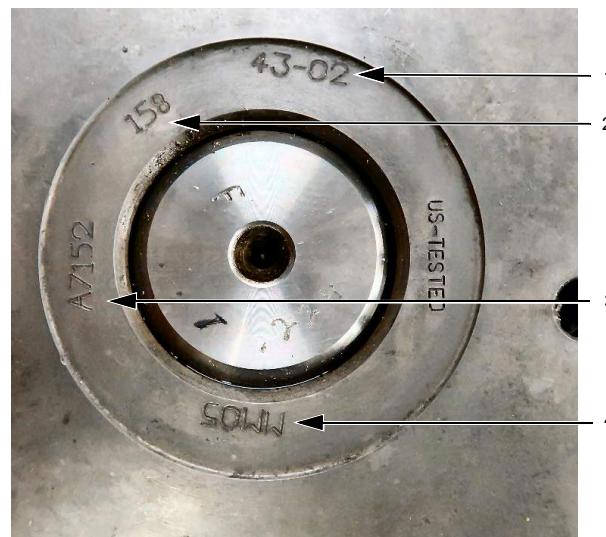
3.2 UT equipment

- Type
- Serial no.
- Adjustment values.

3.3 Test results for each piston pin

3.4 Piston pin:

- Variant (3/1)
- Serial no. (3/2)
- Batch no. (3/3)
- Production year (3/4)



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Schematic diagram