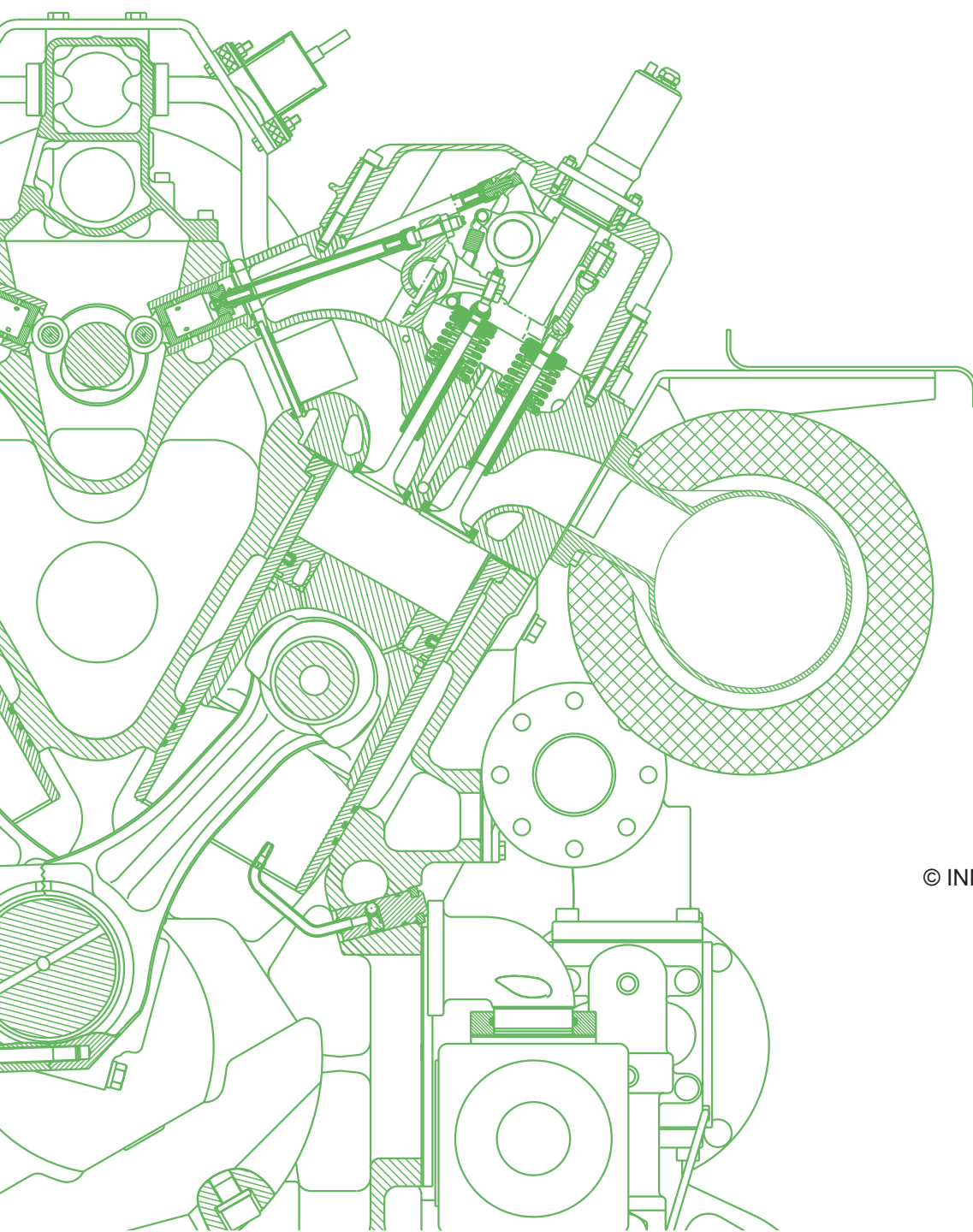




W 0400 M6

Maintenance Instruction

Valve lash



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Customers, distribution partners, service partners, commissioning partners, subsidiaries/branches, Jenbach location

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1 Scope

This Maintenance Instruction [W] applies to the following Jenbacher Engines:

- Type 6 engines

2 Purpose

This Maintenance Instruction (W) lays down the maintenance interval and describes the following activity:

- ⇒ Measure and document the valve stem projection

3 Maintenance interval

Maintenance work	Maintenance interval	Carried out by ¹⁾
⇒ Measure and document the valve stem projection	2,000 Oh ¹⁾	K
⇒ Check and adjust valve lash	2,000 Oh	K

¹⁾ When replacing a cylinder head, check the valve clearance and measure the valve stem projection on the replacement cylinder head for the first time after 5 – 25 Oh.




Valid for:

- Type 6: Maintenance schedule A Maintenance schedule B Maintenance schedule D

*) Carried out by	This column defines who carries out the maintenance work.
K	This activity is to be carried out by the customer, INNIO or a company selected and authorised by INNIO to carry out this work.
INNIO	This activity is to be carried out by INNIO or a company selected by INNIO authorised to carry out this work.

4 Safety information

⚠ WARNING






Danger from unauthorised restarting

Serious injuries such as cutting, crushing, severing or shearing of body parts due to unintentional contact with rotating or moving machine parts.

- Shut down the engine as described in TA 1100-0105.
- Secure the engine against unauthorised restarting in accordance with TA 2300-0010.

⚠ WARNING



Personal injury

Failure to use personal protective equipment and comply with safety instructions or employee protection information may lead to personal injury.

- Wear the relevant personal protective equipment (PPE).
- Observe the safety instructions as per TA 2300-0005.
- Observe the employee protection information as per TA 2300-0001.

5 Additional information

i The valves must always be closed and the rocker arm slack when checking and adjusting the valve lash and measuring the valve-stem projection (ignition TDC).

Turn the crankshaft until the piston of the cylinder head to be checked is positioned at the top dead centre; this slackens the push rods and rocker arm.

To avoid incorrect adjustments, always use two feeler gauges at the same time when adjusting the exhaust or inlet valves!

i The setting values for the valve lash depend on the camshaft (not the cylinder head).

Set values

Inlet valve	0.8 mm
Exhaust valve	1.0 mm

Valid for:

Type 6 engines, version E/F/G/H

Set values

Inlet valve	0.4 mm
Exhaust valve	1.2 mm

Valid for:

Type 6 engines, versions J/K

Relevant documents:

TA 1100-0105 – Engine shut-down

TA 2300-0001 – Employee protection

TA 2300-0005 – Safety instruction

TA 2300-0010 – Guidelines for using the LOTO kit

E 0400 6 – Operational data - Valve-stem projection

6 Work steps

6.1 Measure and document the valve stem projection

You can determine the valve and valve seat ring wear by measuring the distance between the valve rotator or valve spring retainer to the machined face on the top of the cylinder head. This compares the actual measured value with the value measured when the cylinder head was initially fitted, or with the value entered on the initial commissioning data sheet, see also **initial commissioning data sheet**.



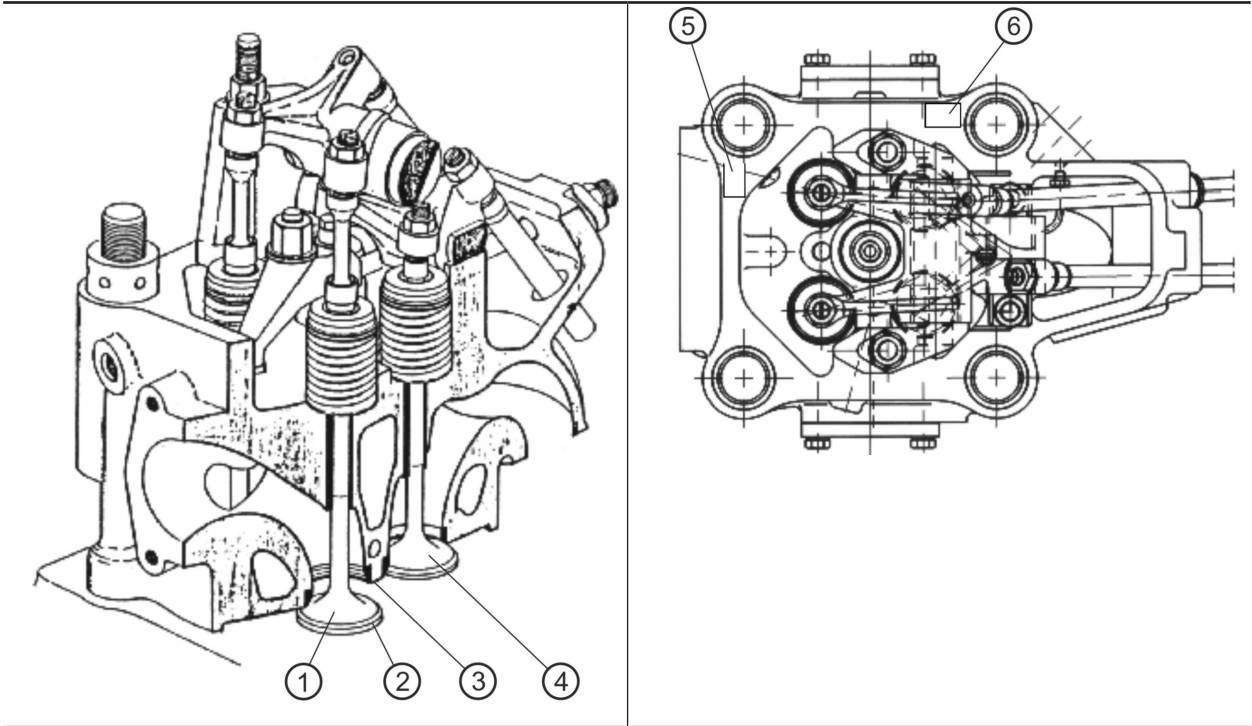
Initial commissioning data sheet

On **older** engines, the **value** measured at the time the head was fitted is stamped on the cylinder head - see the Figure below!

If the total wear comes to 1.5 mm, the valve lash inspection intervals should be halved.

If the total wear comes to 2.5 mm, the cylinder heads must be replaced.

If the total wear between two measuring intervals is 0.2 mm for the inlet valve and 0.4 mm for the exhaust valve, the inspection intervals should be halved.



① Exhaust valve	④ Inlet valve
② Valve wear	⑤ Value for exhaust valves
③ Valve seat ring wear	⑥ Value for inlet valves

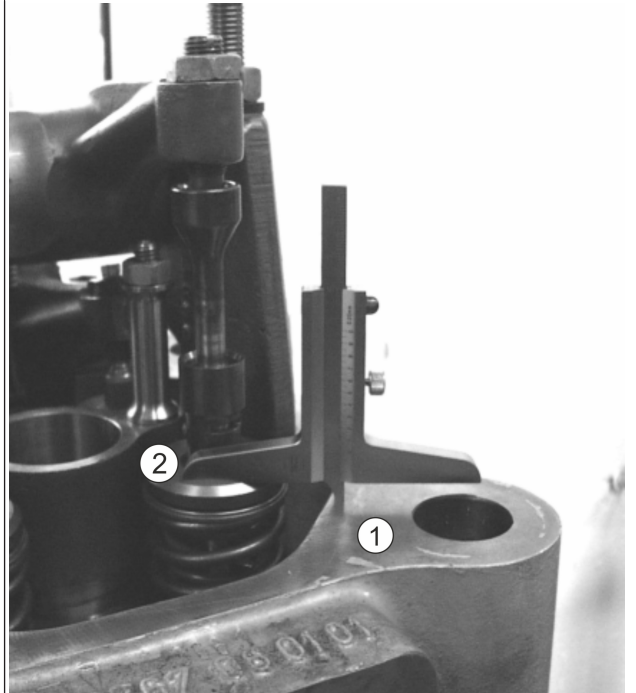
- Enter the measured values in the table **E 0400 6**.



E 0400 6 – Operational data - Valve-stem projection

Exhaust valves:

- Clean the machined face.
- Measure the valve-stem projection from the exhaust-valve valve rotator or valve spring retainer ② to the machined face of the cylinder head ① using a depth gauge.

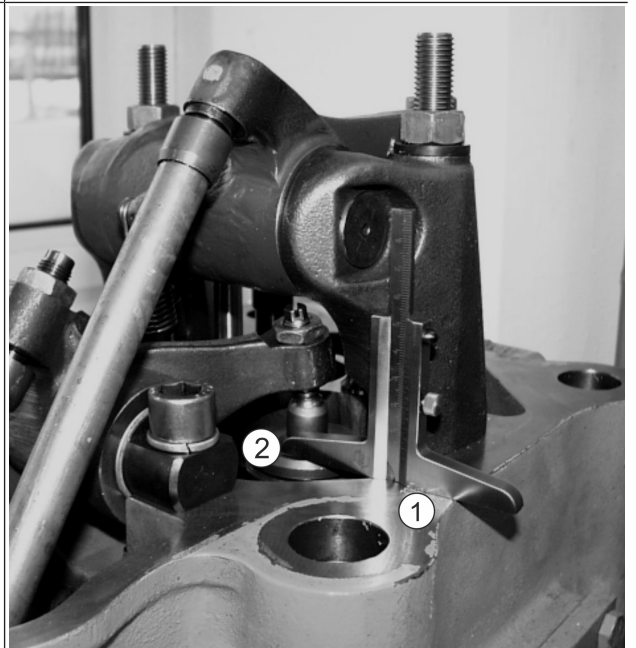


Inlet valves:

- Clean the machined face.

If you can slide the depth gauge from the machined face ① of the cylinder head over the valve rotator or valve spring retainer ② of the inlet valve, no measurement is necessary yet.

If the valve rotator or valve spring retainer ② protrudes beyond the machined face of the cylinder head ①, measure the valve-stem projection using a depth gauge from ② to ①, same as for the exhaust valve.



6.2 Check and adjust valve lash



If the valve clearance at the inlet is <0.2 mm and at the exhaust <0.6 mm, then a camshaft inspection and roller shaft inspection must be carried out according to **IW 8052 M0**.



IW 8025 M0 – Camshaft/valve timing gear

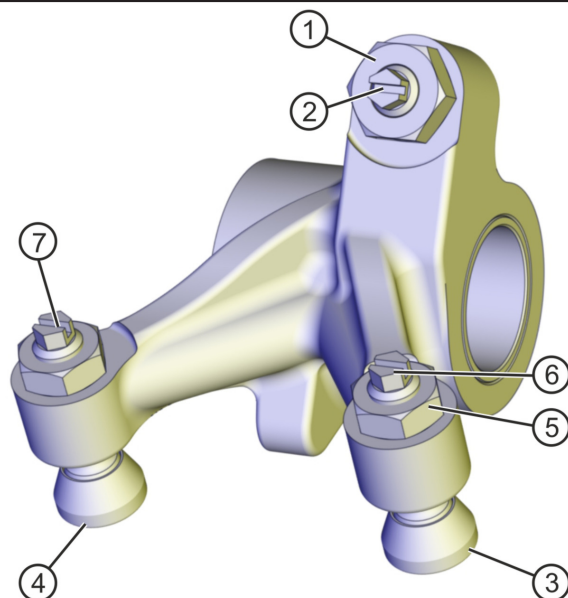
6.2.1 Inlet valves (only with bonded adjusting screw ⑦ at the left inlet valve)

To avoid incorrect adjustments, always use two feeler gauges at the same time when adjusting the exhaust valves!

- Slide the feeler gauges between the valve stem ends and ball cups ③ and ④.

If the valve lash is not equal at both inlet valves, the valve lash must be adjusted as follows – see also Additional information:

- Loosen the lock nut ① on the push rod.
- Adjust the valve lash on the left inlet valve using the adjusting screw ②.
- Secure the adjusting screw ② using the lock nut ①.
- Loosen the lock nut ⑤ on the right inlet valve.
- Adjust the valve lash on the right inlet valve using the adjusting screw ⑥.
- Secure the adjusting screw ⑥ using the lock nut ⑤.
- Check the valve lash again. You should now feel slight resistance if you try to move the feeler gauges.



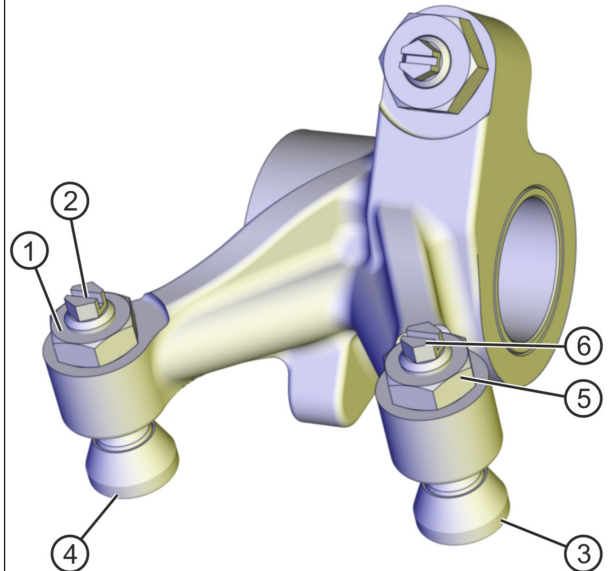
6.2.2 Inlet valves (only with non-bonded adjusting screw ② at the left inlet valve)

To avoid incorrect adjustments, always use two feeler gauges at the same time when adjusting the exhaust valves!

- Slide the feeler gauges between the valve stem ends and ball cups ③ and ④.

If the valve lash is not equal at both inlet valves, the valve lash must be adjusted as follows – see also Additional information:

- Loosen the lock nut ① on the left inlet valve.
- Adjust the valve lash on the left inlet valve using the adjusting screw ②.
- Secure the adjusting screw ② using the lock nut ①.
- Loosen the lock nut ⑤ on the right inlet valve.
- Adjust the valve lash on the right inlet valve using the adjusting screw ⑥.
- Secure the adjusting screw ⑥ using the lock nut ⑤.
- Check the valve lash again. You should now feel slight resistance if you try to move the feeler gauges.



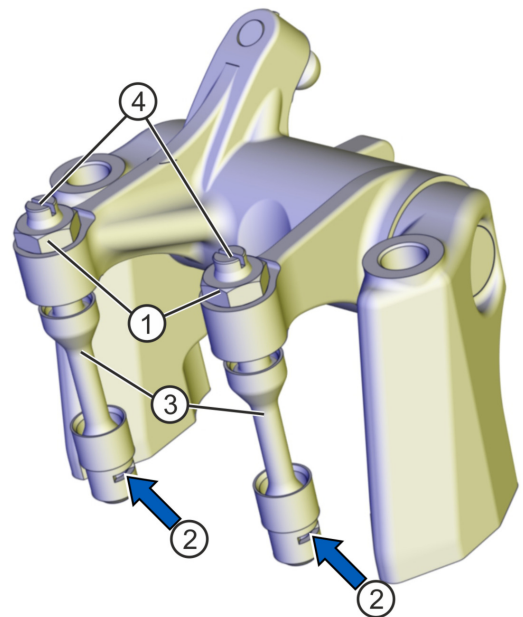
6.2.3 Exhaust valves

To avoid incorrect adjustments, always use two feeler gauges at the same time when adjusting the exhaust valves!

- Push the ball cup up and slide the feeler gauges through the ball cup openings ② on both valves.

If the valve lash is not equal at both exhaust valves, the valve lash must be adjusted as follows – see also: Additional information

- Loosen both lock nuts ① on the push rods ③.
- Adjust the left and right valve lash using the adjusting screws ④.
- Secure the adjusting screws ④ using the lock nuts ①.
- Check the valve lash again. You should now feel slight resistance if you try to move the feeler gauges.



7 Revision code

Revision history

Index	Date	Description / Revision summary	Expert Auditor
9	11.11.2019	Anpassungen in Kapitel 6.1 und 6.2 / Adaption in chapter 6.1 and 6.2	Townsend M. <i>Waldron P.</i>
8	04.09.2019	Durchführung der Wartungsarbeit „Ventilspiel prüfen und einstellen“ auf Kunde korrigiert / Carrying out maintenance work „Check and adjust the valve lash“ to customer corrected	Waldron P. <i>Waldron P.</i>
7	30.04.2019	Strukturelle Anpassungen / Structural Adaption GE durch INNIO ersetzt / GE replaced by INNIO	Fallzberger F. <i>Pichler R.</i>
6	19.04.2017	Einstellwerte für Ventilspiel Version E/FG/H geändert / Changed set values for valve lash of version E/F/G/H Verweis auf IW 8052 M0 hinzugefügt / Cross reference to IW 8052 M0 added	Becker F. <i>Waldron P.</i>
5	21.12.2016	Einstellwerte für Ventilspiel Version J/K ergänzt / Set values for Valve clearance of version J/K added	Rivellini S. <i>Waldron P.</i>
4	24.05.2016	Ventilschaftüberstandsmessung -Intervall auf 2 000 Bh geändert / Measuring valve-stem projection – interval changed to 2,000 Oh	Engensteiner S. <i>Nota F.</i>