

**RAIL DRILLING
MACHINE**

Type
PR1



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

SECTION 1 – SAFETY

- 1.1 Introduction*
- 1.2 General safety rules*
- 1.3 General safety instructions*
- 1.4 Special safety instructions*

SECTION 2 – DESCRIPTION OF THE MACHINE

- 2.1 General information*
- 2.2 General view*
- 2.3 Technical specification*

SECTION 3 – INSTALLING & SETTING UP

- 3.1 Fitting the hollow drill bit*
- 3.2 Fitting the clamp guides*
- 3.3 Inspecting the machine*
- 3.4 Defining the drilling axis*
- 3.5 Installing the machine on the rail*
- 3.6 Connection of the pressurised tank*

SECTION 4 – OPERATION

- 4.1 Conditions for use*
 - 4.1.1 Starting-up and shutting-down the machine*
 - 4.1.2 Instructions for the use of the drill*
 - 4.1.3 Points to note for removing the drill bit*
 - 4.1.4 Taking the machine off the track*
- 4.2 Storage*
 - 4.2.1 General instructions for storage*
 - 4.2.2 Special instructions for storage*

SECTION 5 – SERVICING & MAINTENANCE

- 5.1 Servicing*
- 5.2 Maintenance*

SECTION 6 – SPARE PARTS LIST

- 6.1 Illustrations and lists of parts*

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.

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.
- ⇒ 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**

- 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.

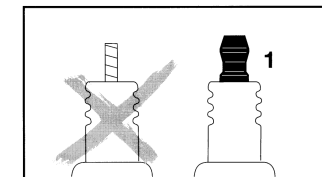
IN CERTAIN CASES HANDLING OIL CAN GIVE RISE TO THE SAME TYPE OF RISKS AS HANDLING FUEL. IT IS THEN ESSENTIAL TO TAKE THE SAME PRECAUTIONS WITH OIL AS THOSE SET OUT ABOVE FOR FUEL.

- 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

The main risks to the user of these machines and those in the immediate vicinity are:

- Catching loose-fitting clothing around the bit
- Injuries caused by shavings or the tool in use.
- Fires resulting from the fuel handling

Important: never pick up the swarf produced by the bit with bare hands. Never insert your fingers into the hole that has just been drilled, even if the machine has been withdrawn: the burrs remaining can inflict cuts. Never clean an area where swarf can accumulate with bare hands.

In addition to the personal equipment described in §1.3 « General safety recommendations » / "The operator and his environment", we particularly recommend for a safe use that the operator wear robust gloves (no slipping) as well as protective goggles.

Wearing hearing protections is also recommended. However, imperatively refer to the railway regulations into effect on the worksite to ensure whether they can be used or not.



SECTION 2 – DESCRIPTION OF THE MACHINE

2.1 General information

<u>Manufacturer:</u>	SOCIETE TURRIPINOISE DE MECANIQUE Route d'Italie 38110 LA TOUR DU PIN
<u>Description of the equipment:</u>	Rail drilling machine
<u>Type :</u>	PR1

The ultra-light PR1 rail drill is designed for drilling all types of Vignoles rail, even high alloy rails, using hollow drill bits.

Its exceptional performance, strength and lightness make the machine extremely comfortable to use.

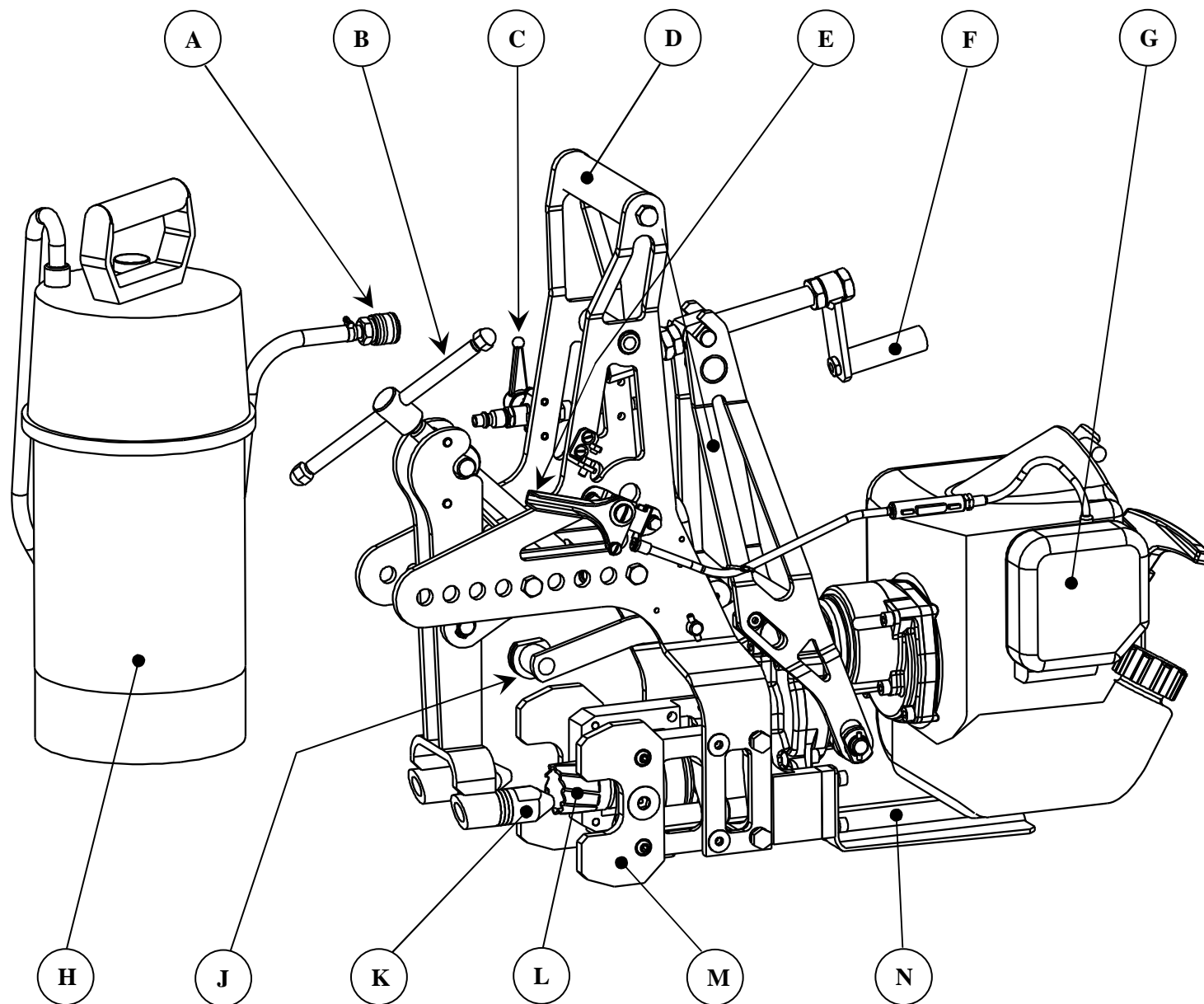
The design was developed using the latest techniques in the machine tool field.

It uses hollow drill bits which reduce the cutting area considerably and thus reduce the force and time required compared with conventional bits. This reduction in cutting force means that the type of motor used in the PR1 is smaller than that for a drill using solid bits, which also considerably reduces the weight of the machine.

This light and compact rail drilling machine has a quick clamping vice combined to a set of single clamp guides (or double as an option) ensuring a setup and a removal in a few seconds, a rigid mounting to the rail and an accurate drilling.

The vice makes it possible to drill as close as 60 mm from the end of the rail.

2.2 General view



No.	Description
A	Pressurized tank coupling
B	Vice clamping lever
C	Lubricant tap
D	Carrying handle
E	Engine acceleration lever
F	Forward travel handle
G	Engine
H	Pressurized lubricant tank
J	Lateral adjustment lever
K	Mobile jaw
L	Hollow drill bit
M	Clamp guide (2 per machine)
N	Engine protector



2.3 Technical specification

Machine dimensions

Length / width / height mm 600 / 240 / 500

Weight

Machine only (weight empty)..... kg 17
Machine (ready for use)..... kg 18
5 l tank for pressure lubrication (no load)..... kg 1,6

Noise

Acoustic pressure level dBA 85
Acoustic power level LwA 93

Vibrations

Level of vibration $m.s^{-2}$ 4,88

Engine

Model KAWASAKI TH48 2 stroke
Power rating..... ch 1,9 (= 1,4kW) at 6500rpm
Starting..... Automatic return cord starter
Fuel..... Mixed fuel of Gasoline and 2-stroke oil (Ratio 25 :1)
Fuel tank capacity..... liter 1
Fuel consumption..... gr /ch/h 400 (544 g/kW.h)

Machine

Engine speed adjustment (unloaded)..... rpm 11500
Engine speed adjustment (loaded)..... rpm 5000
Spindle speed (loaded)..... rpm 180
Maximum drilling stroke mm 50 (of which 30 mm usable with a new drill bit)
Maximum drilling diameter mm 36 mm
Type of forward travel Hand feed with crank
Vice Quick clamping screw vice

Reamed spindle, Ø 19,05 mm, for hollow drill bit (WELDON attachment)

Lubrication and cooling under pressure of the drill bit from the spindle center thanks to an independent tank.

Single clamp guides (or double as an option) for a type of rail (to define) allowing a quick and accurate mounting of the drill.

Machine foreseen for use with drilling emplate (as option) for a precise horizontal positioning of the machine.

Drilling is possible as close as 60mm from the end of the rail. Quick clamping screw vice for vignole and grooved rails.

SECTION 3 – INSTALLING & SETTING UP

3.1 Fitting the hollow drill bit

To fit the drill bit, imperatively stop the engine/motor.

For safety reasons and to ensure good quality drilling, *use only drill bits in good condition and designed for use with this machine.*

A good flow of cooling fluid to the cutting area ensures good quality drilling and longer life for the equipment and the drill bit. To guarantee this essential flow no dirt or swarf must be allowed to block the passage of the cooling fluid, and that the ejector Ref.③ is fitted as indicated on sketch Fig.1 (the ejector must be fitted on the rail of the drill bit).

➔ Therefore the *stem of the drill bit Ref.② and the socket in the spindle Ref.④ must be carefully cleaned before fitting.*

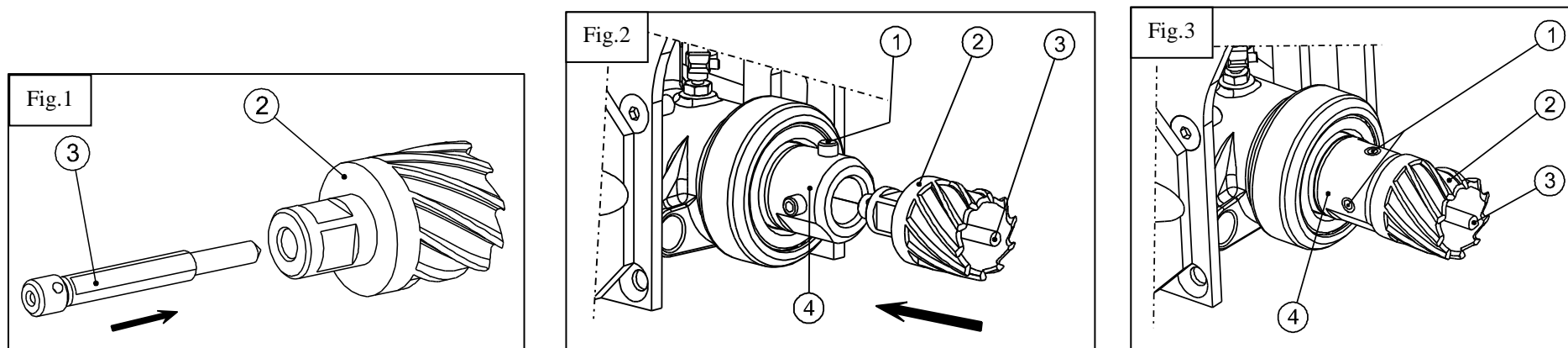
To fit the drill bit, pull out the spindle to the maximum position and remove the two clamp guides (if fitted).

⚠ The cutting edges of the drill bit are very sharp. Gloves must be worn or a cloth used when fitting the drill bit.

Fitting the hollow drill bit Ref.② to the spindle Ref.④ must be carried out in 3 stages :

- 1) Fit the ejector Ref.③ to the hollow drill bit Ref.② as shown in Fig.1.
- 2) Hold the pre-assembled unit and insert it into the spindle Ref.④ as shown in Fig.2. When fitting, match the two flats on the drill bit Ref. ② with the two screws Ref.①.
- 3) When the drill bit Ref.② is hard against the front face of the spindle Ref.④ (Fig. 3), screw in one of the two screws Ref.① until it makes contact, without tightening it. Then screw up the second screw Ref.① until it makes contact and then start to tighten the two screws alternately.

(Because the ejector spring exerts pressure on the ejector Ref.③ and therefore on the drill bit Ref.②, the drill bit must be held against the front face of the spindle Ref.④ during the tightening operation).



3.2 Fitting the clamp guides

The clamp guides automatically align the machine at the correct drilling height in relation to the foot of the rail.

Each type of rail and drilling height require a special guide.

The PR1 uses single or double clamp guides (option). A double clamp guide enables to drill on 1 or two types of rails or at two different heights, A and B for example.

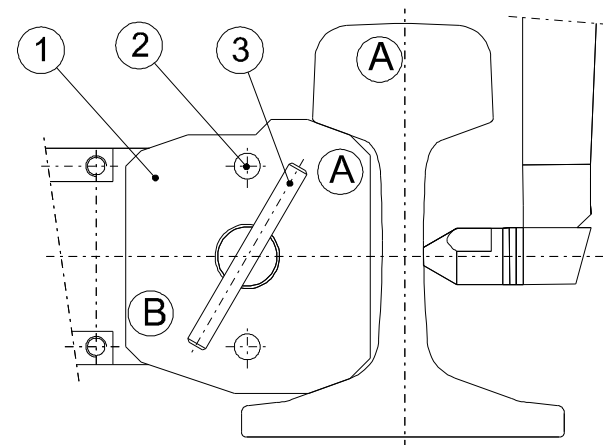
Each clamp guide has a designated position (right or left) and cannot be switched, thanks to locating pins. The clamp guides marking must always be towards the exterior.

- To mount the clamp guides :

- Put the clamp guide Ref.① onto the locating pins Ref.②.
- Tighten the screw Ref.③.
- Repeat these operations for the second clamp guide.

- To use the clamp guides on another type of rail (B for example), rotate them as follow :

- Partly untighten by about 10mm the screw Ref.③ in order to free the clamp guide Ref.① from the locating pins Ref.②.
- Rotate the clamp guide by 180° and put it back onto the locating pins.
- Tighten the fixing screw.
- Repeat these operations for the second clamp guide.



NB - To order clamp guides, it is necessary to indicate us the type of rails and to fill in the form shown later as fully as possible in Appendix A.

3.3 Inspecting the machine

Every part must be inspected by a qualified person before being used, in order to detect any faults.

This inspection will consist mainly of a visual and a functional check.

The detailed check of the machine will ensure that all elements are safe and have not been damaged during transport or storage.

- Checking levels

- Fuel level: check the fuel level and top up if necessary (⚠ : refer carefully to §1.3 "General safety recommendations"/sub-section: "Use and handling of fuel" before doing anything).
- Engine oil level: use the dipstick to check the oil level and top up if necessary. The level should be just below the maximum mark on the dipstick but must never be above it.



IF ANY FAULT IS DISCOVERED DURING THIS INSPECTION PHASE OR IN USE, IT IS IMPERATIVE THAT THE MACHINE BE RESTORED TO THE CORRECT CONDITION BY QUALIFIED PERSONNEL OR THE MANUFACTURER BEFORE BEING USED AGAIN.

3.4 Defining the drilling axis

Defining the drilling axis must be done prior to put the machine on the rail.

It can be done by to means, with or without a drilling jig (option).

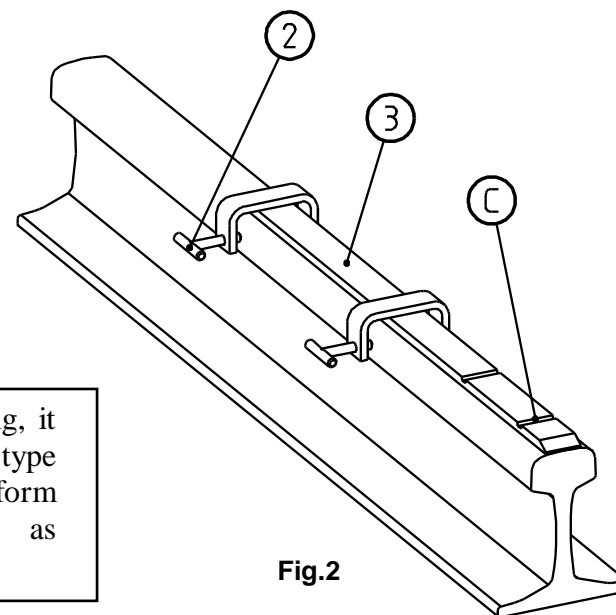
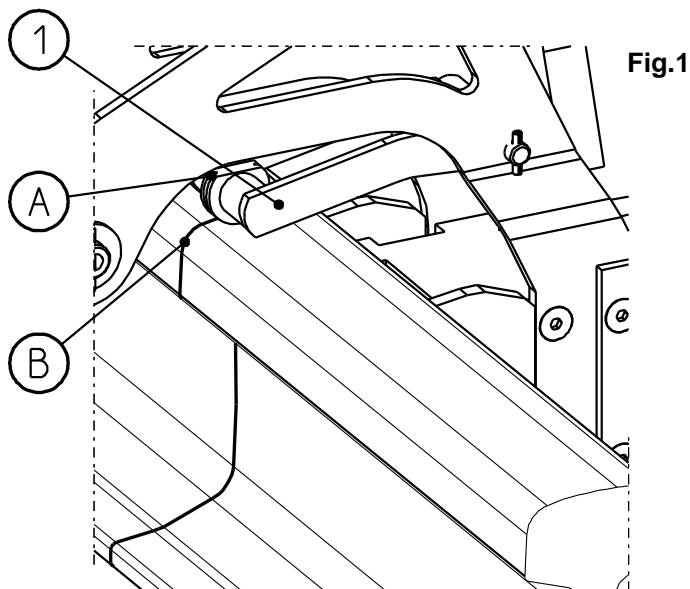
1. When drilling without a drilling jig (Fig.1): mark on the rail the hole axis Ref.ⓑ. The slot Ref.ⓐ of the lever Ref.Ⓛ must be on the mark Ref.ⓑ.

2. When drilling with a drilling jig (OPTION - Fig.2):

- place the drilling jig Ref.ⓓ on the rail.
- place the bevelled part of the jig flush with the end of the rail to be drilled.
- screw and block manually the 2 screws Ref.Ⓜ.

⇒ Drilling jig function:

- The jig positions the holes precisely in relation to one another and in relation to the end of the rail, defining the drilling axes by means of notches Ref.ⓐ, which serve for positioning the machine.
- Combining it with the clamping pieces gives precisely positioned drilled holes, immediately without hesitation and without having to make measurements or markings.
- Each drilling and positioning centre relative to the end of the rail requires a specific drilling jig.



NB - To order drilling jig, it is necessary to state the type of rails and to fill in the form shown later as fully as possible in Appendix A.

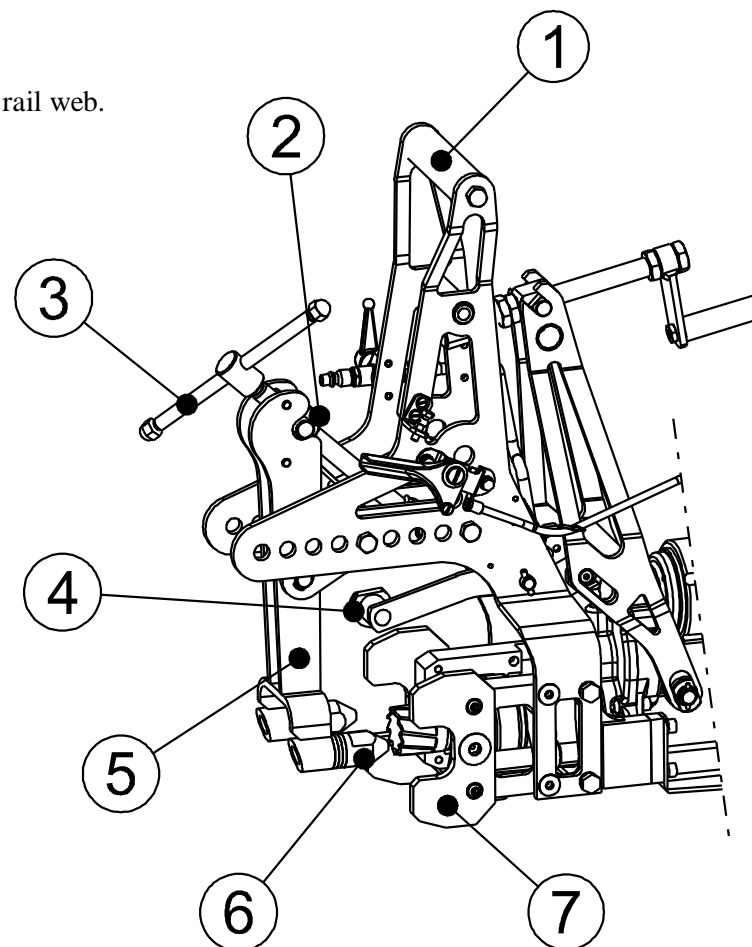
3.5 Installing and removing the machine from the rail (imperatively switch off the engine/motor)

- Place the machine on the rail (without tightening the vice immediately) having checked that the spindle is in the rear position (drill bit retracted).
- Horizontal positioning :
 - With drilling template : position the lever slot Ref.④ into the drilling jig slot corresponding to the hole to drill (Fig.2 - §3.4).
 - Without drilling template : position the lever slot Ref.④ on the mark previously done (Fig.1 - §3.4).
- Vertical positioning :
 - Vertical positioning is carried out automatically by the insertion of the guides in the stem of the rail. Therefore, check that the clamp guides Ref.⑦ (left and right) correspond with the type of rail to be drilled (see § 3.2). Also check that the machine is correctly perpendicular to the rail.
- Tightening the quick clamping vice:
 - Lower the lever Ref.③ to position the nut Ref.② into the vice lever Ref.⑤.
 - Manoeuvre the lever Ref.③ so that the mobile jaws Ref.⑥ are in contact with the rail web.
 - **Tighten properly** the lever Ref.③ by hand.

⚠ The tightening of the vice is a very important step in the drilling operation. It is this that ensures the drill is held correctly on the rail for carrying out good quality drilling. If the drill is not held correctly, the bit may chip or even break during the work.

- Advantages of a quick clamping vice :

- **the machine can be easily removed from the track** ➤ untighten the lever Ref.③ by about two revolutions and, holding the machine by the lifting handle Ref.①, pull the lever upwards. The nut Ref.② will get off the vice lever Ref.⑤ that will open automatically.
- **quick fastening when drilling several holes** ➤ after opening the vice (as previously described), the next operation will be even faster. Position the drill where needed and just lower the lever Ref.③ so that the nut Ref.② is positioned into the vice lever Ref.⑤. Only a few turns of the lever Ref.③ will be necessary to clamp the drill on the rail.



3.6 Connection of the pressurised tank (see the operation of the pressurised tank in Appendix B)

1) ⇒ Fill the pressurised tank Ref.⑤ as follows :

RECOMMENDED MIXTURE

- **Mixture of water and biodegradable cutting oil** (not hydraulic oil, or oil for engine) in the following proportions:
 - 5 % soluble machine cutting oil.
 - 95 % water.

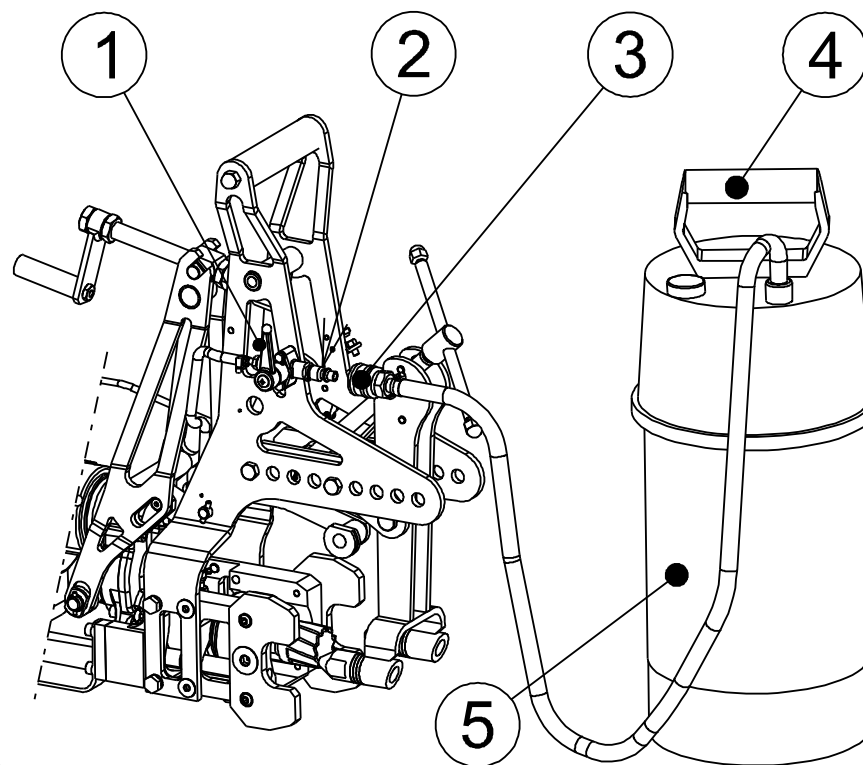
This percentage may vary depending on the type of cutting oil used. In any case, the recommendations of the cutting oil manufacturer should be followed.

The use of cutting oil and water will ensure longer life of the edges of the carbide tips. Therefore, it is advised to use this mixture whatever the temperature.

POSSIBLE USE

- Water, if the temperature is above 0°C on the working site.
- Mixture made of water (50%) and biodegradable antifreeze (50%), if the temperature is below 0°C on the working site.

- 2) ⇒ Check that the tap Ref.① is closed and if not, close it.
- 3) ⇒ Connect the coupling Ref.③ to the machine socket Ref.②.
- 4) ⇒ Put the tank under pressure by actionning the handle Ref.④ many times.



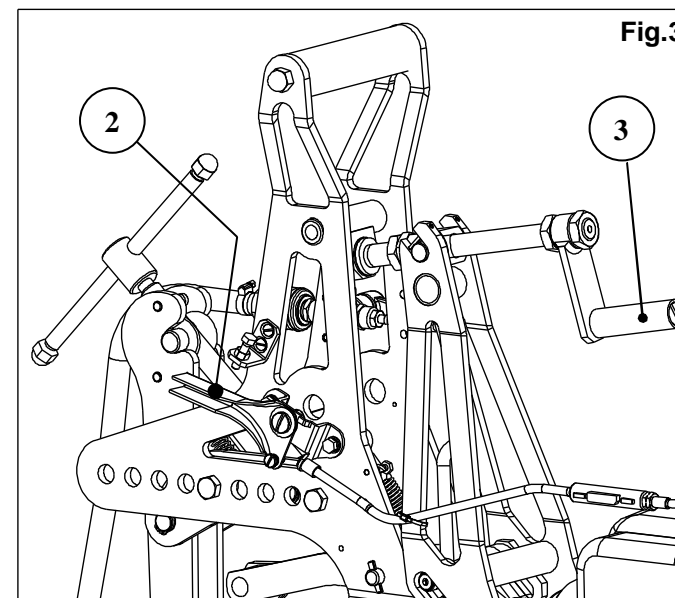
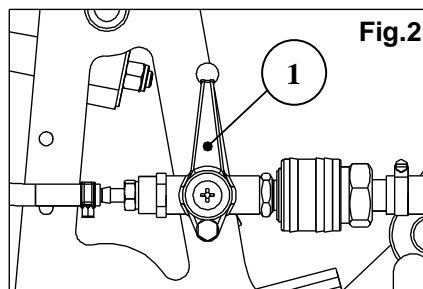
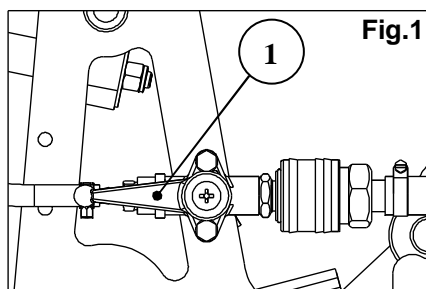
IT IS IMPERATIVE THAT THE MOTOR BE STOPPED WHEN THE MACHINE IS MOVED ON OR OFF THE TRACK

SECTION 4 – OPERATION

4.1 Conditions for use

4.1.1 Starting and stopping the machine

- Check that the remote motor stop control is in the correct position **1** and start the engine (refer to the engine document supplied with the machine) and leave it running at idle speed for a short time until the engine speed stabilizes and the engine warms up. When the engine is warm, increase the motor running speed by moving the accelerator lever Ref. **2** to the fast (or high speed) position.
- Open the lubricant tap Ref. **1** (Fig.1).
IMPORTANT : the coolant consumption depends on how the tap is opened and on the tank pressure. When the pressure is high, it is sufficient to slightly open the tap. If it is low, the tap will have to be fully opened.
- To drill, turn the forward travel handle Ref. **3** clockwise (Fig.3). The spindle starts to move. Be careful to control the force on the handle, listening to the engine to prevent it from stalling (see §4.1.2 to determine the appropriate feeding speed).
- Check that the flow of lubricant is sufficient during the whole drilling operation.
- When drilling is finished, close the lubricant tap Ref. **1** (Fig.2).
- Return the spindle to its initial position by turning the handle Ref. **3** anticlockwise.
- At the end of the work, reduce the engine speed and stop it by pushing the remote motor stop switch to one of the two “**0**” positions.



THE MACHINE MUST ONLY BE STARTED WHEN IT IS INSTALLED ON THE TRACK

4.1.2 Instructions for the use of the drill

Set out below are some basic rules that must be followed so that the drilling operation can be carried out in the best conditions and to ensure a long service life for the equipment.

- The drilling operation takes place in three phases. Here are the precautions to take for each phase:

1) ***Start of drilling phase*** >> during this phase the penetration of the drill bit into the rail must be slow and as regular as possible.

2) ***Work phase*** >> during this phase it is important to control the forward speed of the tool correctly.

If the forward speed is too high the cutting edges of the drill bit could break. On the other hand, if the forward speed is too slow, the shavings will not be thick enough and will not detach themselves. The swarf will then build up on the cutting edges and may jam or damage the tool.

To check whether the forward speed is correct, examine the shavings:

- if they come out in the form of short splinters the forward speed is too low.
- if they are long and continuous and curl round the tool in a kind of bundle, the forward speed is correct.

In normal conditions of use it should take between 30 and 50 seconds to drill a hole (these values may vary depending on the forward speed, the drill bit Ø, the amount of drill bit wear and the hardness of the rail, etc.).

3) ***Core ejection phase*** >> at the end of drilling the forward speed must be maintained until the drilling core is ejected.

If necessary, the examination of the drilling core can be used to check whether the forward speed was correct and if the tool is still in good condition.

If the cylindrical part of the core has a shiny appearance, that indicates that the forward speed was insufficient.

If the cylindrical part of the core exhibits what looks like a slight thread around its circumference, that indicates that the forward speed was correct.

If the cylindrical part of the core is rough or if the core sticks in the tool, that indicates that the condition of the tool is deteriorating and it must soon be sharpened or replaced.

- To ensure long equipment life and so that the drilling operation is carried out in correct conditions, it is imperative to check that swarf does not build up in the guide pillars or the forward travel system.

This point must be checked before the machine is used and in particular every time the machine is installed for successive drillings.

If swarf has accumulated round the drill bit it is imperative to hook it out but never do so with bare hands.



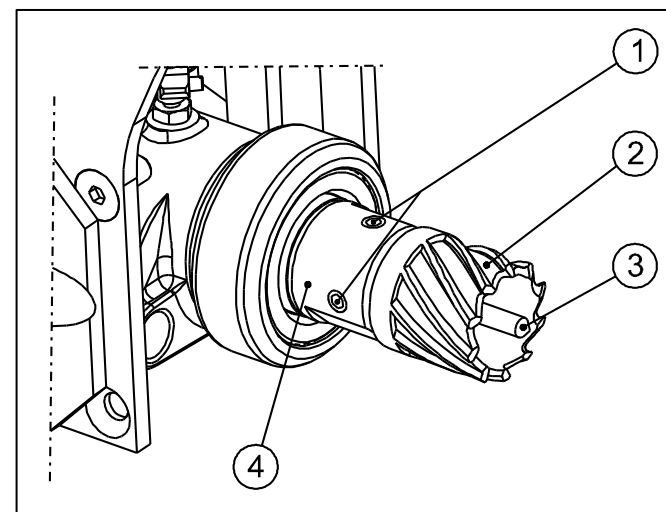
: ALWAYS use gloves (or cloth) to avoid injuring or burning your hands.

4.1.3 Points to note for removing the drill bit

- Before removing the drill bit Ref.②, stop the motor.
- Remove the two clamp guides, proceeding in the reverse order to the procedure described in §3.2 "Fitting the clamp guides".
- Hook out any swarf which may have built up round the drill bit Ref.② but never with bare hands.
- Unscrew the two screws Ref.①.
- Grip the drill bit Ref.② and withdraw it from the spindle Ref.④.

WARNING: As a precaution, always use gloves (or cloth) to avoid injuring your hands with the shavings which may have remained round the drill bit or burning yourself on the drill bit which will still be very hot for several minutes after drilling a hole.

- If the drill bit gets jammed in the spindle (due to corrosion or overheating) follow the procedure described below :
 - Immobilize the spindle with a 32 mm open-end spanner fitted on the flat provided.
 - Grip the drill bit Ref.② with a pair of pliers and move it in the opposite direction to the movement exerted on the spanner.
 - When the drill bit starts to turn in the spindle, insert a screwdriver between the drill bit and the spindle and lever the drill bit off.



4.1.4 Removing the machine from the track

- Close the lubricant tap.
 - Disconnect the pressurized tank.
 - Return the spindle to its initial position by turning the forward travel handle anticlockwise.
 - Reduce the engine speed and stop it.
 - Unlock the vice and get the machine off the track (refer to §3.5 "Installing and removing the machine from the rail").
- ➔ The removal of the machine from the track should take no more than 15s and can be done by one operator only.

4.2 Storage

4.2.1 General storage instructions

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.

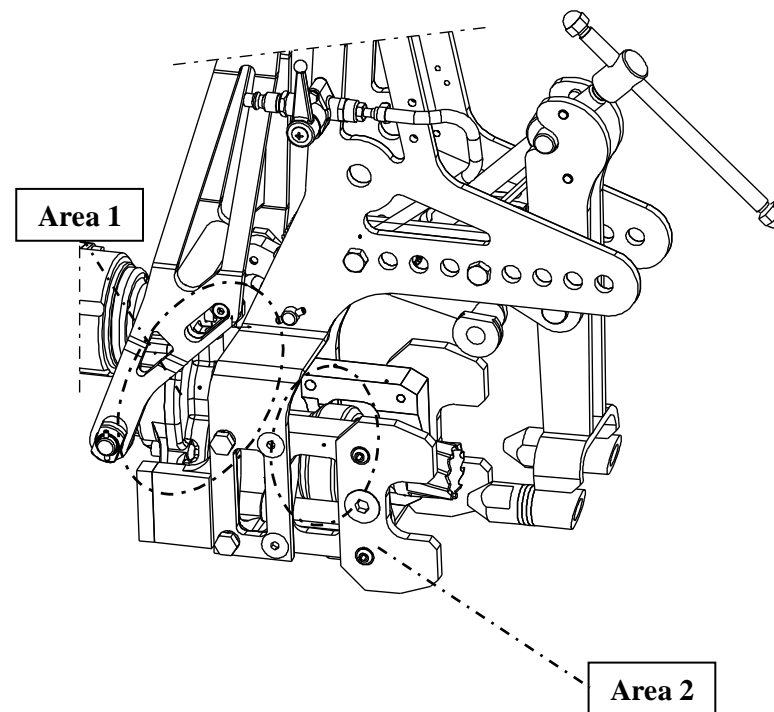
4.2.2 Special storage instructions

- After each use and in particular for storage lasting several days, to prevent rusting of the drill bit in the spindle which would make it difficult to dismantle, it is imperative to remove the drill bit, clean it, coat it with grease and store it away from the machine.
- At temperature below 0°C, the coolant may freeze and damage the drill lubrication circuit. It is therefore necessary to drain the lubrication circuit before storing the machine. Disconnect the pressurized tank and take the drill bit off. Open the tap and let all the coolant drain from the circuit.

SECTION 5 – SERVICING & MAINTENANCE

5.1 Servicing

- Engine: Follow the manufacturer's instructions carefully
- Machine:
 - ⇒ Take care to keep the drilling machine as clean as possible.
 - ⇒ *It is imperative that swarf does not accumulate* around the forward travel systems (Area 1) or the guide pillars (Area 2).
 - ⇒ Repair or replace immediately any part which is worn, damaged or missing if it creates a safety hazard.
 - ⇒ Lubricate the forward travel screw and the vice screw from time to time.
 - ⇒ After carrying out work inside the spindle housing, check that there is enough grease and if necessary, add some of one of the following greases :
 - TOTAL AEROGREASE 22
 - ESSO (EXXON) AVIATION GREASE 322
 - SHELL AEROSHELL GREASE 22
 - MOBIL MOBILGREASE 28
 - ELF AVIATION GREASE 22
 - or any other grease that meets the ISO-L-XEEBA2 standard (NLG12 grade heavy-duty grease. Operating temperature: -54°C to +177°C).



5.2 Maintenance

PREVENTIVE MAINTENANCE SCHEDULE

OPERATION	TYPE OF OPERATION	SERVICE INTERVALS						Refer to
		Every use	First 30 hours	Every week	50 hours	6 months	300 hours	
Machine checks	Carry out	X						Section.3 - § 3
Lubrication	Carry out		X	X				Section.5 - § 1

N.B : These recommendations are not exhaustive. Constant supervision of the machine and well-organized preventive maintenance will extend machine life.

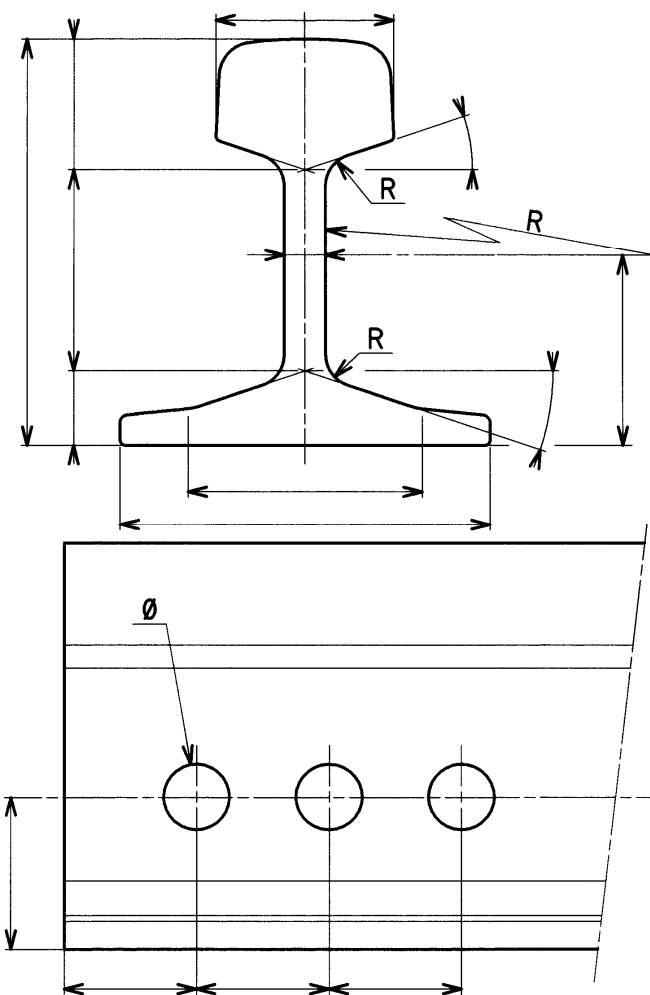
Appendix A

GUIDE AND TEMPLATE SPECIFICATIONS

To order pieces, it is necessary:

- to state the type of rail(s)
- to fill in the form opposite as fully as possible for each rail

This form will enable us quickly to determine the equipment that you require.

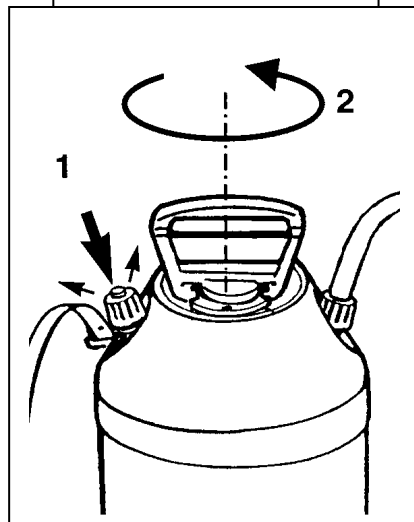


TYPE DE RAIL : _____

Appendix B

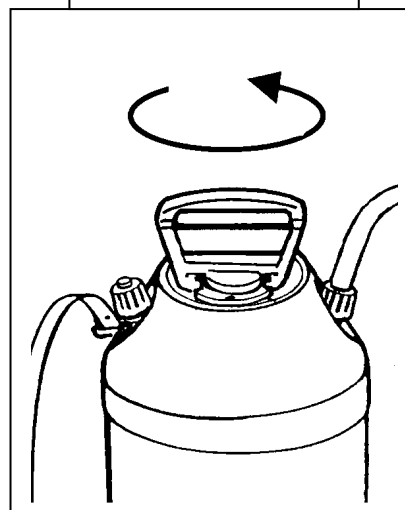
OPERATION OF THE PRESSURISED TANK

① Depressurization

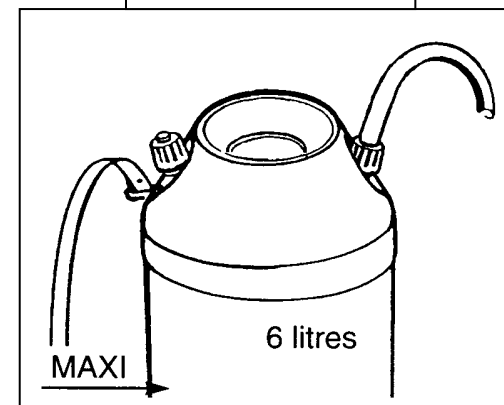


Before opening, press the pressure valve to allow the residual pressure to escape, then unscrew slowly.

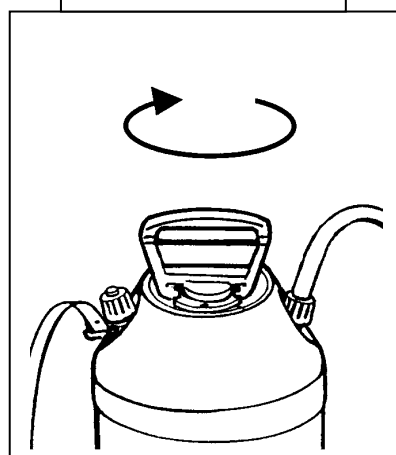
② Unscrewing



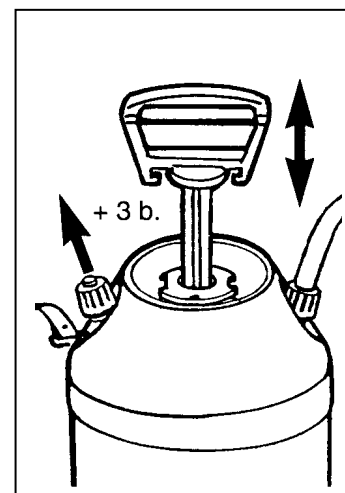
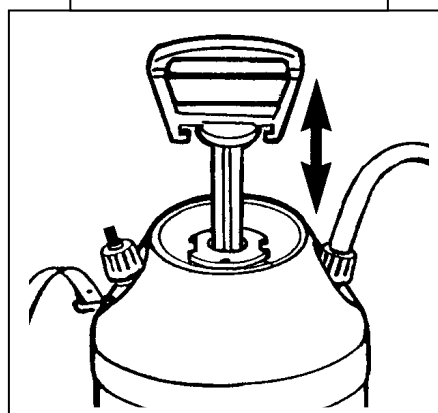
③ Filling



④ Screwing

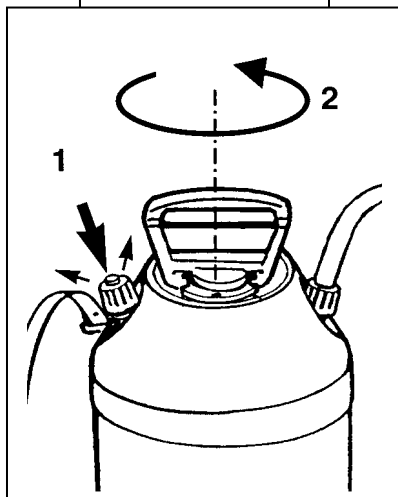


⑤ Pressurising



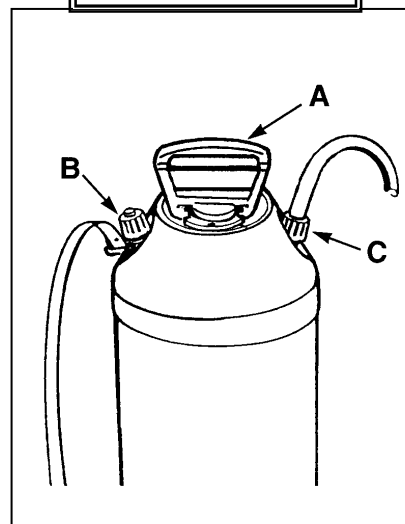
Excess pressure:
Above 3 bar
the air escapes

STORAGE

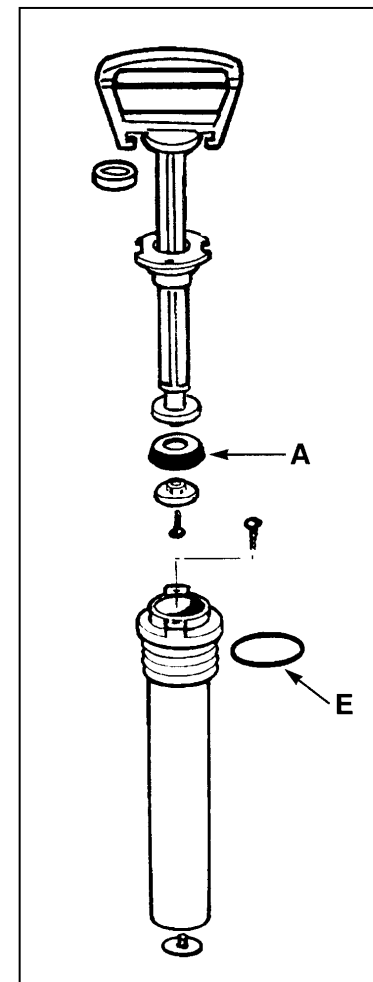


Before opening, press down the pressure valve to allow the residual pressure to escape, then slowly unscrew the handle. **The pump must be unscrewed for storage.**

WARNING



Never undo A, B or C when the tank is pressurized



- **Servicing**

- ⇒ After each use it is advisable, or even essential (depending on the product used) to clean the tank. We advise that you follow the maintenance instructions recommended by the manufacturer of the product you are using.
- ⇒ For correct operation of your equipment, it is recommended that the pump seals always be well lubricated. This lubrication must be carried out several times during the year and every time a seal is removed or replaced. Silicone grease must be used for lubrication.

- **Storage**

Never leave the appliance stored under pressure, in direct sunlight or at high or low temperatures (lower than 0°C).

CHAPTER 6 – SPARE PARTS CATALOG

6.1 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

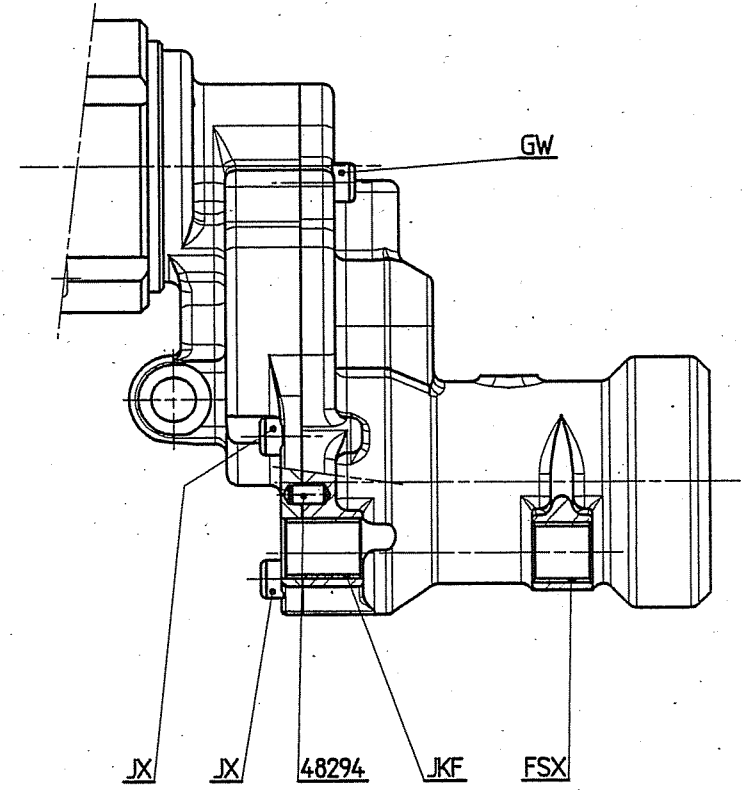
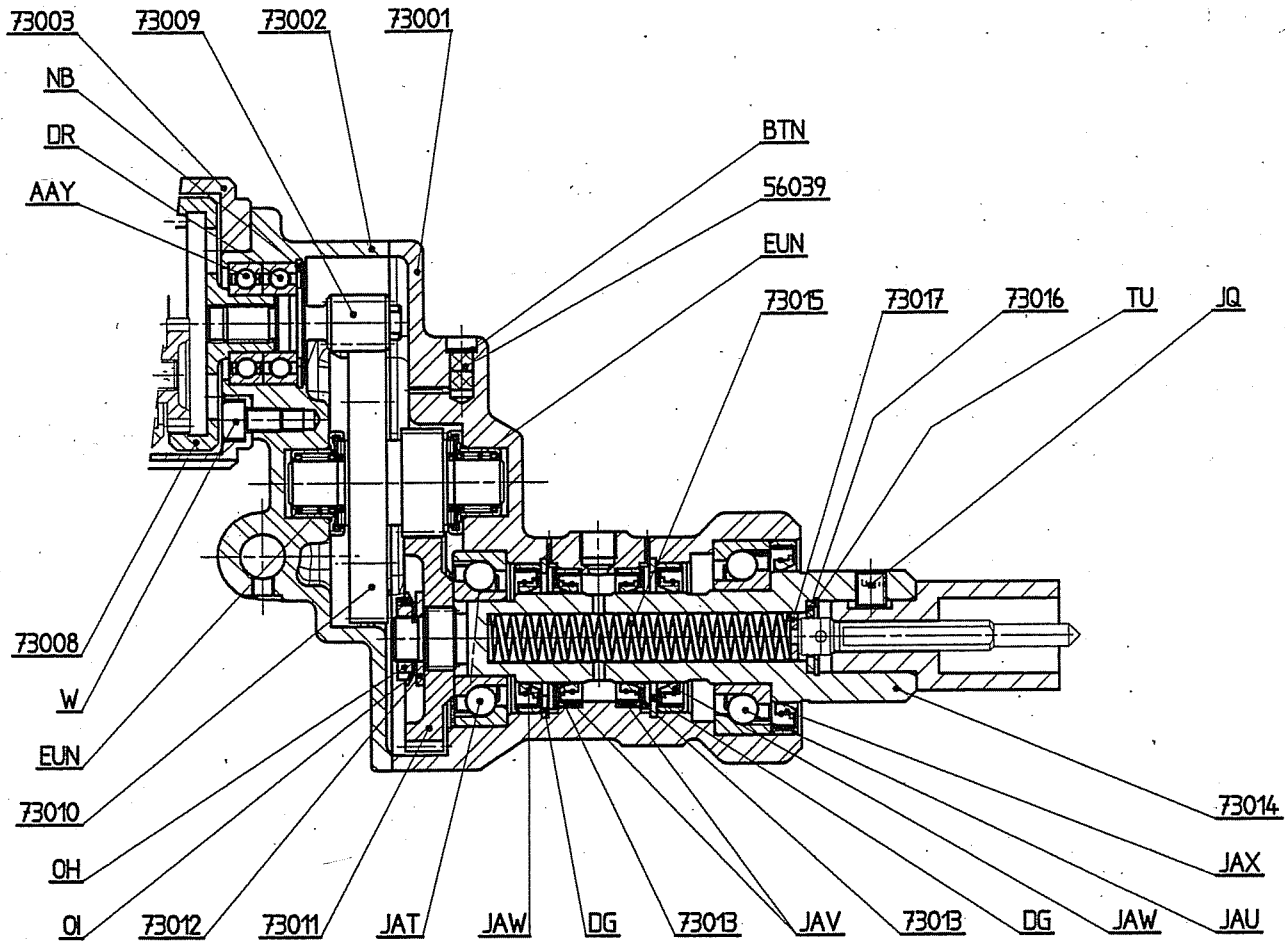
To ensure that you are delivered promptly and correctly after placing an order for spare parts please state:

- 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)

WICHTIG

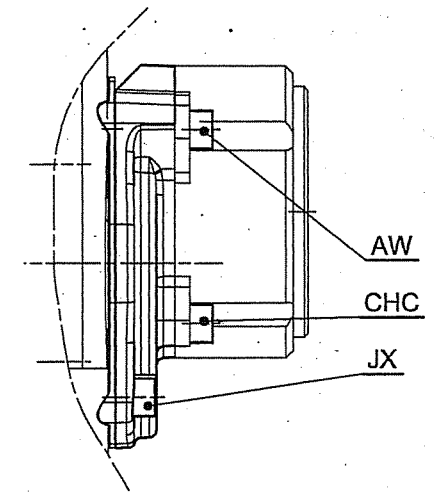
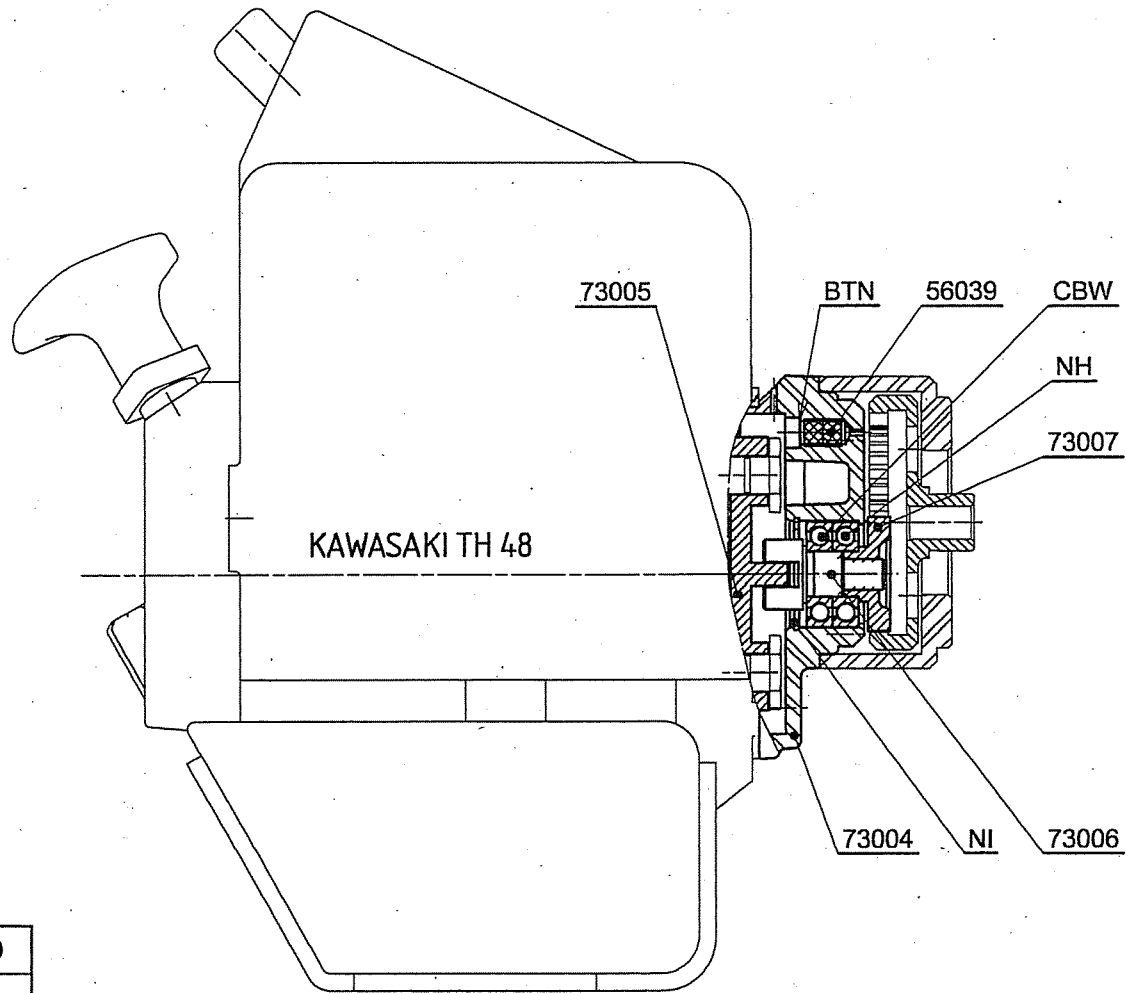
Um uns eine schnelle und fehlerlose Erledigung Ihres Ersatzteil-Auftrages zu erlauben, bitten wir Sie um folgende Angaben :

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



73000 A
03-03

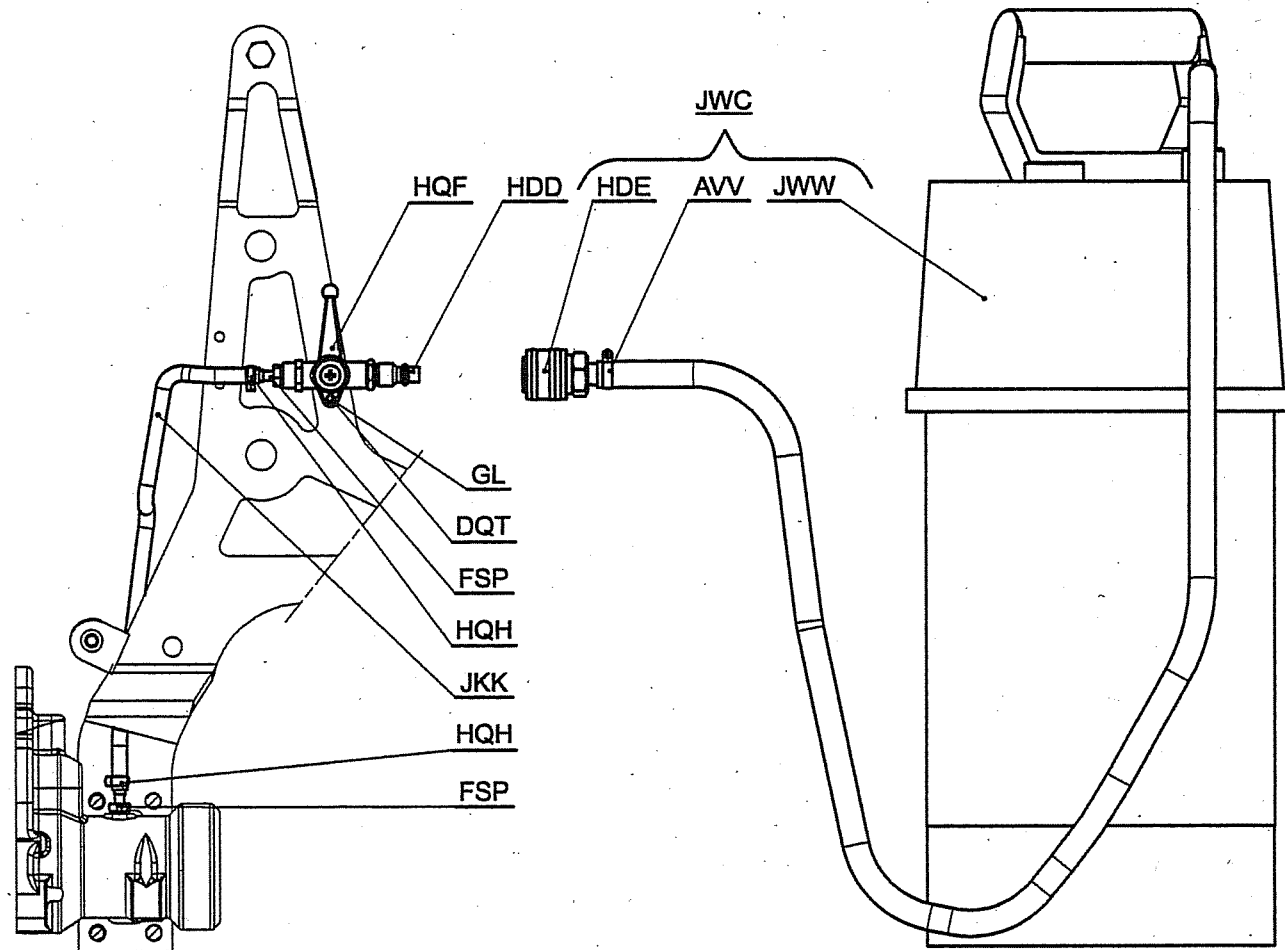
Ref.	Qty	Description	Ref.	Qty	Description
48 294	4	Centring pin	W	4	Screw Chc 6 x 10
56 039	2	Obturator	DG	2	Circlips 40 i
73 001	1	Spindle casing	DR	1	Ball bearing 6002
73 002	1	Rear casing	GW	2	Screw Chc 6 x 20
73 003	1	Crown gear casing	JQ	2	Screw Hc 8 x 10, flat end
73 008	1	Crown 36 t.	JX	4	Screw Chc 6 x 16
73 009	1	Driving pinion	NB	1	Circlips 32 i
73 010	1	Intermediate pinion 58-21 t.	OH	1	Nut KM1
73 011	1	Receiving pinion 46 t.	OI	1	Washer MB1
73 012	1	Washer Ø 12,1 x 25 x 2	TU	1	Circlips 19 i
73 013	2	Pad ring	AAV	1	Ball bearing 6002 EE
73 014	1	Spindle	BTN	1	Elastic ring 7015-8
73 015	1	Ejector spring	EUN	2	Needle sleeve
73 016	1	Retaining washer	FSX	2	Ring PAP 1415 P10
73 017	1	Pad ring	JAT	1	Ball bearing n° 7204 B
			JAU	1	Ball bearing n° 7205 B
			JAV	2	Seal Ø 24 x 37 x 7
			JAW	2	Seal Ø 24 x 40 x 7
			JAX	1	Seal Ø 35 x 52 x 7
			JKF	2	Ring PAP 1420 P10



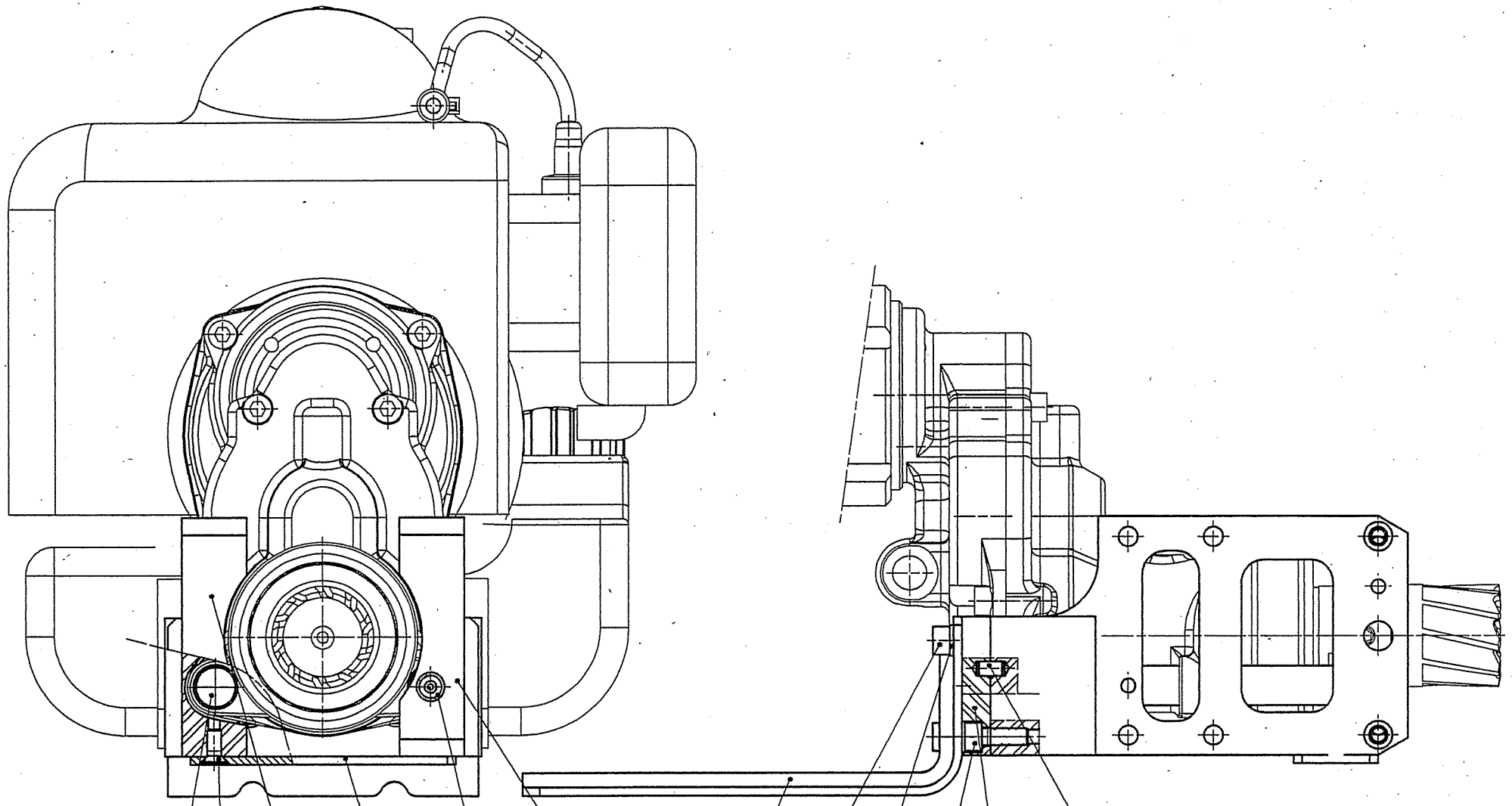
73000 D
03-03

Ref.	Qty	Description	Ref.	Qty	Description
56 039	2	Obturator	AW	2	Screw Chc 6 x 30
73 004	1	Engine adaptation flange	JX	2	Screw Chc 6 x 16
73 005	1	Engine coupling flange	NH	1	Ball bearing n° 6001
73 006	1	Screwdriver drive	NI	1	Circlips 28 i
73 007	1	Driving pinion 18 t.	BTN	1	Elastic ring 7015-8
			CBW	1	Ball bearing n° 6001 EE
			CHC	2	Screw Chc 6 x 12

73000 F
03-03



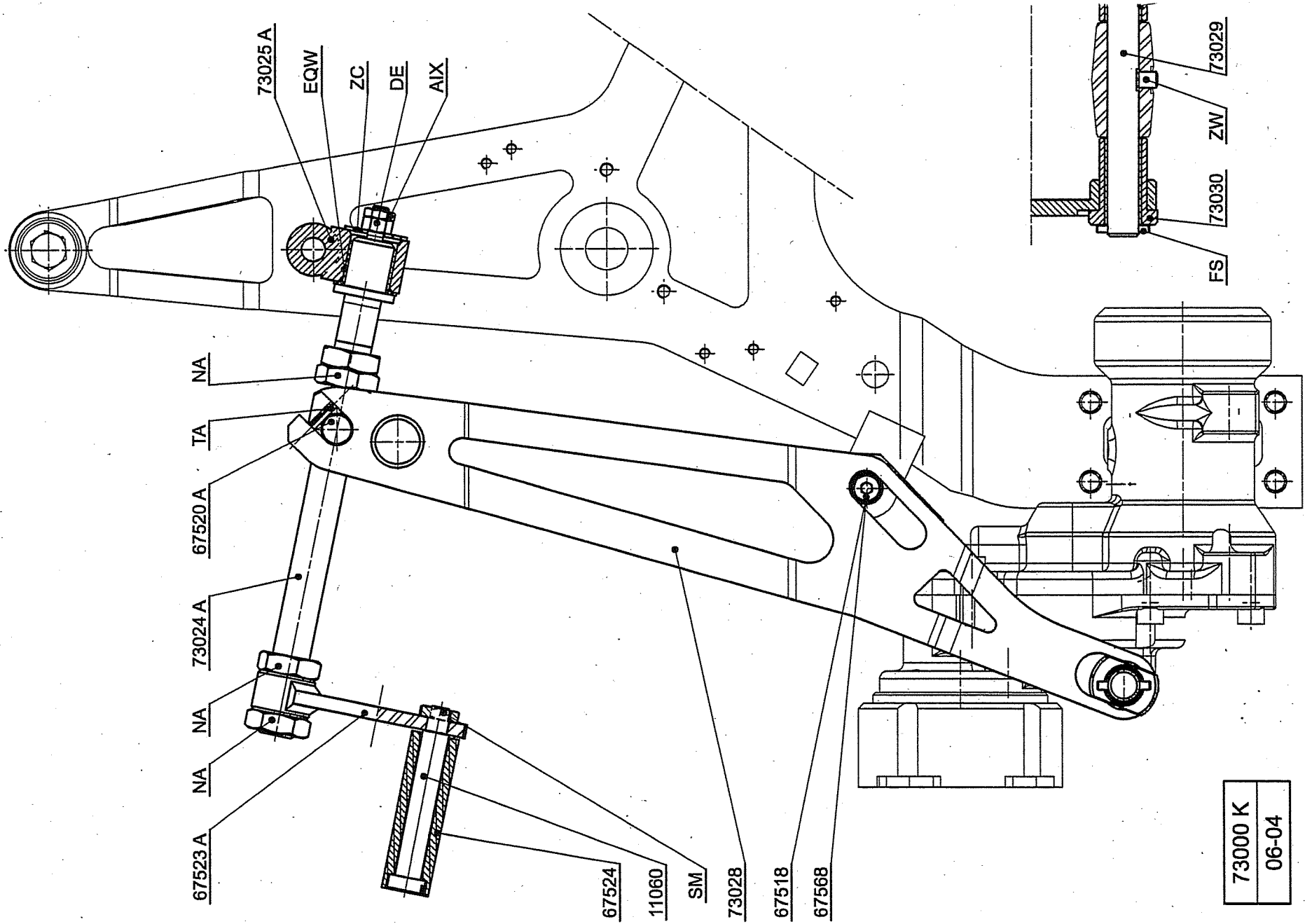
Ref.	Qty	Description	Ref.	Qty	Description
GL	2	Washer DI 4	HQF	1	Tap
DQT	2	Screw H 4 x 12	HQH	2	Tightening collar
FSP	2	Splined sleeve	JKK	1	Nylon pipe Ø 6 x 8, 320 mm long.
HDD	1	Coupler end piece	JWC	1	Complete tank including :
			- AVV	1	- Tightening collar
			- HDE	1	- Coupler
			- JWW	1	- Pressurised tank



73000 J
06-04

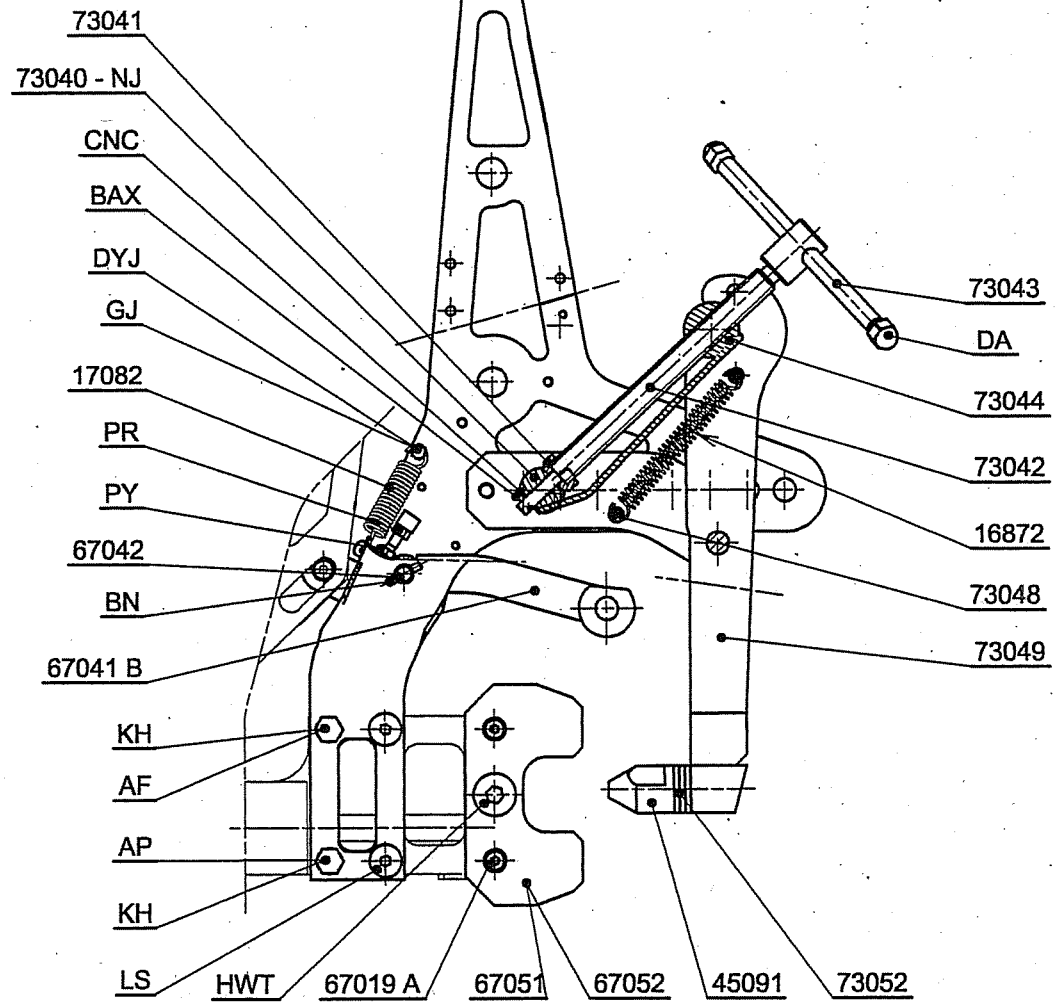
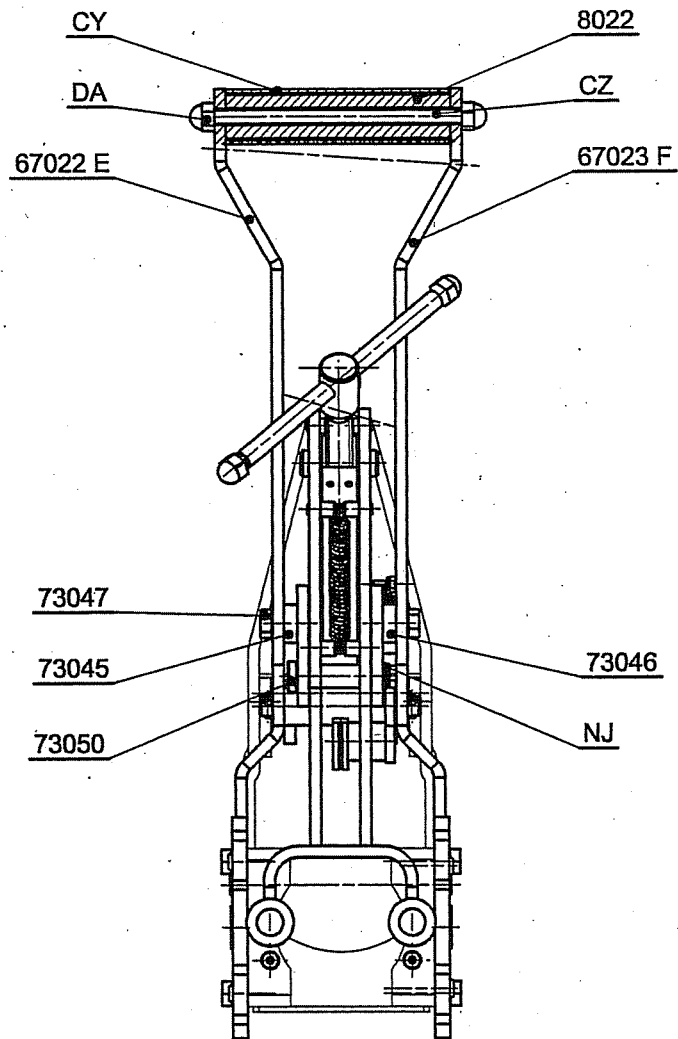
73019 AAP 73021 73022 73019 73020 73051 AV JE JX 73023 A 48294

Ref.	Qty	Description	Ref.	Qty	Description
48 294	4	Centring pin	AV	4	Screw Chc 6 x 25
73 019	2	Guiding column	JE	4	Washer DE 6
73 020	1	Left column support	JX	2	Screw Chc 6 x 16
73 021	1	Right column support	AAP	2	Screw FS 5 x 12
73 022	1	Linking flat			
73 023 A	1	Column junction piece			
73 051	1	Engine protector			



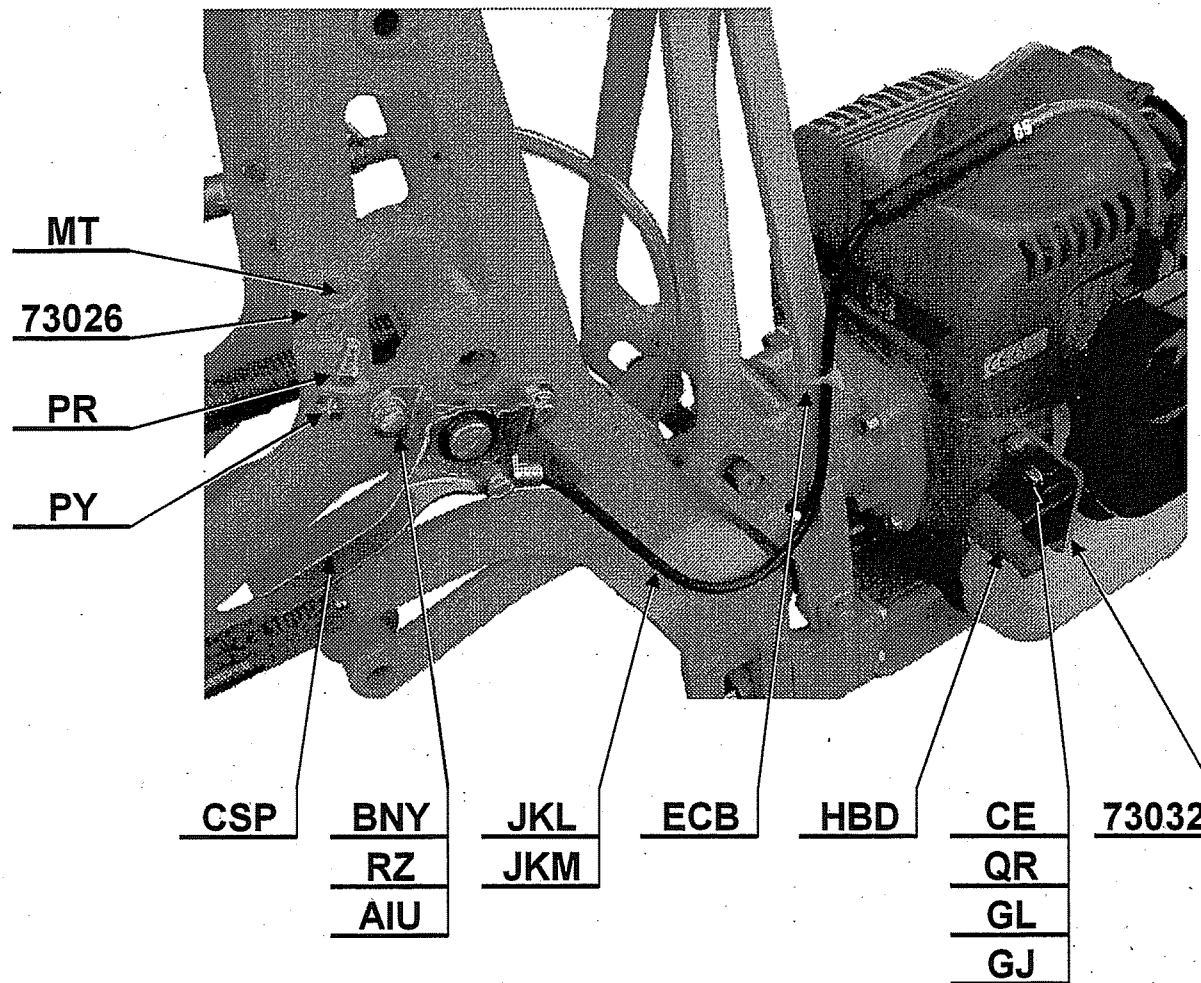
73000 K
06-04

Ref.	Qty	Description	Ref.	Qty	Description
11 060	1	Handle axle	DE	1	Nut H 6
67 518	2	Rear lever axle	FS	2	Elastic pin Ø 3 x 20
67 520 A	1	Feed nut	NA	4	Nut Hm 14
67 523 A	1	Feed crank	SM	1	Nut Hm 8
67 524	1	Crank handle	TA	2	Elastic pin Ø 3 x 30
67 568	2	Ring Ø 8 x 12 x 8	ZC	1	Washer LL6
73 024 A	1	Feed screw	ZW	1	Screw Hc 6 x 8, flat end
73 025 A	1	Feed bearing	AIX	1	Nut Hm 6
73 028	1	Feed lever	EQW	1	Ring PAF 16170 P10
73 029	1	Feed lever axle	EUH	4	Ring PAP 1215 P10
73 030	2	Ring			



73000 Q
07-04

Ref.	Qty	Description	Ref.	Qty	Description
8 022	1	Handle	AF	2	Screw H 8 x 16
16 872	1	Spring	AP	2	Screw H 8 x 20
17 082	1	Spring	BN	2	Elastic pin Ø 4 x 20
45 091	2	Mobile jaw	CY	1	Rubber handle
67 019 A	4	Centring pin	CZ	1	Threaded rod
67 022 E	1	Right vice flange	DA	4	Domed nut
67 023 F	1	Left vice flange	GJ	1	Nut H 4
67 041 B	1	Positioning lever	KH	4	Washer W 8
67 042	1	Axle, 86 mm long.	LS	4	Screw Fhc 8 x 20
67 051	1	Left clamp form	NJ	3	Circlips 12 e
67 052	1	Right clamp form	PR	1	Nut H 5
73 040	1	Plain bearing	PY	1	Screw H 5 x 20
73 041	1	Ring	BAX	1	Elastic pin Ø 2,5 x 16
73 042	1	Vice screw	CNC	1	Washer Z8
73 043	1	Tightening screw	DYJ	1	Screw H 4 x 20
73 044	1	Vice nut	HWT	2	Screw Fhc 12 x 20
73 045	1	Left lever support			
73 046	1	Right lever support			
73 047	4	Lever support screw			
73 048	1	Spring fastening			
73 049	1	Vice lever			
73 050	1	Vice lever axle			
73 052	6	Washer Ø 16,5 x 25 x 3			



N° 12000 FF
12 - 03

PR.1 moteur KAWASAKI TH48

Ensemble accélération et arrêt moteur

Ref.	Qty	Description	Ref.	Qty	Description
73 026	1	Acceleration stop	CE	2	Screw CS 4 x 10
73 032	1	Switch support	GJ	2	Nut H 4
			GL	2	Washer DI 4
			MT	1	Screw FS 4 x 10
			PR	1	Nut H 5
			PY	1	Screw H 5 x 20
			QR	2	Washer M 4
			RZ	2	Washer Z 5
			AIU	2	Washer W 5
			BNY	2	Screw H 5 x 12
			CSP	1	Command handle
			ECB	1	Polyamide collar
			HBD	1	Switch
			JKL	1	Câble Ø 1,5 with stop, 360 mm long.
			JKM	1	Sheath for cable Ø 1,5, 290 mm long.