



Service Information No. 07 / 05

Date: 08.04.2005

Piston Maintenance

RM 43 / VM 43

With Service Information No. 05/05 dated Feb. 2, 2005 we sent you 6 pages of

job card A5.05.02.06.02.02

In the meantime we have evaluated the available workshop and service engineer reports on piston overhauls and the related operational results. Due to these results it is not required any more to distinguish between the two indicated piston variants with regard to clearance between crown and skirt.

On page 4/5 we have harmonized the clearance between crown and skirt for **both** variants and also defined a limit clearance.

Original clearance:s = 0.14 - 0.28 mmLimit clearance:s = 0.6 mm

In turn, page 5/6 has now been omitted.

Also, we have revised the information on page 5/5 once more for better comprehensibility. Attached you will find 5 pages of the new

job card A5.05.02.06.02.03

Please exchange the <u>complete</u> job card in the instruction manual for the previous edition A5.05.02.06.02.02

This job card is applicable to all RM/VM 43 (C) engines with 900 kW/cyl.



See also:	02.06.01.nn, 02.07.01.nn, 02.08.01.nn
Spare parts list:	B1.05.02.432601
Time requirement:	2 Pers./ 0,70 h
Personnel qualification:	Cat/MaK-specialist
Operating medium:	Heavy fuel and distillate fuel

Tools:

Piston lifting unit (piston crown)	W1	439223 A
Piston lifting unit (big end)	W2	439223 A
Torque wrench 20 - 90 Nm	W3 *	1.9454-020
Torque wrench 100 - 400 Nm	W4 *	1.9454-400

* no picture

Auxiliary materials:

Molykote Paste "G-n plus" **

** or equivalent product

Procedure:

1. Turn the piston

- 1.1 Attach crane to piston lifting unit (Fig. 1/W1), lift piston.
- 1.2 Mount second piston lifting unit (W2) on the big end (1) and attach second crane or sling.
- 1.3 Turn the piston carefully and place on suitable surface.

2. Dismantling the piston crown

Note:

The piston crown should only be replaced by the CAT Customer Service.

- 2.1 Connect piston lifting unit (W1) to crane, remove piston pin (2) (**02.08.01.nn**).
- 2.2 Measure piston pin bearing (3) (02.09.01.nn) and evaluate if necessary (02.03.03.nn).





- 2.3 Loosen the piston screws (**Fig. 3**/5) and remove with piston skirt (12).
- 2.4 Clean piston crown (8) and piston skirt (12). Make sure that the contact surfaces of piston parts and spacer sleeves (6) are clean.

Attention:

Check the contact surfaces for friction marks / cold welding (Fig. 2/Z), if necessary consult the CAT Customer Service!









2.5 Clean and inspect the oil bores in the piston skirt (**Fig. 3**/12).

2.6 Piston assembly



It is imperative for piston assembly to use only new piston srews (5) and new spacer sleeves (6)!



- 2.7 Clean the contact surfaces of piston skirt (12) and piston crown (8) and check for unevenness. Carefully smooth out any raised spots with oil stone.
- 2.8 Clean bores for piston screws (5) and contact surfaces for spacer sleeves (6) in the piston skirt (12).



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- 2.9 Clean the 4 threaded holes in the piston crown (8). Turn tap drill M20x1,5 in until reaching the root of the thread. After that clean again. By means of a limit plug gauge check for 35 mm thread depth (from main contact surface).
- 2.10 Insert **new** O ring (13) untwisted into groove.
- 2.11 Put on piton skirt (12), fixation hole and spring dowel pin (11) must match.
- 2.12 Lubricate **new** spacer sleeves (6) with Molykote paste "G-n plus" on recess side and insert into the screw bore of the piston crown (8) with recess up.
- 2.13 Lubricate thread and head contact surface of **new** piston pins (5) with Molykote paste "G-n plus" and screw by hand.
- 2.14 Tighten piston screws (5) crosswise to a torque of

M = 20 Nm.

Measure recession (Fig. 6/X) of the screw heads with regard to the lowest bolt bore contour.

X = 8 mm ± 1,5 mm

(Check whether all spacer sleeves (Fig. 3/6) have been inserted with recess up.)

2.15 Tighten piston screws (5) crosswise to a torque of

M = 140 Nm.

- 2.16 Loosen piston screws (5) again crosswise.
- 2.17 Check clearance (Fig. 4/s) with non tightened piston screws (5).

<u>Clearance new:</u> s = 0,14 - 0,28 mm

<u>Clearance limit:</u> s = 0,6 mm

2.18 Pretighten piston screws (**Fig. 6**/5) crosswise to a torque of

M = 40 Nm.





- 2.19 Mark screw head (Fig. 5)
- 2.20 Continue tightening by

 α = 120 ° (2 hexagon corners).



2.21 Check by a second person:

Check visibly that the piston screw turned further by 2 hexagon corners.

When applying a torque of

M = 115 Nm

the piston screws must not turn any more in tightening direction!

