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Distribution list Jenbach, Subsidiaries, Service Providers		
Service Technician Instruction	ST-134	25 April 2013

Engine type **Type 6 engines (J612....J620F & J624G/H)**

Subject **Fritz Winter cylinder heads**
Modification by milling an additional oil drain groove

Service Technician Instruction ST-134 describes the modification of Fritz Winter cylinder heads to reduce the risk of valve sticking.

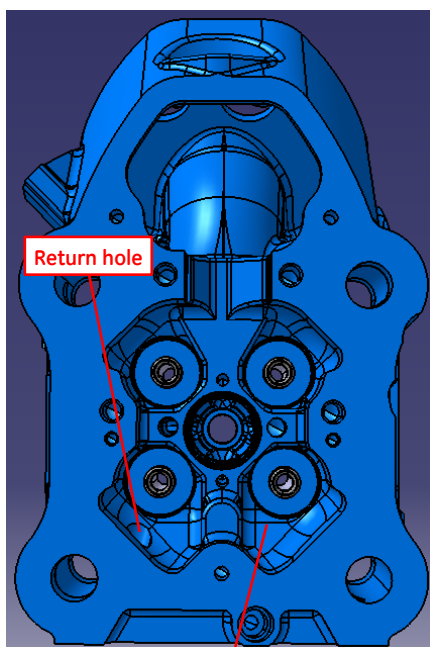
AFFECTED ENGINES / SCOPE OF THIS BULLETIN

- Type 6 engines, F version
- Type J624 engines, G and H versions

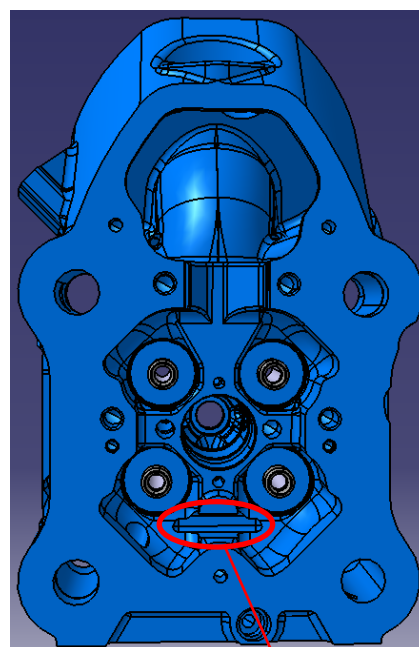
...according to the AUL (Affected Unit List) of Quality Escape QE-51.

DESCRIPTION OF THE CONTENT

The cylinder heads of the engines defined in the AUL of QE-51 have to be modified by milling a groove according to this bulletin to make oil drain in the area of the right exhaust valve possible – return hole only at the left side – in order to reduce the risk of valve sticking.



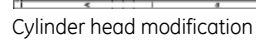
Current design: **Oil can't drain off**



Modified design with **milled groove**

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REQUIRED ACTIONS

Depending on the operating hours (oph) of the cylinder heads the following actions must be carried out:

➤ Up to 1000oph:

The cylinder heads may be machined when installed.

- Milling the groove according to the instruction (see further down)
- Cleaning of the cylinder heads (and the engine)
- 4-eyes-check, i.e. a second person has to confirm cleanliness

➤ Above 1000oph:

The cylinder heads may not be machined on the engine. They must be disassembled.

- Disassembling of the cylinder heads
- Milling the groove according to the instruction (see further down)
- Cleaning of the exhaust valve guides in the cylinder heads according to ST-133
Regarding ST-133 Mr. Craig FALLS (T +43 5244 600 3169, E craig.falls@ge.com) has to be contacted.
- Cleaning of the cylinder heads
- 4-eyes-check, i.e. a second person has to confirm cleanliness
- Reassembling of the modified cylinder heads

REQUIRED PARTS

The following parts are provided by the Jenbacher Tooling Center:

PART NUMBER	QUANTITY	DESCRIPTION	COMMENTS
1220445	1	Mobile milling machine	
1220456	See further down	Milling cutter	D = 12mm
9012308	2	Cover sleeve for valves	
1221802	1	Oil drain plug	
381685	1	Prechamber plug	
Not available	1	Cable extension reel	Three-phase electric power, 30m

Table: Required parts

- **Required quantity of milling cutters 1220456**

It is recommended to replace the milling cutter after each single engine.
Quantity of milling cutter = Quantity of engines + 1 additional spare part

- **Vacuum cleaner**

There must be a vacuum cleaner, which will not be delivered by the Jenbacher Tooling Center, available on site.

- **Coolants/lubricants**

Not required.

IMPORTANT

The following chapters must carefully be read and observed:

- Instructions for using the mobile milling machine
- Operating and maintenance manual for the mobile milling machine

RELEVANT DOCUMENTS

All the relevant instructions are part of the plant documentation handed over to every customer on delivery of an engine. The latest versions of documents referred to here can be downloaded from the Jenbacher web portal (<http://information.jenbacher.com>). Regarding ST-133 Mr. Craig FALLS has to be contacted.

- Technical Instruction TA 1100-0105, Engine shut-down
- Technical Instruction TA 2300-0005, Safety instructions
- Technical Instruction TA 2300-0010, Guidelines for using the LOTO kit
- Service Technician Instruction ST-133, Cleaning of cylinder head exhaust valve guides



REVISION CODE

INDEX	DATE	DESCRIPTION / REVISION SUMMARY
01	Apr. 25, 2013	First version of this document

Table: Revision history

Instructions for using the mobile milling machine manufactured by CAD Technik for milling an oil drain groove in Fritz Winter cylinder heads **in situation on the engine**

1. When working on the engine, observe the following Technical Instructions:

Shut the engine down in accordance with Technical Instruction No. 1100-0105 and secure it against unauthorised restarting in accordance with Technical Instruction No. 2300-0010.

Observe the safety and hazard information in the safety instructions (TI 2300-0005) and wear the appropriate "Personal Protective Equipment".

It is essential that you read the CAD Technik Operating and Maintenance Manual, CAD – 025 GE 12 – 119, before using the machine for the first time.

- Depending on the number of cylinders and the version of the Type 6 engine in question, several engine components must be removed before mounting the milling machine. The parts affected are mainly the mixture intake lines before the turbochargers and the blowby filters with brackets. For example, on J 620F engines the mixture intake lines at the end cylinders must be removed in the vicinity of the turbocharger (see Fig. 1).

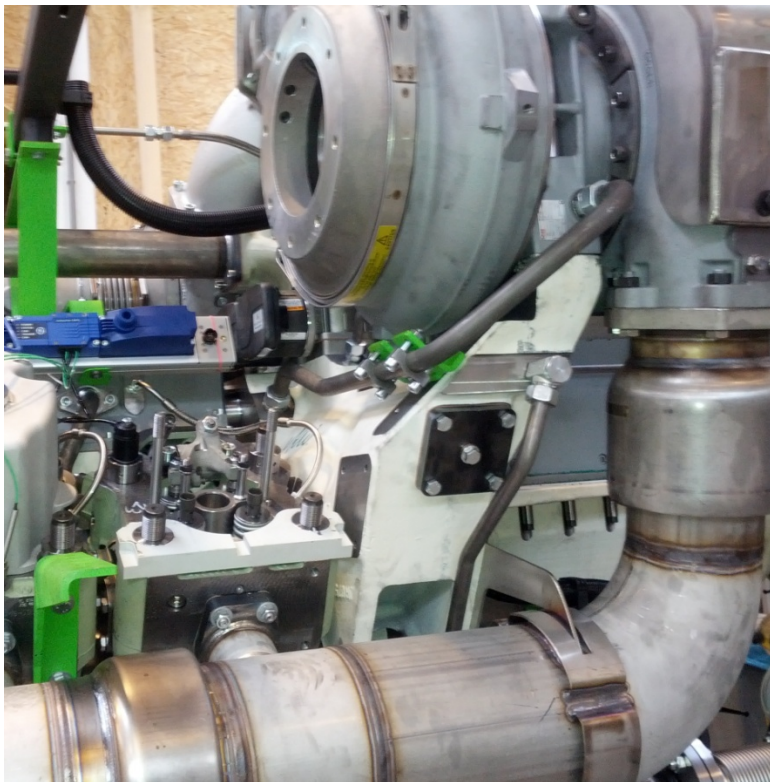


Fig. 1: Remove the mixture intake lines

3. Undo the endoscope screw plugs completely, but do not remove them.

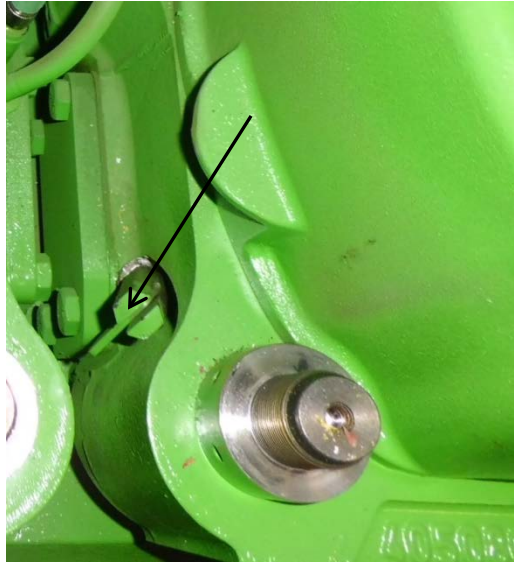


Fig. 2: Endoscope screw plug

4. Remove the spark plug connector and rocker cover of the cylinder head to be milled.



Fig. 3: Rocker cover and plug connector

5. Remove any oil from the area to be milled on the cylinder head with a suitable vacuum cleaner.

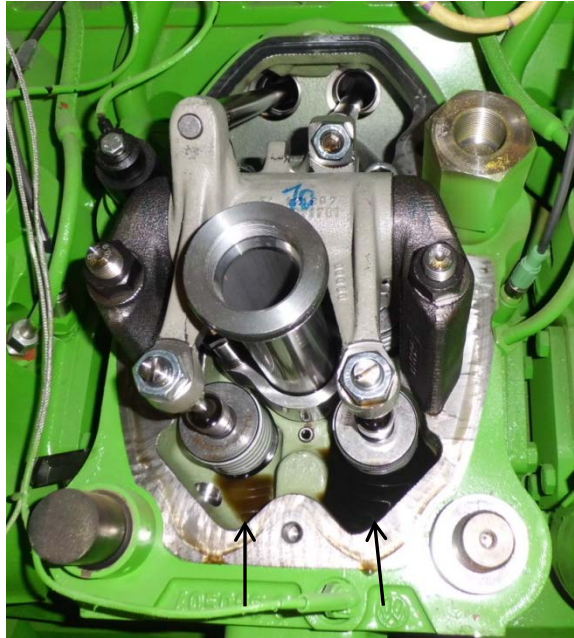


Fig. 4: Remove any oil from the cylinder head

6. Remove the spark plug sleeve extension and the exhaust thermocouple with its thermowell.

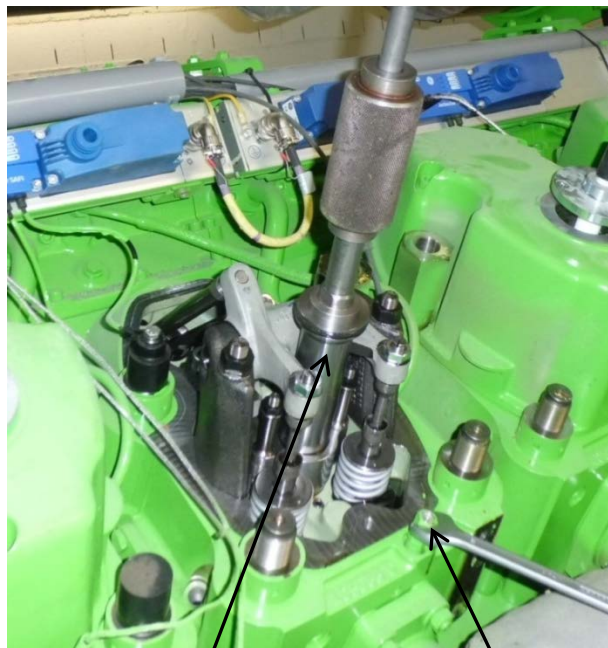


Fig. 5: Spark plug sleeve extension and exhaust thermocouple

7. Bring the piston with the cylinder head to be milled in the position "Ignition TDC" with the turning bar or suitable turning gear (there must be discernible clearance at the valves).
8. Remove the exhaust valve rocker bracket, valve rods and cups.



Fig. 6: Exhaust valve rocker bracket, valve rods and cups

9. Cover the valve springs with protective caps.
Use the plug included in the milling machine set to close off the oil drain bore at the area to be milled and cover the prechamber with a cap.

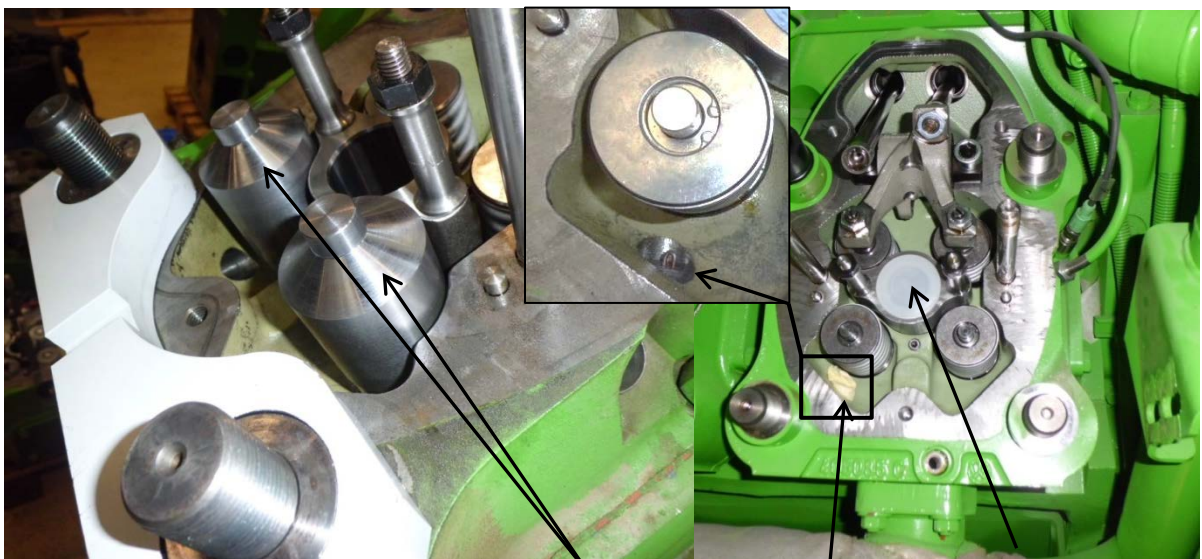


Fig. 7: Cover the valve springs with protective caps

Close off the oil drain bore
and prechamber

10. Mount the base plate on the cylinder head and lift the milling machine on to the cylinder head with a crane.

Caution: the milling machine weighs 73 kg. Do not lift it by hand.

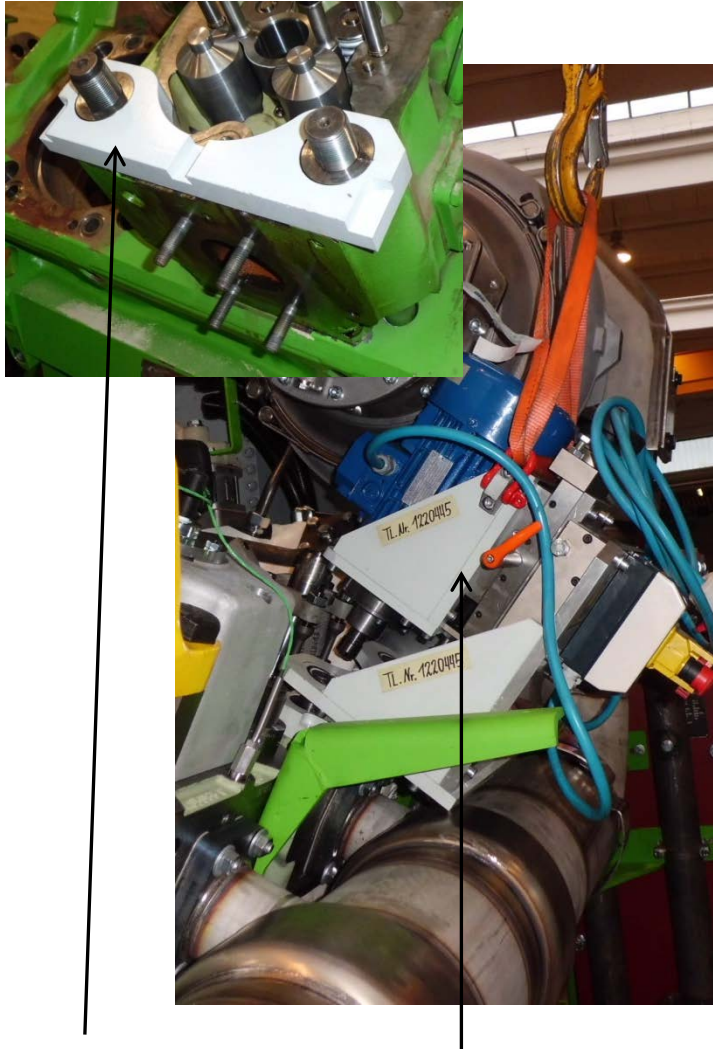


Fig. 8: Fit the base plate and lift the milling machine onto the cylinder head with a crane



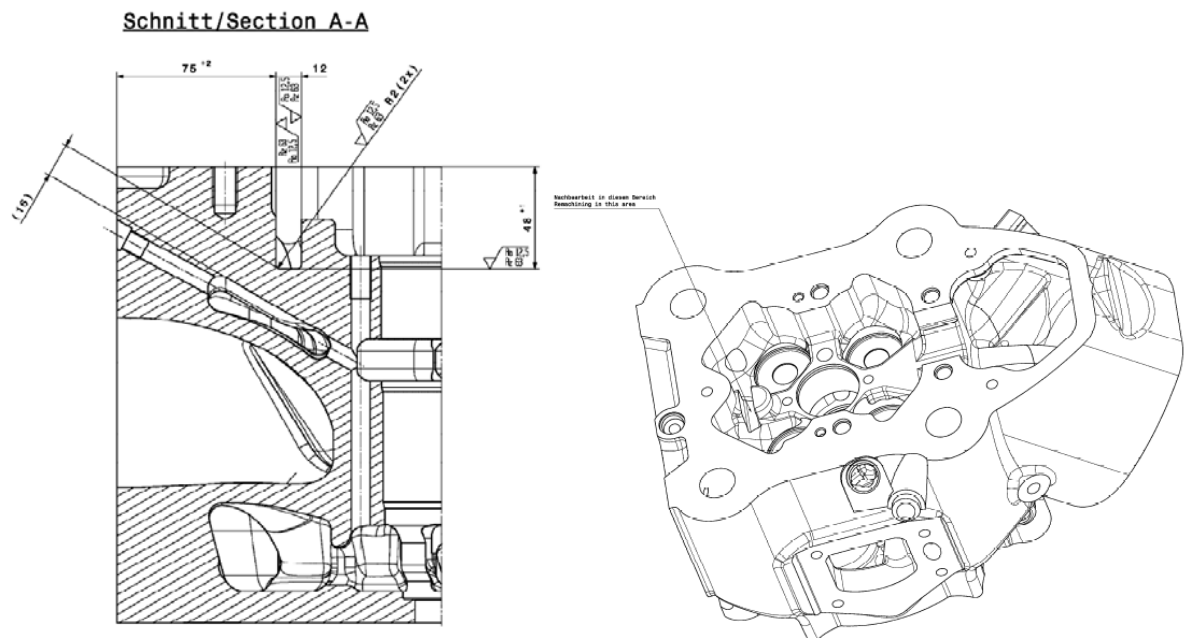
Fig. 9: Fit the washers and fastening nuts and tighten the nuts with an open-ended wrench.

11. Further instructions can be taken from the CAD Technik Operating and Maintenance Manual, Section 3.2.

12. Additional information

- The milling cutter must be clamped in the machine collet chuck so that the required groove depth can be achieved without the chuck making contact with the cylinder head.
- **Feed setting (milling depth):** 2 mm
- After every pass, switch off the milling machine and remove the swarf from the cylinder head with a suitable vacuum cleaner.
- **Groove depth:** 48 to 51 mm (measured from the rocker cover support surface down to the groove base)

13. Cylinder head drawing



Instructions for using the mobile milling machine manufactured by CAD Technik for milling an oil drain groove in Fritz Winter cylinder heads when removed from the engine

1. Setting up the jig to hold the mobile milling machine

Rest the cylinder head on its exhaust port, insert the retaining bracket with the two threaded rods and secure it against falling out with the spacer sleeves and nuts (note: the spacer sleeves are marked "Top L" and "Top R"). Put the second cylinder head support in position and carefully rest on the head on its combustion chamber plate.



Fig. 10: Retaining bracket with cylinder head supports, spacer sleeves and nuts

2. Remove the two nuts again and fit the base plate. Fit the angle iron to prevent the cylinder head from tipping over and secure it with bolts (if the studs have not yet been removed, use these and nuts).

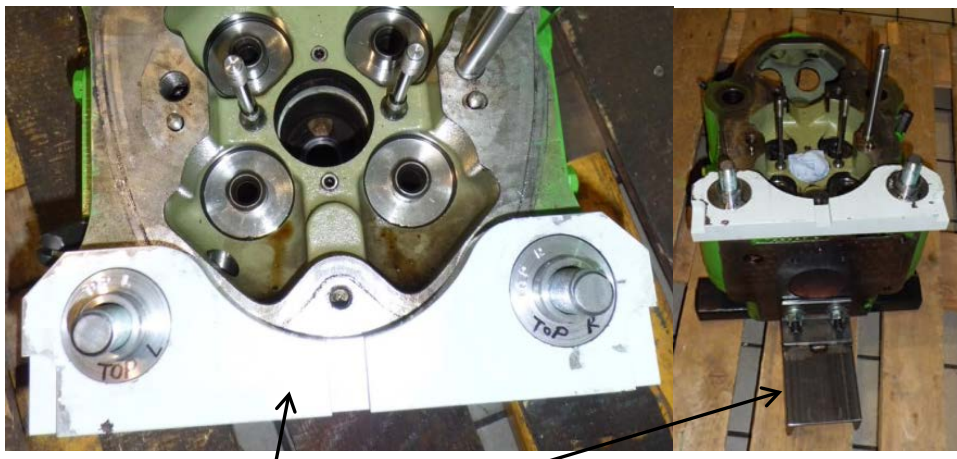


Fig. 11: Fit the base plate and angle iron to prevent tipping over

3. Place the mobile milling machine on the cylinder head using a crane, fit the washers and nuts and tighten with a ring wrench.

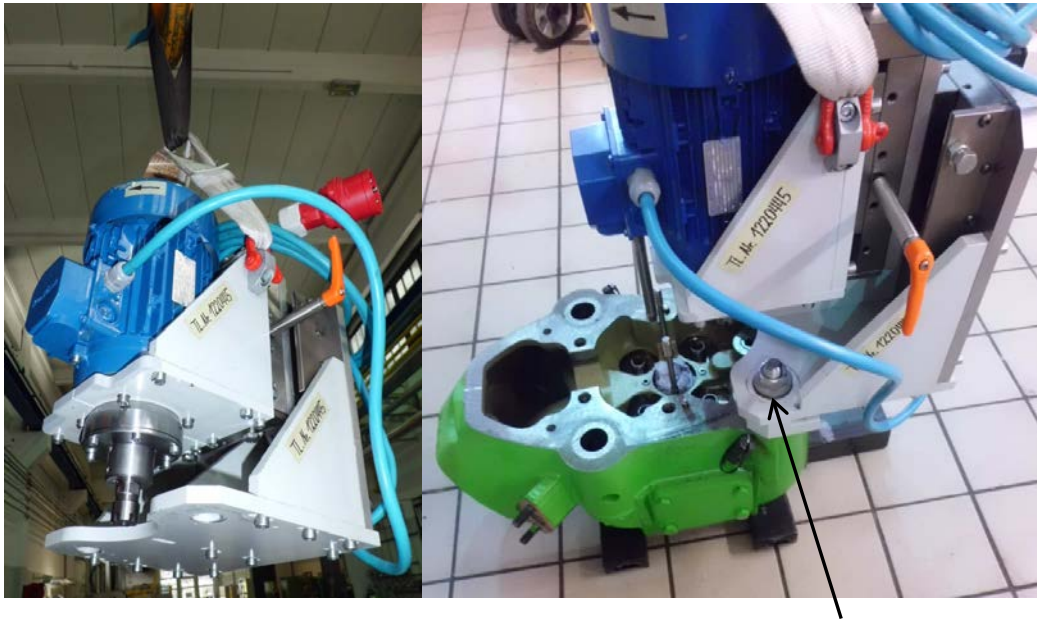
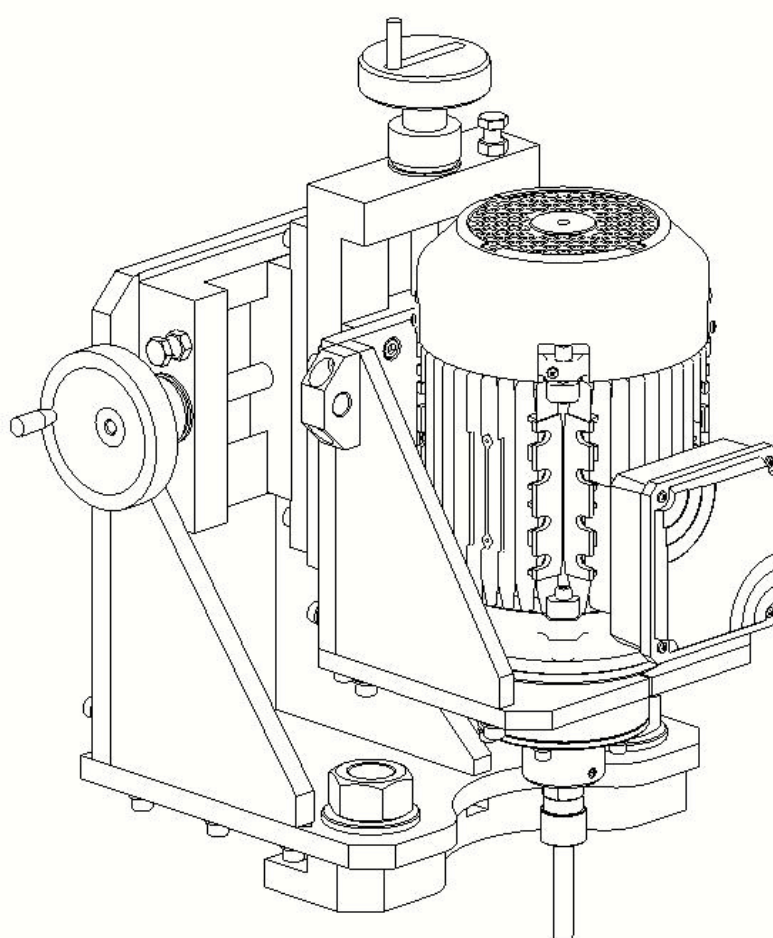


Fig. 12: Place the milling machine on the cylinder head, fit and tighten the nuts

4. The rest of the procedure is as described from Section 9 onwards in the "Instructions for using the mobile milling machine manufactured by CAD Technik for milling an oil drain groove in Fritz Winter cylinder heads in situ on the engine" above.

Operating and maintenance manual

Milling machine
CAD-025
GE 12-119



Manufacturers:
CAD Technik Werkzeug und Formenbau

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Metall- und Maschinenbau GmbH
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1 General information

1.1 Copyright

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The contents of this publication shall not be **passed on to third parties** without prior consent in writing.

1.2 Manufacturers

Manufactured by :

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1.3 Purpose of the operating and maintenance manual

This manual is intended for all operators to give them the necessary information to operate the machine.

It includes important **Warnings and safety instructions** that users must observe.

Please observe the following operating and maintenance instructions as closely as possible to ensure trouble-free operation of the machine. Non-observance of these operating instructions shall void all liability on the part of the manufacturer.

1.4 Intended use

This machine is only intended for use for the purpose precisely described in the instructions or contract documents. The most important preconditions and safety precautions for use and operation of the product are also set out.

Use or commissioning outside the intended designated purpose as described without observing the necessary preconditions and safety precautions is **PROHIBITED** and discharges us from all liability.

1.5 Limitations on liability

The machine may only be used, operated and used by appropriately qualified personnel who are also able to observe the necessary safety precautions during operation. The personnel must also know and understand the content of the operating and maintenance manual.

We accept no liability for damage and operating failures and their consequences caused by operator error, failure to observe these instructions, or improper use or unauthorised repairs.

The machine may only be operated with accessories and consumables supplied and approved by us.

In particular we would like to point out that not all the accessories supplied by us have been tested and approved by us. In exceptional cases we can grant approval in writing in advance.

The installation and use of third-party products can impair the design characteristics of the machine, cause damage to the machine and adversely affect safety for persons, the machine or other property.

No liability is accepted for damage arising from the use of spare parts and accessories which are not of original equipment manufacture.

Customers are not permitted for safety reasons to carry out their own conversion or modification work on the machine, and all liability for damage resulting from such work is excluded.

We reserve the right to make technical changes as part of continuous development of the machine covered by this operating and maintenance manual. Consequently, no claims can be derived from the information and descriptions in this manual. Instead, they should be understood more as guidelines which do not detract from the proper duty of care when using the machine.

2 Safety regulations

2.1 General instructions

The rules necessary for safe operation of the machine are compiled in the enclosed "Safety Regulations" booklet.



This symbol is allocated to safety at work information intended to avoid danger to life and health of persons.

The information must be carefully observed. These documents must be given to the personnel operating the machine.

This sign is allocated to information, regulations and guidelines intended to prevent damage to or destruction of the machine due to incorrect operation.

Make sure that persons entrusted with the assembly, operation and maintenance of the machine have read and understood this regulation before starting work.

The machine has been manufactured to the latest state of the art and is safe in operation. However, it may be dangerous if operated by untrained personnel.

Before using the machine for the first time the operator must make sure the machine is in a safe condition, including its safety equipment. This must also be done at regular intervals.

In addition to the safety at work information below, both the general and local safety and accident prevention regulations must be observed.

2.2 General safety instructions

1. The machine is intended solely for the purpose agreed with the manufacturer.

In the event of non-observance, the manufacturer shall not be liable for any damage occurring.

2. Personal competence must be clearly established for assembly, commissioning, operation and maintenance so that safety when using the machine is not endangered.
3. Only use suitable equipment for transporting and setting up the machine (transport equipment).



4. Persons should not stand underneath suspended loads.



5. Never allow anyone but authorised personnel to work on electrical connections, electric motors, and the electrical equipment of the machine.



6. Check the machine to ensure that it is in a safe condition before commissioning.
7. The machine may only be operated when fully assembled complete with all accessories. (original condition)
8. If changes from the original condition are found, these must be reported to the appropriate authority by the operator.

9. For safety reasons customers are not permitted to carry out their own conversion or modification work on the machine, and the firm of Wallner Metall- und Maschinenbau GmbH shall not incur any liability whatsoever be released of all liability in respect of such work.



10. The electrical connections of the machine must be adequately protected. Damaged electrical wiring must be replaced immediately.



11. Inspect the machine for any externally recognisable damage and defects before commissioning.
12. Maintenance and setting work must only be carried out when the machine is at rest and by properly trained personnel. Before starting this work, make sure that the machine cannot be started inadvertently or by third parties.
13. The operator must make sure the machine is in a safe condition, including its safety equipment after any maintenance work and repairs.
14. Only original parts from Wallner Metall- und Maschinenbau GmbH may be used.

2.3 Special safety instructions

Safe operation of the equipment supplied cannot be guaranteed if the following special safety instructions are not observed. Observance of these rules does not release the operator of the equipment from the obligation to observe further national safety regulations.

(2.3.1) The milling machine may only be employed for the intended purpose and only under the conditions specified in the purchase agreement and the operating and maintenance instructions.

(2.3.2) The operator must ensure that the milling machine is used correctly to avoid damage to it.



(2.3.3) Maintenance and repair work may only be carried out when the machine is switched off and electrically dead.

(2.3.4) Personnel must know the location and method of operation of switch-off and emergency switch-off equipment; this equipment must be easy to reach and access must never be obstructed. Trouble-free operation of this equipment must be checked at the prescribed intervals.



(2.3.5) Machines that were switched off due a fault or accident may only be switched on again by authorised personnel after the cause of the shut-down due to a fault or accident has been rectified and it has been determined that restarting can be done without any danger.



(2.3.6) All adjustment work of a mechanical or electrical nature may only be carried out by authorised personnel. The machine must be switched off and the switch locked before carrying out this work.



- (2.3.7) Repairs and the removal of protective equipment may only be carried out or initiated by authorised personnel; the machine must be switched off and the switch locked before this work is carried out.

Switching back on by personal may only take place after the safety equipment has been refitted at the order of the persons responsible for the machine.



- (2.3.8) Lubrication work during operation is prohibited unless the position of the parts to be lubricated or special equipment allows this to be done without danger.

If protective equipment has to be removed or opened for lubrication purposes, lubrication may only be done when the machine is at rest.

- (2.3.9) Operating and maintenance personnel must be specifically trained in accident prevention matters with particular reference of the operating and maintenance instructions.

- (2.3.10) Changes that affected the design or operation of the machine may not be made without the consent of the manufacturer or supplier. If no such consent exists, the liability of the manufacturer or supplier shall cease.



- (2.3.11) If protective equipment has been removed for maintenance and repair work, work may only be carried out by trained persons specifically instructed so to do. Such persons must be made aware of possible dangers arising from the work and trained in the necessary safety precautions.



- (2.3.12) In the event of maintenance and repair work on unsecured machines, a second person familiar with the measures to be taken must observe the person carrying out the work and stay in the vicinity of the off switch, outside the danger area and ready to operate the off switch.

(2.3.13) Do not use any blunt or damaged tools.



(2.3.14) Personnel entrusted with the maintenance and operation of the machine must wear working clothing that complies with the applicable safety regulations.



(2.3.15) The milling cutters used represent a danger of cuts and crushing for the user. Wear protective gloves.



(2.3.16) Wear protective gloves when touching the workpiece. The swarf created during milling represents an injury hazard. The machining results in sharp edges and the workpiece will heat up.



(2.3.17) Wearing protective gloves due to the danger of crushing by falling objects is compulsory.



(2.3.18) The operator must pay attention to ensure that his limbs, clothing, chains, watch straps, rings or long hair are not caught by moving machine parts. Wearing a hair net is recommended with long hair.



(2.3.19) During operation, considerable noise is generated when the milling cutter cuts into the workpiece. Wearing ear defenders is recommended to avoid damaging one's hearing.



(2.3.20) Safety glasses must be worn by operators when operating the machine to avoid eye injuries caused by swarf produced when milling.



(2.3.21) Do not try to grasp anything in the danger zone when the milling machine is in operation. Danger of injury from rotating milling cutters.

3 Operation and maintenance of the machine

It is essential to observe and follow the following Sections to ensure trouble-free operation of the machine.

3.1 Transport

The machine is supplied ready-assembled.

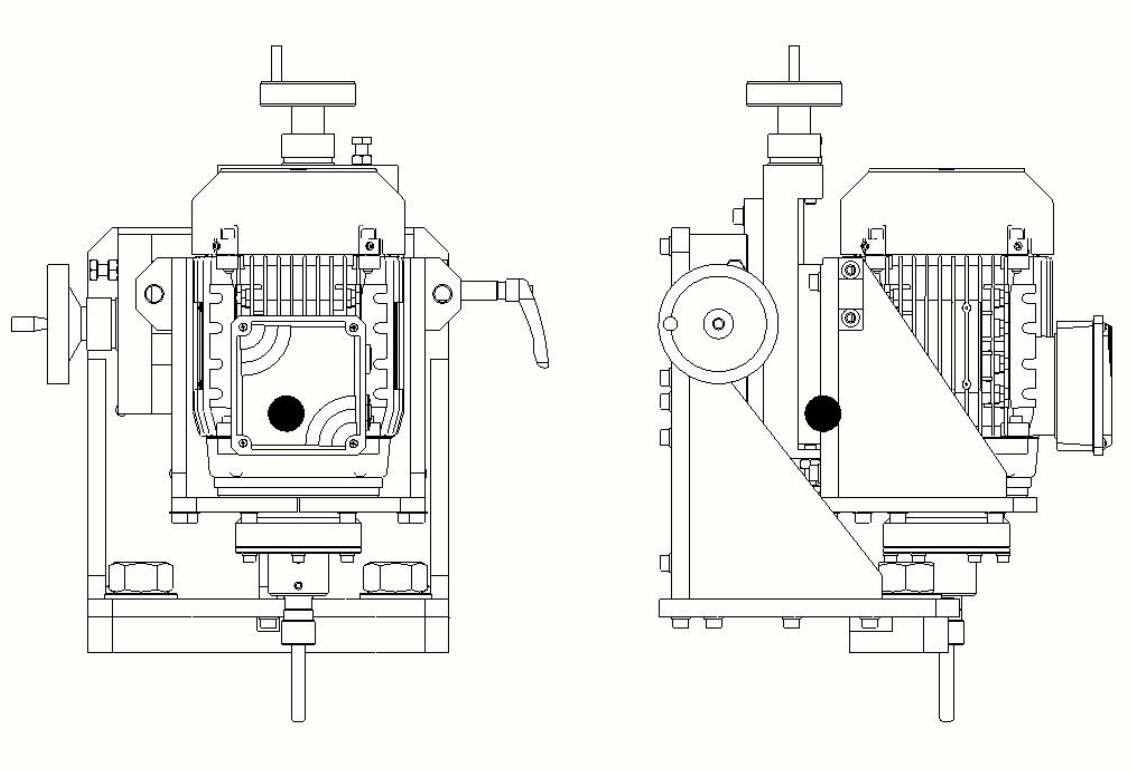


Illustration of the centre of gravity of the machine

The machine may only be transported using the lifting equipment intended for the purpose, taking the centre of gravity into account.

Before lifting the machine, remove the milling cutter from the collet chuck to avoid damaging the machine, milling cutter or surrounding parts, or injuring the operator.



Illustration of the lifting lug on the machine / Illustration of the machine



Danger of crushing for hands and feet when setting down

DO not stand under the load when lifting and setting down,
and stay outside the danger zone.

Incorrect transport of machines and their components can result in damage ranging from impaired usability to unusability.

Lifting equipment should be attached to places also intended to support the assembly in question during operation.

3.1.1 Basic transport setting

The carriage slide in the Z-direction is at the top end position

Carriage slide in Z-direction is secured by the clamping lever.

The carriage slide in the Z-direction is in the left-hand end position.

The milling cutter is not clamped in the machine.

3.2 Mounting:

3.2.1 General



The machine may only be mounted by trained personnel and must be switched off and disconnected from the mains.

Observe the following points before mounting the machine:

- Shut down the gas engine.
- Secure the gas engine against unauthorised restarts.
- Make sure the rocker cover can be removed safely.
- Ensure that the operator has a firm footing.

Observe the following points when mounting the machine:

- Remove the rocker cover from the gas engine.
- Protect the valve springs with sleeves.
- Fit the machine base plate.



Illustration showing the base plate position.

Bring the machine into its basic transport position.

Lift the machine on to the cylinder head.



Illustration showing the machine on the cylinder head

Align the machine.

Fit washers.

Fit the nuts and tighten them with the tool provided.

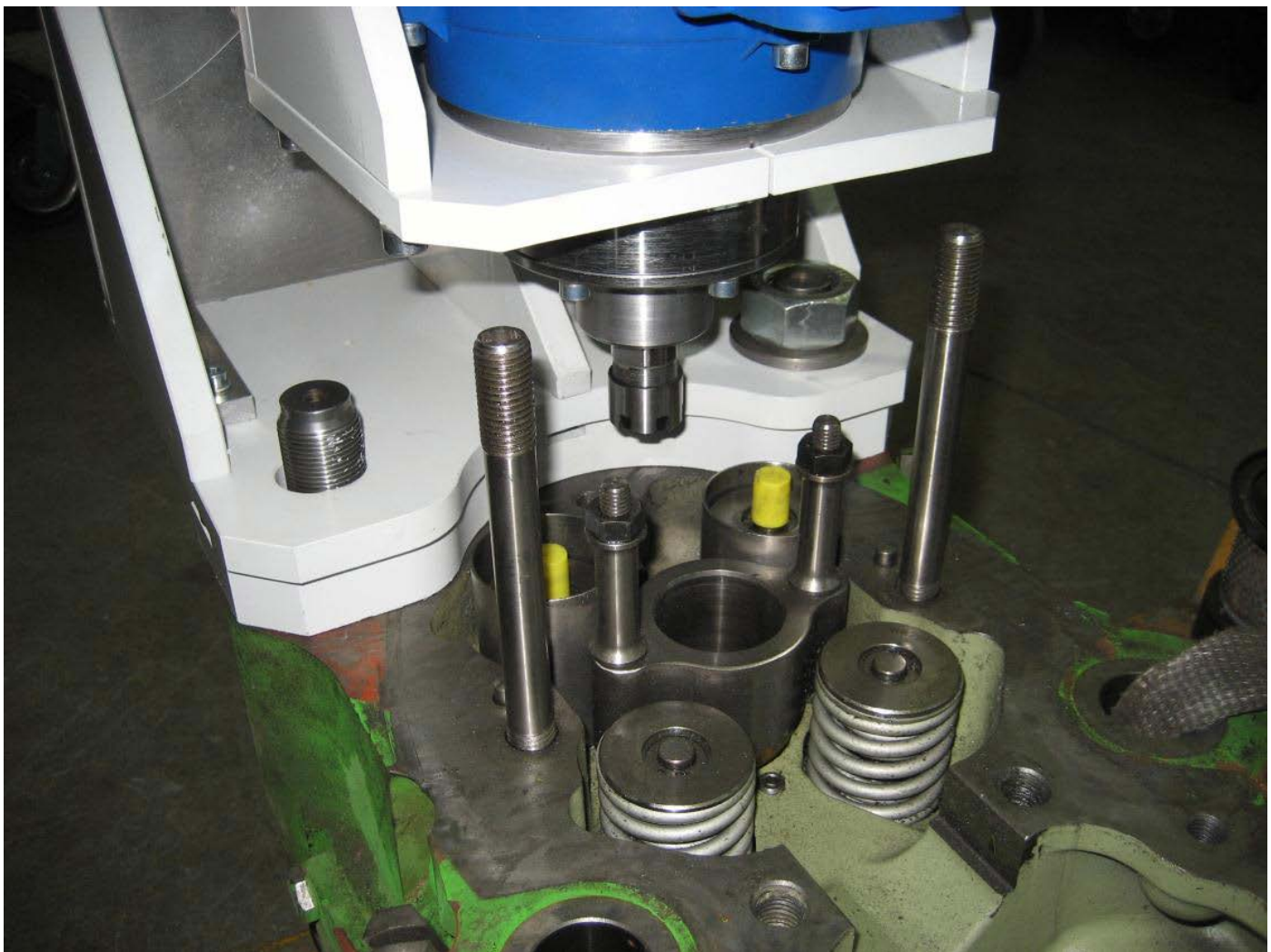


Illustration showing the machine being tightened.

Mount the base plate and tighten the machine to form the necessary support surface and also to obtain maximum stiffness. This is the only way to minimise vibration and ensure trouble-free operation.

All the important components for mounting are shown on the drawing and marked with item numbers and parts lists.

Observe the lifting regulations.

Only use the lifting equipment and jacks provided to lift the machine.

Only lift the machine by the lifting lugs provided.

Special mounting instructions, e.g. additional information about mounting work sequences, are contained in the brochures from the various suppliers.

3.2.2 Mounting various additional equipment

Observe the specific mounting instructions from the supplier for this.

3.3 Power supply and control connections

Supply lines must not come into contact with moving parts of the equipment.

All connection work may only be carried out by authorised firms (persons).

3.3.1 Electrical connections

Information on the electrical equipment of the machine can be found in the instructions from the individual electrical firms or the technical enclosures.

Compare the operating voltage with the information on the rating plate and check it.

The machine may only be operated with the mushroom-head emergency off button fitted.

3.4 Settings

3.4.1 Final check

Carry out a careful check based on the parts list before the first trial run of the machine.

Electrical connections of the motor and switch

Check that all safety precautions as per the CE Regulation have been implemented.

Carefully check all parts that have been moved for forgotten tools and mounting aids.

3.4.2 Test run without material = dry run

Observe the following points when first using the machine:

Make sure before starting that nobody is inside the danger zone of the machine.

Check the emergency off equipment after every installation, all maintenance work, servicing and repairs with the following practical test:

1. Press the mushroom emergency off button
2. Wait until the machine switches off
3. Acknowledge the emergency stop



Illustration of the mushroom emergency off button

Drive unit function - check for vibrations, noise, temperature etc.

Remove all parts not necessary for the machine to operate.

3.5 Operating instructions

Maintenance work carried out with the machine at rest must always be completed before the machine is restarted, and the available safety equipment properly fastened.

If the prescribed maintenance and lubrication instructions are conscientiously followed, starting for the first time and normal operation will not give rise to any difficulties.

In the event of a malfunction, observe the specific instructions from the manufacturer for the drive units and other mechanical and electrical equipment (see the technical enclosures).

3.5.1 Equipment components

Motor bracket

Bracket

Base plate

X-axis

Y-axis

Toolholder support

Toolholder

Three-phase a.c. motor

Washers

Fastening nuts

3.5.2 Control unit

Milling machine control unit



Illustration of control unit

3.5.3 Starting position

The carriage slide in the Z-direction is in the top end position and is locked by the clamping lever. The carriage slide in the X-direction is in the left-hand end position. The machine is mounted on the cylinder head and the fastening nuts are tightened. The milling cutter is fixed in the collet chuck.

3.5.4 Procedure

The milling machine is used for remedial machining on cylinder heads on gas engines already delivered by GE Jenbacher directly on site at the customer's premises.

A 12 mm-wide groove is to be machined in the steel casting at the front two cylinder valves parallel to the gas engine crankshaft in order to achieve an oil exchange in this area.

The tool used is a special end mill.

The operator sets the milling depth on the Z-axis and fixes the axis with the clamping lever. He then mills the cylinder head by manually operating the handwheel on the X-axis. The required depth of milling is achieved after several plunges.

At the end of the process, the operator cleans the entire cylinder head of swarf and removes the machine in order to mount it on the next cylinder head.

3.5.5 Training information, brief instructions

The precondition for training is that the operator is familiar with the safety regulations (Section 2) and the procedure Section (3.5.4) before starting work.

The precondition for first use of the machine is that all the information and activities in Sections 3.1 to 3.4 have been observed and carried out.



The machine may only be operated when fully assembled, complete with all safety equipment and accessories. (original condition)



The milling machine must never be used while the gas engine is in operation – danger of injury. Always shut the plant down first and secure it against being restarted.



Danger of injury from rotating machine parts.
Do not try to grasp anything in the danger zone when the milling machine is in operation.



Wear protective clothing.

Safety footwear, safety gloves, safety glasses and ear defenders.

Switching on the machine

1. Inspect all components visually.
2. Bring the milling machine to its starting position.
3. Check the milling cutter.
4. Check the milling cutter is securely fitted.
5. Connect the power supply.
6. Release the mushroom-head emergency off button.
7. Operate the black switch on the control element to start the milling machine.



Illustration of the milling machine mounting

Carrying out the milling

1. Release the Z-axis clamping lever.
2. Operate the Z-axis handwheel.
3. Bring the milling cutter into contact with the cylinder head.
4. Lock the Z-axis clamping lever.
5. Set the Z-axis scale to zero.
6. Operate the X-axis handwheel.
7. Move the milling cutter out of the milling zone.
8. Release the Z-axis clamping lever.
9. Set the milling depth by operating the Z-axis handwheel.
10. Lock the Z-axis clamping lever.
11. Operate the X-axis handwheel. (judge the feed rate by touch).
12. Repeat actions 7 to 10 until a milled depth of 30 mm has been reached.

Maximum plunge depth 3 mm.

A larger plunge depth can result in damage to the milling machine and particularly of the milling cutter.

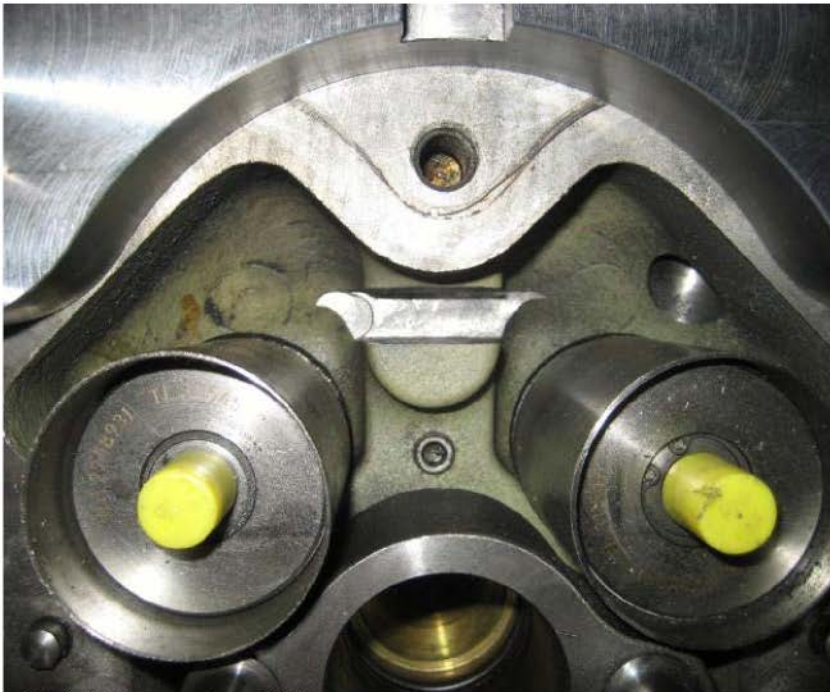


Illustration of the milled groove

Switching off the machine

1. Operate the mushroom-head emergency off button.
2. Restore the starting position.
3. Disconnect the machine from the power supply.
4. Clean the machine.

3.5.6 Faults, troubleshooting

Sequence of events for the machine operator

1. Switch the machine off.
2. Secure the machine against unauthorised restarting.
3. Remedy the fault.
4. Switch the machine back on.



Faults may only be remedied by specialists or trained personnel.

Danger of injury from moveable or jammed parts.

5. Remedy the problem / fault.



If the machine has been switched off due to a fault or an accident, it may not be brought back into operation after the cause has been remedied and it is safe to switch it back on.



The machine may only be brought back into operation by authorised personnel.

Repairs and maintenance work may only be carried out by appropriately-trained specialists.

6. Switch the machine back on.

3.6 Maintenance instructions

3.6.1 General



Only trained personnel may carry out maintenance and servicing work on the machine.

All work must be carried out with the machine at a standstill.



Care should be taken to ensure that it is impossible to start the machine while work is in progress.



The protective equipment necessary for CE conformity must not be removed, as in this case the supplier (Wallner Metall- und Maschinenbau GmbH) would be released of all claims relating to safety.

Carry out the following visual inspections as well as the work specified in the maintenance and lubrication instructions for trouble-free operation of the machine:

3.6.2 Weekly inspection

Visual inspection of the components for damage, function check

Lubrication

Ease of motion of slideways

3.7 Lubrication

The specific maintenance and lubrication instructions for the individual components are contained in the documentation from the respective manufacturers (see the technical enclosures). Lubricants, lubricant quantities and lubrication intervals and oil changes must be observed absolutely to ensure trouble-free operation of the individual machine components and their required service life.

All the bearings used are lubricated for life.

Lubricate the slideways once a week.

4 Technical data and wear parts

4.1 Technical Data

Type: milling machine

Machine no.: GE-12-1 19

Project no.: CAD-025

Max. plunge depth: 3 mm

Max. end mill diameter: 12 mm

Longitudinal carriage travel (X): 55 mm

Vertical carriage travel (Z): 55 mm

Transverse adjustment range (Y): 20 mm

Total width: 365 mm

Total depth: 380 mm

Total height: 510 mm

Total weight 73 kg

Toolholder: ER mini collet chuck, cylindrical collet ER 20 12 mm dia.

Power connection by a CEE three-phase plug with phase swap

Cable length: 4 m

Motor

Motor type: Three-phase a.c.

Type: 5AZ90L8B14F1

Flange design : B14F1

Power: 0.55 kW

Speed: 670 rpm

Voltage: 230 / 400 V

Current: 4 / 32 A

Frequency: 50 Hz

Degree of protection: IP55

4.2 Spare and wear parts list

4.2.1 Mechanical components spare parts list

Spares parts drawing (see Appendix)

5 Test documentation (see the Appendix)

5.1 CE - Declaration of Conformity

5.2 Risk analysis

6 Technical enclosures (see the Appendix)

6.1 Assembly drawing of the machine (layout)

6.2 Spare parts list

6.3 Supplier documentation