

## RAIL PROFILE GRINDING MACHINE

**MODEL**

**MP 23**



FOR SERVICE AND SPARE PARTS

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# INTRODUCTION

Safety has always been an outstanding feature of our machines.

However, the new international labour safety regulations prescribe that any machine or instrument be supplied with an instruction note pointing out the possible risks for the user and the precautions to be taken to avoid accidents.

In pursuance of these regulations which are imperative for any machine manufacturer anxious to give a maximum of safety to his customers, we urge you to read carefully the following chapters which concern your safety as well as that of your staff.

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## **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 STUMEC/GEISMAR 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 STUMEC/GEISMAR 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.**

## 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.

- 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.
- ⇒ 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

- 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 half to 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.

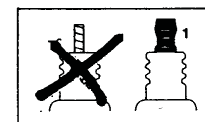
**IN CERTAIN CASES HANDLING OIL CAN GIVE RISE TO THE SAME TYPE OF RISKS AS HANDLING FUEL. IT IS THEN ESSENTIAL TO TAKE THE SAME PRECAUTIONS WITH OIL AS THOSE SET OUT ABOVE FOR FUEL.**

- 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 instructions

### 1.4.1 Risks that can be caused by using the " MP23 " type profile grinder

The main risks involved in this machine for the operator and the environment are :

- 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  $\frac{3}{4}$  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 "General use and safety instructions" and §1.3 "General safety requirements".

#### 1.4.2 Safety rules to observe before and during use of the type "MP23" 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.
- ➔ Authorized by the regulation in application for this type of machine.



## CHAPTER 2 – DESCRIPTION OF THE MACHINE

### 2.1 General

<u>Manufacturer:</u>	SOCIETE TURRIPINOISE DE MECANIQUE Route d'Italie 38110 LA TOUR DU PIN
<u>Description of the equipment:</u>	Profile grinder
<u>Type:</u>	<b>MP23</b>

The MP23 has been designed for grinding rail heads and rail welds, including the curvature and the sides.

Its robust construction and exceptional performance make the machine very easy to use.

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

Thanks to the 180° head angle adjustment system, the MP23 can work over the whole profile of the rail without the operator having to turn the machine round. Therefore, the operator remains within the track at all times.

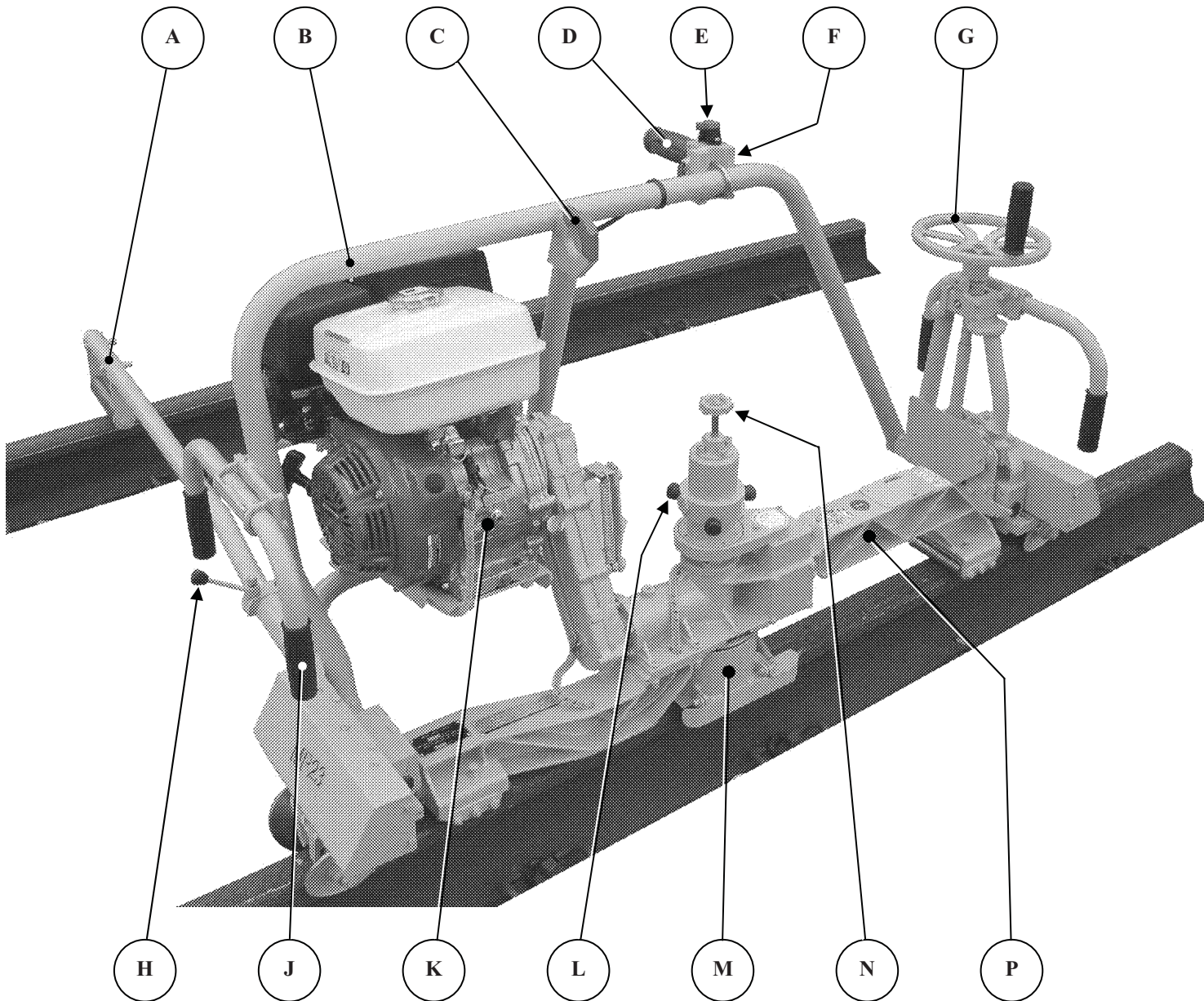
This machine is fitted with an electric upward and downward translation system for the grindstone. The system is controlled by two buttons located on the upper part of the machine handle. All the controls are therefore within reach of the operator.

A system of stops limits the grindstone downward travel to prevent any operating error that would result in making a depression in the rail.

The machine moves along the track by means of 6 flat rollers (3 rollers on each side) ensuring perfectly even grinding.

The machine is fitted with two handling arms that fold away to reduce the overall measurements of the machine during transport and storage.

## 2.2 General view



Ref.	Description
A	Counterbalance beam
B	Machine handle
C	Lifting ring
D	Control handle
E	Remote engine stop switch
F	Buttons controlling the electric upward and downward translation system for the grindstone
G	Grinding head angle adjustment wheel
H	Counterbalance beam locking handle
J	Foldaway transport arms (x2)
K	Engine
L	Upward / downward translation manual control
M	Grindstone guard
N	Grindstone downward thrust
P	Grinding head

## 2.3 Technical specification

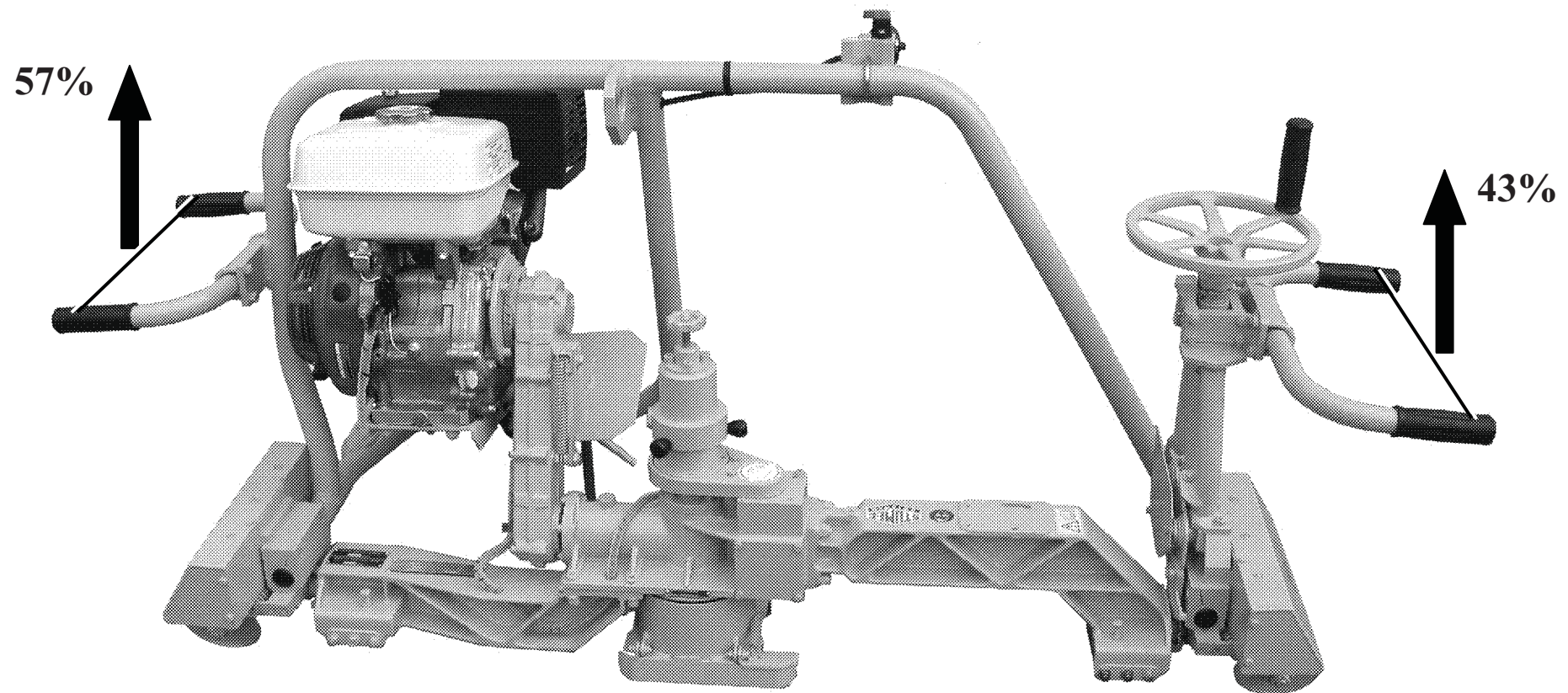
<i>ENGINE MODEL</i>		HONDA GX 200 4stroke	HONDA GX 270 4stroke
<b>Machine dimensions</b>			
Length / width / height .....	mm	1600 / 630 / 880	1600 / 630 / 880
<b>Weight</b>			
Machine (weight empty).....	kg	84	95
Machine (ready for use).....	kg	90	102
Counterbalance beam.....	kg	5	5
End-of-travel stops (x2).....	kg	4,6	4,6
<b>Noise</b>			
Acoustic pressure level .....	dBA	82	84
Acoustic power level.....	LwA	89	92
<b>Vibrations</b>			
Level of vibration.....	ms <sup>-2</sup>	5,6	6,5
<b>Engine</b>			
Power rating.....	kW	4,8 (= 6,5hp) at 3600 rpm	6,6 (= 9hp) at 3600 rpm
Fuel.....	.....	Unleaded petrol	Unleaded petrol
Starting.....	.....	Automatic return cord starter	Automatic return cord starter
Fuel tank capacity.....	liter	3,6	6
Fuel consumption.....	g/kW/h	313 (230 g/hp/h)	313 (230 g/hp/h)
<b>Machine</b>			
Motor adjustment speed (maximum speed).....	rpm	3600	
Grindstone running speed.....	rpm	4000	
Maximum diameter of grindstone.....	mm	150	
<b>Grindstone</b>			
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	65	



## 2.4 Weight distribution

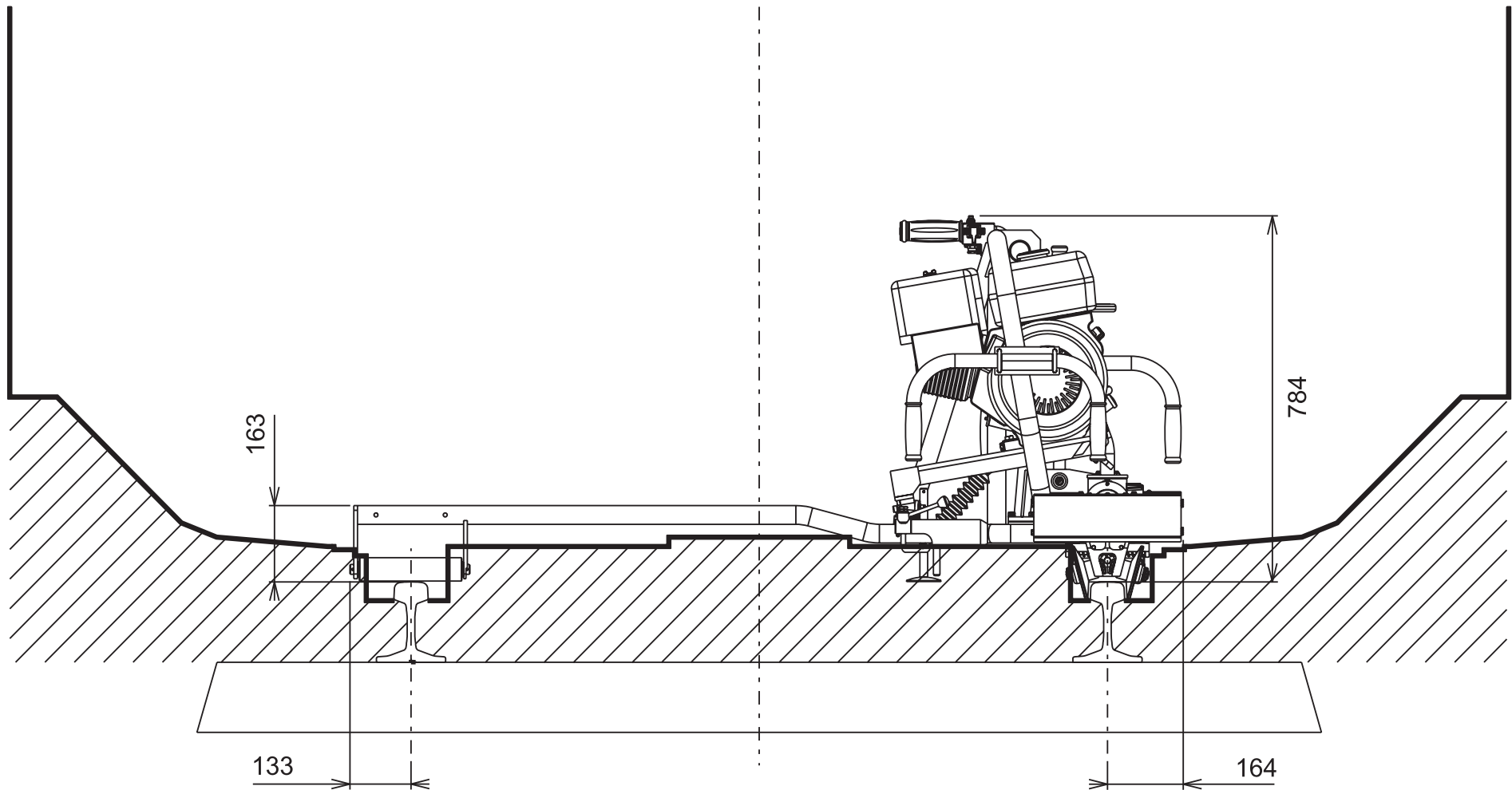
The diagram below shows the weight distribution as a percentage of machine weight.

See §3.3 “Putting the machine on the rail” to determine the number of persons needed for handling operations.



## 2.5 Machine location inside the clearance gauge

The diagram below shows the dimensions of the machine as compared with the lower UIC 505-1 clearance gauge (track with a nominal gauge of 1.435 m).



## CHAPTER 3 – INSTALLATION AND USE

### 3.1 Installing the grindstone

The operations of mounting and dismounting the grindstone should be done with the **engine switched off** and when the machine is resting on the ground.

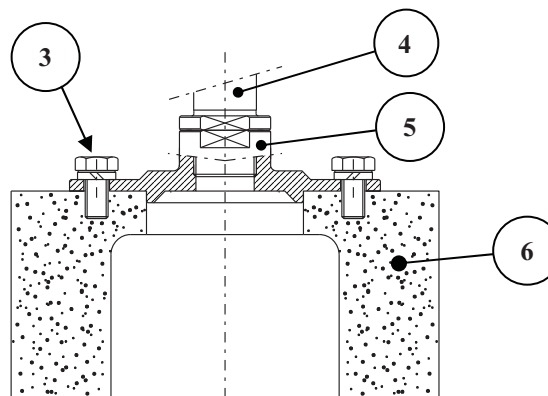
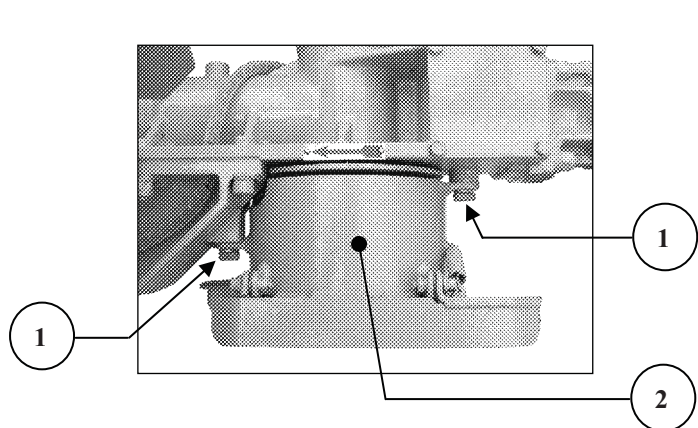
To fit a grindstone to the machine, proceed as follows :

→ Dismounting the grindstone :

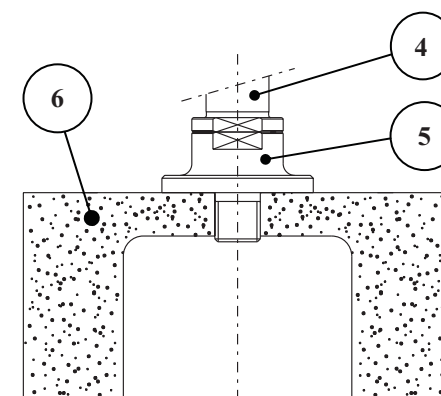
- 1 → Lower the grindstone as far as possible and then remove the grindstone casing Ref.② by taking out the 2 screws Ref.① (17 mm box wrench).
- 2 → Hold the spindle Ref.④ using a 27 mm open end wrench and then unscrew the “grindstone + grindstone holder” unit using a second 27 mm wrench.
- 3 → Remove the grindstone Ref.⑥ from the grindstone back plate Ref.⑤ :
  - *assembly Pic.2* >> Take out the fastening screws Ref.③ (13 mm open end wrench).
  - *assembly Pic.3* >> Hold the grindstone holder Ref.⑤ (27 mm open end wrench) and untighten the grindstone Ref.⑥.

→ Mounting the grindstone :

- 5 → - *assembly Pic.2* >> Position the grindstone Ref.⑥ in such a way that the internal Ø fits over the flange on the grindstone back plate Ref.⑤. Insert the fastening screws Ref.③ in the grindstone Ref.⑥ until they touch the back plate. Then tighten them.
- *assembly Pic.3* >> Hold the grindstone holder Ref.⑤ (27 mm open end wrench) and tighten the grindstone Ref.⑥.
- 6 → To fit the “grindstone + grindstone holder” unit, carry out operations 2 and 1 in the opposite order as compared with removal.



Pic.2



Pic.3



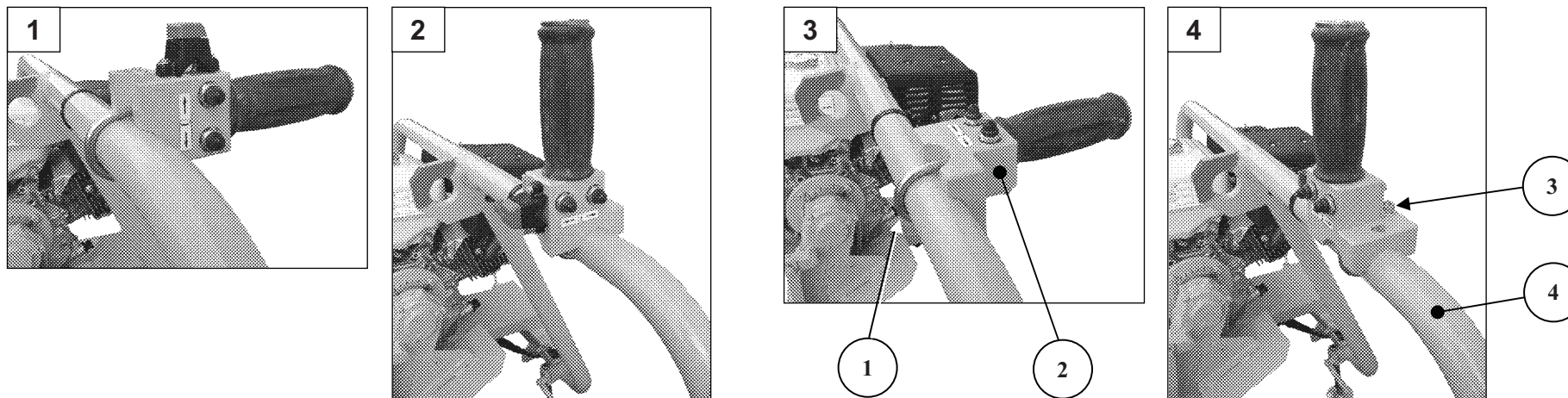
THE GRINDSTONES YOU USE SHOULD MEET THE TECHNICAL SPECIFICATIONS STATED IN § 2.3 "TECHNICAL DATA / GRINDSTONE"



## 3.2 Orientation of the control handle

The orientation of the control handle on the machine can be modified to suit the operator's working position.

The control handle can be placed in the three different positions shown below :



- To move the control handle from position 1 to position 2 :
  - slightly loosen nut Ref.③ and then swivel the handle through 90°.
  - tighten nut Ref.③.
- To move the control handle from position 1 to position 3 or 4 :
  - fully unscrew nut Ref.③, and then remove the collar Ref.① from the button box Ref ②.
  - swivel the button box Ref.② through 90° until the shaped section lines up with the machine handle Ref ④.
  - put the collar Ref.① back in place in the corresponding position and then tighten nut Ref.③ until it comes into contact with the handle.
  - adjust the position of the handle, and then fully tighten nut Ref.③.

### 3.3 Putting the machine on the rail

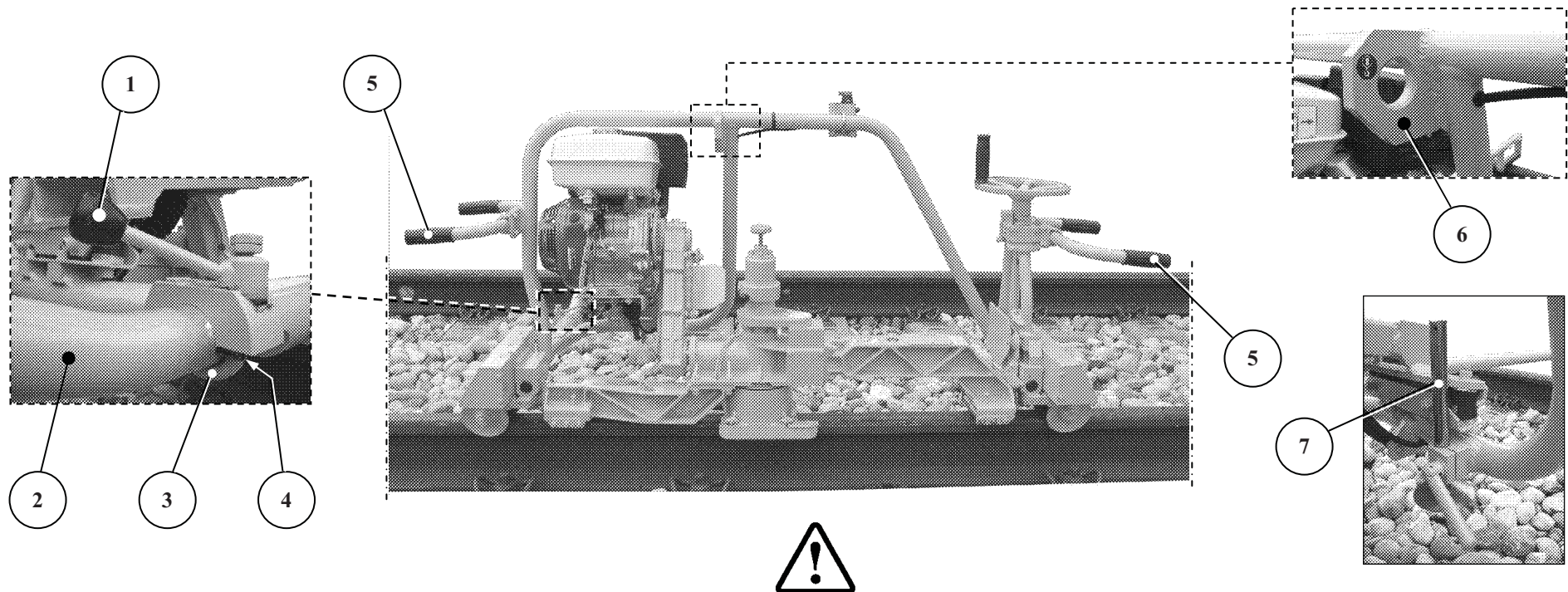
The task of putting the machine on the rail and removing it must be carried out by at least two persons. Nevertheless, if the work area is difficult to reach, it is necessary to ensure that enough persons are present to ensure that the machine can be handled in full safety

- To put the machine on the rail, proceed as follows :

- ❶ Pick the machine up by its lifting ring Ref.❹ and put it in place on the rail using a crane or any other lifting equipment with a lifting capacity exceeding the weight of the machine as set out in §2.3 “Technical specifications”.
- ❷ Insert the counterbalance beam Ref.❷ into the hole provided and push it in as far as it will go so that the pin Ref.❸ is in contact with the clamp ring Ref.❸. Then lock the beam in place by turning the lever Ref.❶ until it is tight.
- ❸ Lift the stand Ref.❷ so that it does not interfere with the movement of the grinder.

**NOTE :** If no lifting equipment is available on the worksite, move the two handling arms Ref.❺ out and use them to position the machine on the rail.

- Once the machine has been positioned on the rail, it must be chocked in place to prevent it from rolling away unattended and injuring someone by hitting them.

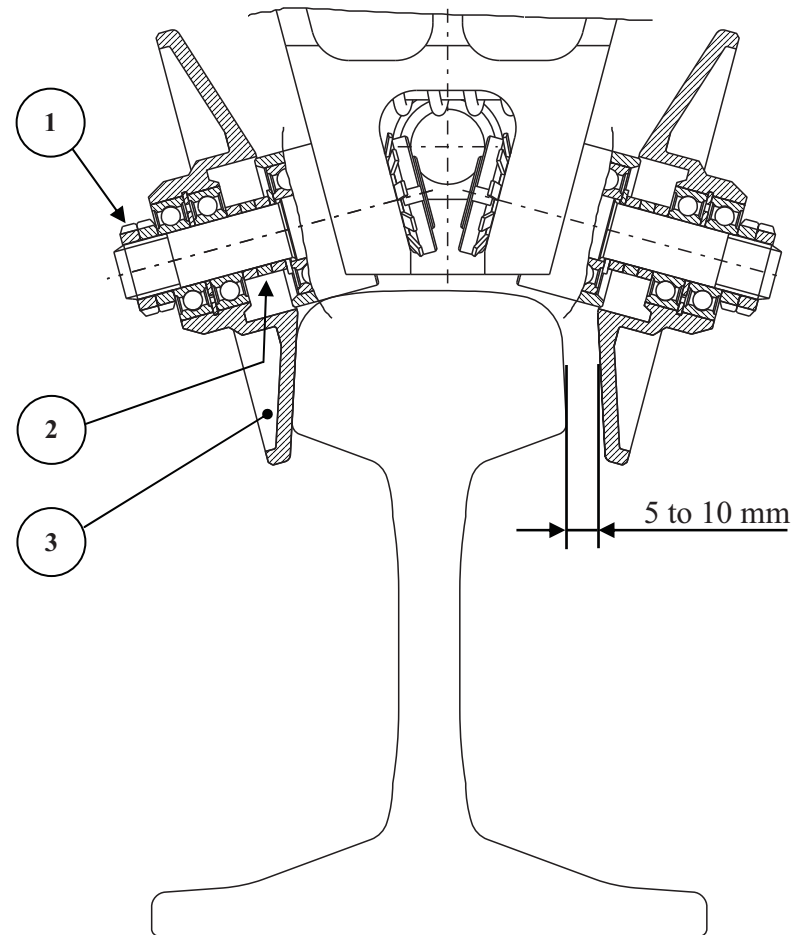


**IT IS IMPERATIVE THAT THE ENGINE BE STOPPED WHEN PUTTING THE MACHINE ON OR REMOVING IT FROM THE TRACK**

### 3.4 Setting of the grinding rollers

The spacing between the grinding rollers is settable, so that the machine can work on all types of rails, whatever the rail head width.

- To adjust one of the two machine guiding rollers, proceed as follows :
  - remove the two guiding flanges Ref.③ held in place by the nuts and locknuts Ref.① (25 mm pin wrench)
  - on each of the two axes of roller axles, remove or add the number of spacers Ref.② necessary (the same number on both sides ) to obtain clearance of 5 to 10 mm between the head of the rail and one of the two guiding flanges Ref.③ (see sketch).
  - put the unused spacers on the outside of the guiding flanges Ref.③.
  - screw on and fully tighten the nuts and locknuts Ref.①.
- Proceed in the same way for the second guiding roller.



### 3.5 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 " Starting-up and shutting-down the machine "), and check that the safety devices work properly (remote motor shutdown).

- Check the functioning

Check the good working order of the controls. Check that the upward / downward translation control switch and the grinding head angle adjustment wheel are working correctly : during the operation, controls moving must be as smooth as possible, without any hard point.



**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.**



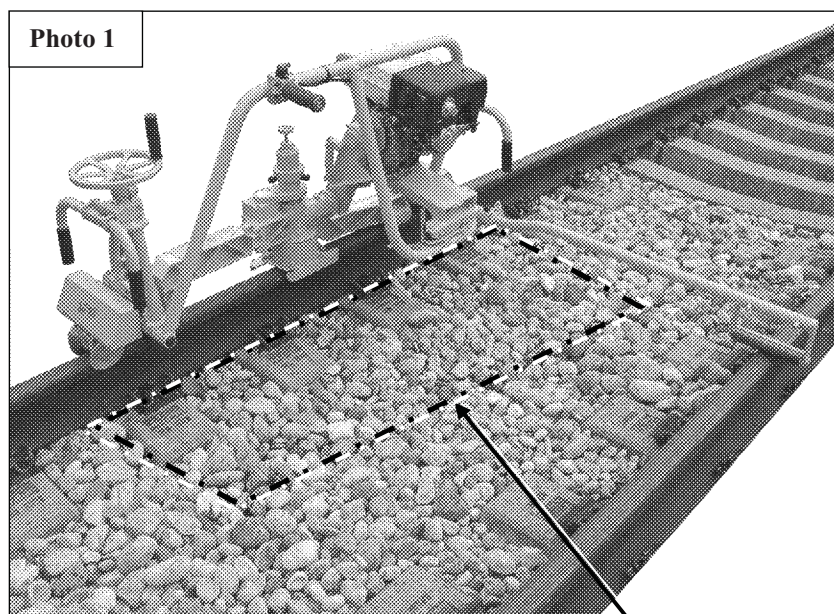
## CHAPTER 4 – USE

### 4.1 Conditions of use

#### 4.1.1 Movement zone and position of the operator

- The operator's working zone is located within the two vertical limits defined by the UIC 505-1 clearance gauge (Cf. §2.5 "Machine location in the clearance gauge") >> Photo n°1.
- During work, the operator must always be in the position shown on photo n°2 with his right hand firmly grasping the control handle and his left hand holding the handle of the tilt wheel. This working position ensures full control of the machine.

If the operator is in the working position described above, it is impossible for him to move outside the two vertical limits defined by the UIC 505-1 clearance gauge.



**MOVEMENT ZONE OF  
THE OPERATOR**



**OPERATOR'S POSITION**

#### 4.1.2 Starting-up and shutting-down the machine

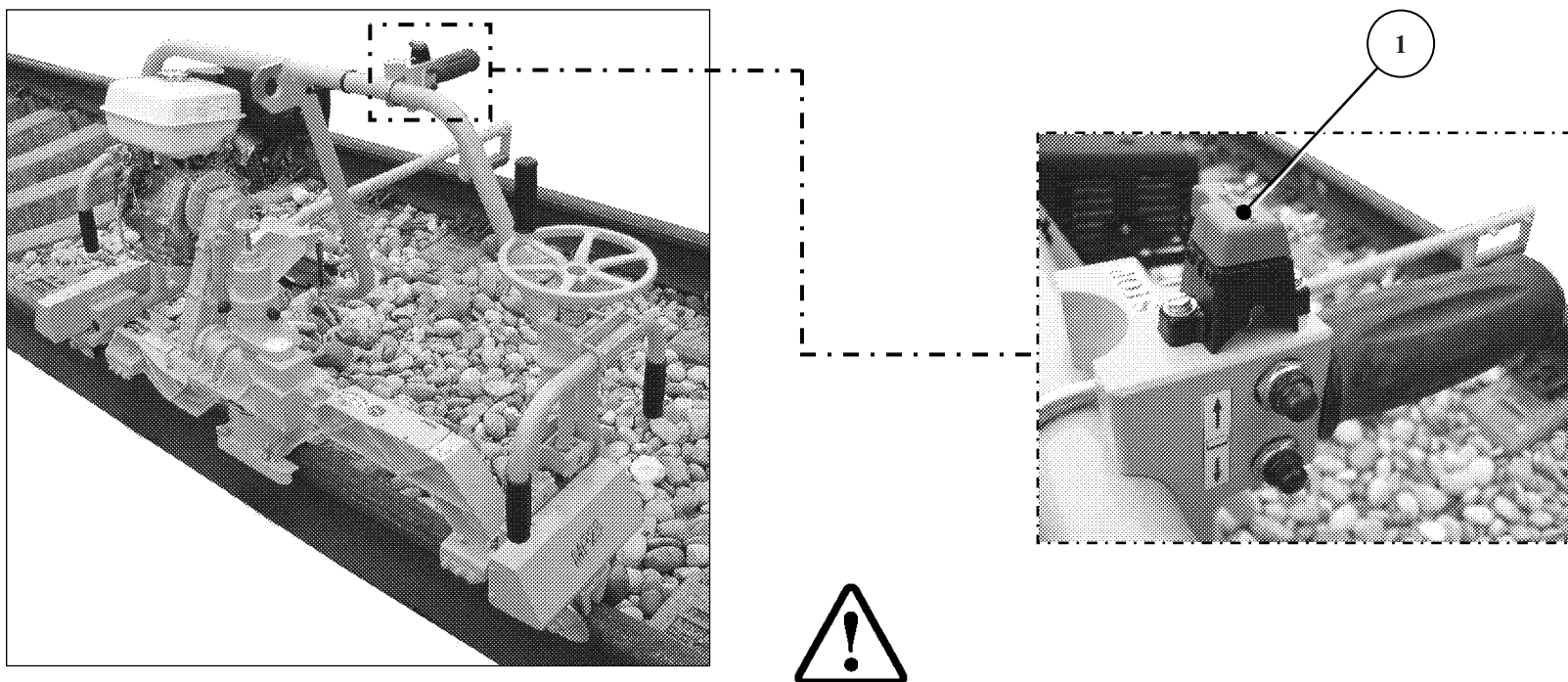
Refer to the engine manufacturer's instructions to determine the position of the controls to be operated to start and stop the engine.

##### → Starting-up :

- Check that the remote engine stop switch Ref.① is correctly in position **1** and move the choke lever to the close position (if necessary > do not use the choke if the engine is warm or the air temperature is high).
- Start the engine and leave it running at idle speed for a short time until the engine speed stabilizes and the engine warms up. As the engine warms up, gradually move the choke lever to the open position.
- When the engine is warm, increase the engine speed by moving the control to the max. position (factory setting).

##### → Shutting down the machine :

- Stop the engine by moving the remote engine stop switch Ref.① to one of the two **0** positions.



**THE MACHINE MUST ONLY BE STARTED ON THE TRACK**

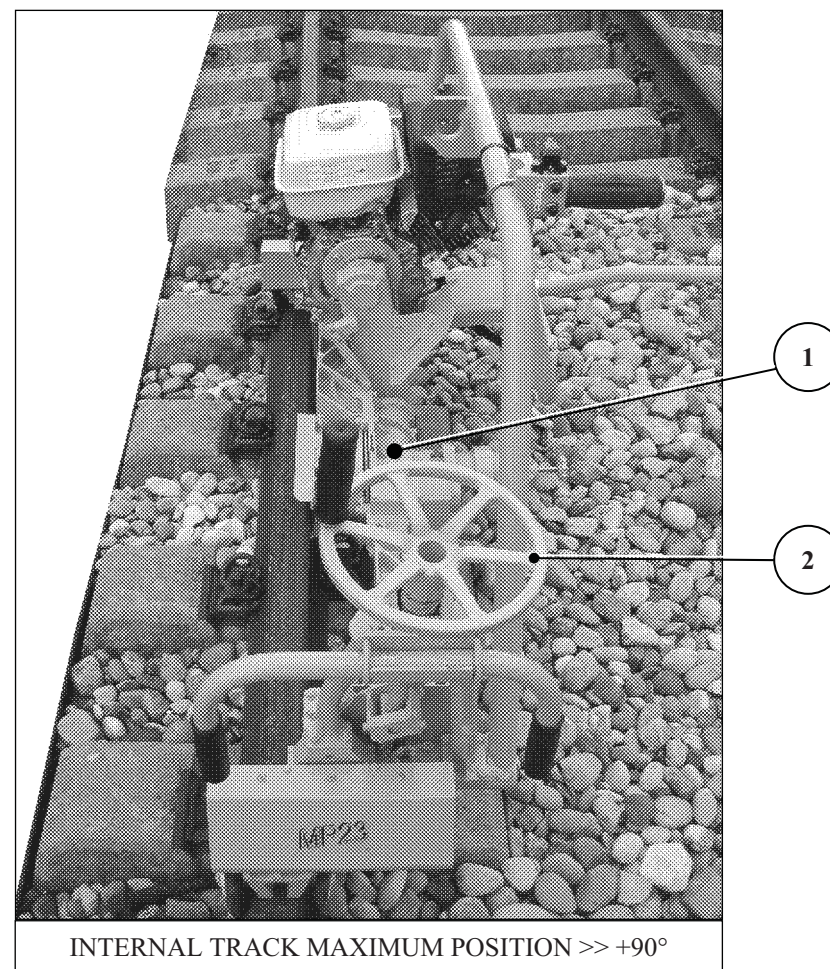
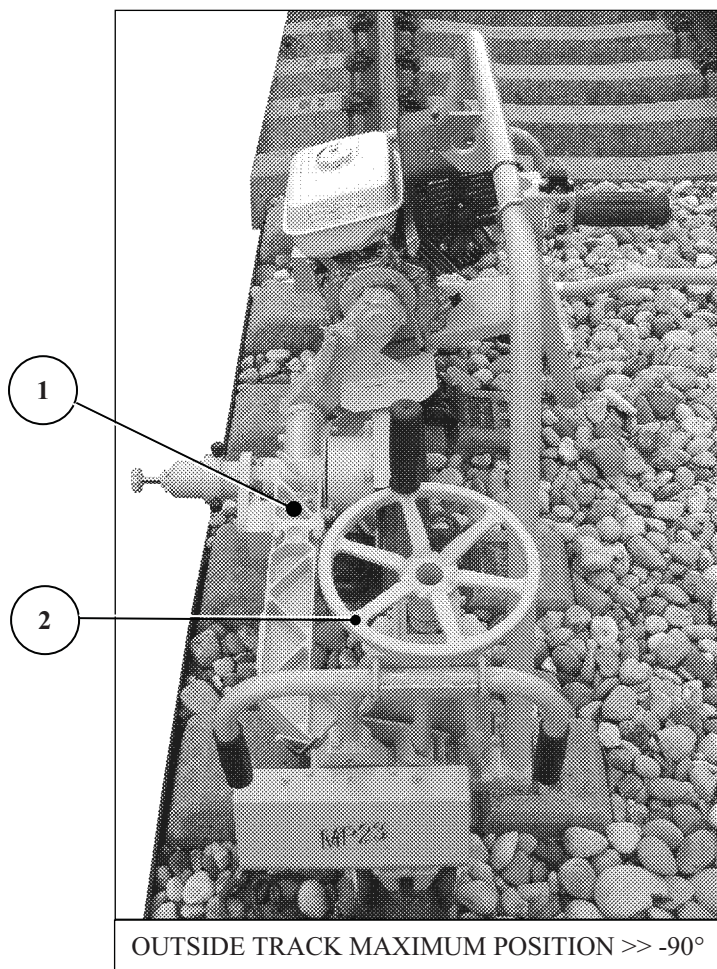


### 4.1.3 Angle adjuster operation

The angle adjustment wheel Ref.② moves the position of the grinding head Ref.① through a total angle of  $180^{\circ}$  ( $90^{\circ}$  on either side).

This angle adjustment makes it possible to work on both sides of the rail without having to turn the machine round.

The full range of movement of the grinding head Ref.① (from one side to the other) requires 21 turns of the wheel (i.e.  $8^{\circ}34'$  per turn).



#### 4.1.4 Grindstone electric upward and downward translation system

The grindstone height is adjusted using an electric system controlled by two buttons Ref.② and Ref.③, located on the machine handle.

When pressing on the button Ref.② ( ↑ ) the grindstone moves upward, when pressing on the button Ref.③ ( ↓ ) the grindstone moves downward. One revolution of the translation system Ref.④ corresponds to a grindstone change of height of 2,5mm. Therefore, to get an indication of the height change, the operator can observe the revolution angle of the translation system Ref.④.

In case of a malfunctioning of the electric translation system, the translation upwards/downwards of the grindstone can be operated manually. This manual control is made of 3 knobs located on the body Ref.④. Turn the body to the right to lower the grindstone, and turner the body to the left to raise it.

To limit the downward stroke of the grindstone, the machine is equipped with a downward thrust Ref.① which prevents the operator from doing a depth on the rail profile when grinding.

It is **IMPERATIVE** to adjust this stop on the crown of the rail before starting the grinding operation.

To adjust the grindstone downward thrust Ref.①, proceed as follows :

- place the grinding head Ref.⑤ in the vertical position (grinding the crown of the rail).
- fully unscrew the knurled knob on the grindstone downward thrust Ref.①.
- gently bring the grindstone just in contact with the rail, pushing by *short pulses on the button* Ref.③ (so that to get just a few sparks) >> do this in an area near the weld that does not require grinding, i.e. in a place where the rail profile is correct (check that at this point the rollers are in fact positioned on a correct profile, where there are no burrs, dips or bumps).
- screw down the knurled knob on the grindstone downward thrust Ref.① until resistance is felt.
- raise the grindstone so that it is in a plane above the weld.

Start by grinding down the weld to about one millimetre above the surface of the rail.

To do this, work in rapid successive passes by moving the machine in short forwards and backwards movements along the rail. Start with the horizontal surface and then grind down the sides (see §4.1.3 "Angle adjuster operation").

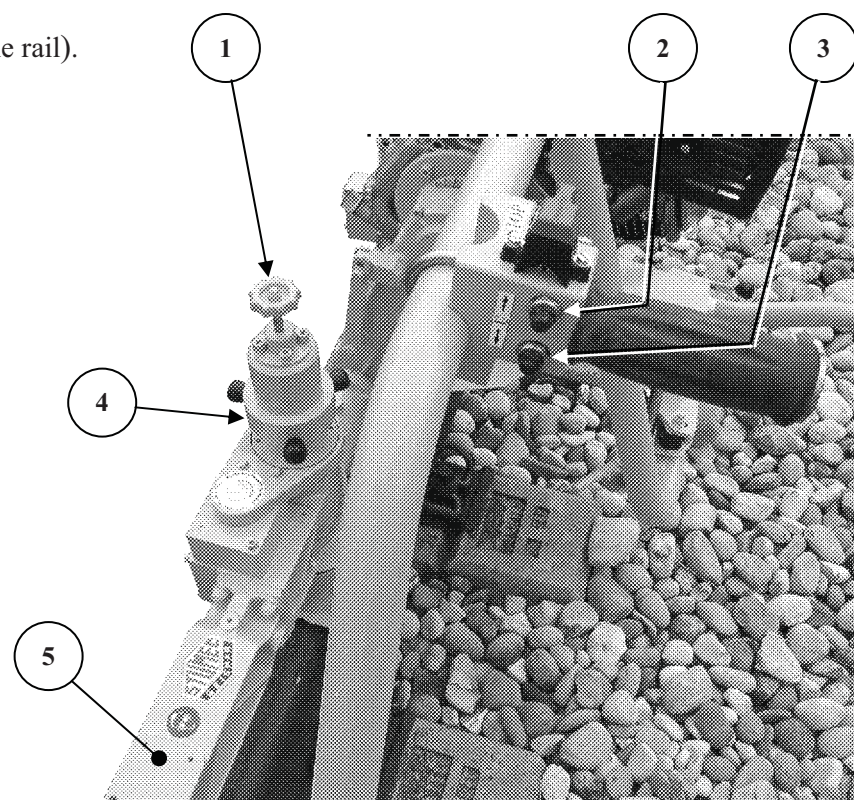
To finish off, readjust the grindstone downward thrust (to compensate for grindstone wear) and complete the grinding of the whole profile.

Do this until all traces of the weld have been removed.

Finish by making the joint flush over about 10 cm on either side of the weld.

Check the evenness with a straight edge.

**If these instructions are followed, it is impossible to make a depression.**





#### 4.1.5 Taking the machine off the track

Depending on the situation (the time available to take the machine off the track), the machine is taken off the track using either a) the “Normal Procedure” or b) the “Emergency procedure”.

##### a) Normal procedure

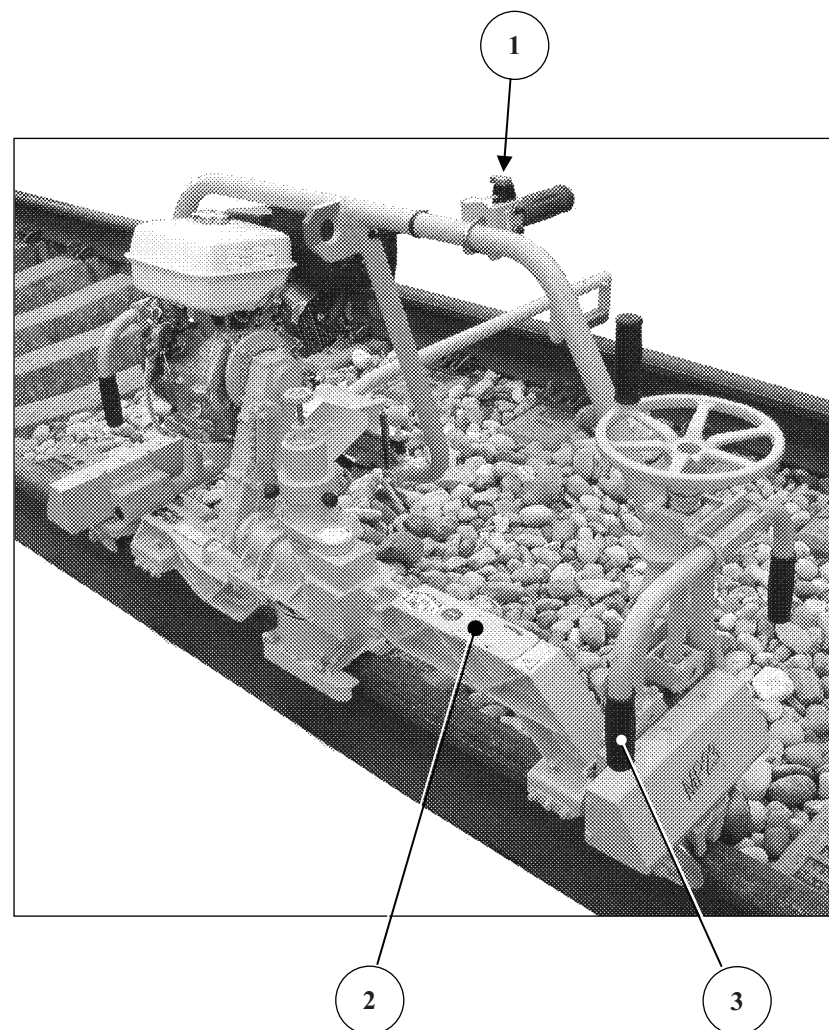
- Raise the grindstone to ensure a clearance of at least 3 mm between it and the crown of the rail.
- Move the grinding head Ref.② to the vertical position.
- Reduce the engine speed and then stop the engine by setting the remote engine stop switch Ref.① to 0. Then wait until the grindstone stops rotating.
- Take the machine off the track by carrying out in reverse order the procedure for “Putting the machine on the rail” set out in §3.3.

➔ As described in that paragraph, the “MP23” type profile grinder can be put on the track or taken off the track by two persons. However, if the work zone is difficult to access, it is necessary to ensure that enough persons are present to enable the machine to be handled under good conditions.

##### b) Emergency procedure

- Stop the engine by moving the remote engine stop switch Ref.① to one of the two 0 positions.
- Grasp the machine using the two handling arms Ref.③ located on each side of the machine and quickly take it off the track.

**IMPORTANT:** after using the emergency procedure to take the machine off the track, it is essential to make sure that none of the machine parts have been damaged and that the grindstone is in good condition. The machine must be inspected and repaired if necessary before it is started up again.



## 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

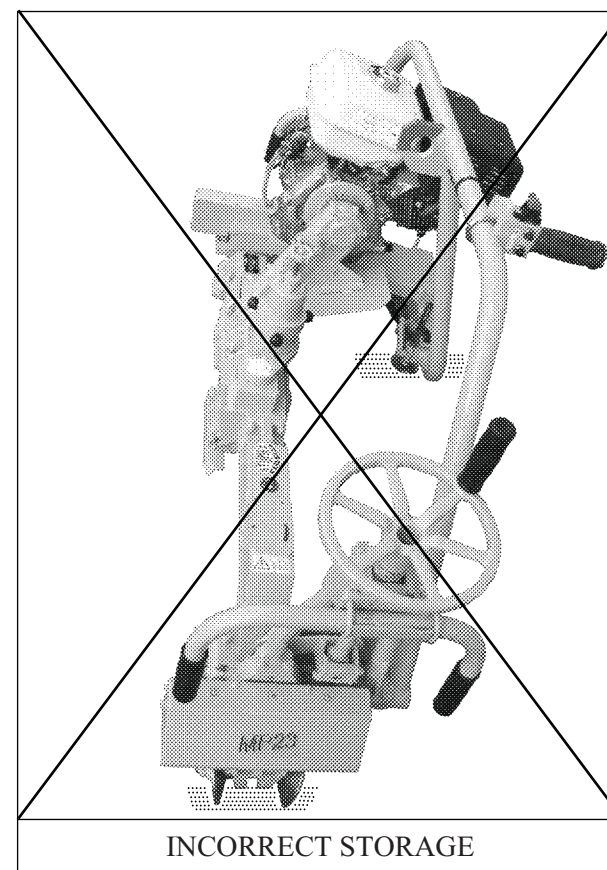
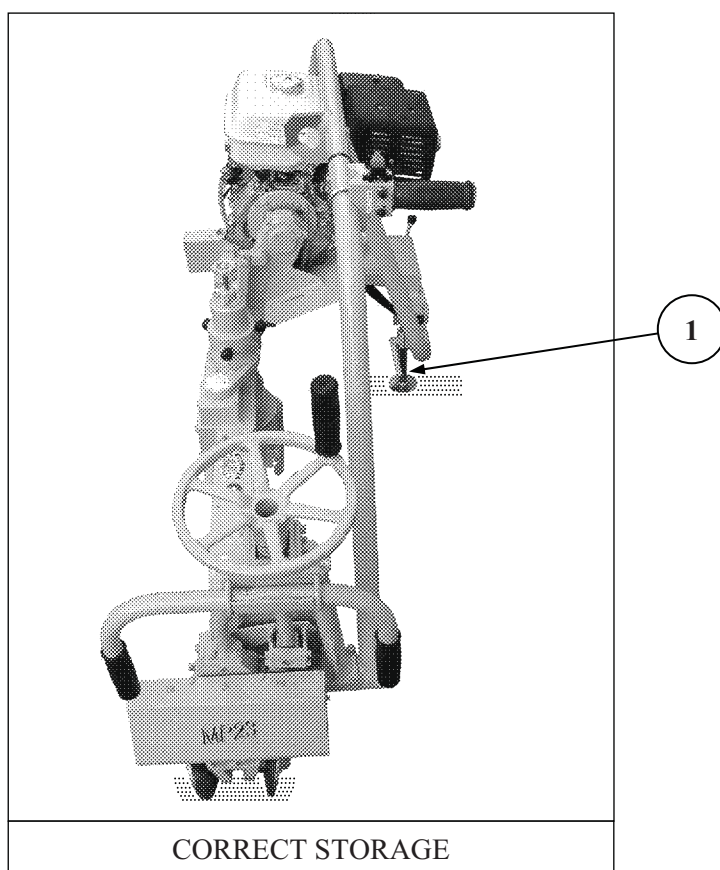
#### ⇒ Putting into storage

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 after 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.
- ⇒ If the engine is left stopped lying canted, oil passes into the cylinder and the carburettor and the engine will not start.  
Therefore, *the machine must be stored with the stand* Ref.① in position. The *stand* is designed to keep the engine horizontal during storage.



## CHAPTER 5 – SERVICING AND MAINTENANCE

### 5.1 Servicing

It is necessary to have undergone appropriate training, possess the required skills and have the right tools to service and repair this equipment correctly. All servicing and repair work on this equipment must be carried out by competent staff with a good knowledge of general mechanics.

- ⚠ Before carrying out any servicing work, stop the engine (leave the switch on the stop position) and wait for it to cool down.
- ⚠ All waste products remaining after servicing and maintenance operations (fluids, filters, used rags, etc.) must be disposed of in accordance with the regulations in force and the directives for protection of the environment.
- ⚠ Replace or repair any worn, damaged or missing parts immediately when there is a possible safety hazard.

#### 5.1.1 Engine

Comply strictly with the manufacturer's instructions.

#### 5.1.2 List of essential equipment and accessories for servicing

The following tools are necessary for correct servicing and maintenance operations :

<i>Servicing tools (supplied with the machine)</i>	<i>Servicing and maintenance tools (not supplied with the machine)</i>
10,13 and 17 mm box wrenches 2 x 27 mm open ended wrenches 25 mm pin wrench	Flat bladed screwdriver 10 mm open ended wrench 3 and 5 mm hex head keys

This tool list does not exclude the usual, essential servicing equipment such as rags, brushes, grease, etc...

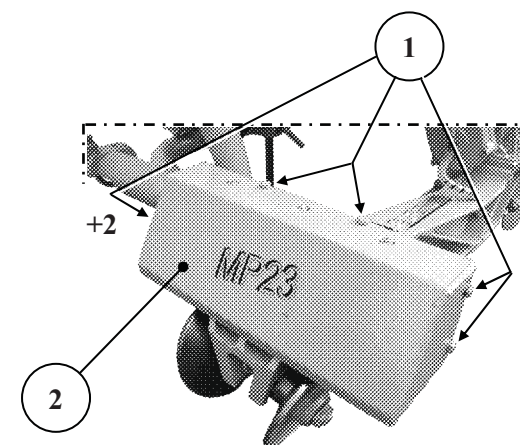
#### 5.1.3 Cleaning

Make sure the machine is always kept as clean as possible. The care taken in cleaning the machine directly influences the length of its service life and its correct operation.

Carefully clean the machine using a clean rag or a blow gun, taking care to remove all dirt that has gathered on it, especially close to the moving parts. As a precaution, always wear gloves to avoid cuts and burns on the hands.

Clean the roller slides under the protective cover at regular intervals. To do so, take out the six screws Ref.① holding the cover Ref.② in place (10 mm box wrench). Clean both sides of the machine.

⚠ **Do not oil or grease the slides after cleaning them.**





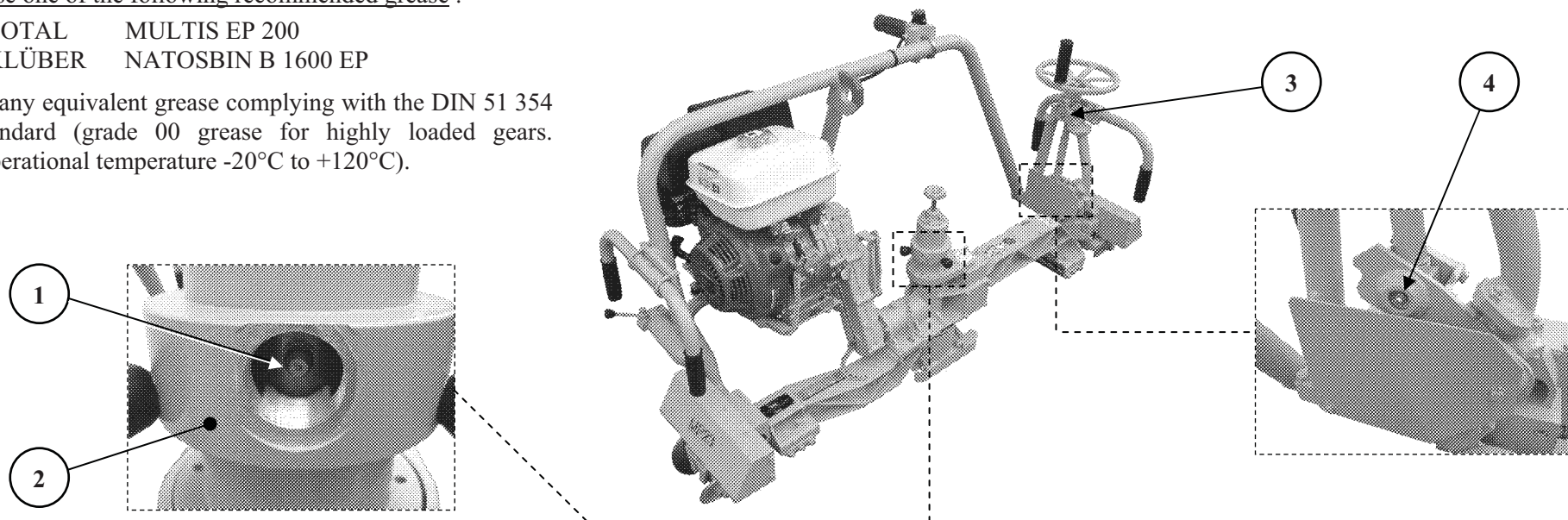
#### 5.1.4 Greasing

- Once a week, put grease in the 3 grease nipples Ref.①, ③ et ④ on the machine. To access grease nipple Ref.④, tilt the grinding head to its extreme inner position on the track. To access the grease nipple Ref.①, remove plug (27 mm open ended wrench) and turn the body Ref.② until you can see the grease nipple.
- After any servicing operation on the transmission casing (where are located the conical gears), replace the grease (0,180kg).

Use one of the following recommended grease :

- TOTAL MULTIS EP 200
- KLÜBER NATOSBIN B 1600 EP

or any equivalent grease complying with the DIN 51 354 standard (grade 00 grease for highly loaded gears. Operational temperature -20°C to +120°C).



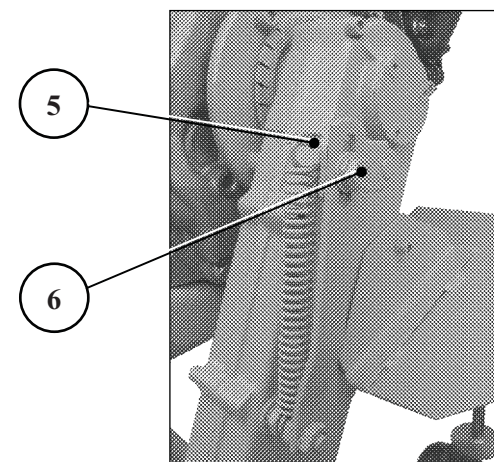
#### 5.1.5 Checking drive belt tension (must be done with the engine stopped)

An automatic tensioning system is fitted on the machine. The correct tension is automatically set when tightening / untightening the screw Ref.⑥.

Every 50 hours of work, set the belt tension by proceeding as follows :

- loosen the screw Ref.⑥ which holds the tensioning roller Ref.⑤ in position (13 mm wrench).  
> the necessary tension on the belt is applied automatically by the spring.
- tighten the screw Ref.⑥.

NOTE: When replacing or a belt or putting a belt back in place, check that the pulley grooves are in good condition and clean them carefully, together with the grooves in the belt.

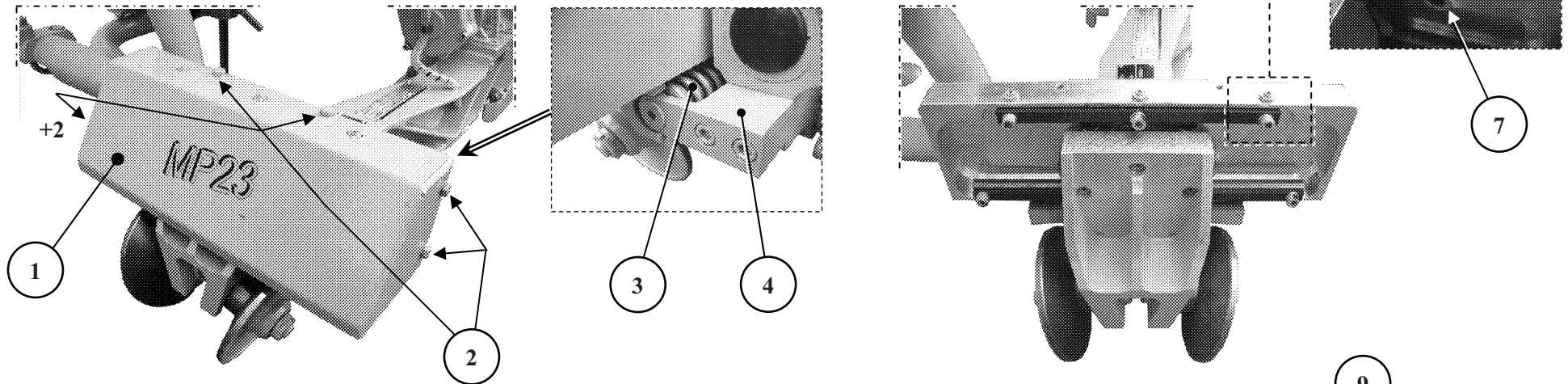


### 5.1.6 Checking and adjusting roller slide clearance

Every 100 hours of use, it is advisable to check the roller slide clearance and adjust it if necessary.

To adjust the clearance, proceed as follows :

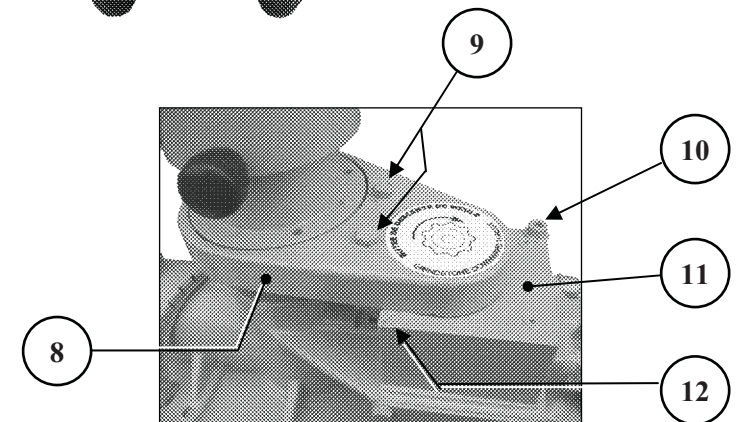
- ❶ Set the grinding head to its vertical position.
- ❷ Remove the cover Ref.❶ after taking the six screws Ref.❷ out (10 mm box wrench).
- ❸ To facilitate adjustment, cancel the spring pressure by removing bracket Ref.❹ (3 screws - 5 mm hex head key) and then spring Ref.❸.
- ❹ Loosen the 3 screws Ref.❷ by half a turn (5 mm hex head key).
- ❺ Loosen the 3 locknuts Ref.❻, and then adjust clearance using the 3 pressure screws Ref.❺ (3 mm hex head key).
- ❻ Once the clearance has been adjusted, retighten the 3 locknuts Ref.❻ while keeping the 3 pressure screws Ref.❺ at the desired setting.
- ❼ Put the various elements back in place in reverse order as compared with the removal procedure.



### 5.1.7 Replacing the drive belt on the raising and lowering system

To replace the drive belt on the raising and lowering system, proceed as follows :

- take out the 2 screws Ref.❹ (10 mm box wrench) and then remove the cover Ref.❸.
- loosen the screws Ref.❺ (5 mm hex head key) and Ref.❻ (flat blade screwdriver) by a few turns.
- fit the belt and then adjust its tension by pulling the motor and reduction drive Ref.❻ back.
- tighten the screw Ref.❺ and then the screw Ref.❻, and then put the cover Ref.❸ back in place.



## 5.2 Maintenance

### 5.2.1 Preventive maintenance schedule

ITEM	NATURE OF THE OPERATION	PERIODICITY						Ref.
		Before each use	Before each use	Every week	Every 50 hours	Every 100 hours	Presence of obvious signs of wear or incorrect operation	
Complete appliance	Inspecting the machine	X						Chap.3 - § 3
Complete appliance	Cleaning the machine as a whole using a clean rag or a blow gun to remove all dirt from the machine		X					Chap.5 § 1.3
Greasing	Greasing			X				Chap.5 § 1.4
Drive belt	Adjusting tension				X			Chap.5 § 1.5
	Replacement						X	Chap.5 § 1.5
Roller slides	Cleaning				X			Chap.5 § 1.3
	Checking clearance (adjusting if necessary)					X		Chap.5 § 1.6
Drive belt on the raising and lowering system	Replacement						X	Chap.5 § 1.7

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

## 5.2.2 List of wearing parts (this list does not include any engine parts)

The wearing parts for the machine and the conditions for their replacement are set out in the list below.

Nonetheless, it is essential to replace or repair immediately all worn, damaged or missing parts, if a safety risk is involved.

Description	Ref.	Qty	Conditions for replacement
Tightness joint G 45 x 52 x 4	HWM	1	Oil leak or incorrect operation
Tightness joint Ø 40 x 52 x 7	DGM	1	
Tightness cap	JVY	2	Wear or breakage
Belt 13 J – L = 813	JTD	1	Breakage
Belt 170 XL	JPU	1	
Stop switch	HBD	1	Incorrect operation or switch broken
Seal n°26	HWG	1	Oil leak or incorrect operation
Scraper seal AS 22 - 28 - 5 - 9	KWH	1	
O-ring n°8	SS	1	
Rubber handle	36151	1	Wear or breakage
Rubber handle Ø27	LZ	5	
Gas spring C = 80 – 700 N	JPB	1	Oil leak or incorrect operation
Bellows V 6 - 639	HXC	1	Damage



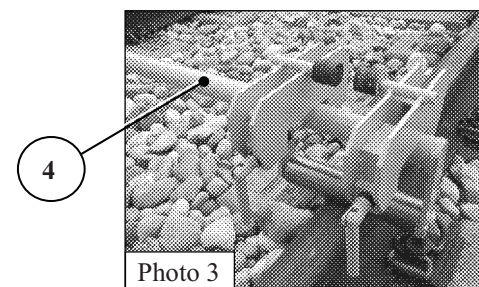
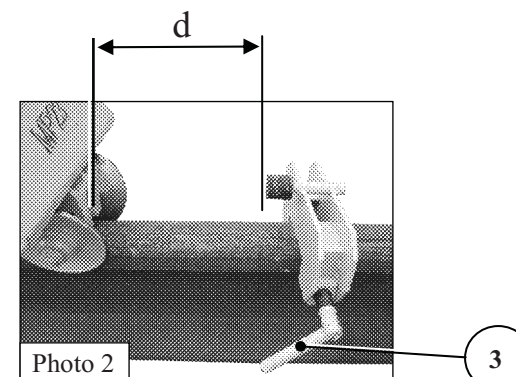
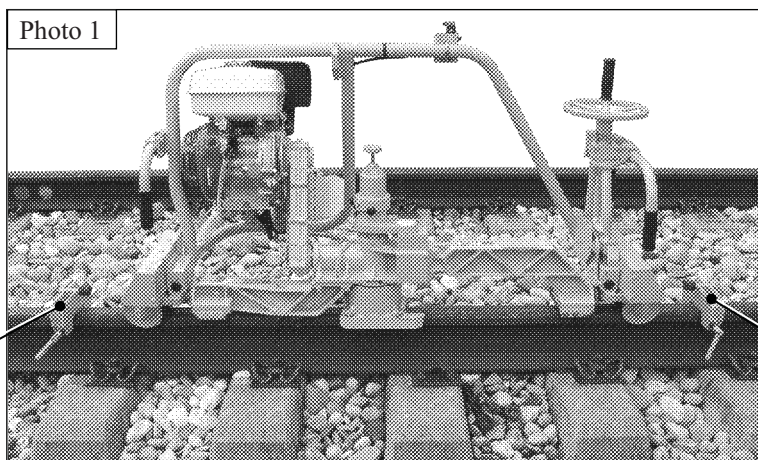
## CHAPTER 6 – ACCESSORIES AND OPTIONS

### 6.1 Optional equipment

#### 6.1.1 End-of-travel stops

The end-of-travel stops are designed to limit the grinding area and also to facilitate the forward and backward movement of the machine.

- To install these stops, proceed as follows :
  - place the grinding head in line with the weld.
  - fit the end-of-travel stops Ref.① and ② so that the required grinding distance is evenly distributed either side of the machine (photo 1).
  - tighten the tightening levers Ref.③.
  - push the machine to contact a stop and check that measurement "d" is the correct grinding distance (photo 2).
- After use, store the stops in the locations provided at the end of the counterbalance beam Ref.④ (photo 3).



**THE END-OF-TRAVEL STOPS MUST NOT BE USED IF THE WORK IS BEING CARRIED OUT WITHOUT STOPPING RAIL TRAFFIC**

## **CHAPTER 7 – SPARE PARTS CATALOG**

### **7.1 Drawings and parts lists**

## 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)

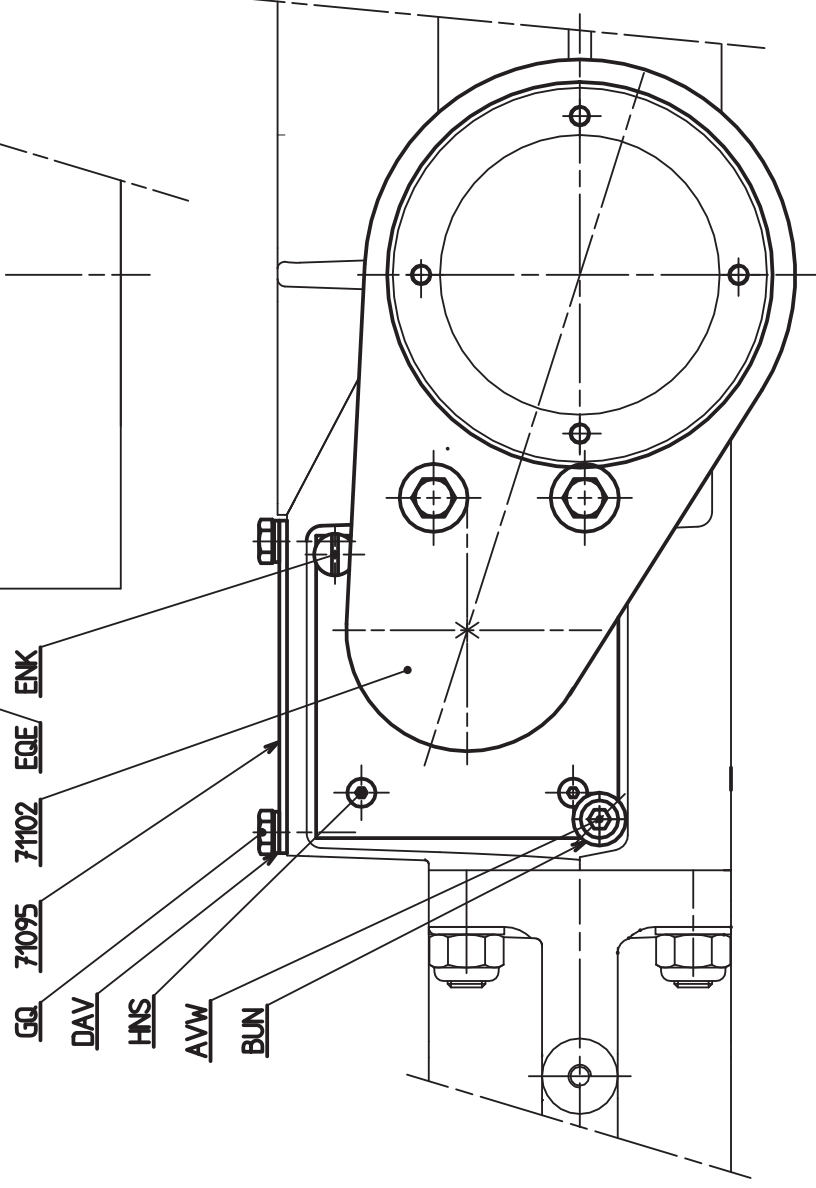
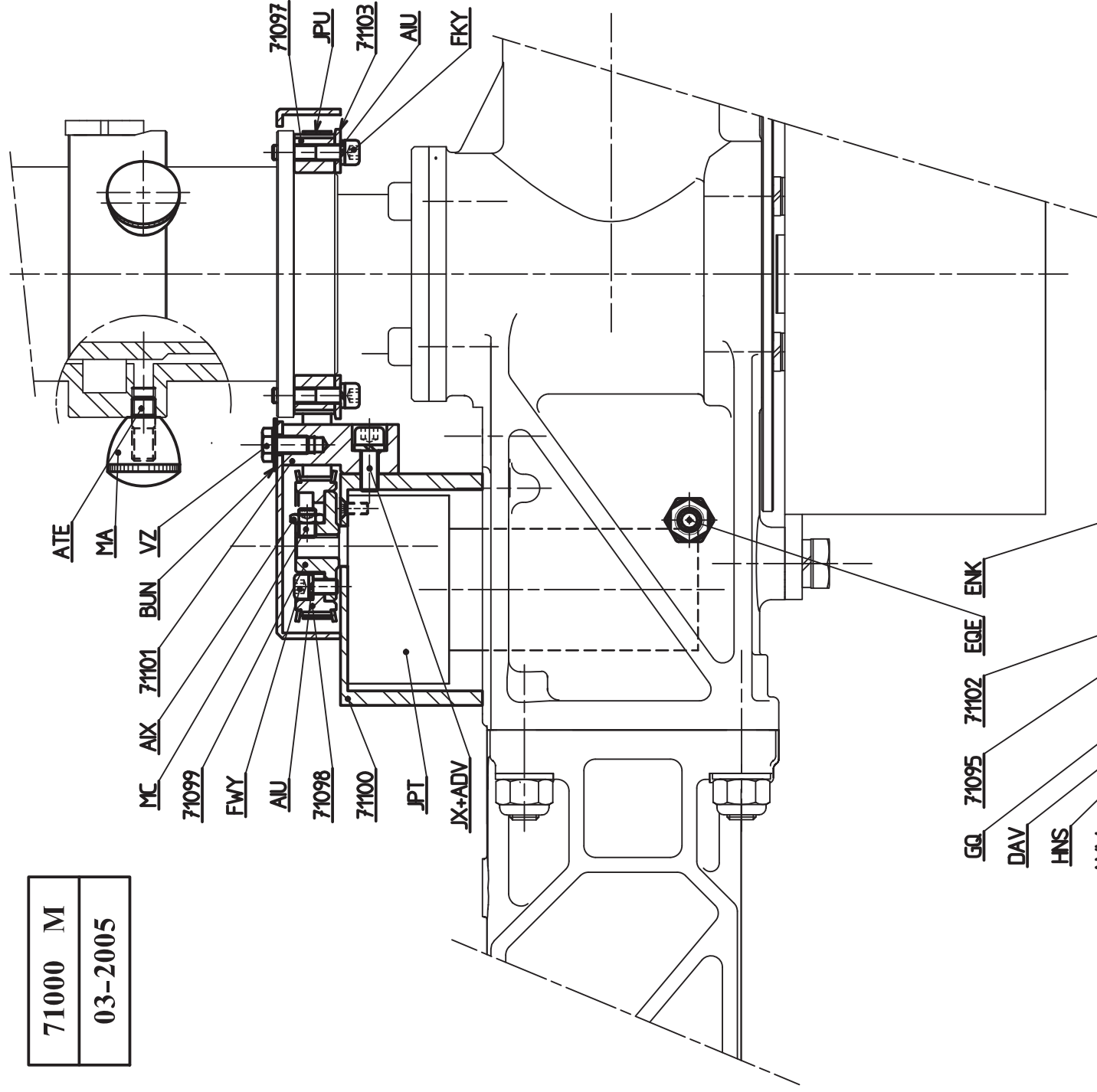
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## WICHTIG

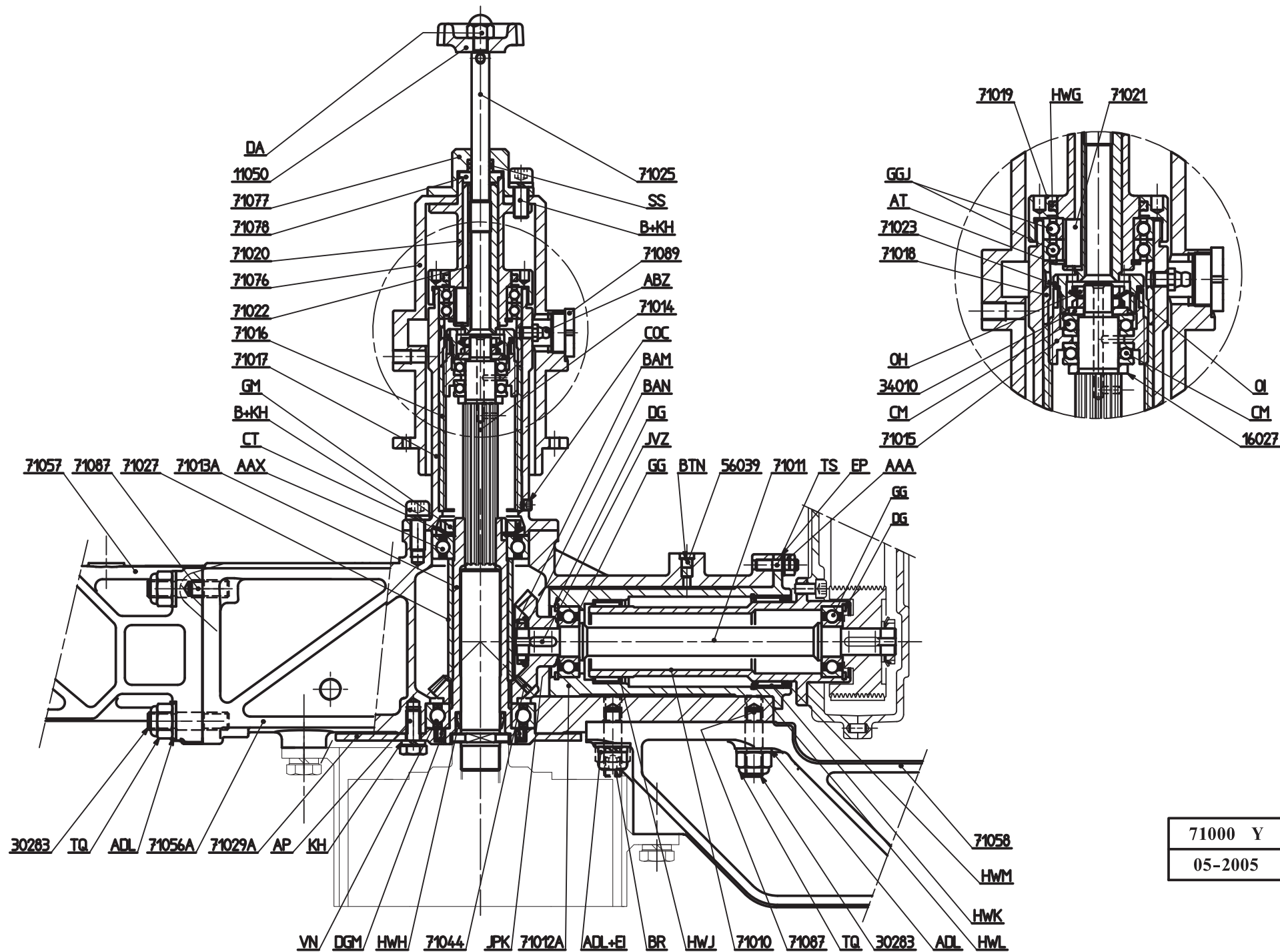
Um uns eine schnelle und fehlerlose Erledigung Ihres Ersatzteil-Auftrages zu erlauben, bitten wir Sie um folgende Angaben :

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

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03-2005



Ref.	Qty	Description	Ref.	Qty	Description
71 095	1	Cap	GQ	4	Screw H 6 x 10
71 097	1	Pulley 60 T	JX	2	Screw Chc 6 x 16
71 098	1	Pulley 30 T	MA	3	Knob Ø 25
71 099	1	Hub	MC	1	Screw Hc 6 x 10 flat end
71 100	1	Reducer casing	VZ	2	Screw H 6 x 12
71 101	1	Belt casing support	ADV	2	Washer W 6
71 102	1	Belt casing	AIU	6	Washer W 5
71 103	1	Pulley flange	AIX	1	Nut Hm 6
			ATE	3	Pin M 8 x 22
			AVW	1	Screw Chc 6 x 60
			BUN	3	Washer JZC 6
			DAV	4	Washer DI 6
			ENK	1	Screw F 6 x 60
			EQE	1	Stuffing box n° 7
			FKY	3	Screw Chc 5 x 25
			FWY	3	Screw Chc 5 x 10
			HNS	4	Screw Fhc M 4 x 10
			JPT	1	Gearmotor 12 V
			JPU	1	Belt 170 XL

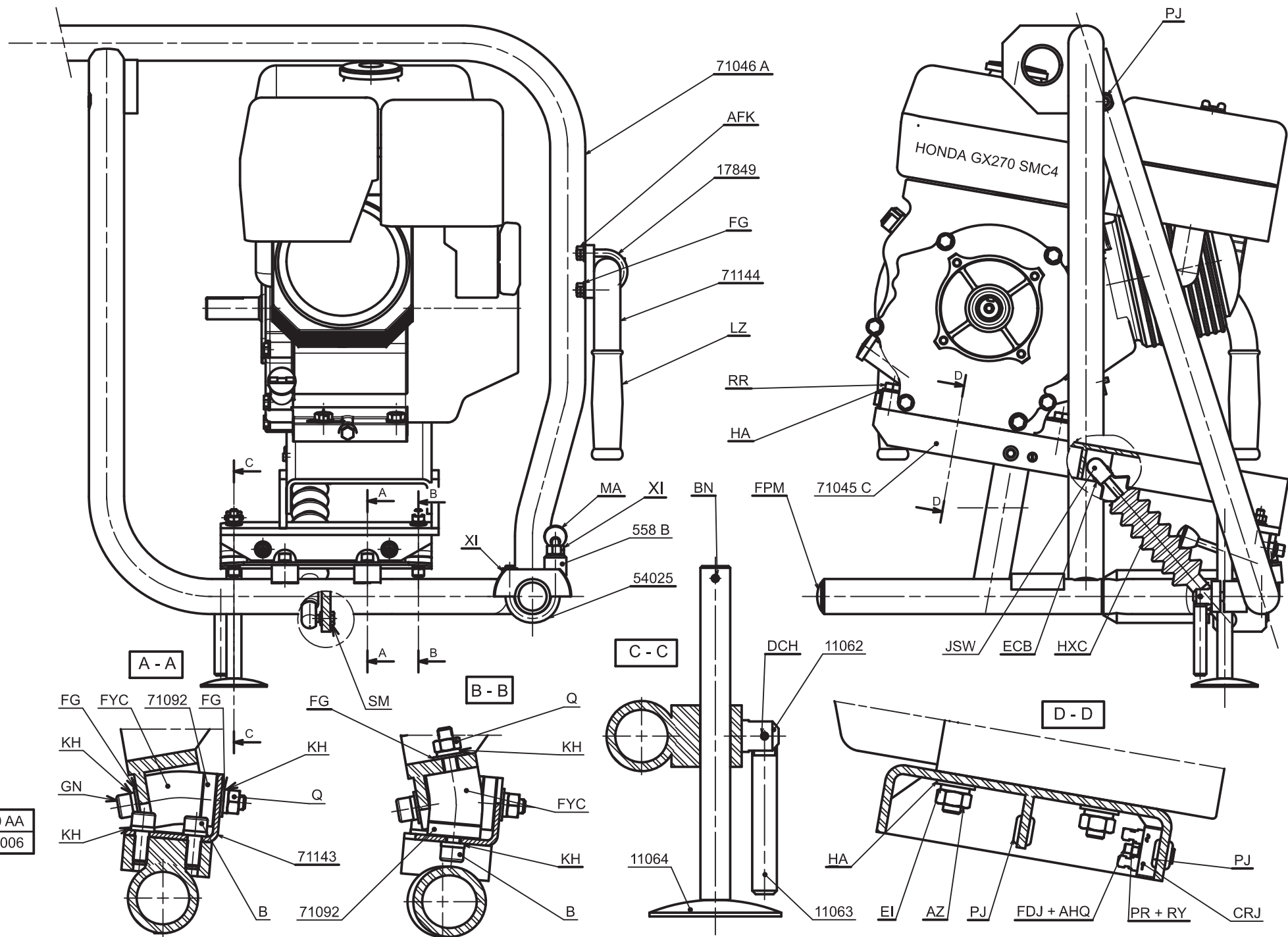


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Ref.	Qty	Description	Ref.	Qty	Description
11 050	1	Knob	71 021	1	Key
16 027	1	Washer Ø 17,1 x 25 x 4	71 022	1	Thrust nut
30 283	7	Pin M 10 x 46	71 023	1	Brake washer
34 010	1	Washer Ø 12,2 x 25 x 3	71 025	1	Thrust screw
56 039	2	Felt blanking plug	71 027	1	Pinion crosspiece
71 010	1	Articulation axle	71 029 A	1	Obturator
71 011	1	Transmission shaft	71 044	1	Bevel gear 28 T.
71 012 A	1	Sleeve	71 056 A	1	Centre frame
71 013 A	1	Receiving pinion hub	71 057	1	Left frame
71 014	1	Spindle	71 058	1	Right frame
71 015	1	Grinding wheel adjusting screw	71 076	1	Sleeve
71 016	1	Grinding wheel adjusting nut	71 077	1	Cap
71 017	1	Nut cage	71 078	1	Stop washer
71 018	1	Spacer	71 087	4	Centring pin Ø 8
71 019	1	Nut	71 089	1	Plug
71 020	1	Handwheel bearing			

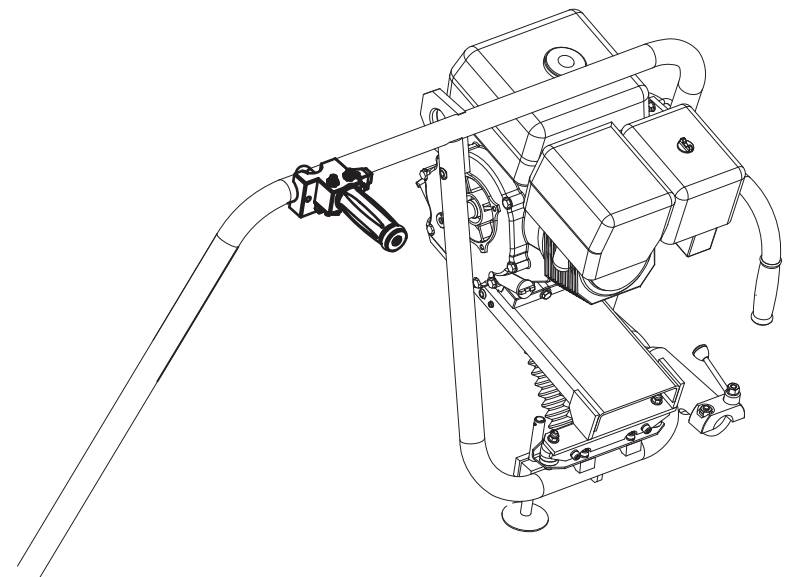
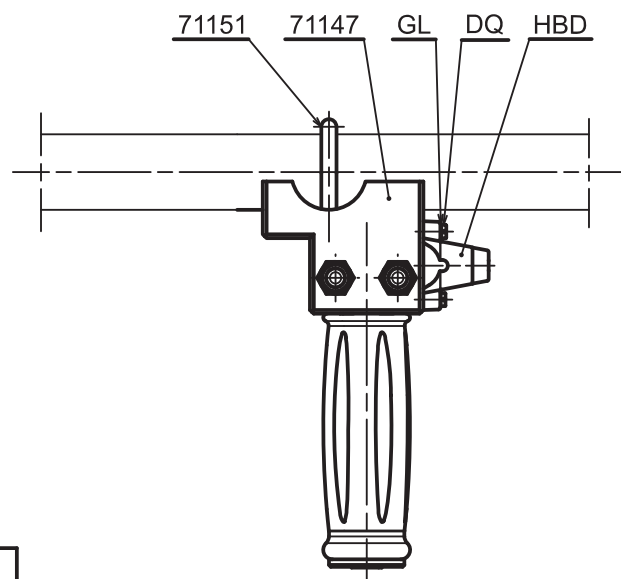
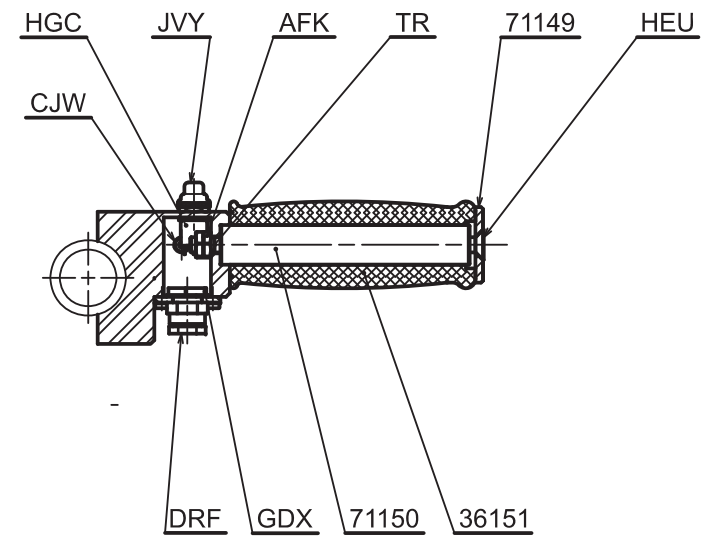
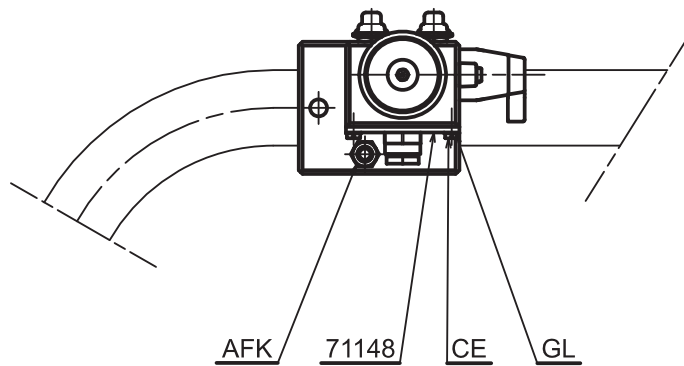
Ref.	Qty	Description	Ref.	Qty	Description
B	8	Screw Chc 8 x 20	TS	5	Pin M 6 x 24
AP	4	Screw H 8 x 20	VN	1	Bearing n° 6007 EE
AT	1	Circlips 30 e	AAA	5	Stop nut H 6
BR	1	Screw Chc 10 x 30	AAX	1	Bearing n° 6006 EE
CM	2	Thrust ball bearing 51103	ABZ	1	Lubricator BEC M 6
CT	1	Brake washer MB 6	ADL	8	Washer Z 10 U
DA	1	Cap nut H 8	BAM	1	Tightening nut KM2
DG	2	Circlips 40 i	BAN	1	Brake washer MB2
EI	1	Washer W 10	BTN	1	Elastic ring 7015-8
EP	5	Washer M 6 U	COC	1	Screw Hc 6 x 6, bowl end
GG	2	Bearing n° 6203 EE	DGM	1	Tightness joint Ø 40 x 52 x 7
GM	1	Tightening nut KM6	GGJ	2	Bearing n° 61906
KH	12	Washer W 8	HWG	1	Seal n° 26
OH	2	Tightening nut KM1	HWH	1	Scraper seal AS 22 - 28 - 5 - 9
OI	1	Brake washer MB1	HWJ	1	Needle bearing HK40 - 16
SS	3	O-ring n° 8	HWK	1	Needle bearing HK45 - 16
TQ	7	Stop nut H 10	HWL	1	Stop segment BR 52
			HWM	1	Tightness joint G 45 x 52 x 4
			JPK		Shims (Ø 15,2 x 21)
			JVZ	1	Key BR 5 x 5 x 15 - T 120





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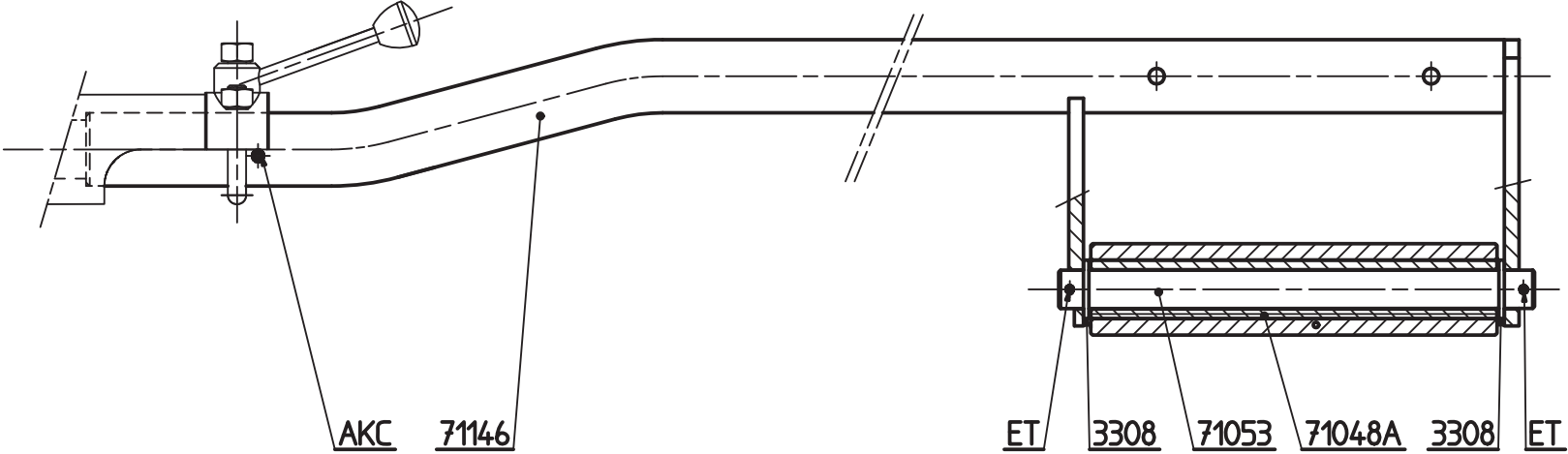
Ref.	Qty	Description	Ref.	Qty	Description
558 B	1	Locking handle	B	6	Screw Chc 8 x 20
11 062	1	Tightening screw	Q	4	Nut H 8
11 063	1	Tightening handle	AZ	4	Nut H 10
11 064	1	Crutch	BN	1	Elastic pin Ø 4 x 20
17 849	2	Locking strap	EI	4	Washer W 10
54 025	1	Locking strap	FG	10	Washer M 8 U
71 045 C	1	Engine fixing plate	GN	2	Screw Chc 8 x 16
71 046 A	1	Outrigger support	HA	8	Washer M 10 U
71 092	4	Spacer Ø 8,5 x 30 x 8	KH	12	Washer W 8
71 143	1	Elastic stud support	LZ	2	Rubber handle
71 144	2	Carrying arm	MA	1	Knob Ø 25
			PJ	4	Grommet
			PR	1	Nut H 5
			RR	4	Screw H 10 x 45
			RY	1	Washer M 5 U
			SM	2	Nut Hm 8
			XI	2	Stop nut H 10
			AFK	4	Stop nut H 8
			AHQ	1	Washer DE 5
			CRJ	1	Bridge rectifier
			DCH	1	Elastic pin Ø 4 x 18
			ECB	1	Clamp
			FDJ	1	Screw Cs 5 x 25
			FPM	3	Plug
			FYC	4	Elastic stud 520027
			HXC	1	Bellows V 6 - 639
			JSW	1	Gas spring C = 80 - 800 N



71000 AB  
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Ref.	Qty	Description	Ref.	Qty	Description
36 151	1	Rubber handle	CE	4	Screw Cs 4 x 10
71 147	1	Button box	DQ	2	Screw Cs 4 x 16
71 148	1	Cover	GL	6	Washer DI 4
71 149	1	Washer	TR	1	Stud M 8 x 27
71 150	1	Handle	AFK	2	Stop nut H 8
71 151	1	Locking strap	CJW	1	Cord-eye
			DRF	1	Stuffing box n° 9
			GDX	1	Counter nut n° 9
			HBD	1	Stop switch
			HEU	1	Screw Fhc 8 x 16
			HGC	2	Switch
			JVY	2	Tightness cap

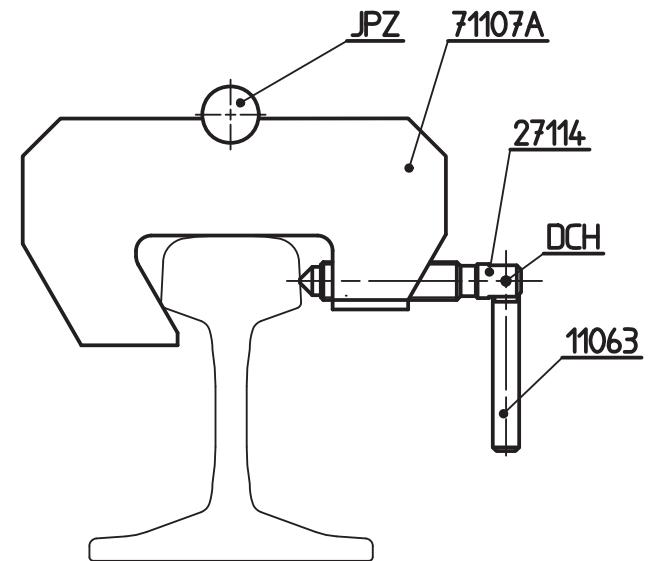
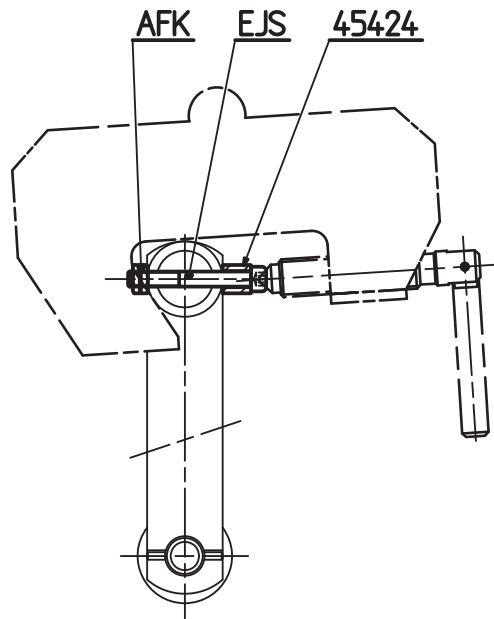
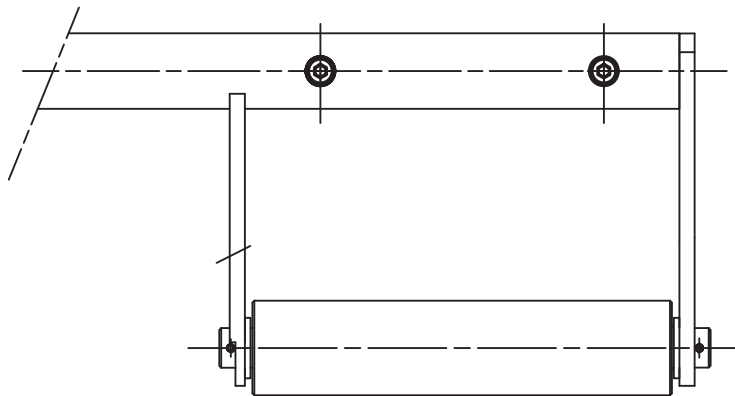
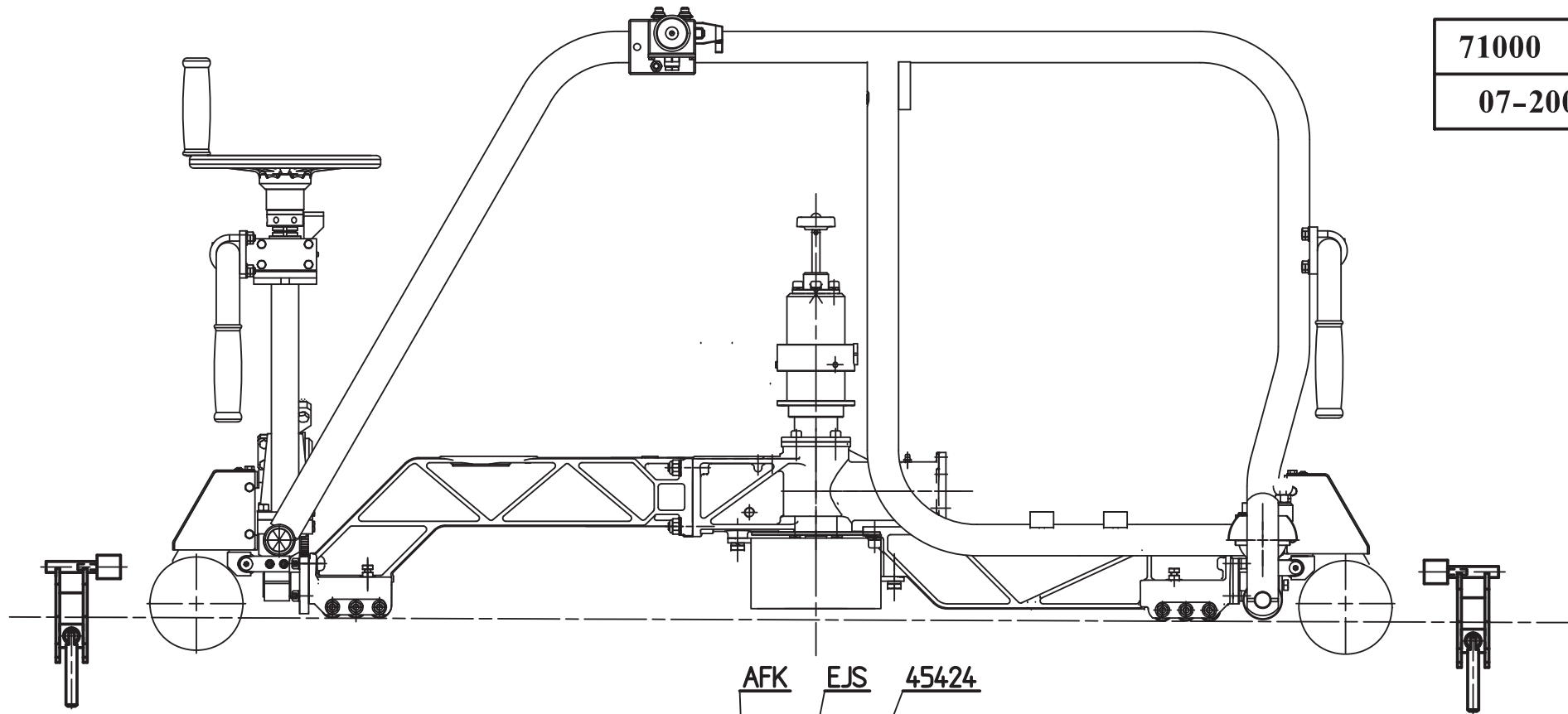
71000 AC
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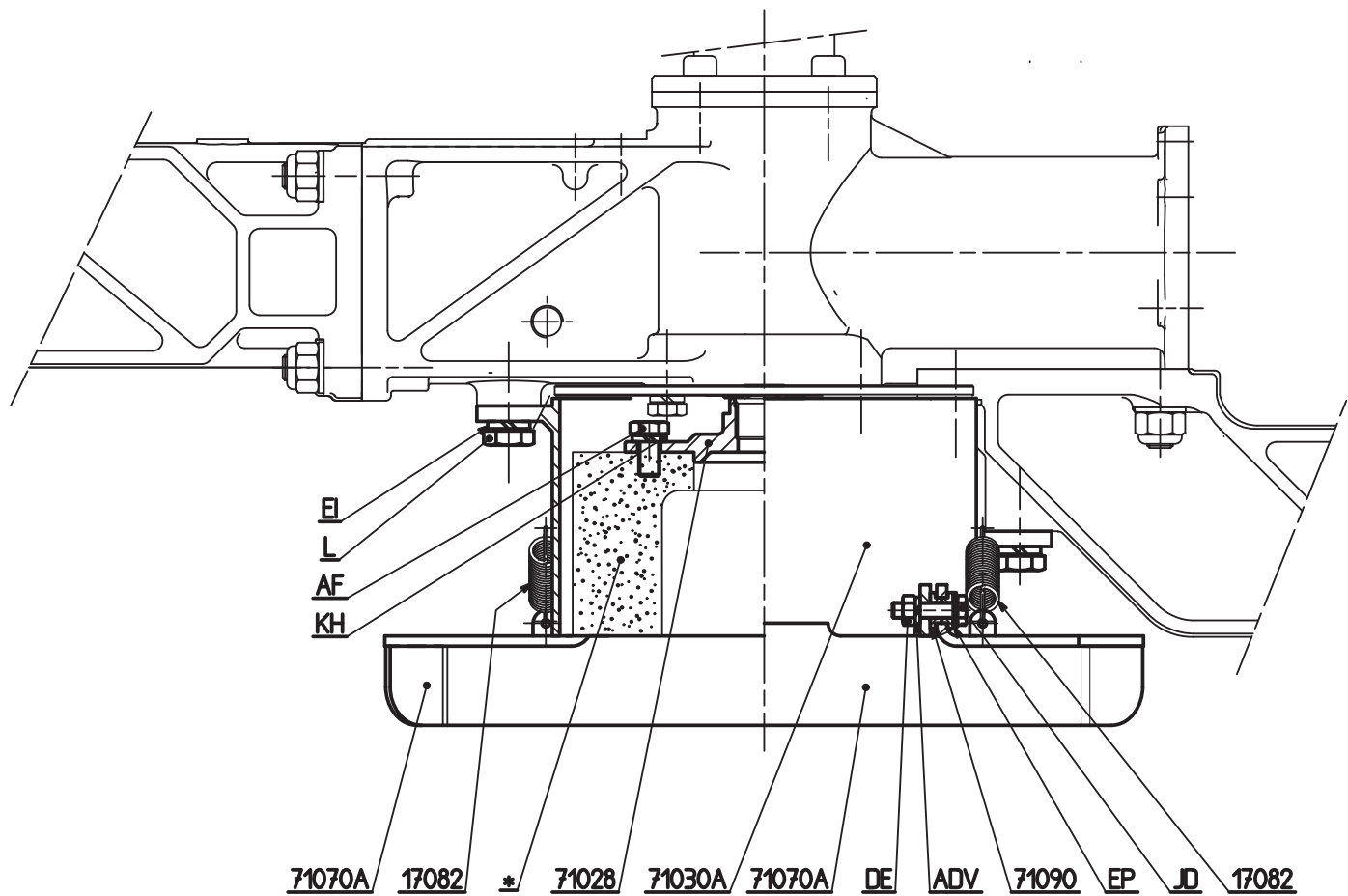


Ref.	Qty	Description	Ref.	Qty	Description
3 308	2	Washer Ø 21,5 x 32 x 3	ET	2	Elastic pin Ø 4 x 40
71 048 A	1	Roller	AKC	1	Elastic pin Ø 6 x 70
71 053	1	Roller axle			
71 146	1	Outrigger (1435 track gauge)			
71 146 A	1	" (1524 track gauge)			
71 146 B	1	" (1600 track gauge)			
71 146 C	1	" (1668 track gauge)			
71 146 D	1	" (1676 track gauge)			
71 146 E	1	" ( 914 track gauge)			
71 146 F	1	" (1000 track gauge)			
71 146 G	1	" (1050 track gauge)			
71 146 H	1	" (1067 track gauge)			

71000 AD
07-2006



Ref.	Qty	Description	Ref.	Qty	Description
11 063	2	Tightening handle	AFK	2	Stop nut H 8
27 114	2	Screw	DCH	2	Elastic pin Ø 4 x 18
45 424	2	Spacer	EJS	2	Screw Chc 8 x 65
71 107 A	2	Thrust	JPZ	2	Elastic pin 511312



71000 AE

07-2006

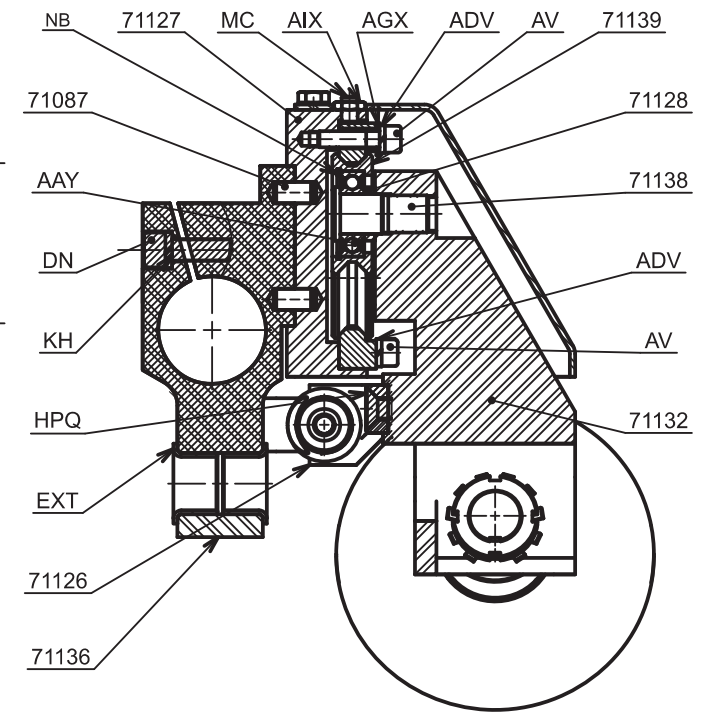
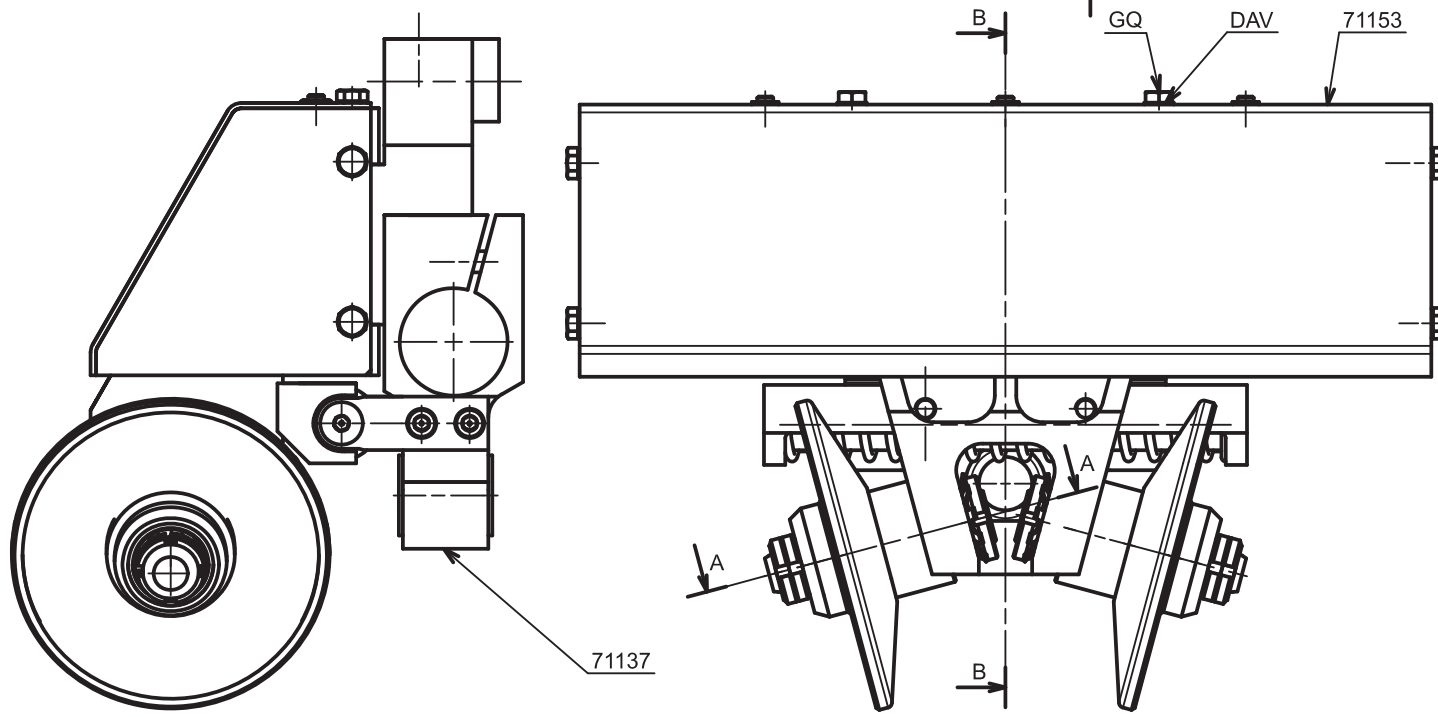
Ref.	Qty	Description	Ref.	Qty	Description
17 082	2	Spring	L	2	Screw H 10 x 20
71 028	1	Stone holder	AF	4	Screw H 8 x 16
71 030 A	1	Grindstone casing Ø 150 x 72	DE	4	Nut H 6
71 070 A	2	Deflector	EI	2	Washer W 10
71 090	8	Deflector ring	EP	4	Washer M 6 U
			JD	4	Screw H 6 x 25
			KH	4	Washer W 8
			ADV	4	Washer W 6

\* Grindstone type 6 - Ø 150 x 72 x 4 M8 / Ø 90 - 50 m/s

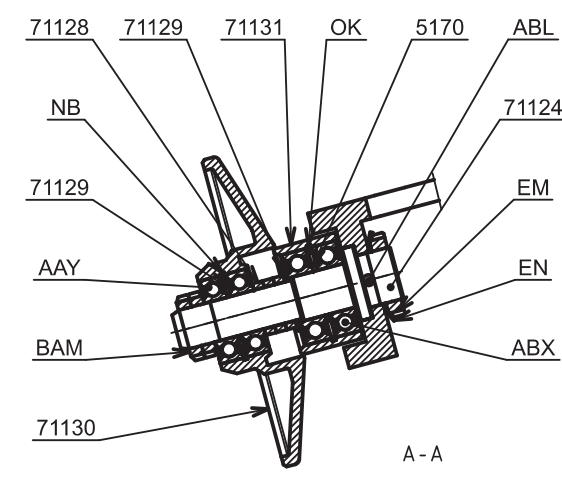
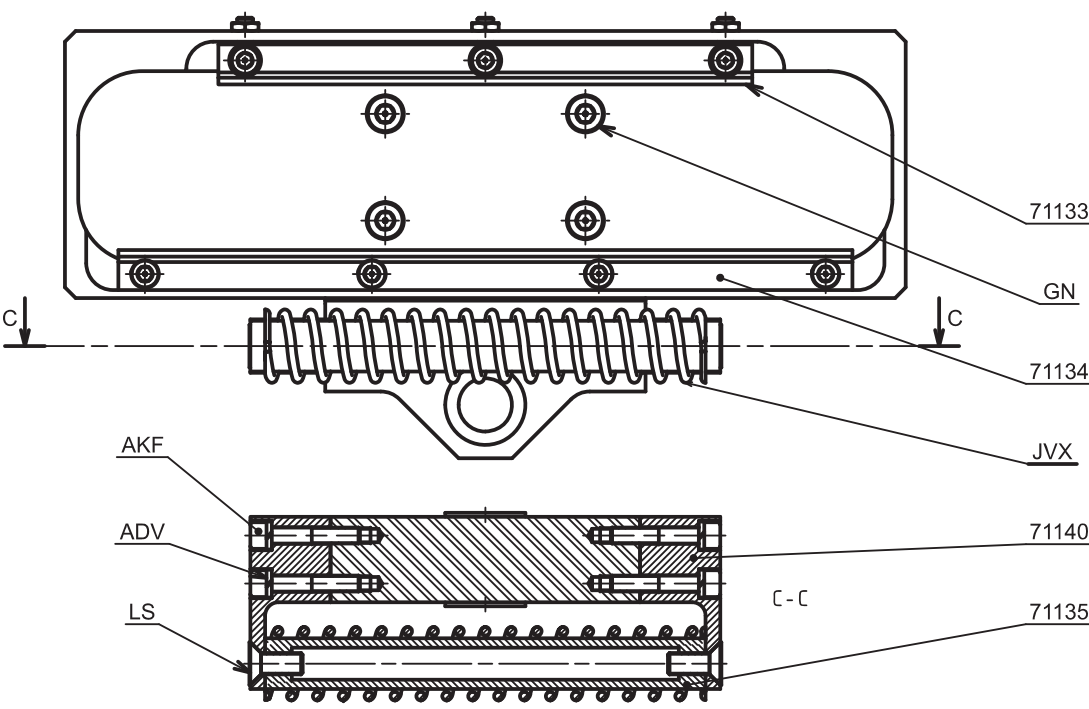




Ref.	Qty	Description	Ref.	Qty	Description
760	1	Spring	R	5	Screw H 6 x 20
11 042	1	Washer Ø 20,2 x 30 x 3	BB	1	Screw ST 10 x 10 flat end
11 060	1	Handle axle	BC	1	Steel ball Ø 8,7
17 849	2	Strap	CG	1	Nut H 14
37 206	1	Stop ring	EM	2	Tightening nut KM 4
45 239	1	Washer Ø 20,1 x 40 x 4	EP	12	Washer M 6 U
54 017	2	Swivel support	FF	2	Screw H 8 x 25
71 059	1	Toothed sector	FG	4	Washer M 8 U
71 060	1	Lever	GP	8	Pin M 8 x 32
71 063	1	Toothed sector axle	GX	4	Screw H 6 x 30
71 066	1	Right angle	KH	2	Washer W 8
71 067	1	Left angle	LZ	3	Rubber handle
71 068	1	Inclination handwheel	SM	2	Nut Hm 8
71 091	1	Screw protector	UA	4	Swivel GE 15 D
71 093	1	Thrust cage	VZ	1	Screw H 6 x 12
71 094	1	Swivel support	XQ	1	Elastic pin Ø 5 x 35
71 144	1	Carrying arm	ABZ	2	Lubricator BEC M 6
71 145	1	Carrying arm support	ADV	12	Washer W 6
71 154	1	Handwheel handle	AEJ	1	Washer DE 14
71 156	1	Protective plate	AFK	12	Brake nut H 8
71 157	1	Spacer	BBP	2	Screw H 8 x 12
71 170	1	Inclination screw	BUN	2	Washer JZC 6
71 171	1	Nut	CNC	8	Washer Z 8 U
			EHP	2	Combined bearing RAX 720
			FDK	1	Ring PAP 2020 P10
			JVZ	1	Key BR 5 x 5 x 15 - T 120



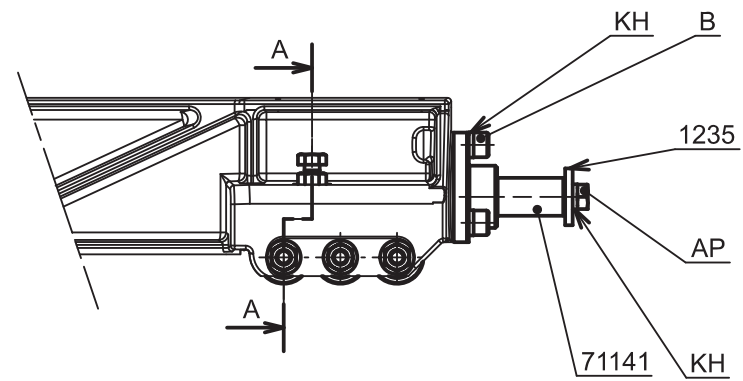
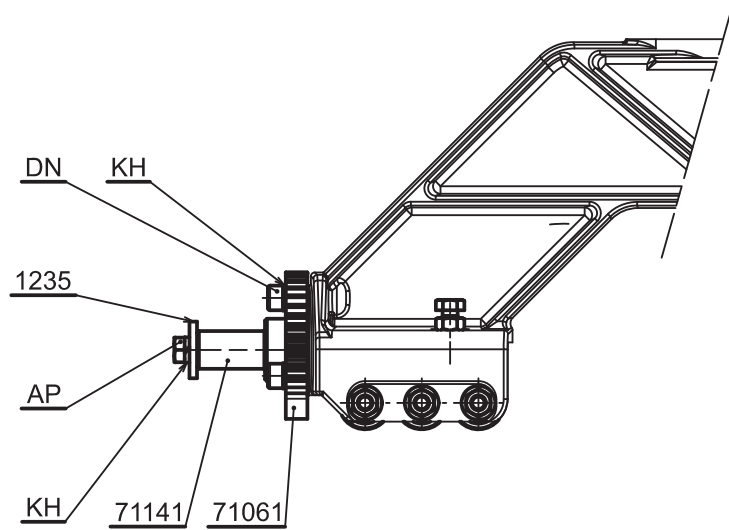
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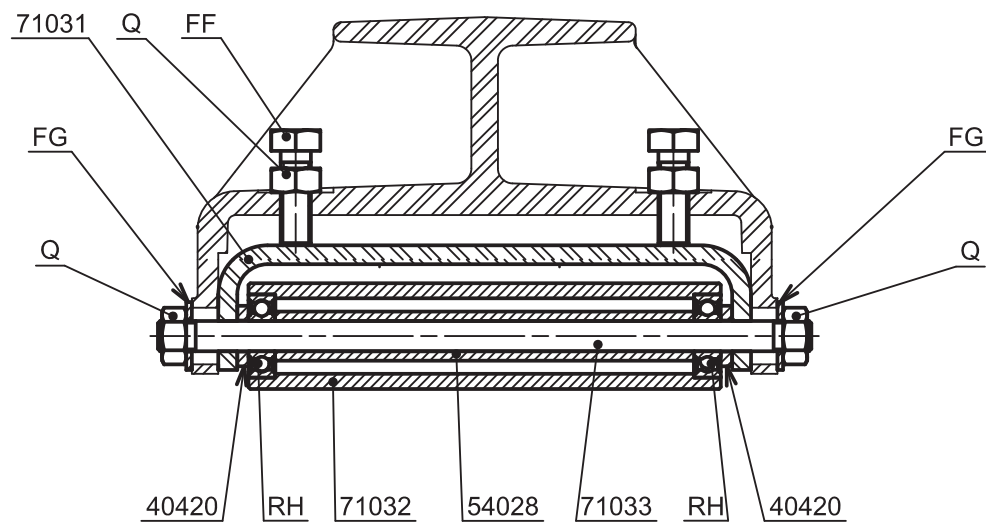
A - A

71000 AJ  
09-06

Ref.	Qty	Description	Ref.	Qty	Description
5 170	4	Washer Ø 17,1 x 22 x 1,6	AV	14	Screw Chc 6 x 25
71 087	4	Centring pin Ø 8	DN	4	Screw Chc 8 x 25
71 124	4	Axle	EM	4	Nut KM 4
71 126	2	Thrust	EN	4	Washer MB 4
71 127	2	Casing	GN	8	Screw Chc 8 x 16
71 128	18	Washer Ø 15,1 x 20 x 4	GQ	12	Screw H 6 x 10
71 129	8	Washer Ø 15,1 x 23 x 1,3	KH	4	Washer W 8
71 130	4	Guide flange	LS	4	Screw Fhc 8 x 20
71 131	4	Guide roller	MC	6	Screw Hc 6 x 10 flat end
71 132	2	Support	NB	10	Circlips 32 i
71 133	2	Upper slide	OK	4	Circlips 35 i
71 134	2	Lower slide	AAY	14	Bearing n° 6002 EE
71 135	2	Spring guide	ABL	4	Elastic pin Ø 4 x 8
71 136	1	Right box	ABX	8	Bearing n° 6003 EE
71 137	1	Left box	ADV	22	Washer W 6
71 138	6	Axle	AGX	6	Washer Z 6
71 139	6	Roller	AIX	6	Nut Hm 6
71 140	4	Square	AKF	8	Screw Chc 6 x 35
71 153	2	Protective case	BAM	8	Nut KM 2
			DAV	12	Washer DI 6
			EXT	4	Ring PAF 20165 P 10
			HPQ	4	Screw Fhc 8 x 25
			JVX	2	Spring



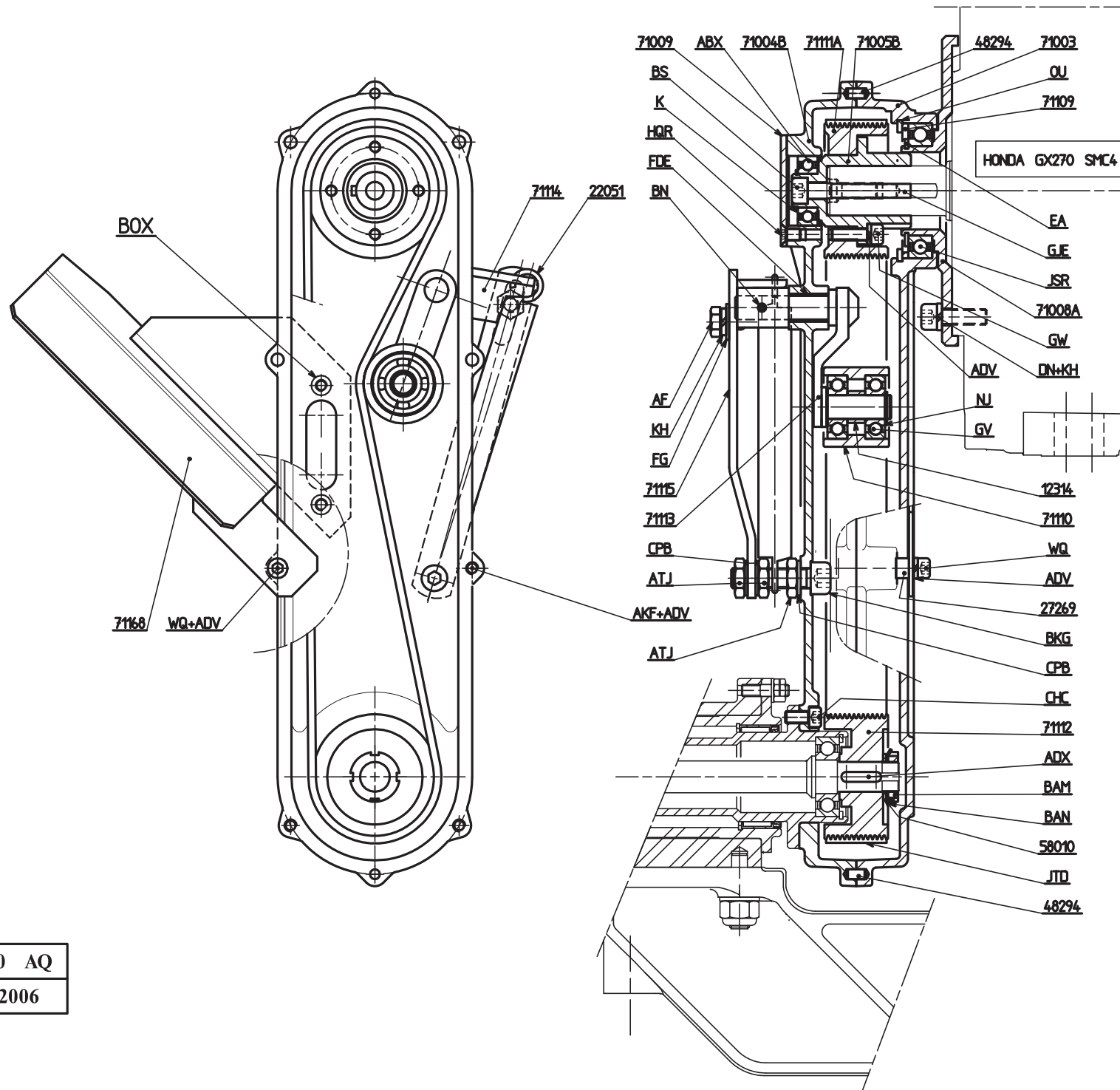
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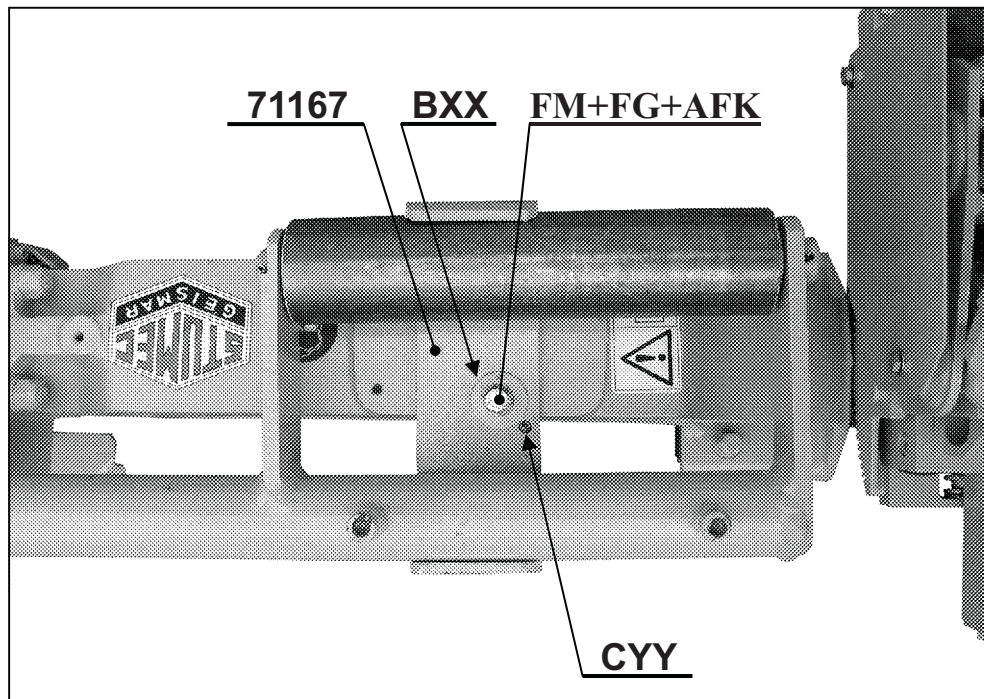


Ref.	Qty	Description	Ref.	Qty	Description
1 235	2	Washer Ø 9 x 30 x 4	B	3	Screw Chc 8 x 20
40 420	12	Washer Ø 8,2 x 16 x 3	Q	16	Nut H 8
54 028	6	Bearing roller spacer	AP	2	Screw H 8 x 20
71 031	2	Bearing roller support	DN	3	Screw Chc 8 x 25
71 032	6	Bearing roller	FF	4	Screw H 8 x 25
71 033	6	Bearing roller axle	FG	12	Washer M 8
71 061	1	Driving pinion	KH	8	Washer W 8
71 141	2	Guiding roller axle	RH	12	Bearing n° 608 EE

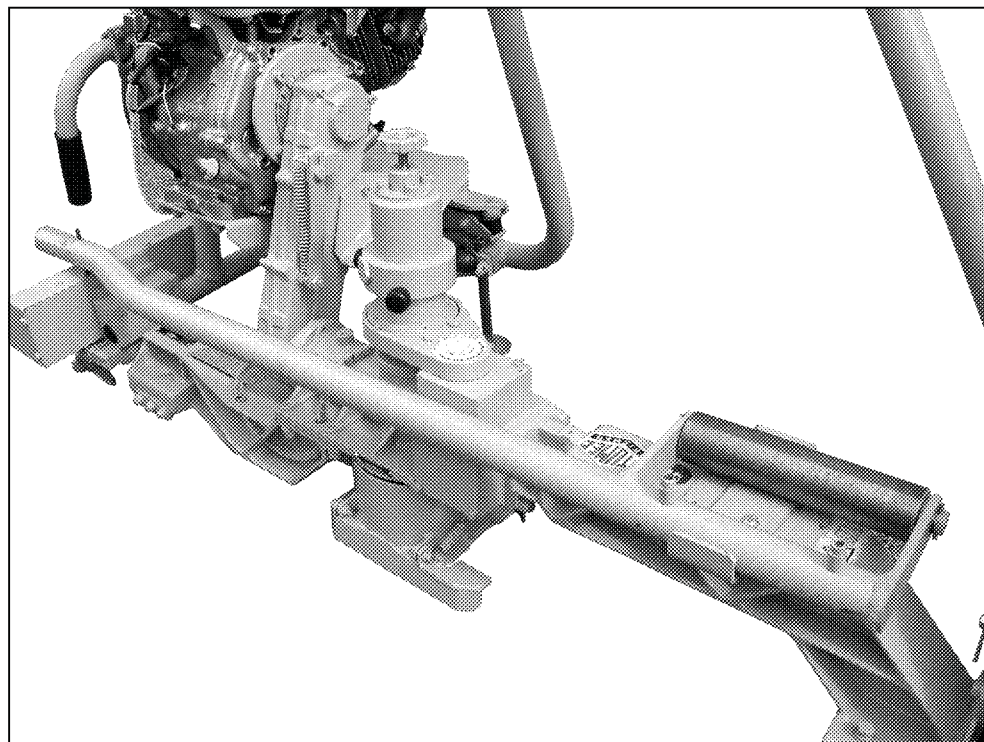


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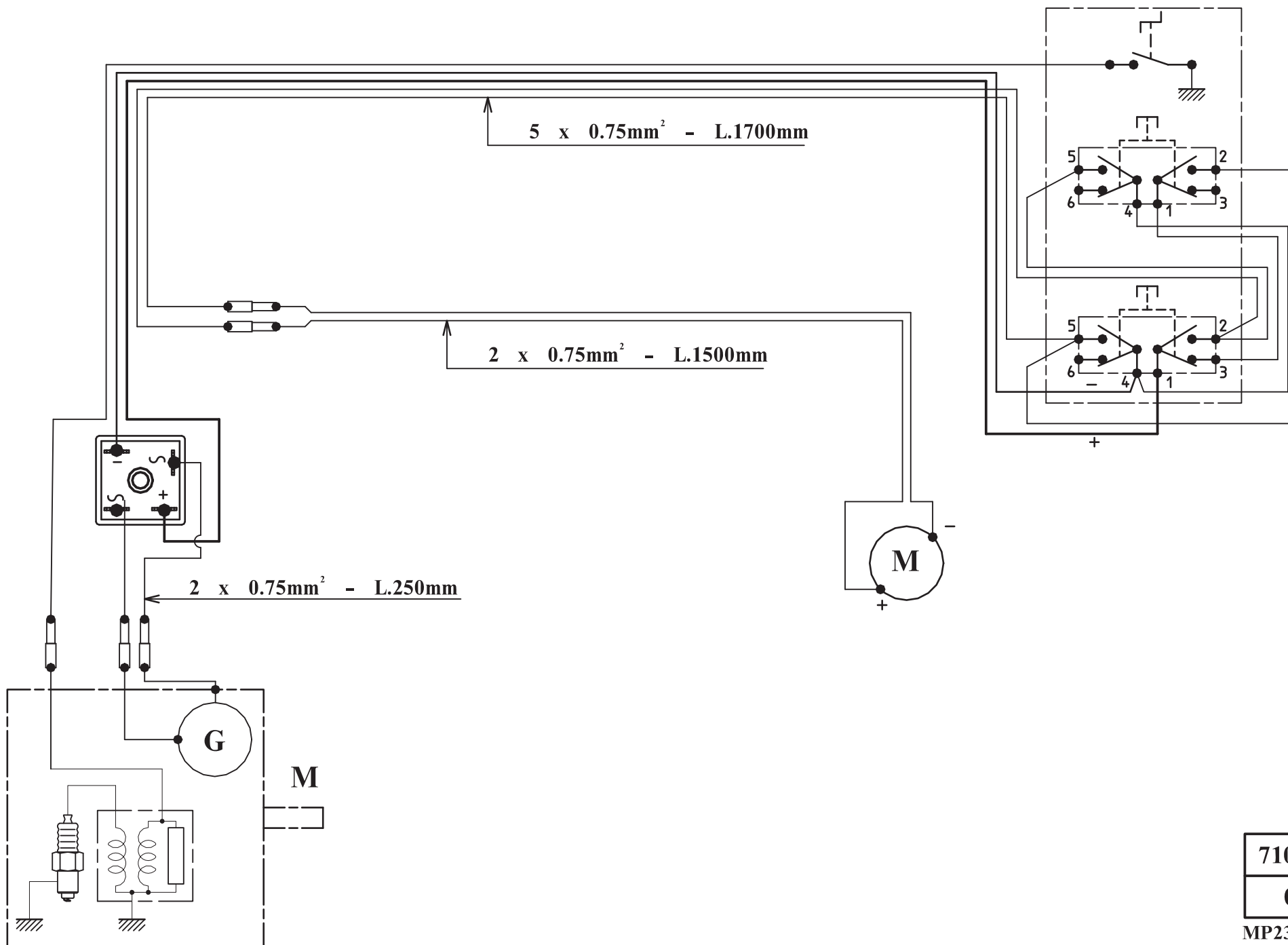
Ref.	Qty	Description	Ref.	Qty	Description
12 314	1	Spacer	K	1	Circlips 17 e
22 051	1	Spring	AF	1	Screw H 8 x 16
27 269	2	Spacer	BN	1	Elastic pin Ø 4 x 20
48 294	2	Centring pin Ø 5 x 9	BS	1	Screw Chc 8 x 35
58 010	1	Washer Ø 15,1 x 23 x 1,5	DN	4	Screw Chc 8 x 25
71 003	1	Belt casing engine side	EA	1	Circlips 45 e
71 004 B	1	Belt casing frame side	FG	1	Washer M 8 U
71 005 B	1	Driving pulley hub	GV	2	Bearing n° 6201 EE
71 008 A	1	Mounting flange	GW	4	Screw Chc 6 x 20
71 009	1	Cap	KH	5	Washer W 8
71 109	1	Spacer	NJ	1	Circlips 12 e
71 110	1	Tension roller	OU	1	Circlips 68 i
71 111 A	1	Driving pulley	WQ	2	Screw Chc 6 x 40
71 112	1	Receiving pulley	ABX	1	Bearing n° 6003 EE
71 113	1	Tension axle	ADV	12	Washer W 6
71 114	1	Spring lever	ADX	1	Key BR 5 x 5 x 20
71 115	1	Rod	AKF	6	Screw Chc 6 x 35
71 168	1	Spark protector	ATJ	3	Nut Hm 10
			BAM	1	Tightening nut KM2
			BAN	1	Brake washer MB2
			BKG	1	Screw Chc 10 x 40
			BOX	2	Screw Chc 6 x 7
			CHC	4	Screw Chc 6 x 12
			CPB	3	Washer DI 10
			FDE	1	Ring PAP 1220 P10
			GJE	1	Key BD 7 x 7 x 40
			HQR	3	Screw Fhc 6 x 10
			JSR	1	Bearing n° 61909-2 RS1
			JTD	1	Belt 13 J - L = 813



<b>N° 71000 AM</b>
<b>10 - 06</b>



Rep	Nb	Désignation	Description
71167	1	Bride	Clamp
FG	1	Rondelle M8U	Washer M8U
FM	1	Vis H8 x 30	Screw H8 x 30
AFK	1	Ecrou frein H8	Stop nut H8
BXX	1	Rondelle élastique	Elastic washer
CYY	1	Goupille élastique Ø 6 x 10	Elastic pin Ø 6 x 10



71000 AS

01-07

MP23 cde élec.  
descente meule