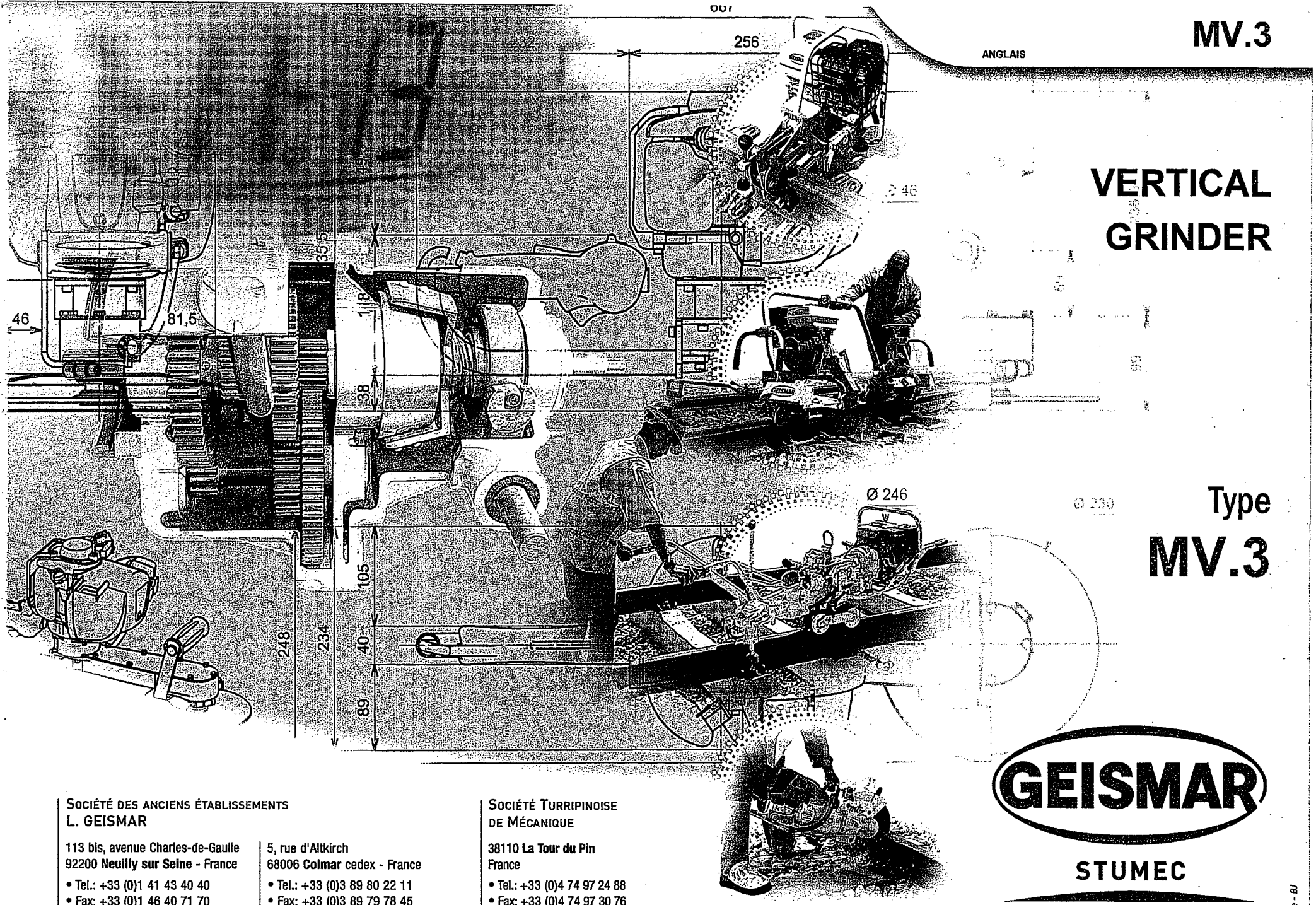
MV.3



VERTICAL GRINDER

Type MV.3

GEISMAR

STUMEC

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GEISMAR, the quality choice !

You have just acquired a machine for laying and servicing railway lines. We thank you for choosing equipment developed and constructed by GEISMAR / STUMEC, the fruit of over eighty years' experience.

Every day since 1924, the GEISMAR Group has been investing in research and state-of-the-art construction to offer you the quality and reliability so essential to the requirements of the world of railways.

This machine, built entirely in France from design through to delivery, has been subjected to continuous, extremely strict controls. Formed of different mechanical elements assembled by highly qualified fitters, your machine has been tested, calibrated and controlled at every stage of its production.

We are convinced that it will give you every satisfaction and are, of course, at your service to offer you any recommendations you may require for its use or its maintenance.

We thank you for the confidence you have shown in us and, in the hope that we will remain one of your privileged partners, we would like to confirm that we are totally available for any comments or recommendations you may care to make.

CONTENTS

GEISMAR STUMEC

CHAPTER 1 – SAFETY

1.1 Foreword

The following set of rules has been drawn up to ensure the application of precautionary principles that help to preserve the safety of persons and property when the machine is in use. Any failure to comply with these rules can have serious repercussions (bodily injury, etc.), and can even be fatal, so we must draw your attention to the fact that all persons involved in the use, maintenance, storage or custody of the machine covered by the present manual must be familiar with these rules.
Any users who cause an accident through failure to comply with these rules will be held personally responsible for the results of their actions.

1.2 Instructions for safety and general use

All persons using, servicing or repairing this equipment must have undergone the training, possess the skills, and have at their disposal the tools necessary to carry out any such operations.
Before using the equipment, even in a maintenance context, it is necessary to read the corresponding instruction manual, together with its appendices, and the safety rules in force in the workplace.
Comply carefully with the general safety instructions drawn up for the site by the person in charge of the site, especially if the work is carried out without stopping or diverting traffic.
The equipment can only be used, serviced or repaired by competent personnel who have undergone thorough specialized training beforehand. The technical documentation and the instructions are useful in completing the knowledge acquired during the training courses, but they can in no way replace theoretical and practical qualifying training, provided in accordance with good professional practice.
If the operating company is not in a position to carry out the necessary training for its staff, at a satisfactory level, the GEISMAR/STUMEC Company is able to provide advice concerning the training programme to be implemented.
The training must include an explanation of the various equipment functions, the instructions for use and maintenance, and the safety rules applicable, together with practical exercises.

IMPORTANT! All persons using the machine must comply with the labour regulations in force

The GEISMAR/STUMEC Company cannot be held responsible for any modifications made without its written approval, or for any assembly work not in conformity with its recommendations, especially in the case of use of parts other than original manufacturer's parts.

GEISMAR STUMEC

1.3 General safety instructions

- The operator and the working environment

⇨ To avoid all risks of accident or injury, it is essential to wear:
- Sturdy, non-flammable clothing that is suitably close-fitting
- Strong, non-slip gloves
- Safety shoes
- Protective eyewear
- Safety helmet
- All other equipment necessary on the site or when using the machine

⇨ In the case of use of ear defenders, the safety instructions in force on the site must be complied with at all times.

⇨ Make sure that the machine vibrations do not lead to a loss of sensitivity in the hands. Adapt the working periods to the level of vibration caused by the machine, which is shown within the framework of normal use.

⇨ Do not work with the machine if you are not sure that you can control it correctly. Do not start working with the machine until you are sure that you can do so in full safety, for yourself (good conditions of visibility and lighting) and for other people (work calmly and carefully). Take care to ensure you have a firm, stable footing; all unstable working positions must be prohibited.

⇨ The user must be in a physical and mental condition enabling work to be carried out without danger.

⇨ The work area must be free of all obstacles. The work area (and the surrounding areas) must be free of all flammable substances.

⇨ If anything does not seem clear to you, whether it concerns the machine or the work to be carried out, ask a qualified person for information. Do not base your work on assumptions.

⇨ For underground use (tunnel or gallery), or in a closed area, make sure there is sufficient ventilation or extraction to avoid the risks generated by inhaling exhaust gases or by their build-up.

⇨ This equipment must not be used in an explosive atmosphere.

⇨ Avoid working positions in which exhaust gases could come into contact with parts of the body, whether protected or not.

⇨ In a general way, take all necessary precautions to prevent flammable products from coming into contact with fire hazards.

⇨ The operator must ensure that no one else is within the working area. In particular, it is necessary to make sure that in the direction in which the machine is travelling, no one can be hit. If someone is nonetheless in the path of the machine, the operator must stop and warn the person of his passage. Special care must be taken with trolleys that take up the full width of the track and could cause leg injuries if someone is hit.

⇨ When the machine is installed on the track, it must be handled only by the number of operators strictly necessary for its normal use.

⇨ As the overall size of the machines does not enable extinguishers to be carried on them, we strongly recommend placing extinguishers of an appropriate type to deal with the fire hazards close to the machine.

⇨ The user must comply with all the regulatory environmental instructions applicable to the machine in use.

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- Using and handling fuel and oil

⇨ It is essential to stop the engine and set the control to the stop position before carrying out any work involving fuel (filling up, checking the level, draining, etc.).

⇨ Always keep suitable extinguishers ready for use in all areas where fuel is handled (storage, filling up, etc.).

⇨ Always store fuel and oil in separate cans specially designed for the purpose and bearing the labels required by regulations. They must be stored in a safe place, well away from all types of fire hazard.

⇨ Each time a machine is started up, and while it is running, make sure that there are no fuel leaks from any part of the machine. If a leak is suspected, stop the engine immediately and do not restart the machine until the leak has been repaired.

⇨ Never carry out any work on a fuel tank or handle fuel to fill a tank, or for any other reason, in an area where there could be a fire hazard (such as a burning cigarette, a blowtorch, sparks, etc.) or substances that are incandescent or at a high temperature (such as welding spatters, slag, clinker, etc.). All such work must always be carried out outdoors or in a well-ventilated area.

⇨ Always turn all mobile phones off while filling a tank with fuel or handling fuel.

⇨ Carefully tighten the fuel filler cap each time, and check that no fuel leaks from it.

⇨ Always remove a filler cap slowly, to enable any internal pressure to be released without spraying any fuel out. Take special care if the surrounding temperature is high.

⇨ When putting fuel in a machine that has heated up, never fill the tank completely. Do not put in more than three-quarters of the tank capacity.

⇨ If fuel starts to boil in the tank when putting fuel in a machine that has heated up, screw the cap on again immediately and leave the machine to cool down.

⇨ Make sure the fuel used is suitable for the type of engine on the machine. See the user manual for the engine.

⇨ Do not inhale fuel vapour.

⇨ If it is necessary to drain the fuel tank, pour the fuel into a container designed for the purpose and bearing the labels required by regulations. Always close them tightly, even if they only contain a small quantity. Never use a glass container.

⇨ Never use fuel for cleaning work. Use only non-flammable, non-toxic products that are harmless for the user and the equipment.

⇨ If fuel has been spilt near the filling area for any reason, clean it up immediately. Clean straightaway any spillage of fuel on the skin. Make sure no fuel has been spilt on your clothes; otherwise, change clothes immediately. Remove all rags or other materials used to wipe fuel, and store them in a safe place well away from all sources of heat or combustion. Move the machine well clear of any spilt fuel before starting it up (at least 6 metres away), and do not move any closer to the area while the engine is running.

IN CERTAIN CASES HANDLING OIL CAN GIVE RISE TO THE SAME TYPE OF RISKS AS HANDLING FUEL. IT IS THEN ESSENTIAL TO TAKE THE SAME PRECAUTIONS WITH OIL AS THOSE SET OUT ABOVE FOR FUEL.

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- The operator and the machine

⇨ Before putting the machine into service each time, check that its condition and its operation are in compliance with the instructions.
In particular, make sure that the controls are free and in good working order, and that they are in the "stop" or "neutral" position. Never make any modifications that could affect correct operation of the control systems.

⇨ All the protective elements must be kept carefully in place and in good condition.

⇨ Always keep the machine clean and remove any accumulated dust, especially if it could absorb flammable products.

⇨ Always move forwards when working.

⇨ When working, always hold the machine with both hands to ensure control at all times, and to be able to use it in full safety.

⇨ Never bring a machine close to a flame or a source of heat.

⇨ The machine must never be positioned close to hot or protruding elements that could damage some parts (tanks, exhaust, housings...).

⇨ Never move away from a machine while the engine is running, even when it is idling. Stop the engine immediately if the machine is not in use. After stopping the engine, wait until all moving parts have come to a complete stop.

⇨ Work on the electrical installations on the machine can only be carried out by suitably qualified persons.

⇨ Read and make sure you fully understand all the signs placed on the machine, and always comply with all the instructions.

⇨ The signs placed on the machine include pictograms, manufacturer's plates, and instruction labels. Make sure they are kept clean and replaced if they have been damaged, or if they are missing or illegible. If one of these elements is on a part that is to be replaced, a new element must be present on the replacement part. Please contact us on this subject.

THE MACHINE MUST NEVER BE USED FOR A PURPOSE OTHER THAN THAT FOR WHICH IT IS INTENDED

NEVER TOUCH A MOVING PART WITH A TOOL, OR WITH THE HAND, OR WITH ANY OTHER PART OF THE BODY

IT IS **ESSENTIAL TO STOP THE ENGINE** AND SET THE CONTROL TO THE STOP POSITION BEFORE CARRYING OUT :

- ANY **HANDLING** WORK
- ANY WORK TO **CHANGE TOOLS OR SOCKETS**
- ANY **WORK INVOLVING FUEL** OR **OIL** (FILLING, TOPPING UP, CHECKING LEVELS, ETC.)
- ANY **REPAIR, MAINTENANCE OR CLEANING** WORK

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- Tools to be used on the machine

  ⇨ Use only the types of tools intended for normal use of the machine.

  ⇨ Measure the speed of all rotating tools at regular intervals.

  ⇨ Never use tools at speeds greater than the maximum speed for which they have been designed and approved.

  ⇨ Never use damaged tools or tools that have reached their maximum level of wear.

- The engine on the machine

  ⇨ Never touch the hot parts of the engine, and especially the exhaust pipe. If it is necessary to work on the engine, wait until it has cooled down.

  ⇨ Check the engine rotation speed at regular intervals, and especially after fitting tools or reassembling the machine. Adjust if necessary.

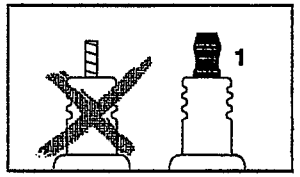
  ⇨ Never exceed the speed shown in the technical specifications.

  ⇨ After starting with the choke, remember to return the choke to the normal running position.

  ⇨ Never wind the starter rope around your hand, and never release it suddenly.

  ⇨ If the machine does not operate correctly after the engine has been started, stop the engine and inform the head of maintenance.

  ⇨ For petrol engines, use only spark plugs whose tops are as shown in drawing 1 opposite. If the plug is fitted with a screw top, make sure the top is fully tightened. After fitting the spark plug, make sure that the plug cap is in good condition and that it stays firmly on the plug. Carefully check the fastening system to make sure that no sparks can be formed.



- Using trolleys

  ⇨ A machine designed to work on a trolley must not be used without the trolley. The trolley is thus an integral part of the machine. The machine and the trolley must not be used separately.

  ⇨ Trolleys whose use is dedicated to a machine must never be used to transport equipment or personnel, or attached to a vehicle.

  ⇨ Before fitting the machine on its trolley, it must be placed correctly on the track to ensure that it can run freely. If it is on a sloping section of track, make sure the trolley is kept immobile while the machine is being put on the track or taken off it.

  ⇨ Attention, the trolley takes up the full width of the track and can cause injuries to the legs if it hits someone.

1.4 Special safety rules

The main hazards that type "MV3" vertical track grinders can cause are as follows:

- fires subsequent to handling of fuel;
- fires caused by sparks igniting flammable materials;
- violent disintegration of grindstones used under abnormal conditions;
- injuries caused by projected sparks (you should make especially sure that you protect your eyes) or, possibly, projections of grindstone debris;
- severe burns if a part of your body comes into contact with the grindstone while it is running;
- inhalation of particles generated by grinding (wear a protective appliance that prevents you from breathing-in such particles).

IMPORTANT

Because the motor is able to tilt while you are working, you absolutely must obey the rules below:

- ➢ Always return the grindstone to the vertical position, stop any grinding and stop the motor before removing the cap from the fuel tank.
- ➢ Never fill the fuel tank to more than ¾ of its capacity (to prevent fuel leakage when the motor is tilted while running).
- ➢ Never perform an operation on a fuel tank or handle fuel, whether for filling or any other reason, in an area where there may be the following hazards: a source of fire (for example, a lit cigarette, a blow torch, sparks, etc.) or material that is either incandescent or at a high temperature (for example, remains from welds, various forms of dross and slag, etc.). Always perform these tasks outdoors and in properly-ventilated premises.
  Properly lock the fuel tank cap into position after each time you open it, and make sure that it does not allow fuel to leak out.
- ➢ Refer to sections §1.2 "Safety rules and general use" and §1.3 "General safety requirements"

CHAPTER 2 – DESCRIPTION OF THE MACHINE

2.1 General

Manufacturer:	SOCIETE TURRIPINOISE DE MECANIQUE Route d'Italie 38110 LA TOUR DU PIN
Description of the hardware:	Vertical track grinder
Type:	MV3

The type MV3 vertical track grinder is designed for grinding the running surface of the rail, grinding welded joints, and grinding the rail head.

The grinding head tilts to ±30° from vertical (it indicates the degree tilt on a graduated scale) and so it also lets you work on part of the blending radii.

Its exceptional performances and robustness bring the operator optimal working convenience.

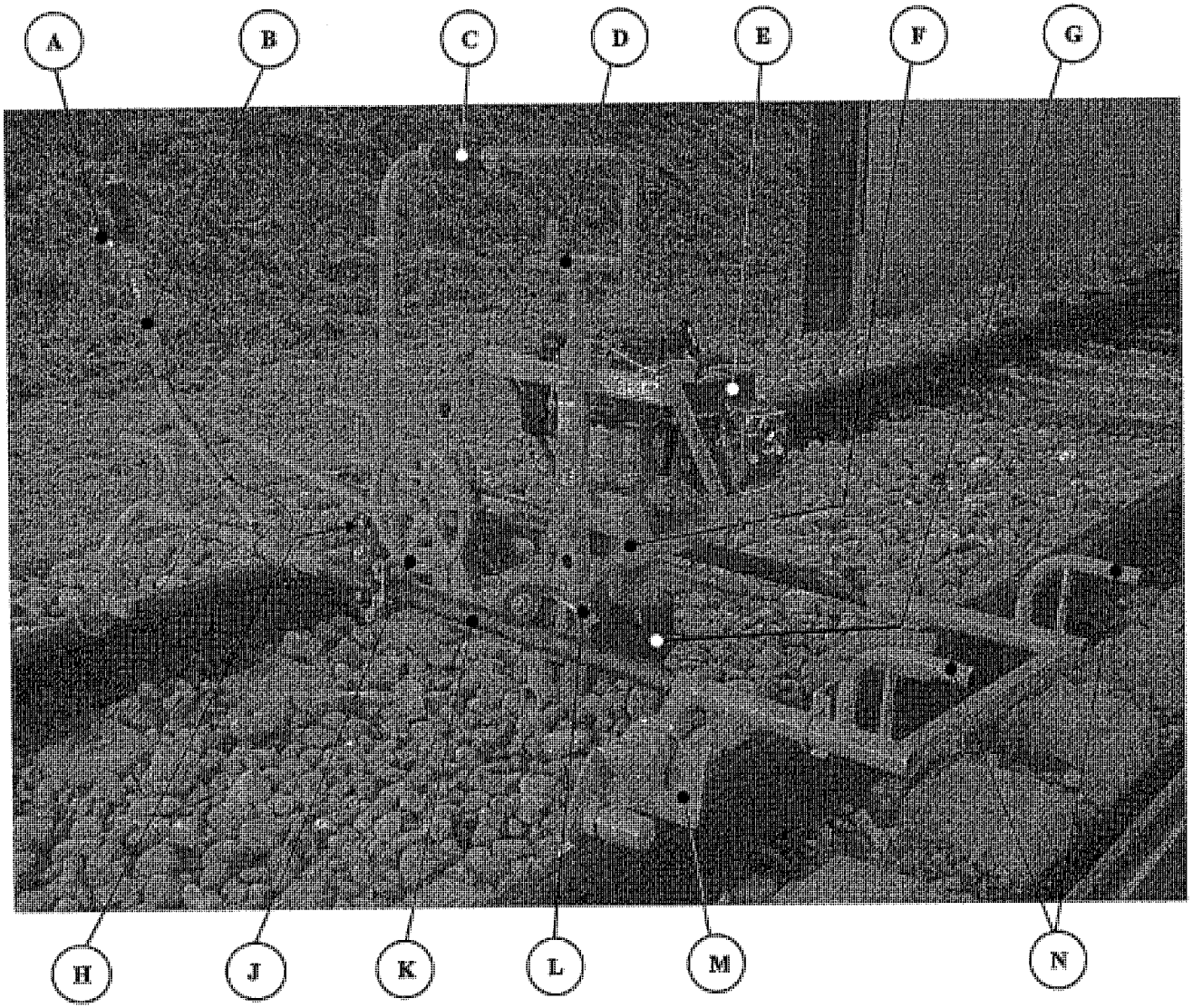
Its whole design is based on the most modern technologies available in the machine tools industry.

The combined movements of its two carriages, which move in two perpendicular directions, means you get access to a very wide working area:

- lengthwise along the track (4-wheel travel carriage);
- perpendicularly to the track (mounting carriage of the machine's grindstone holding mechanism).

The grindstone moves both horizontally and vertically.

2.2 Overview



Ref.	Description
A	Driving handle for locking liberating
B	Operating lever
C	Working handle
D	Grinding wheel downward travel adjuster
E	Engine
F	Grinding head
G	Grinding wheel guard
H	Transversal pawl locking
J	Grinding head angle adjustment wheel
K	Guiding column
L	Graduated sector
M	Spark guard (x2)
N	Carrying handle (x4)

2.3 Technical data

Machine dimensions		
Length / width / height	mm	2140 / 1100 / 1030
Weight		
Machine only (weight empty)	kg	114
Machine (ready for use)	kg	117
Noise		
Acoustic pressure level	dBA	85
Acoustic power level	LwA	99
Vibrations		
Level of vibration	$m.s^{-2}$	Operating lever = 3,9 / Working handle = 3,6
Engine		
Model	.....	HONDA GXV340
Power rating	ch	11 (soit 8,1kW) at 3600rpm
Fuel	.....	Petrol
Fuel consumption	gr /ch/h	230 (313 g/kW.h)
Fuel tank capacity	liter	2,3
Starting	.....	Automatic return cord starter
Machine		
Motor adjustment speed (maximum speed)	rpm	3600
Grindstone running speed	rpm	3600
Maximum diameter of grindstone	mm	150
Grindstone		
Outside diameter	mm	150
Inside diameter	mm	55
Height	mm	72
Authorized grindstone running speed	rpm	6370
Authorized grindstone peripheral speed	m/sec	50
Composition of grindstone	.....	Resinoid grindstone (grindstone composed of synthetic binders)
Heightwise grindstone travel	mm	200

CHAPTER 3 – INSTALLATION AND USE

3.1 Foreword

To be sure that you use the machine in compliance with the rules in §1.2 "Safety rules for general use" and §1.3 "General safety requirements", it is essential that you install and use it following the steps explained in §3.2 to 3.5.
The step explained in §3.2 ("Initial remounting") should be performed before initially starting-up the machine (or, if the machine has been disassembled, before putting it into storage).
The steps explained in §3.3 to §3.5 (« Initial reassembly » ; « Installing the machine on the rail » ; « Inspecting the machine » ; « Installing the grindstone ») should be performed each time before you use the machine.

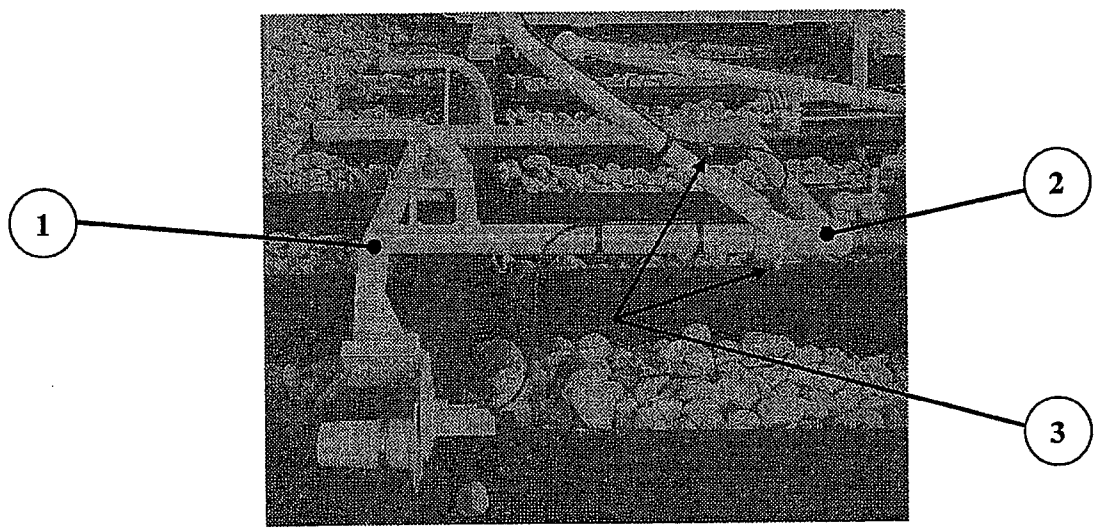
3.2 Initial reassembly

In order to reduce the size of the machine before packaging, it may be that the roller rear mounting, Ref.①, has been dismounted.

If this is the case, you have to undertake initial reassembly, so that the machine is rendered operational.

To reassemble the machine, proceed as follows:

- Insert the roller rear mounting, Ref.①, into the machine's chassis Ref.②.
- Insert the 2 securing bolts, Ref.③, into the housing provided for the purpose (holes going through the 2 tubes).
- Screw-in and tighten the 2 securing bolts (13 mm wrench).



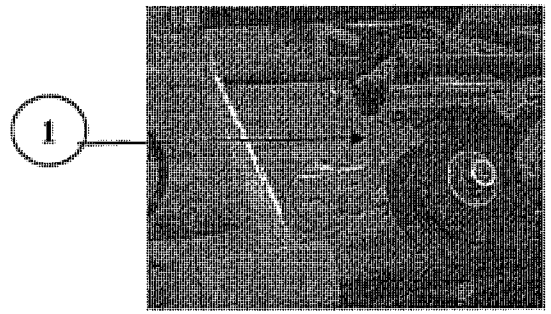
3.3 Installing the machine on the rail

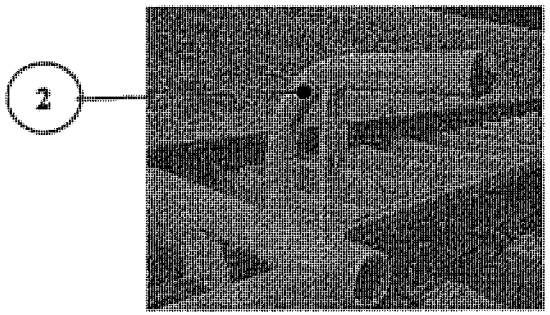
Before performing any handling operation, sideways movement of the machine's moving assembly must be immobilized by means of the ratchet mechanism, Ref.①.

The track grinder can be installed on or near a railway track, using a crane or any other lifting device with a strength exceeding 1000N, by means of the lifting rings Ref.② (x4) at the four extremities of the machine (between the chassis and the holding arms).

The "MV3" type rail grinder can also be positioned manually by means of the 4 carrier handles, Ref.③, located on either side of the machine. Positioning can be done by two people. But if access to the work area is difficult, then a sufficient number of people should move the machine to ensure that the job can be done SAFELY.

Once the machine is positioned on the railway track, it should be immobilized so that it does not move of its own volition and injure someone by hitting them. If the machine is equipped with a roller securing system (refer to Chap.6 "Optional hardware"), then make sure it is actuated; if not, then use chocks where appropriate.





THE MOTOR MUST BE SWITCHED OFF BEFORE MOVING THE MACHINE ONTO AND OFF THE RAILS

3.4 Inspecting the machine

Each part of the machine must be examined by a person with the appropriate skills before starting-up, so as to identify any problems.
This inspection mainly involves a visual and functional check.

The inspection phase will let you make sure that the various parts are safe, and that they have not been damaged during transportation and storage.

- ***Check the fabricated assemblies*** (only do this with the motor switched off)

  Visually check that there are no exterior defects, distortion, surface cracks, wear or corrosion marks.

- ***Check levels*** (only do this check with the motor switched off)
  - Fuel level: check the fuel level, and top-up where necessary (⚠: make sure you do read §1.3 "General safety requirements", sub-section §: "Using and handling fuel" before you do any operation).
  - Motor oil level: check the motor oil level by inspecting the dipstick, and top-up where necessary. The level should be slightly below the maximum level mark on the dipstick, but never higher.

- ***Check the safety devices***

  Switch on the motor (⚠: make sure you do read §4.1.2 "Switching the motor on and off"), and check that the safety devices work properly (remote motor shutdown).

STOP

IF YOU IDENTIFY A PROBLEM WHILE DOING THIS VISUAL INSPECTION OR WHEN YOU ARE USING THE MACHINE, THEN THE MOTOR MUST BE RESTORED TO PROPER WORKING ORDER BY APPROPRIATELY-SKILLED PERSONNEL OR BY THE MANUFACTURER BEFORE IT IS USED AGAIN.

3.5 Installing the grindstone

The grindstone should be installed by following the procedures described in 5.1.3 "Mounting and dismounting the grindstone".

THE GRINDERS YOU USE SHOULD MEET THE TECHNICAL SPECIFICATIONS STATED IN § 2.3 "TECHNICAL DATA / GRINDER».

CHAPTER 4 - USE

4.1 Conditions of use

4.1.1 Safety rules to observe before and during use of the type "MV3" grinder

- In addition to the clothing stated in section §1.3 "General safety requirements / The operator's environment", people using this equipment must also wear: masks or glasses; helmet; apron; gaiters or boots made of fireproof material.
  Similarly, you are recommended to use a means of protection to prevent you from breathing-in dust from grinding.
- Do not use damaged grindstones or grindstones with splits or cracks
- When using a new or newly-remounted grindstone, run the machine for 30 seconds without doing any grinding. When doing this test, make sure that all people apart from the actual operator are at a safe distance away from the machine; only the actual operator should be at the machine's controls, staying out of the plane of rotation of the grindstone and remaining ready to stop the machine if necessary.
- During grinding, do not position yourself in direct line of contact with sparks from grinding. If necessary, set-up a screen that prevents the jet of sparks from reaching anywhere hazardous (danger of starting a wild fire during summer weather).
- Do not allow impacts on the grindstone while working; this could cause it to violently disintegrate.
- Make sure that the grindstone never comes into contact with a crosspiece or ballast, or any other foreign object.
- Before starting the machine, check that the grindstone protective cover is in satisfactory condition and is properly secured. Never make any modifications to it.
- Always install a new cover after a grindstone has violently disintegrated and whenever it no longer seems strong enough.
- Perform measurements of running speed at regular intervals of time, notably after reassembling the machine, and correct if necessary.
- Only used authorized types of grindstones, as regards both size and composition.
- Never use grindstones at speeds higher than the maximum speed recommended by the manufacturer, which should be marked on each grindstone.
- Before taking the machine off the rails, or between two grinding sequences requiring you to move the machine, always switch the motor off and immobilize sideways movement of the machine by using the ratchet mechanism provided for the purpose.

ONLY USE GRINDERS:

→ of which the maximum rated speed is higher than the maximum running speed of the grinder holding shaft, which is marked on the machine.

→ of which the outside diameter is less than or equal to the maximum authorized diameter, which is marked on the machine.

→ Autorized by the regulation in application for this type of machine.

4.1.2 Starting-up and shutting-down the machine

Refer to the manufacturer's documentation for the motor in order to identify the position of the controls to be used for switching it on and off.

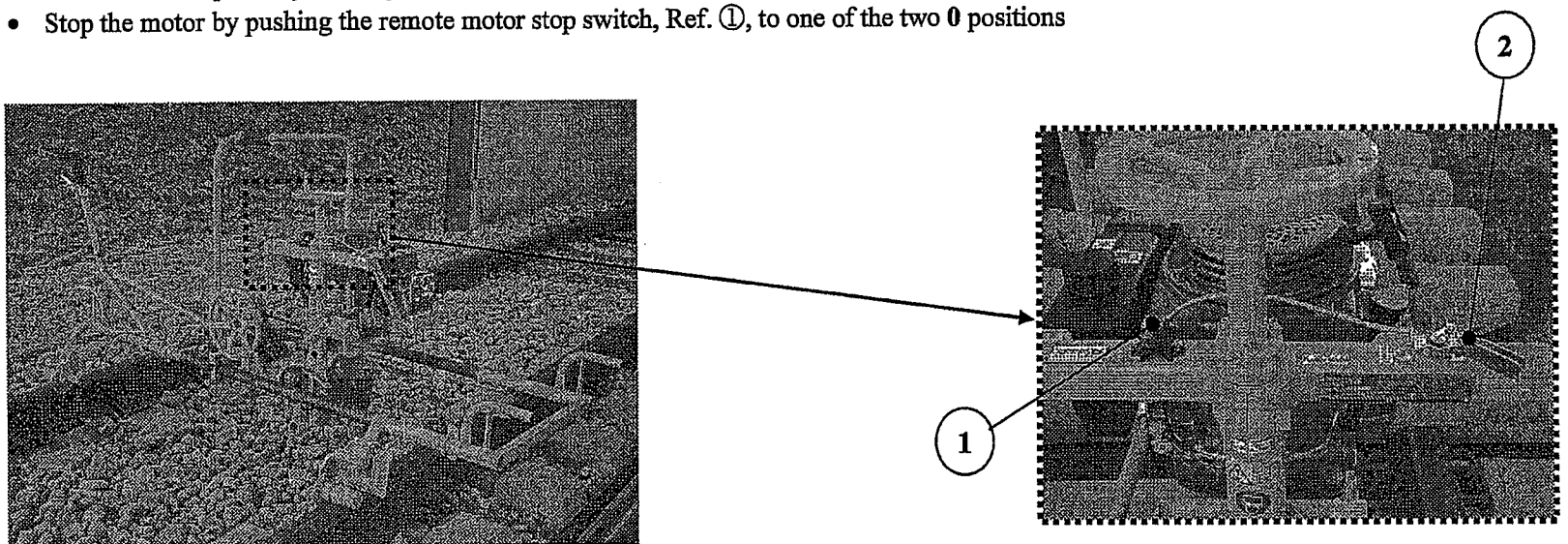
The motor should be switched on and off (under normal conditions of use) only when the grinding head is in the vertical position and there is a gap of at least 3 mm between the top surface of the rail and the grindstone.

➔ Starting-up:

- Check that the remote motor stop control, Ref.①, is in the correct position **1**.
- Start the motor and leave it running at idling speed for a few seconds, until it reaches stable running speed and the motor temperature rises.
- Once the motor has warmed-up, increase the motor running speed by moving the accelerator lever, Ref.②, to the fast (or high speed) position.

➔ Shutting down the machine :

- Raise the grindstone by around 3 mm.
- Reduce motor speed, by moving the accelerator lever, Ref. ②, to the slow (or low speed) position.
- Stop the motor by pushing the remote motor stop switch, Ref. ①, to one of the two **0** positions



THE MACHINE SHOULD ONLY BE STARTED ONCE IT HAS BEEN INSTALLED ON THE TRACK

4.1.3 Operator's work area

The machine is designed so that all controls are within reach of the operator.

Therefore, the operator's work area Ref. Ⓣ is within the track footprint (between the two rails), as shown in Fig.1.

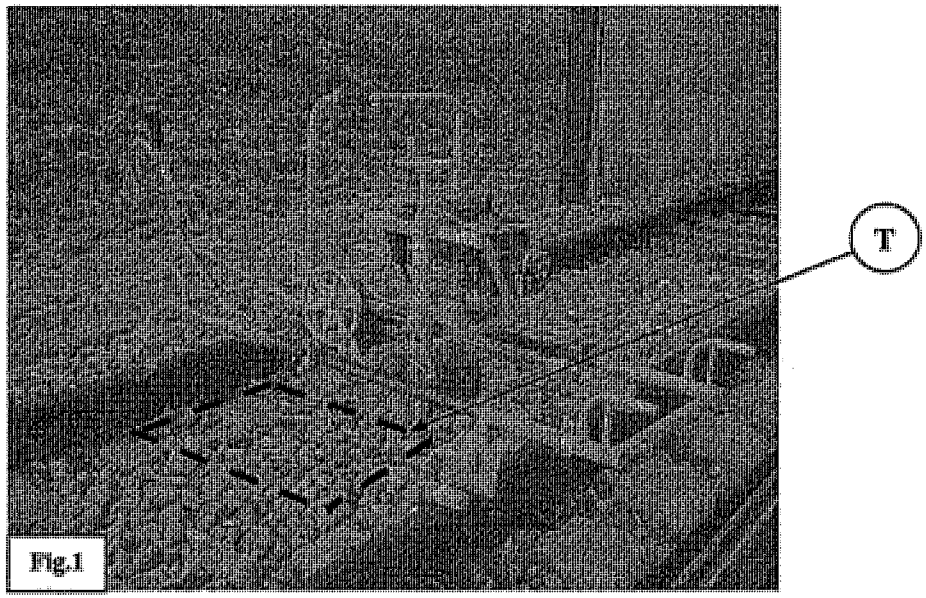


Fig.1

4.1.4 Operation of the machine

In order to explain how the machine works, instructions are given below for the various steps of a grinding operation, explaining for each step: what controls to use, and the location of each of these controls.

The steps involved in a grinding operation are:

①➢ Movement of the grinding head onto the area to be ground.

(① bis ➢ Tilting of the grinding head (optional step to be performed for grinding a part of the blending radii).

②➢ Lateral locking of the grinding head.

③➢ Adjustment of the grindstone height.

④➢ Grinding in successive passes.

- 1) ➢ Movement of the grinding head onto the area to be ground

In order to perform this movement, operate the ratchet mechanism, Ref.⑤, which immobilizes the grinding head on the sideshifter carriage, and then use the control lever, Ref.②, to bring the grindstone into position above the area to grind.

If the grinding operation you want to do is to grind the running surface, leave the grinding head in the vertical position and proceed to step 2. If not, (for grinding part of the blending radii), refer to step 1) bis before proceeding with the next step.

- 2) ➢ Lateral locking of the grinding head

Once the grindstone is positioned precisely above the area to grind, lock lateral movement of the grinding head, using the lever, Ref.⑥.This makes it easier to do the grinding operation, which means you will be able to do a grinding operation of better quality.

- 3) ➢ Adjustment of the grindstone height

Once the grinding head is properly positioned and locked above the area to grind, start the motor (⚠: make sure you do read §4.1.2 "Starting-up and shutting-down the machine").

Next, operate the grindstone lowering wheel, Ref.④, in order to bring the grindstone into light contact (you should see just a few sparks) with the surface to grind.

- 4) ➢ Grinding in successive passes

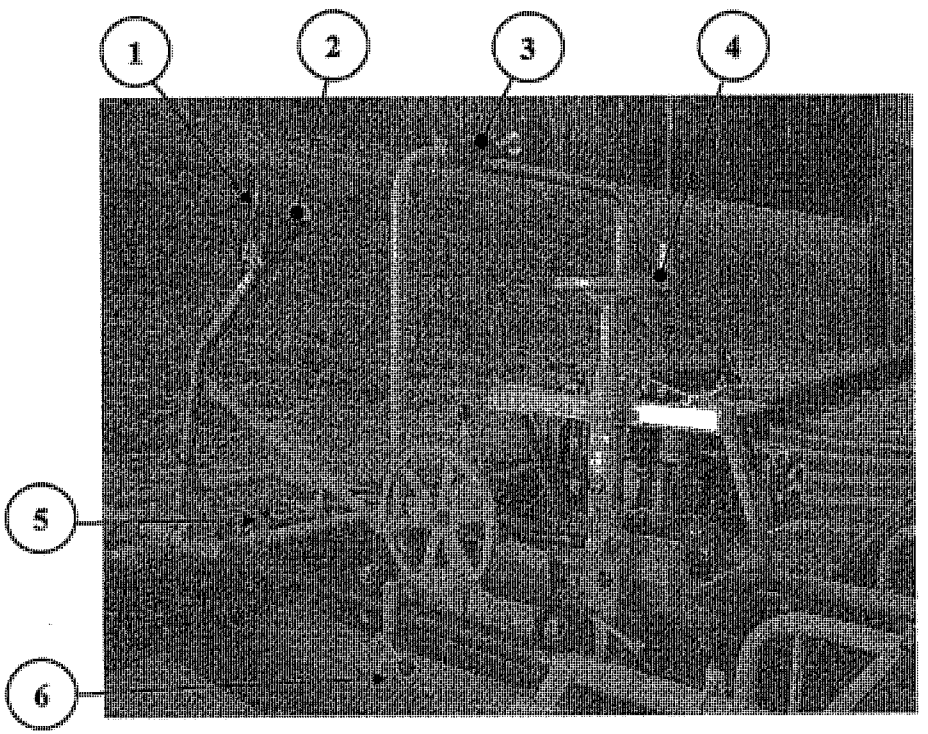
Now proceed with the grinding operation in successive passes, inducing a short back-and-forth movement of the grinder along the rail.

To perform a longitudinal movement of the machine, you have to combine two actions simultaneously:

- operate the handle, Ref.①, with one hand, so as to release longitudinal movement of the machine.
- take hold of the working handle, Ref.③, with your other hand, in order to move the grinder along the rail.

Because the grindstone is pressed onto the rail by means of the grindstone lowering wheel, Ref.④, perform successive passes by operating it delicately. Excessive pressure on the grindstone could cause it to break apart.

In addition, because the grinder does not have a downward travel limiter, you should be particularly careful to ensure that the grindstone does not descend lower than the rail running surface and make a hollow in it.



- 1bis) ➢ Tilting of the grinding head

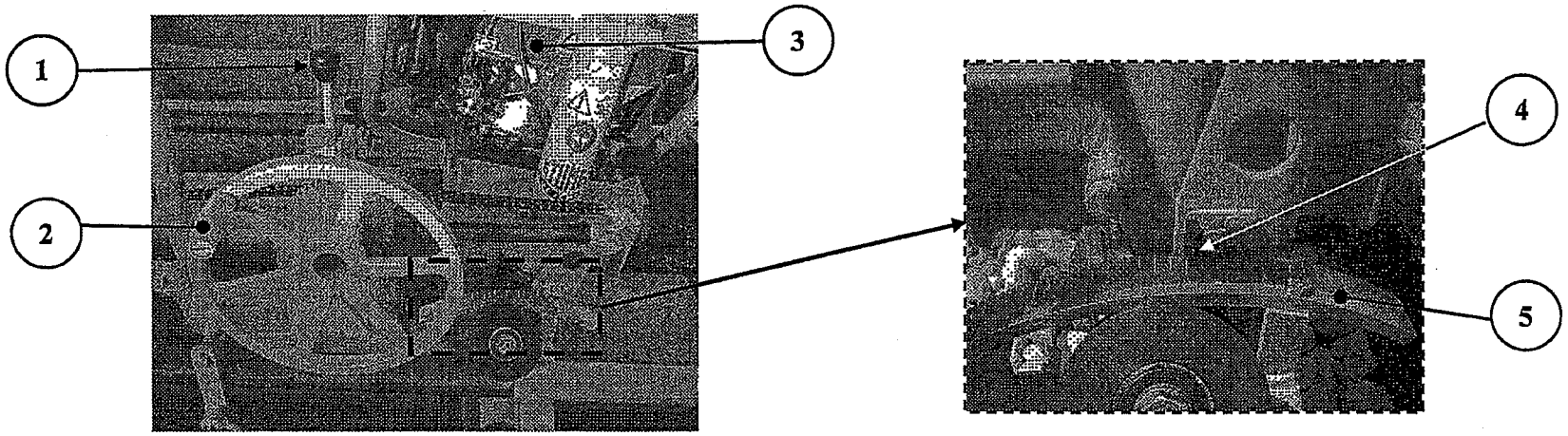
The tilting of the grinding head is an optional step that you can use to grind a part of the blending radii.

Lift the locking ratchet mechanism lever, Ref.①, and operate the tilt wheel, Ref.②, to adjust the tilt of the grinding head to the desired setting. The marker Ref. ④ moves on the graduated scale Ref.⑤, to indicate the tilt angle. Lock the wheel by lowering the ratchet mechanism lever, Ref.①.

You must follow the advice below in order not to grind a hollow in the rail:

- always raise the grindstone to a sufficient height above the rail (to prevent it coming into contact with the rail) each time you change the tilt of the grinding head (so that the grinding head rotation shaft is not in the center line of the rail).

Once you have adjusted the tilt of the grinding head to the desired setting, resume the grinding operation at step n°2.



4.1.5 Taking the machine off the track

- Raise the grindstone so that there is at least a 3 mm gap between it and the top surface of the rail.
- Bring the grinding head back to the vertical position.
- Lower the motor running speed, and then stop it.
- Move the moving assembly back rearwards. The locking ratchet mechanism will automatically prevent transversal movement of the assembly.
- Once you have performed these operations, remove the machine from the track.

➔ Removing the machine from the track can be done by two people. However, if you only have difficult access to the work area, then a sufficient number of people should do the job to ensure that it can be done in proper SAFETY.

4.2 Storage

4.2.1 General instructions for storage

During periods when the equipment is not being used, it is essential to store it correctly in order to maintain its original condition. Equipment that is not stored correctly may cause damage when next used. Therefore it is important that personnel responsible for storage operations take the greatest care in carrying them out and comply scrupulously with the required precautions.

⇨ Storage protection system

The choice of storage protection system depends on 2 main factors:

- length of storage
- storage conditions: storage "out in the open" (exposed to the weather) and storage "under cover" (building, closed warehouse, open warehouse, tarpaulin, etc.).

The equipment should only be put in storage after it has been run in. Arrangements must be made to allow easy access around the equipment for carrying out maintenance operations.

⇨ Storage areas

Generally speaking, areas used for the storage of equipment must provide the best possible protection against:

- dust and exhaust gases, humidity
- direct sunlight
- rapid temperature changes.

⇨ Putting into storage

The condition of equipment when it is returned to service after storage depends on the way it was prepared and protected before being put into storage:

- cleaning of the equipment (protect moving parts with grease when cleaning).
- technical inspection to find any faults.

4.2.2 Special instructions for storage

⇨ When putting the machine into long storage, empty the fuel tank.

⇨ Never store the machine with a grindstone fitted.

⇨ Store grindstones in a dry place, away from freezing, sunlight and strong heat. Position them so there are no stresses upon them, in order to prevent bowing. They should not be stored for longer than 2 years.

CHAPTER 5 – SERVICING AND MAINTENANCE

5.1 Servicing

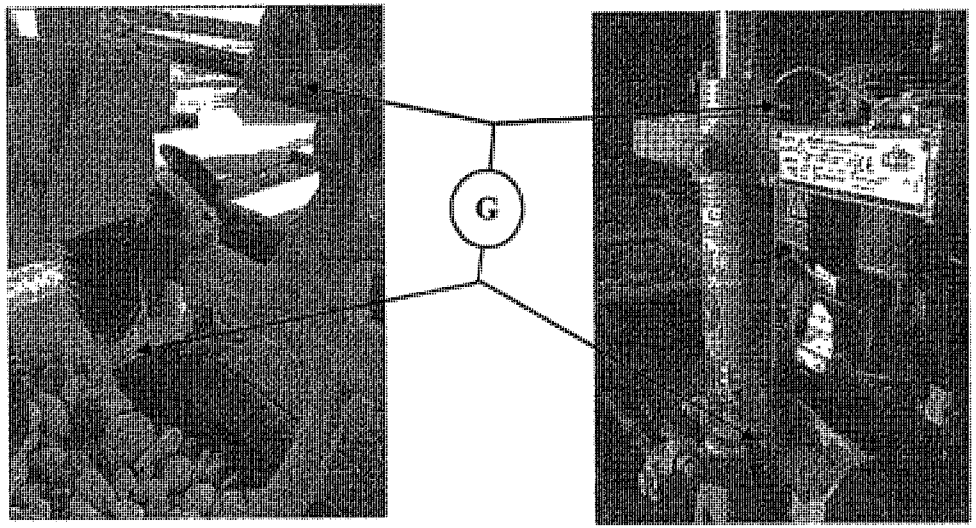
5.1.1 Motor

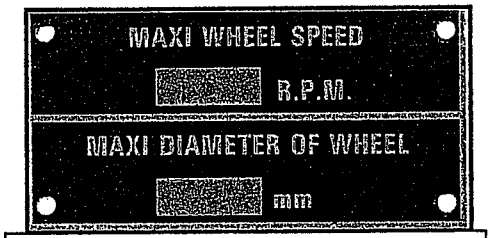
- Follow the manufacturer's instructions strictly.

5.1.2 Machine

- Make sure you keep the machine as clean as possible.
- Periodically apply lubrication at the 4 lubrication points, Ref.Ⓖ.
- Periodically oil the chain of the tilting system.
- Replace or repair any worn, damaged or missing parts immediately when there is a possible safety hazard.

IMPORTANT: **the instruction plates shown opposite must be present on the machine.**
If one of them is missing or damaged, you should immediately order a new one and mount it at the intended position.
If a component bearing instructions is replaced, make sure that another instruction plate is placed on the replacement component.





Riveted on the grinding wheel guard

Riveted on the grinding wheel guard (Refer to the overall photo to establish the direction in which to place the instruction plate)

5.1.3 Mounting and dismounting the grindstone

The operations of mounting and dismounting the grindstone should be done with the **engine switched off.**

To make these operations easier, you are recommended to tilt the grinding head to the extreme position that allows better access.

To fit a grindstone, proceed as follows:

➔ Dismounting the grindstone :

1 → Unscrew the 4 wing nuts Ref.① and lift the grindstone casing, Ref.② to the raised position.

2 → Immobilize the spindle by inserting the tooling shaft, Ref.③, into the hole provided for the purpose.

3 → Unscrew the "grindstone + grindstone holder" by hand or using a special device supplied on request (optional).

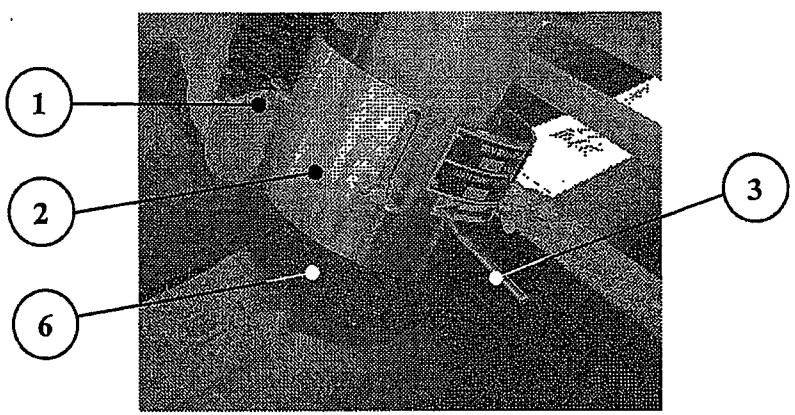
4 → Unscrew the securing bolts, Ref.⑤, in order to separate the grindstone, Ref.⑥, from the grindstone holder plate, Ref.④ (13mm flat wrench).

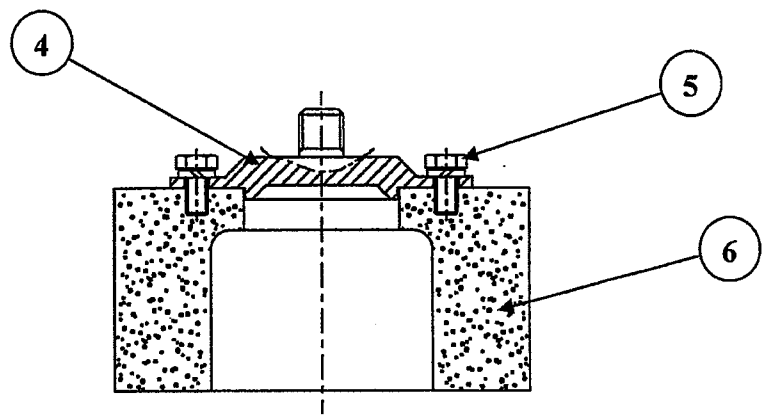
➔ Mounting the grindstone :

5 → Position the grindstone, Ref.⑥, so that its inside diameter comes to rest against the shoulder of the grindstone holder plate, Ref.④.

6 → Position the securing bolts, Ref.⑤, on the grindstone Ref.⑥ and screw them in until they come into contact. Then finish tightening them.

7 → To remount the "grindstone + grindstone holder" assembly, perform operations 1, 2 and 3 in the reverse order of dismounting.





THE GRINDSTONES YOU USE SHOULD MEET THE TECHNICAL SPECIFICATIONS STATED IN § 2.3 "TECHNICAL DATA / GRINDSTONE".

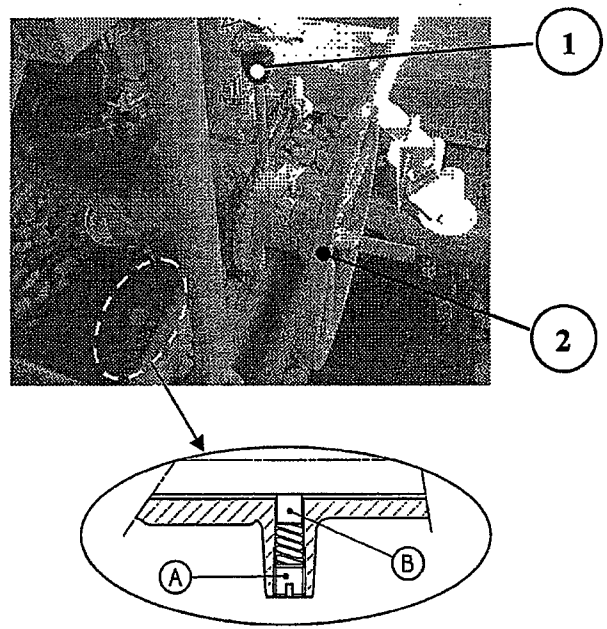
5.1.4 Tilt brake

- The tilt brake should be checked regularly to prevent excessively fast tipping of the grinding head.

  For this: - hold the wheel, Ref.②, firmly.

  - unlock the locking ratchet mechanism, Ref.①.
  - operate the wheel, Ref.②, to tilt the grinding head, and adjust the bolt, Ref.Ⓐ, until the head is maintained in all positions without having to keep it there using the wheel.

- After using it for some time, if the brake is no longer effective, repeat the above operations.
- When adjustment is no longer possible, replace the brake shoe, Ref.Ⓑ.



5.2 Preventive maintenance

PREVENTIVE MAINTENANCE SCHEDULE

ITEMS	OPERATION	TIME INTERVAL						Cross-Reference
		Each usage	First 30 hours	Each week	50 hours	6 months	300 hours	
Machine checks	Perform	X						Chap.3 - § 4
Lubrication / Oiling	Perform		X	X				Chap.5 - § 1-2
Tilt brake	Check / Adjustment			X				.5 - § 1-4

NOTE : These recommendations are not limitative. Continual surveillance of the machine and properly-organized preventive maintenance will extend the machine's working life.

CHAPTER 6 – ACCESSORIES AND OPTIONS

6.1 Optional hardware

6.1.1 Anti-vibration handles

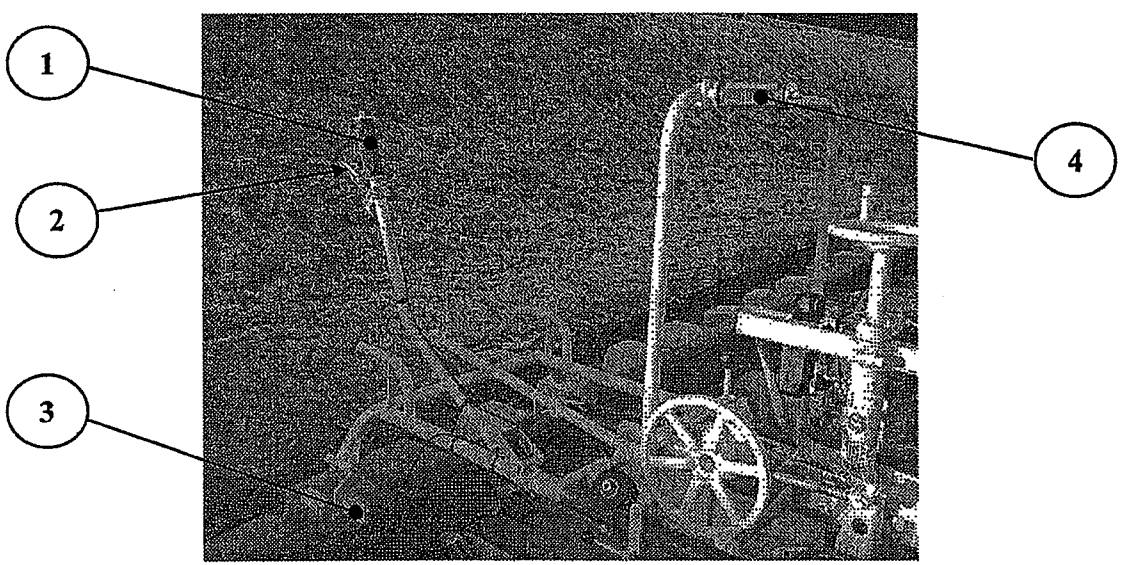
The movement and pressure-application handles, Ref.① and ④, on the machine are designed to suppress vibration.

The purpose of these handles is to:

- reduce vibration at the operator's working position;
- make the machine more comfortable to use;
- allow the machine to be used non-stop for longer.

6.1.2 Roller locking system with control bar

To prevent the machine from moving of its own volition once it has been positioned on the railway track, it is fitted with a roller locking system, Ref.③.
To use the machine, simply disable this locking system by actuating the control lever, Ref.②.



6.1.3 Adaptation for abrasive wheels

The machine can be fitted with an adaptation for abrasive wheels, so that you can remove carbon from the bonding area.

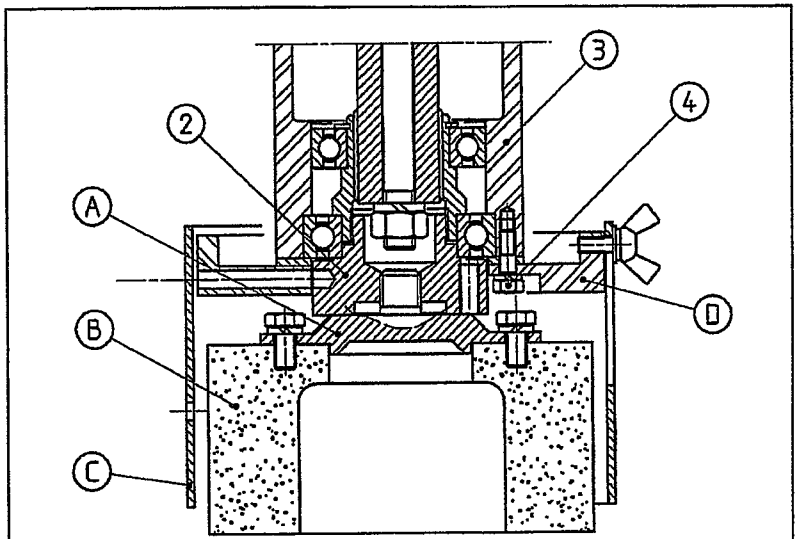
➔ Fitting the adapter (must be done with the **engine switched off**):

- unscrew the assembly comprised by the "grindstone Ref.Ⓑ+ grindstone holder Ref.Ⓐ" mounted on the motor plate Ref.② (by hand or by a special device)
- unscrew the 4 nuts, Ref.④, in order to remove the assembly comprised by "flange Ref.Ⓓ + grindstone casing Ref.Ⓒ" mounted on the spindle casing, Ref. ③ (use a 10 mm pipe wrench).
- mount the new "casing flange Ref.⑤+ abrasive wheel casing Ref.⑦" assembly on the spindle casing Ref.③, and lock it into position with the 4 nuts, Ref. ④ (use a 10 mm pipe wrench).
- fit the abrasive wheel shaft Ref.⑧, onto the motor plate Ref.②, and lock it into position using the 4 bolts Ref.⑥ (use an 8 mm wrench for CHC bolts).
- fit the 3 abrasive wheels Ref.⑨ on the shaft Ref.⑧, and place the tightening flange Ref.⑩, at the end of them. Lock these items into position by tightening the bolt Ref.⑪ (use an 8 mm wrench for CHC bolts) onto the shaft Ref.⑧ (use a 26 mm flat wrench to immobilize the shaft). Tighten the bolt Ref. ⑪, without using excessive force.

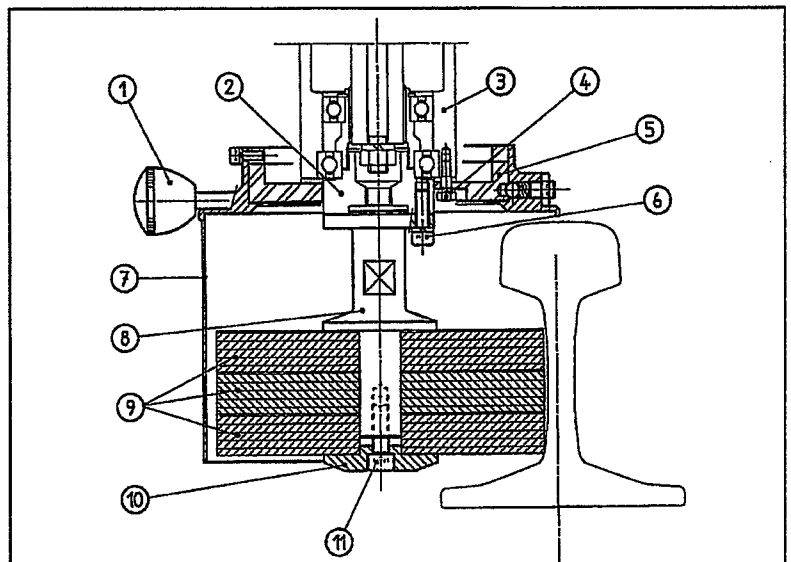
➔ ⚠ ONLY USE ABRASIVE WHEELS:

- of which the maximum rated speed is higher than the maximum running speed of the grindstone holding shaft, which is marked on the casing, Ref.⑦.
- of which the outside diameter is less than or equal to the maximum authorized diameter, which is marked on the casing, Ref. ⑦.

➔ The rotation of the casing Ref.⑦, over an angle of 180° lets you work on either side of the rail. To perform rotation, *make sure that the motor is switched off and that the abrasive wheels are no longer rotating*, take hold of the ball Ref.①, and rotate the casing until the automatic mark.



MOUNTING FOR CUP STONE



ADAPTATION FOR ABRASIVE WHEELS

6.1.4 Adaptation for bonding grindstone

The machine can be fitted with a bonding grindstone adapter so that you can perform grinding in this area.

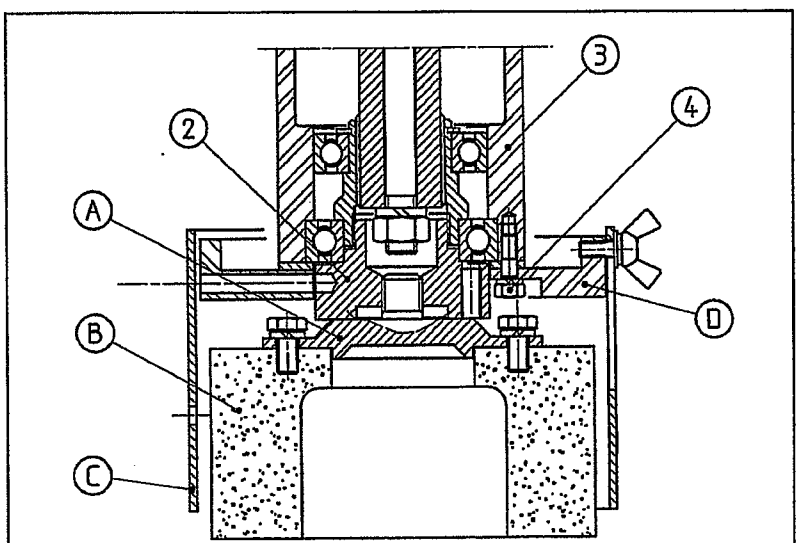
➔ Fitting the adapter (must be done with the **engine switched off**):

- unscrew the "grindstone Ref.Ⓑ + grindstone holder Ref. Ⓐ" mounted on the motor plate Ref. ② (by hand or by a special device).
- unscrew the 4 nuts, Ref.④, in order to remove the assembly constituted by "flange Ref.Ⓓ + grindstone casing Ref. Ⓒ" mounted on the spindle casing Ref. ③ (use a 10 mm pipe wrench).
- mount the new "casing flange Ref.⑤ + grindstone casing Ref.⑦" on the spindle casing Ref.③, and lock it into position with the 4 nuts, Ref. ④ (use a 10 mm pipe wrench).
- fit the grindstone shaft, Ref.⑧, onto the motor plate Ref.②, and lock it into position using the 4 bolts, Ref.⑥ (use an 8 mm wrench for CHC bolts).
- mount the bonding grindstone Ref.⑨, and the spacer Ref.⑩, on the shaft Ref.⑧. Immobilize the assembly by tightening the nut Ref.⑪ (use a 34 mm pipe wrench) onto the shaft Ref.⑧ (use a 26 mm flat wrench to immobilize the shaft).

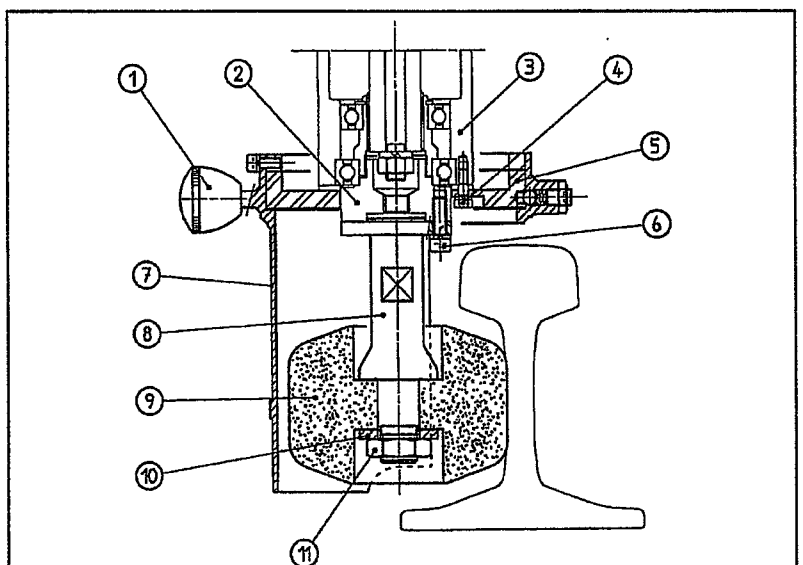
➔ ⚠ ONLY USE GRINDSTONES:

- of which the maximum rated speed is higher than the maximum running speed of the grindstone holding shaft, which is marked on the casing, Ref.⑦.
- of which the outside diameter is less than or equal to the maximum authorized diameter, which is marked on the casing, Ref. ⑦.

➔ The rotation of the casing, Ref.⑦, over an angle of 180° lets you work on either side of the rail. To perform rotation, *make sure that the motor is switched off and that the grindstone is no longer rotating*, take hold of the ball, Ref.①, and rotate the casing until the automatic mark.



MOUNTING FOR CUP STONE



ADAPTATION FOR BONDING GRINDSTONE

CHAPTER 7 – SPARE PARTS CATALOG

7.1 Drawings and parts lists

GEISMAR
STUMEC

IMPORTANT

Afin que votre commande de pièces de rechange soit suivie d'une livraison prompte et correcte, bien indiquer :

- Le rep., le nombre et la désignation des pièces de rechange
- Le type et le n° de série de la machine (plaque sur le châssis)

****

IMPORTANT

To ensure that you are delivered promptly and correctly after placing an order for spare parts please state:

- the Reference, number and description of the spare parts
- the type and serial number of the machine (to locate this number, look at the plate on the chassis)

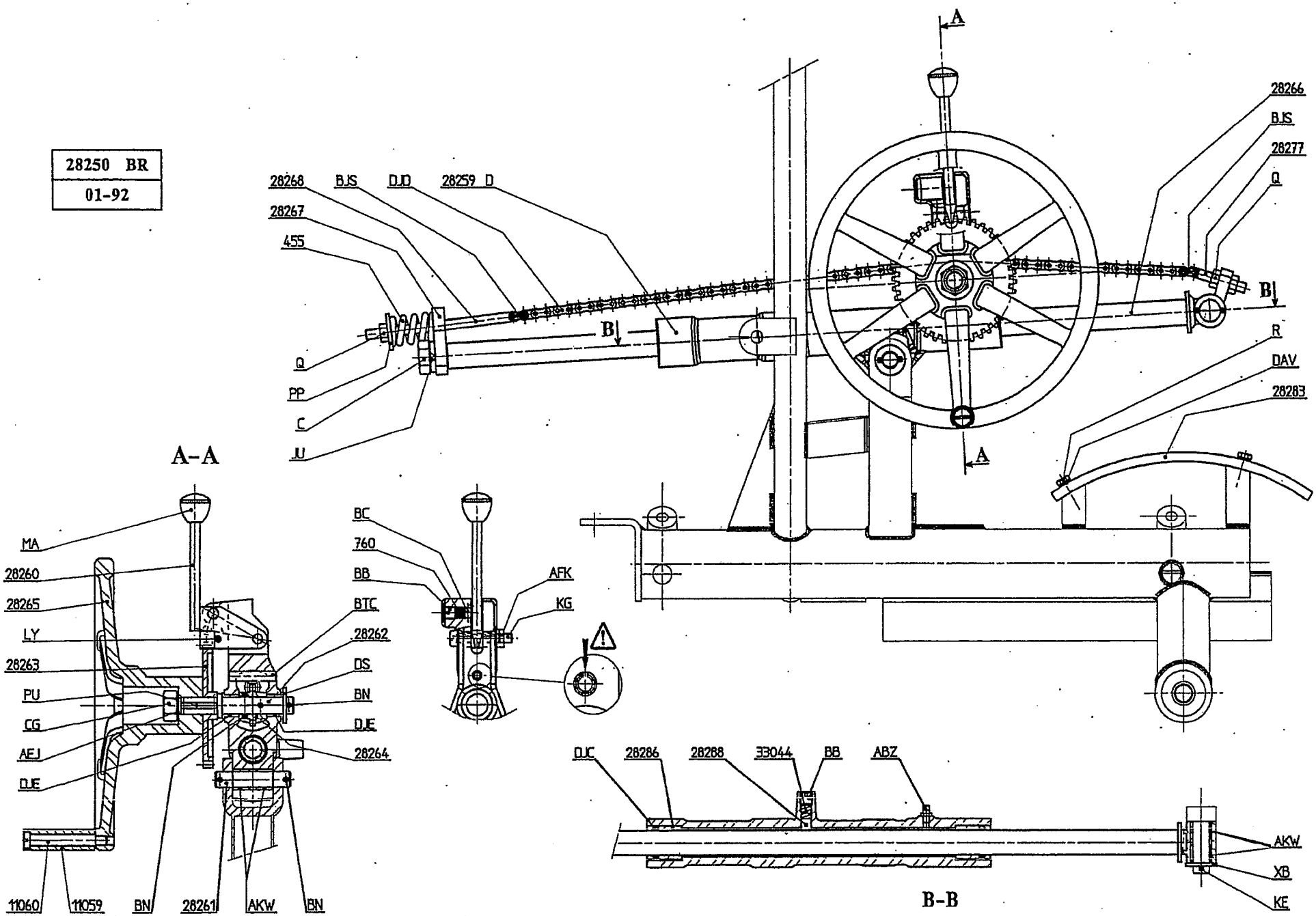
****

WICHTIG

Um uns eine schnelle und fehlerlose Erledigung lhres Ersatzteil-Auftrages zu erlauben, bitten wir Sie um folgende Angaben :

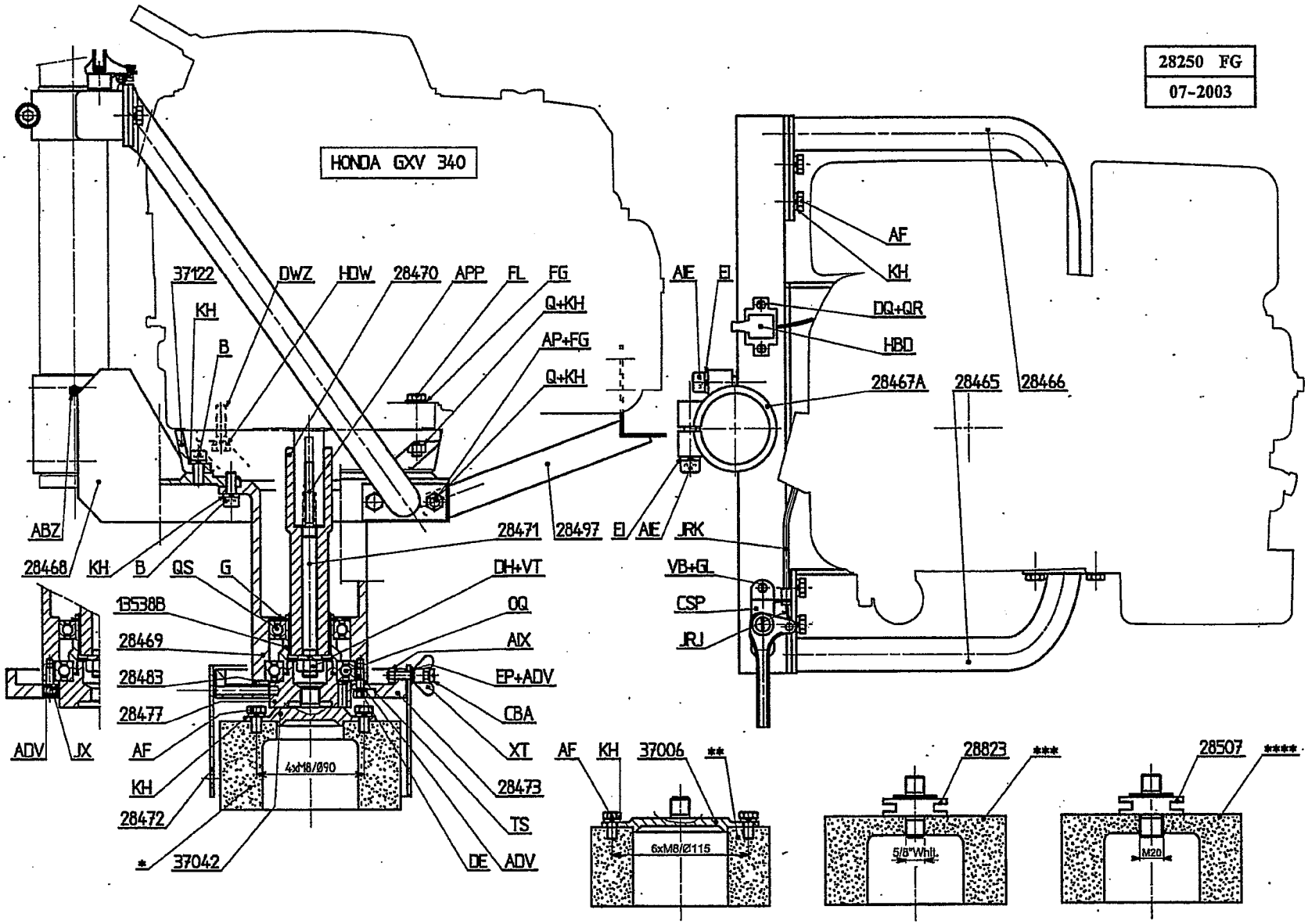
- Seriennummer und Baujahr der maschine
- Benennung und Bestellnummer der Ersatzeile

28250 BR
01-92



Ref.	Qty	Description
455	1	Pressure spring
760	1	Spring
11 059	1	Handwheel handle
11 060	1	Handle axle
28 259 D	1	Inclination mechanism support
28 260	1	Ratchet
28 261	1	Axle 14 x 62
28 262	1	Inclination axle
28 263	1	Pinion 40 D
28 264	1	Chain pinion
28 265	1	Inclination handwheel
28 266	1	Inclination adjustment rod
28 267	1	Hooking plate
28 268	1	Hooking rod
28 277	1	Adjustment rod
28 283	1	Graduated sector
28 286	2	Inclination support ring
28 288	1	Brake pad
33 044	1	Brake spring

Ref.	Qty	Description
C	1	Screw 16 x 30
Q	2	Nut H 8
R	2	Screw H 6 x 20
BB	2	Split screw 3 x 25
BC	1	Steel-ball Ø 8,731
BN	5	Elastic pin 3 x 20
CG	1	Nut H 14
DS	1	Washer M 14
JU	1	Washer W 16
KE	1	Elastic pin 4 x 25
KG	1	Screw Chc 8 x 45
LY	1	Elastic pin 5 x 15
MA	1	Bakelite knob dia. 25
PP	1	Washer Ø 9 x 30 x 3
PU	1	Key BR 5 x 5 x 30
XB	1	Washer Z 14 U
ABZ	1	Lubricator M 6
AEJ	1	Fan washer
AFK	1	Stop-nut H 8
AKW	4	Self-lubricated ring 18 x 24 x 22
BJS	2	Connecting link 3 N chain
BTC	1	Elastic pin 8 x 40
DAV	2	Fan washer DI 6
DJC	2	Scraper joint 21 x 28
DJD	1	3 N chain, pitch 9,525 mm 61 links
DJE	2	Self lubricated ring 14 x 18 x 14


28250 FG
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HONDA GXV 340
37122
DWZ
HDW
28470
APP
FL
FG
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B
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AP+FG
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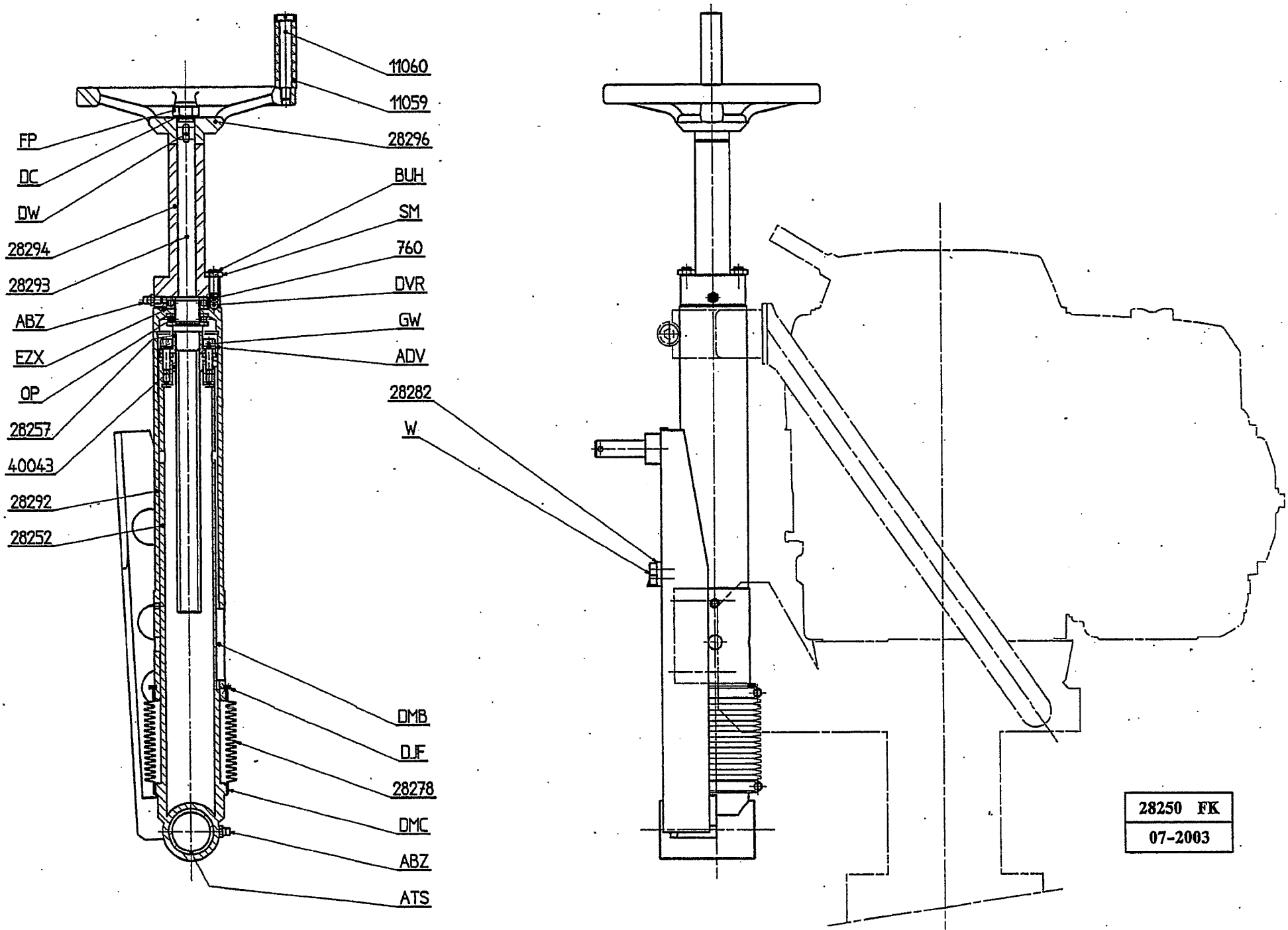
HBD
28467A
28465
28466
ABZ
28468
KH
B
QS
G
28471
28497
EI
AIE
JRK
DH+VT
OQ
AIX
EP+ADV
CBA
XT
28473
TS
DE
ADV
VB+GL
CSP
JRJ
13538B
28469
28483
28477
AF
KH
28472
*
37042
4xM8/Ø90
ADV
JX
AF
KH
37006
**
6xM8/Ø115
28823
***
5/8"Whit.
28507
****
M20

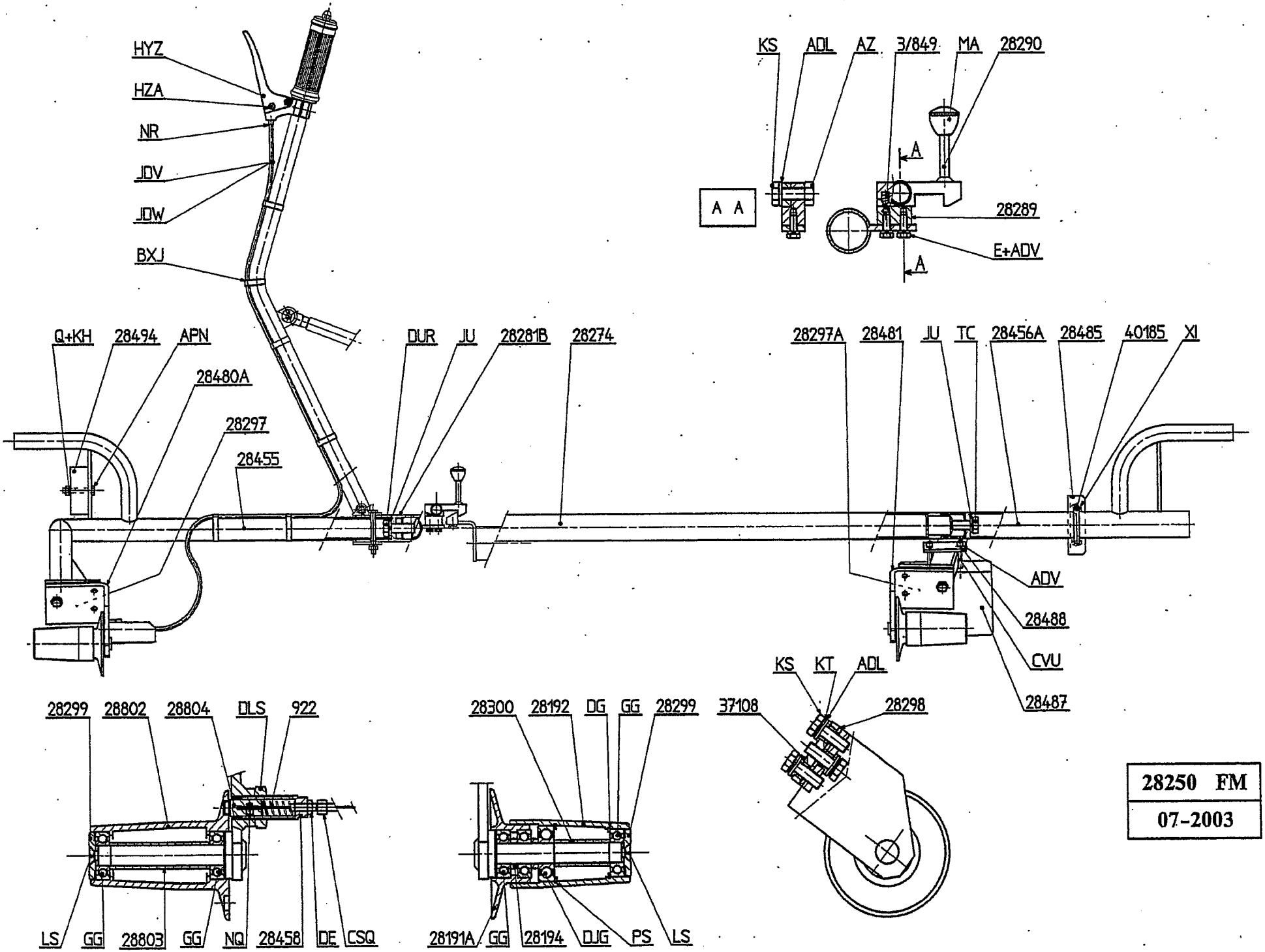
Ref.	Qty	Description
13 538 B	1	Driving hub
28 465	1	Right reinforcement
28 466	1	Left reinforcement
28 467 A	1	Upper support
28 468	1	Engine base
28 469	1	Casing
28 470	1	Transmission shaft
28 471	1	Stud
28 472	1	Housing (grindstone Ø 150)
28 473	1	Housing flange
28 477	1	Spindle
28 483	1	Obturator
28 497	1	Protector
37 122	1	Adaptation flange
		* Grindstone type 6 - Ø 150 x 72 x 4 x M8 / Ø 90 - 50 m/s
37 042	1	4-screw type stone-holder
AF	4	Screw H 8 x 16
KH	4	Washer W 8
		** Grindstone type 6 - Ø 150 x 65 x 6 x M8 / Ø 115 - 50 m/s
37 006	1	6-screw type stone-holder
AF	6	Screw H 8 x 16
KH	6	Washer W 8
		*** Grindstone type 6 - Ø 150 x 75 x 5/8" whit. - 50 m/s
28 823	1	Stone holder
		**** Grindstone type 6 - Ø 150 x 75 x M20 - 50 m15
28 507	1	Stone holder

Ref.	Qty	Description
B	12	Screw Chc 8 x 20
G	1	Circlips 40 e
Q	6	Nut H 8
AF	4	Screw H 8 x 16
AP	4	Screw H 8 x 20
DE	4	Nut H 6
DH	1	Nut H 12
DQ	2	Screw Cs 4 x 16
EI	2	Washer W 10
EP	4	Washer M 6 U
FG	6	Washer M 8 U
FL	2	Screw H 8 x 45
GL	2	Washer GE 4
JX	2	Screw Chc 6 x 16
KH	22	Washer W 8
OQ	1	Bearing n° 6009 EE
QR	2	Washer M 4 U
QS	1	Bearing n° 6008 EE
TS	4	Stud M 6 x 24
VB	2	Screw Cs 4 x 6
VT	1	Washer W 12
XT	4	Wing nut M 6
ABZ	1	Lubricator BEC M 6
ADV	10	Washer W 6
AIE	2	Screw Chc 10 x 45
AIX	4	Nut Hm 6
APP	1	Key BD 6,35 x 6,35 x 50
CBA	4	Screw Cs 6 x 35
CSP	1	Handle remote control
DWZ	2	Screw H 5/6" - 24 UNF x 1" ¼ (32)
HBD	1	Motor stop
HDW	2	Washer W 5/16"
JRJ	1	Cable Ø 1,5 L.430
JRK	1	Sheath L. 340


11060
11059
28296
BUH
SM
760
DVR
GW
ADV
28282
W
FP
DC
DW
28294
28293
ABZ
EZX
OP
28257
40043
28292
28252
DMB
DJF
28278
DMC
ABZ
ATS
28250 FK
07-2003

Ref.	Qty	Description
760	3	Spring
11 059	1	Handwheel handle
11 060	1	Handle axle
28 252	1	Height adjustment pivot
28 257	1	Screw thrust
28 278	1	Protective bellows
28 282	1	Inclination finger
28 292	1	Height adjustment shaft
28 293	1	Height adjustment screw
28 294	1	Handwheel extension piece
28 296	1	Height adjustment handwheel
40 043	1	Height adjustment nut

Ref.	Qty	Description
W	2	Screw Chc 6 x 10
DC	1	Washer M 12
DW	1	Key 5 x 5 x 15
FP	1	Stop nut M 12
GW	2	Screw Chc 6 x 20
OP	2	Thrust ball bearing 51104
SM	3	Nut Hm 8
ABZ	2	Lubricator Bec 6
ADV	2	Washer W 6
ATS	2	Self lubricating ring 32 x 38 x 32
BUH	3	Screw Hc 8 x 20
DJF	1	Inverted ring TRUARC 60 E
DMB	2	Round end key 8 x 7 x 60
DMC	2	Tightening collar
DVR	3	Ball Ø 7
EZX		Shims Ø 30,2 x 34,5



28250 FM
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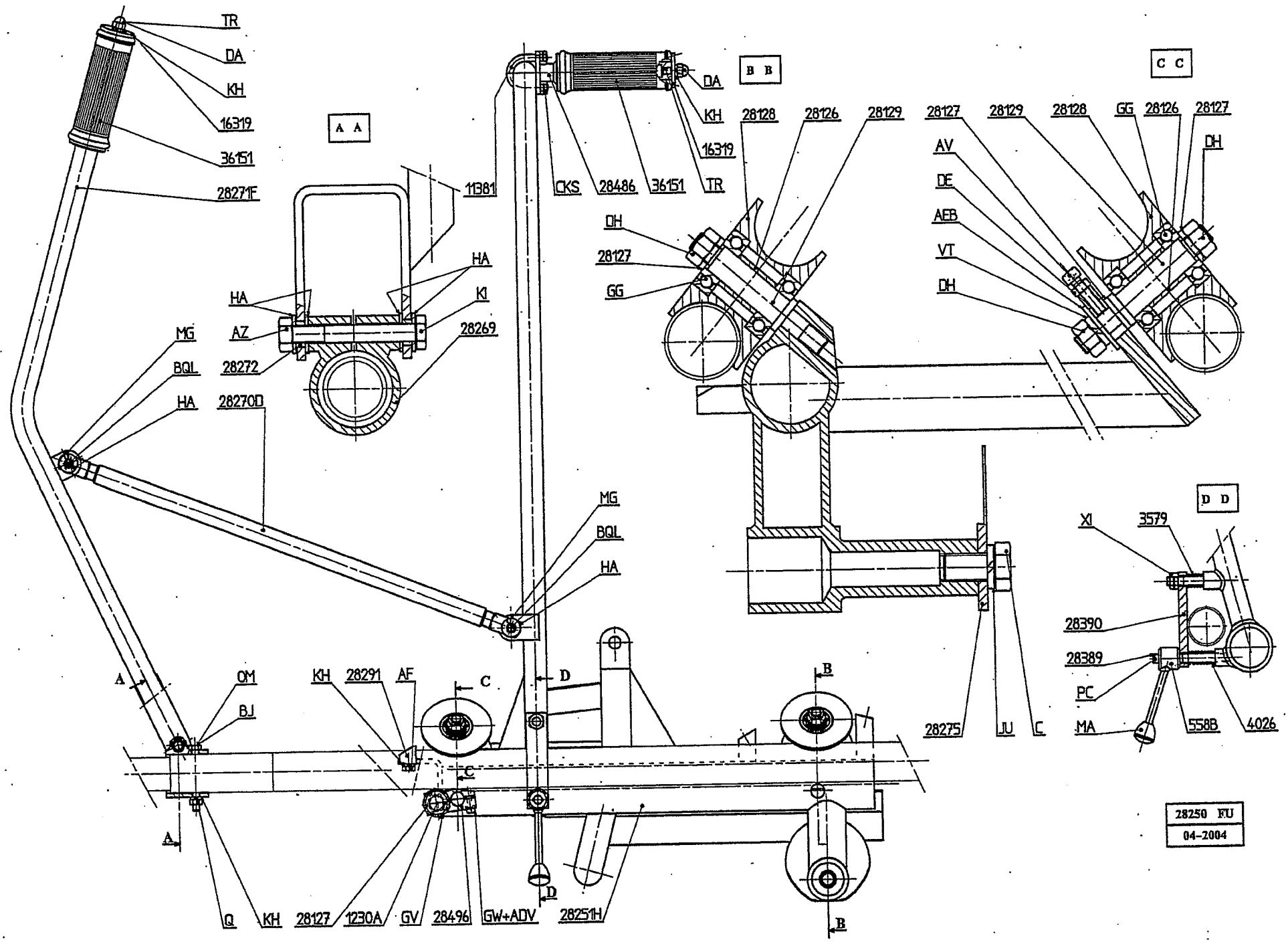
Ref.	Qty	Description
3/849	1	Spring
922	1	Spring
28 191 A	3	Guide flange
28 192	3	Runner
28 194	6	Spacer
28 274	2	Guiding axle
28 281 B	1	Rear slide spacer
28 289	1	Pawl bearing
28 290	1	Ratchet
28 297	1	Front roller bracket (left)
28 297 A	1	Front roller bracket (right)
28 298	4	Insulating plate
28 299	4	Tighting washer
28 300	3	Spacer
28 455	1	Rear roller support
28 456 A	1	Front roller support
28 458	1	Adjustable bearing
28 480 A	1	Rear roller bracket (left)
28 481	1	Rear roller bracket (right)
28 485	1	Thrust
28 487	2	Spark guard
28 488	2	Clamp
28 494	1	Balance weight
28 802	1	Runner
28 803	1	Spacer
28 804	1	Pin
37 108	12	Insulating tube
40 185	1	Stirrup

Ref.	Qty	Description
E	2	Screw H 6 x 16
Q	2	Nut H 8
AZ	1	Nut H 10
DE	1	Nut H 6
DG	3	Retaining ring 40 i
GG	11	Bearing n° 6203 - 2RS.1
JU	4	Washer W 16
KH	2	Washer W 8
KS	13	Screw H 10 x 30
KT	12	Fan washer Ø 10
LS	4	Screw FHc 8 x 20
MA	1	Knob Ø 25
NQ	1	Screw Hc 6 x 6 sharp end
NR	1	Sheath stop
PS	3	Retaining ring 47 i
TC	2	Screw H 16 x 35
XI	2	Stop nut H 10
ADL	13	Washer Z 10 U
ADV	6	Washer W 6
APN	2	Screw H 8 x 50
BXJ	6	Collar
CSQ	1	Adjustable stop
CVU	4	Screw Chc 6 x 55
DJG	3	Bearing n° 6303 EE
DLS	1	Nut Hm 20
DUR	2	Screw H 16 x 45
HYZ	1	Lever
HZA	1	Cable tightener
JDV	1	Cable Ø 1,5 - L. = 1510
JDW	1	Sheath L. = 1400


TR
DA
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16319
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Q
KH
28127
1230A
GV
28496
GW+ADV
28251H
28250 FU
04-2004

Ref.	Qty	Description
558 B	1	Locking handle
1 230 A	1	Axle
3 579	1	Spring
4 026	1	Spring
11 381	1	Stirrup
16 319	2	Washer
28 126	3	Grooved roller axle
28 127	5	Blocking washer
28 128	3	Grooved roller
28 129	3	Blocking axle
28 251 H	1	Transfer trolley-body
28 269	1	Traversing arm bearing
28 270 D	1	Support connecting rod
28 271 F	1	Traversing arm
28 272	2	Spacer socket
28 275	1	Protective plate
28 291	1	Pawl
28 389	1	Stud M 10 x 90
28 390	1	Skid
28 486	1	Handle
28 496	1	Roller support
36 151	2	Rubber handle

Ref.	Qty	Description
C	1	Screw H 16 x 30
Q	2	Nut H 8
AF	1	Screw H 8 x 16
AV	1	Screw Chc 6 x 25
AZ	1	Nut H 10
BJ	1	Screw H 8 x 70
DA	2	Cap nut H 8
DE	1	Nut H 6
DH	4	Nut H 12
GG	6	Bearing n° 6203 EE
GV	1	Bearing n° 6201 EE
GW	1	Screw Chc 6 x 20
HA	6	Washer M 10
JU	1	Washer W 16
KH	5	Washer W 8
KI	1	Screw H 10 x 80
MA	1	Knob Ø 25
MG	2	Cotter pin 3 x 25
OM	1	Screw H 8 x 60
PC	1	Elastic pin Ø 2 x 12
TR	2	Stud M 8 x 27
VT	1	Washer W 12
XI	1	Split brake nut Ø 10
ADV	1	Washer W 6
AEB	1	Washer L 12
BQL	2	Shell-axle
CKS	2	Stop nut H 8