

Date: 03.06.09

Hydraulic Jack for Assembly of the Rocker Arm Bracket M43, M43C, VM43, VM43C

Spannzylinder für Kipphebelbock	2	1.9213 H	
Hydraulic jack for rocker arm bracket			
Figure 1			

The hydraulic tool 1.9213 (see figure 1) for removal of the rocker arm bracket has stood the test of time since its market launch. In a few cases, however, it turned out that an improperly fitted hydraulic jack may damage the threads of the studs and thus become unusable.

We have taken this as an opportunity to add additional instructions to the corresponding job cards to point out what has to be paid attention to in order to avoid such failures. You will find the new job cards attached to this Service Information. Please add these job cards to your M43 operating instructions.

Also, please take note of the instructions in this Service Information on how to press back the hydraulic jack.



NOTE

In order to be able to press back the hydraulic jack completely, the jack must be connected to the hydraulic pump and the shutoff valve on the pump must be opened.

The hydraulic jack is completely compressed when the inner cylinder is flush with the outer edge of the hydraulic jack (see figure 2). There are 4.5 turns (+/- 90°) required for the threaded sleeve from putting the sleeve onto the bolt until final position. During the last turn of the threaded sleeve an increased effort may be required.



Figure 2



ATTENTION

Please make sure the pin is correctly located in the holes of the threaded sleeve in order to avoid slipping off.

M43

01

See also: 01.01.01.nn
Spare parts list: B1.05.01.432107
Time requirement: 1 Pers./ 0,20 h
Personnel qualification: skilled engine hand
Operating medium: Heavy fuel and distillate fuel

Tools:

Hydraulic unit W1 1.9213 H

Auxiliary materials:

Molykote Paste "G-Rapid Plus" **

** or equivalent product

Attention:

High pressure lines may not be bent below minimum bending radius $r = 250 \text{ mm}$! Unit may only be operated with hydraulic oil. Protect the unit from corrosion during storage.



Attention!

Do not place any body parts under equipment which is under pressure. Ensure that the engine cannot be started.

Procedure:

1. **Disassembly**
 - 1.1 Engage the rotor.
 - 1.2 Open indicator valves.
 - 1.3 Remove valve cover.
 - 1.4 Turn piston to **ignition TDC**. Intake and exhaust valves are closed, rocker arms subject to no force.

M43

01

1.5 Remove the four rocker arm nuts with the hydraulic clamping unit.

- 1.5.1 Place the hydraulic clamping elements on the round nuts (1), unscrew threaded bush up to the limit stop and pull. Ensure that the slits are easily accessible.
- 1.5.2 Connect the clamping elements with the high pressure pump (6) by means of the high pressure lines (5).
- 1.5.3 Pull the hydraulic piston completely down via the threaded sleeve and with the hydraulic valve of the high-pressure pump (6) open.

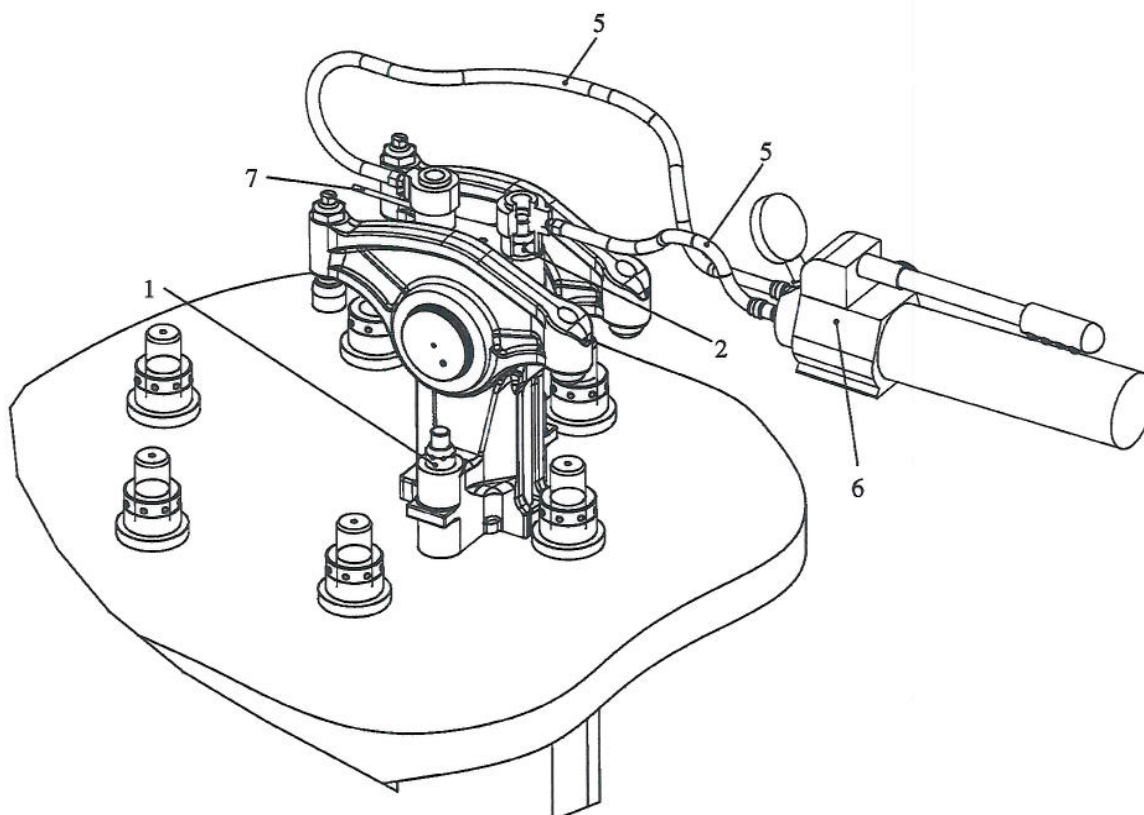
4,5 turns \pm 90° total screw-in depth!
An increased effort is possible!

Loosen threaded sleeve by 3 holes.

- 1.5.4 Close the valve on the high pressure pump and extend both rocker arm bracket bolts evenly and smoothly with a pressure of

p = 2250 bar.

- 1.5.5 Loosen the round nuts with a pin. Turn the round nut back four holes.
- 1.5.6 Depressurize the clamping elements, dismantle the clamping device and remove the round nuts.



M43

01

Note:

If the round nuts cannot be removed, the pressure on the nuts can be increased by ca.

50 bar

more.

If the round nuts are subject to higher pressure, the pin threading may stretch, which can cause the round nuts to lock into place.

1.5.7 Repeat dismantling procedure 1.5.1 to 1.5.5 for the upper round nuts (2).

1.6 Remove rocker arm bracket with intake and exhaust rocker arms.

2. Assembly

2.1 Clean the contact surface for the rocker arm bracket.

2.2 Blow out the oil outlet with compressed air.

2.3 Place the rocker arm bracket on the cylinder over the studs and position.
The bracket is fastened by means of studs.

2.4 Apply Molykote paste "G-Rapid Plus" to the threads and contact surface for the nuts and tighten by hand.

2.5 Tighten the four rocker arm bracket bolts with the hydraulic clamping unit.

2.5.1 Place the hydraulic clamping elements on the round nuts (2) and tighten. Ensure that the slits are easily accessible.

2.5.2 Connect the clamping elements with the high pressure pump (6) by means of the high pressure lines (5)

2.5.3 Pull the hydraulic piston completely down via the threaded sleeve and with the hydraulic valve of the high-pressure pump (6) open.

4,5 turns \pm 90° total screw-in depth!
An increased effort is possible!

2.5.4 Close the valve on the high pressure pump and extend both rocker arm bracket bolts evenly and smoothly with a pressure of

p = 2250 bar.

Attention:

The pressure must remain constant when the pump is not being actuated to prevent incorrect tightening.

2.5.5 Tighten the round nut firmly with a pin (7). Check to ensure good action (no stiffness).

M43

01

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- 2.5.6 Check to ensure that the round nut is seated properly.
- Reduce pressure by **50 bar**.
 - The round nuts must be tight enough that they cannot be loosened with the pin.
- 2.5.7 Depressurize the clamping elements, dismantle the clamping unit.
- 2.5.8 Repeat installation procedure 2.5.1 to 2.5.6 for lower round nuts (1).
- 2.6 Set valve clearance (01.01.01.nn).
- 2.7 Disengage the rotor.
- 2.8 Install valve cover. (Check gasket!)
- 2.9 Close indicator valves.

M43/VM43

See also: 01.01.01.nn
Spare parts list: B1.05.01.432107
Time requirement: 1 Pers./ 0,20 h
Personnel qualification: skilled engine hand
Operating medium: Heavy fuel and distillate fuel

01

Tools:

Store hydraulic device kit	W1	consisting of
clamping cylinder	W1.1	1.9213 H
high pressure hose	W1.2	433420 A
high pressure hose	W1.3	433420 E

Auxiliary materials:

Molykote Paste "G-Rapid Plus" **

** or equivalent product

Attention:

High pressure lines may not be bent below minimum bending radius $r = 250 \text{ mm}$! Unit may only be operated with hydraulic oil. Protect the unit from corrosion during storage.



Attention!

Do not place any body parts under equipment which is under pressure. Ensure that the engine cannot be started.

Procedure:

1. **Disassembly**
 - 1.1 Engage the rotor.
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M43/VM43

01

1.5 Remove the four rocker arm nuts with the hydraulic clamping unit.

- 1.5.1 Place the hydraulic clamping elements (W1.1) on the round nuts (1), unscrew threaded bush up to the limit stop and pull. Ensure that the slits are easily accessible.
- 1.5.2 Connect the clamping elements with the high pressure pump by means of the high pressure lines (W1.2, W1.3).
- 1.5.3 Pull the hydraulic piston completely down via the threaded sleeve and with the hydraulic valve of the high-pressure pump open.

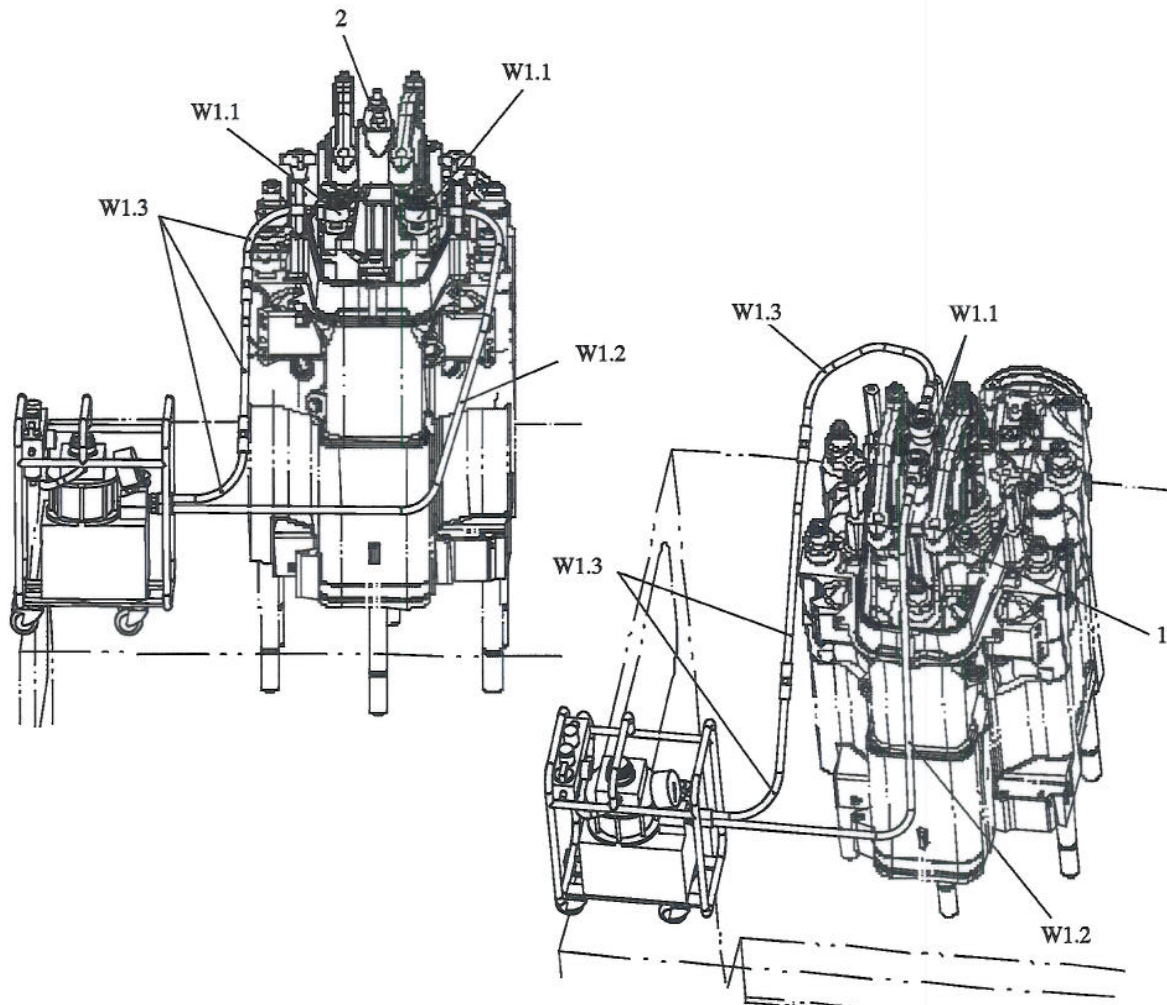
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- 1.5.6 Depressurize the clamping elements, dismantle the clamping device and remove the round nuts.



M43/VM43

01

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50 bar

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If the round nuts are subject to higher pressure, the pin threading may stretch, which can cause the round nuts to lock into place.

1.5.7 Repeat dismantling procedure 1.5.1 to 1.5.5 for the upper round nuts (2).

1.6 Remove rocker arm bracket with intake and exhaust rocker arms.

2. Assembly

2.1 Clean the contact surface for the rocker arm bracket.

2.2 Blow out the oil outlet with compressed air.

2.3 Place the rocker arm bracket on the cylinder over the studs and position.
The bracket is fastened by means of studs.

2.4 Apply Molykote paste "G-Rapid Plus" to the threads and contact surface for the nuts and tighten by hand.

2.5 Tighten the four rocker arm bracket bolts with the hydraulic clamping unit.

2.5.1 Place the hydraulic clamping elements (W1.1) on the round nuts (2) and tighten. Ensure that the slits are easily accessible.

2.5.2 Connect the clamping elements with the high pressure pump by means of the high pressure lines (W1.2, W1.3).

2.5.3 Pull the hydraulic piston completely down via the threaded sleeve and with the hydraulic valve of the high-pressure pump open.

4,5 turns ± 90° total screw-in depth!
An increased effort is possible!

2.5.4 Close the valve on the high pressure pump and extend both rocker arm bracket bolts evenly and smoothly with a pressure of

p = 2250 bar.

Attention:

The pressure must remain constant when the pump is not being actuated to prevent incorrect tightening.

2.5.5 Tighten the round nut firmly with a pin. Check to ensure good action (no stiffness).

M43/VM43

01

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- 2.5.6 Check to ensure that the round nut is seated properly.
- Reduce pressure by **50 bar**.
 - The round nuts must be tight enough that they cannot be loosened with the pin.
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- 2.5.8 Repeat installation procedure 2.5.1 to 2.5.6 for lower round nuts (1).
- 2.6 Set valve clearance (**01.01.01.nn**).
- 2.7 Disengage the rotor.
- 2.8 Install valve cover. (Check gasket!)
- 2.9 Close indicator valves.