
OTMA



USE AND MAINTENANCE MANUAL

Farm mounted Sprayers

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Thank you for having chosen OTMA.

The product you purchased has been designed and built with the greatest attention to the safety of the operator and the environment, nevertheless there are still some residual risks due to the nature of the product used. For this reason we recommend reading all of this manual to avoid making mistakes in the first period of use and to get the most out of the working life of the sprayer in time, doing the programmed maintenance at regular intervals.

1. USING AND KEEPING THE USE AND MAINTENANCE MANUAL

The manual is an integral part of the machine and should be kept in a safe place where it can be reached easily for consultation.

1. 1 COMPOSITION OF THE MANUAL

This manual consists of various parts to make it easier to consult by subject and to avoid repetitions; the following are part of the manual:

- a) pump handbook
- b) pressure regulator handbook (manual or electric)
- c) spraying computer handbook (if fitted)
- d) optional accessories handbooks (marker, premix, cardan shaft, etc.)

OTMA reserves the right to make changes to the manual without prior warning and the normal printing cycles may vary slightly.

1. 2 GUARANTEE

The enclosed card indicates the conditions of the OTMA guarantee.

The OTMA guarantee covers the repair or replacement of parts considered manufacturing flaws, according to the unquestionable judgement of OTMA, only after the authorised agent for that zone has verified the fault.

Ambit of the guarantee

The guarantee doesn't cover cases of normal wear, negligent use, poor maintenance and/or improper use.

The following materials subject to normal wear are not covered by the guarantee: gaskets and seals, diaphragms, seal rings, tubes and pipes, nozzles, pressure gauges, oil, tyres, friction material of the clutches.

Evident cases of negligence include: work speed over that indicated in the spraying tables in the handbook (or too high for the conditions of the terrain), use of herbicide booms without an auto-levelling system or with the auto-levelling system blocked, power-takeoff speed over 540 rpm.

Mounted sprayers: activation of the three-point elevator with cardan shaft engaged and power-takeoff operational.

And anything else indicated in the present Use and Maintenance Manual.



Maintenance:

The guarantee is void if the maintenance indicated in the tables in this manual isn't respected, regarding the period and deadline of the interventions, washing the machine and the circuit at the end of the treatment.

Improper use:

The use the OTMA machines are designed for is indicated in this manual, any other use is forbidden and makes the guarantee void.

1. 3 PRODUCT RESPONSIBILITY

OTMA S.p.A is not responsible if:

a) During the working life of the machine the normal maintenance operations aren't performed and documented as indicated in this handbook, in the enclosed handbooks of the pumps-motors-regulators-etc. and in any case as is customary for the normal maintenance of mechanical machinery.

b) The machine is equipped with non original accessories or components or parts that aren't acknowledged by OTMA as their own.

c) The machine is equipped with original accessories or components that are unsuitable in the measurements, weight or version for the same.

Please consult the page of available and recommended fittings.

d) Not following the instructions in the manual whether totally or partially.

e) Modifications made to the machine that haven't been authorised by OTMA.

2. SAFETY REGULATIONS AND RESIDUAL RISKS

In relation to safety, the following terms will be used:

Dangerous zones: any zone inside and/or near the machine where the presence of a person exposed constitutes a risk for the safety and health of the same person.

Person exposed: any person who has their body or any part of their body in a dangerous zone. Before starting the machine, the operator must check for any visible faults in the safety devices and the machine itself.

Never start the machine until you have told anyone in the range of action of the machine to move away and they have done so.

The protective devices must not be removed or disabled when the machine is running.

It is obligatory to keep all the plates with danger and safety signs in perfect conditions. If they get damaged or deteriorate, replace them in good time.

Replace parts believed to be faulty with others indicated by OTMA.

NEVER try makeshift or hazardous solutions.

Don't wear clothes, jewellery, accessories, or anything else that can get caught in the moving machine members.

Pay the greatest attention to all the warning and danger signs on the machine.

Don't use the machine for any other purpose other than that indicated in the manual.

The machine has been designed and built with the appropriate devices to guarantee the safety of the user.

In any case there are some residual risks associated with the improper use of the machine by the operator; for this purpose danger signs and symbols and prohibitions are applied near some parts of the machine (see previous pictograms).

2. 1 INTENDED USE

The sprayer in this series is built for agricultural use. The materials used are resistant to normal chemical products used in agricultural spraying (or herbicides) at the time of construction. Any other use is not allowed and the manufacturer is not responsible for any damage caused by aggressive, dense or sticky chemicals.

THE USE OF THE MACHINE BY PERSONS UNDER 18 YEARS OF AGE IS STRICTLY FORBIDDEN



The use of liquid fertilizers in suspension is not allowed, while the use of the same in a solution is possible if requested when the machine is ordered from Otma and in any case changing some of the parts described in the handbooks of the regulator, such as the manometer (stainless steel), the nozzles (large diameter ceramic) and eliminating the fine mesh filters to prevent blockages.

2. 2 PROHIBITED USE

Using the machine with the following products is strictly forbidden:

- = Paints of any kind and type
- = Solvents or thinners for paints of any kind and type
- = Combustibles or lubricants of any kind and type
- = LPG or gas of any kind and type
- = Flammable liquids of any kind and type
- = Liquid foodstuffs, whether for animals or humans
- = Liquids containing granules or consistent solids
- = Mixtures of various incompatible chemical products
- = Liquid fertilizer or manure in suspension with lumps and/or that is particularly dense
- = Liquids with a temperature of over 40°C
- = Any products that aren't suitable for the specific use of the machine.

2.3 USING CHEMICAL PRODUCTS

All pesticides or herbicides can be dangerous to humans and the environment if used erroneously or inadvertently.

Therefore we recommend that only suitably trained persons should use these products (license) and in any case only after having carefully read the instructions on the container.

2.3.1 REGULATIONS FOR THE USE OF CHEMICAL PRODUCTS

Some recommendations for avoiding damage and accidents:

- = Keep the machine in a suitable, protected place with no access for children or strangers
- = Handle the products with care, wearing rubber acid-proof gloves, goggles- face masks or filtering helmets, overalls made of water-repellent fabrics or TIVEK and boots made of rubber or similar materials.
- = If chemical products or mixtures of product come into contact with the eyes or are swallowed consult a doctor immediately, taking the label of the product with you.
- = Wash all clothes that come into contact with the chemical, whether diluted or undiluted, thoroughly before using them again.
- = Don't smoke, drink or eat when preparing or spraying the mix or near or in the fields treated.
- = DON'T ENTER THE TANK: the residues of a chemical product can cause poisoning and suffocation.
- = When spraying, respect safe distances from residential areas, water courses, roads, sports centres and public parks or paths.
- = Thoroughly wash the containers of plant protection products using the relevant accessories, rinsing several times with clean water. The liquids used for washing can be used for treatment.
- = Collect the washed containers and send them to the relevant collection centres. Never dispose of them in the environment and don't use them again for any other purpose. It is good practice to knock a hole in the bottom of the tins so they can't be used again.
- = When you have finished spraying, wash the sprayer thoroughly, diluting the residues with a quantity of water at least 10 times that of the residues, spraying the resulting mix over the treated field.

2. 4 RECOMMENDATIONS

Refer to the present handbook for the use and maintenance of the frame, tank, auto-levelling systems, elevators, mechanical and hydraulic herbicide booms, spray booms and hose reels. Refer to the enclosed handbooks for the use and maintenance of the pump and pressure regulator and any accessories or motors.

- A. Please contact the agent in your zone, the nearest authorised workshop or OTMA S.p.A. directly for any repairs the user feels they aren't capable of performing alone. (see point 10.4)
- B. Due to the complexity of the equipment and the variety of technologies used (mechanical, hydraulic, oil-pressure and electrotechnical) operators must not dismantle or modify the equipment. All of the relevant operations must be performed by specialised personnel, authorised by OTMA S.p.A.

2.4.1 TAKING PRECAUTIONS AGAINST FIRE HAZARDS

Don't use naked flames or heat sources near the machines.

The sprayers are made with many materials that derive from petroleum: tanks, tubes, pipes and hoses, wheels and plastic parts; furthermore the presence of oils of various nature and residues of chemical products make them potentially flammable.



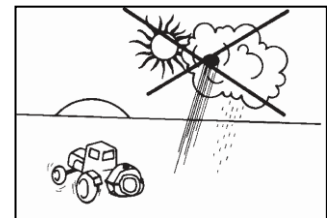
2. 5 WEATHER CONDITIONS

We recommend spraying in the early hours of the morning or late in the afternoon, avoiding the hottest time of day.

Never do any spraying if it's raining or rain is forecast.

Don't spray in strong wind or in any case, in winds above 3/5 m/second.

If you have to spray in windy conditions, use relatively low pressures to obtain quite large drops that are less sensitive to drifting (being heavier the wind has less effect). There are also special anti-drift nozzles available from OTMA S.p.A.; for information, please contact our offices.

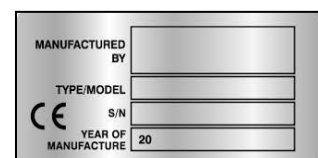


2. 6 MACHINES DESIGNED TO BE USED ONLY WITH CLEAN WATER

There are versions of the machines designed only to be used with a hose reel for washing with cold clean water.

These machines cannot be used with chemical products as they don't have some of the devices or accessories that are needed to use these products safely.

These machines are identified by the word "washing" on the CE plate.



2. 7 DRIVING ON THE ROAD

The mounted sprayers are not specifically designed for road use.

Nevertheless, many models are also available in the version homologated for road traffic with the tank empty. You should check with your local reseller on the correct couplings to use and use tractors that meet the regulations in force.

3. CHARACTERISTICS AND SPECIFICATIONS

This handbook is valid for tractor-mounted sprayers to be used with:

a) horizontal booms per herbaceous cultivations (herbicides, insecticides, fungicides, foliage nutrient, etc.)

d) treatments with hand lances with or without a hose reel

e) hand lances for washing with or without a hose reel The OTMA S.p.A. sprayers are identified by the CE plate, bearing one of the marks indicated in the tables of the allowed fittings (TABLE N° 23).

3. 1 TABLES OF FITTINGS ALLOWED

Tables N° 23 let you identify the version of your machine indicating the basic equipment and all the possible fittings available (optional).

You can also find the other fittings allowed or other versions to meet your requirements in the future.

THE FITTING DEFINED IN TABLES N° 23 SHOULD BE CONSIDERED BINDING FOR THE VALIDITY OF THE DECLARATION OF CONFORMITY.

Other fittings or setups of basic components and optionals should be considered unsafe and therefore are not covered by the guarantee and aren't OTMA's responsibility.

The same goes for fittings realised with components or accessories that aren't original OTMA parts.

OTMA accessories can easily be identified by the label with the yellow background "ORIGINAL OTMA ACCESSORY"

3. 2 NOISE LEVEL OF THE MACHINE

Use earmuffs to protect your ears when using the machine, sprayers that are equipped with just a pump and hydraulic plant produce a noise level below 80 dB(A).

Readings taken in accordance with the following standards:

Machines Directive 98/37/CE (89/392 CE Dir. re-codified).

Legislative Decree D.Lgs. n°292 of the 4th of September 2002 concerning the environmental acoustic emission of machines and equipment for use outdoors.

Legislative Decree D.Lgs. 277/91 on the subject of the protection of workers against the risks deriving from exposure to chemical, physical and biological agents.

4. USER'S INSTRUCTIONS

4.1 DESCRIPTION OF THE MACHINE

The sprayers are made of a structural steel frame and a polyester tank reinforced with fibreglass or high-density polyethylene.

The frame is painted with special fired epoxy paints or, depending on the versions, hot galvanised. The tank is easy to empty and this makes it possible to use the machine even on hillsides.

The pumps are generally diaphragm pumps but in some cases fitted with pistons.

The accessories that can be used to complete the sprayer include: lifting devices, self-levelling devices, mechanical or hydraulic herbicide booms, jets and nozzles and this makes the OTMA sprayer a highly qualified and efficient piece of equipment.

4.1.1 WORK STATIONS

The use of this machine does not envisage an operator standing constantly near the same, the operator normally sits in the cab of the tractor.

During calibration and maintenance operations the operator will be working near the machine at ground level (for all the calibration and maintenance operations refer to the relevant chapters).

In case of operations that request the entry to parts of the machines located at 1,5 mt. height ,it is advised to use a ladder at rule; the ladder shall be positioned steady on a flat ground not yielding and with the machine at a standstill and braked.

In some special models with controls above 1.5 metres there is a platform to make these operations easier.

This platform must only be used with the machine stopped.

4.1.2 HAND WASHING TANKS

The sprayers are supplied with an auxiliary hand-washing tank with clean water and a hand tap. This tank must always be supplied with water and the inside must be clean so you can wash any parts of the body that come into contact with the chemical product used.

Never drink the liquid inside.

4. 2 PRELIMINARY CHECKS

When you receive the machine, check that it is complete and no parts are missing.

If there are any damaged parts, inform your local reseller or OTMA directly in good time.

When the machine is delivered, make sure you ask:

a) that the machine is delivered with all of its parts fitted and that the fitting meets the requisites in table N° 23. (This procedure is necessary because for reasons of space during transportation the machine is often delivered partially dismantled).

b) that it is tested in your presence in particular checking:

= that the suction filter and the inside of the tank are clean and free of work residues.

= that the connections are made correctly.

= that the hose clips and all the unions and connections are tightened properly.

= that any herbicide boom is mounted in the centre.

= that all of the protective covers are fitted solidly to the machine, in particular the protective cover of the power-takeoff of the pump.

4. 3 TRANSPORTING AND MOVING THE MACHINE

Every time you have to lift the machine, before starting the operation, always make sure the lifting gear and the relevant tools and equipment (cables, hooks, etc..) are suitable for lifting the load and check the stability of the same.

The dry weight of the machine at the maximum level of fitting and with all the accessories allowed is stamped on the nameplate; use slings and lifting gear with a adequate load-bearing capacity.

Don't stand the sprayer on soft ground or steep slopes. Never lift or move the sprayers by hand if there is liquid in the tank. The machine will weigh more and the movement of the liquid can change the centre of gravity causing uncontrolled movements.

We recommend using slings as shown in the figure, the lifting points to use on the machine are indicated with the relevant symbol.

Don't lift the machine with the forks of a forklift truck because the machine can tip over due to the overhanging weight of the booms.

Don't pass or stand under the machine when it is being lifted.

4.3.1 TRACTOR-MOUNTED SPRAYERS

The tractor-mounted sprayers don't have wheels for moving the same if it isn't mounted on the tractor. Therefore you will have to use lifting gear as indicated in the previous general note.

4.3.2 PARKING FEET

The sprayers with hydraulic booms are fitted with extractable, anti-tipping, parking feet so the machines are stable when resting on the ground. They must be extended every time the machine is taken off the tractor.

4.4 TRACTOR COUPLING

The tractor must have a 1 3/8 ASAE DIN 9611/A power-takeoff that runs at 550 rpm. It must have a 3-point elevator suitable for safely supporting the weight of the sprayer. Check this by consulting the table of allowed fittings N° 23.

WARNING: make sure there are no persons or things near the sprayer before starting the machine and while you are using it. Tractor mounted spray booms cannot be fitted and utilised on the front of tractors not equipped with a cabin.



4.4.1 THREE-POINT COUPLING

a) We recommend carefully checking that the tractor is suitable for supporting the weight of the fully loaded sprayer safely.

The total weight of the sprayer with all of its accessories and fittings is indicated on the nameplate and also (in the version with the maximum fittings allowed) in tables N° 23. Non-observance can result in a very dangerous situation as the tractor will lose steering sensitivity and can tip over when driving uphill or over bumps.

b) Check the diameter of the elevator coupling pins. If necessary position the double diameter pins correctly; there are also appropriate adapter bushes available.

c) Adjust the length of the third point tie-rod correctly so the sprayer is perfectly vertical in normal working position.

d) Check for the presence of the safety pins that stop the arms of the tractor jumping off the connecting pins.

4.4.2 HYDRAULIC CONNECTION TO THE DISTRIBUTORS

The machines that need a hydraulic connection to drive the herbicide booms are equipped with 1/2", "Push-Pull", quick-fit male couplings.



You can connect the pipes by simply pushing them in, making sure you:

- proceed only with the engine turned off;
- lower any tools connected to the elevator of the tractor;
- carefully clean the two parts that will be coupled

Warning: the hydraulic cylinders used are the “Double Effect” type.

Consult the use and maintenance manual of the tractor.

4.5 CARDAN SHAFT

In some models this is supplied on request.

The cardan shaft must bear the CE mark.

It must always have its own instructions that must be followed scrupulously and it should come with a cover bearing the mark, integrated in every part.

You should have previously checked the length to avoid:

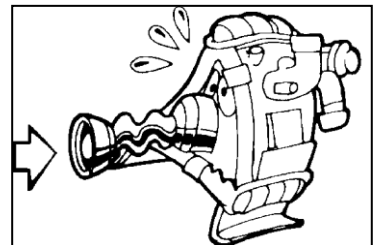
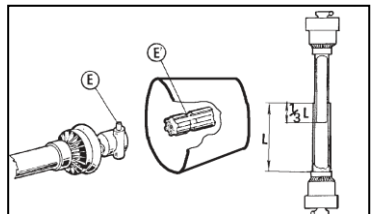
= if it is too long, DANGEROUS THRUST ON THE PUMP SHAFT

= if too short, the POSSIBILITY OF DANGEROUS BREAKAGES

THE MINIMUM OVERLAP OF THE TWO TELESCOPIC TUBES MUST NEVER BE LESS THAN 1/3 OF THE LENGTH OF THE TUBES.

The power that can be transmitted by the cardan shaft must be at least equal to that required to run the sprayer. Consider that the power necessary to run a sprayer without the fan is practically the same as that of the pump, the power rating can be found in the pump instructions handbook. Generally 20 bar pumps need 20 hp; 50 bar pumps need 30 hp. These power ratings can be found in tables N° 23.

- Hook any safety chains to solid anchor points
- Check that the button or ringnut is correctly engaged and blocked both on the pump side and on the tractor side.
- Don't exceed an inclination of 30° in any direction for any reason
- With the machine stopped, periodically grease the spiders and the pipes, keeping the connecting zone particularly clean.
- Avoid letting the end of the cardan shaft come into contact with the ground with the machine stopped; use the relevant support on some versions for this, if your machine has no support, hook the external safety chain to a part of the frame of the machine (ex. control unit support).



NEVER USE THE CARDAN TRANSMISSION IF THE FOLLOWING PROTECTIVE COVERS ARE MISSING:

- TRACTOR POWER-TAKEOFF PROTECTIVE COVER
- CARDAN SHAFT PROTECTIVE COVER
- FIXED PROTECTIVE COVER ON THE PUMP SHAFT

4. 6 PUMP

When using the pump scrupulously observe the instructions in the enclosed handbook supplied by the manufacturer.

The pump can be identified by the ratings plate on the same; the main data on the pressure and delivery are easy to find on this plate.

Normally the pumps mustn't exceed 550 RPM; a higher speed won't improve performance but there is a risk of compromising the life and safety of the pump.

There is a safety valve on the pump, calibrated to prevent overpressure. Don't tamper with this valve for any reason and don't block or obstruct the pipes connected to it in any way.



4. 7 SUCTION FILTER

The sprayer is fitted with a suction filter with filter cartridges that have roughly a 50-gauge mesh, which is equivalent to a hole of 0.4 at 0.35 mm. An efficient filter lets the sprayer work properly.

You should periodically check that the filter cartridge is clean, this check should be done more often if there are impurities in the liquid.

To inspect the filter cartridge wear rubber acid-proof gloves as the liquid in the filter can come into contact with your hands when you open the filter. Don't perform this operation with the pump running as the depression produced blocks the cover preventing the removal.

Before removing the cover of the filter, make sure that the same is isolated from the tubing by unscrewing the relevant rear valve or on the 3- way deviator.

After washing the cartridge, reassemble the cover making sure you connect the same to the circuit again, using the valves described above in the opposite order.

WARNING!: Don't disperse the washing residues in the environment!!



4. 8 PRESSURE REGULATOR

To use the pressure regulator, follow the instructions in the enclosed handbook scrupulously. The pressure regulator controls all of the most important spraying functions, the thorough knowledge of its functions makes work easier and more precise.

The working pressure and the maximum pressure of the sprayer are determined by the pressure regulator which also protects the circuit from overpressure in any work conditions. (In serious but very rare cases, if the connecting pipes get blocked the pressure relief valve lets the pressure off).

In some setups there may be a pump that can reach a pressure of 50 bar controlled by a regulator designed for 20 bar. In this case the maximum pressure that can be reached is 20 bar. The regulators can be manual, mounted on the sprayer or at a distance to make the controls easier to use; or electrical with a control panel in the cabin.



There are also regulator versions with mechanical remote controls with a cable. If the tractor has a waterproof cabin the use of electrical controls is obligatory.

4.8.1 COMPONENTS OF THE PRESSURE REGULATOR

Below you will find the indications for the main models fitted on Otma products.

A. main ON-OFF command: "open" lets the fluid flow into the circuit in use; "closed" empties the tank.

B. maximum pressure valve: adjusted by hand with the relevant knob (drains the excess liquid when the set pressure is reached).

C. boom section tap: opens the corresponding boom or drains to the compensation regulator (G).

D. auxiliary tap: can be used for various accessories (it is always manual).

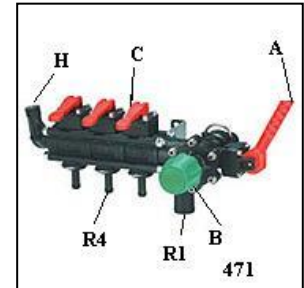
E. volumetric pressure valve (proportional) :

(when present) it regulates the spraying pressure. The valve automatically compensates variations in speed (within the scope of the same gear ratio), keeping the quantity of liquid supplied per surface unit (litres/hectare) unchanged.

F. self-cleaning filter: filters the delivery liquid.

G. compensation regulators: suitably regulated, these make it possible to keep the pressure constant when one or more sections of jets is closed, they don't influence treatments with the boom fully open.

H. manometer: indicates the working pressure.



Connections:

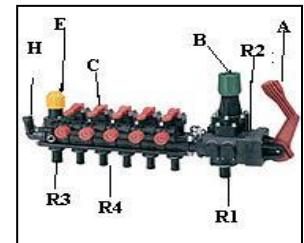
R1 supply union

R2 drain union

R3 volumetric drain union

R4 boom section delivery union

R5 auxiliary delivery union



4.8.2 GENERAL INSTRUCTIONS

When using the pressure regulator, scrupulously observe the instructions in the enclosed handbook, below you will find generic indications for the major models fitted by Otma.

All the regulation and adjustment tests must be carried out with clean water.

Pressure regulators without a volumetric valve (GCP3-way - RPN - RVA)

Adjusting the maximum pressure valve

- = put main control A in the drain position ("OFF").
- = loosen the hand wheel of maximum pressure valve B completely (anticlockwise).
- = start the pump by activating the power-takeoff of the tractor at 540rpm
- = open main control A (position "ON"), the manometer will be activated

- = open all of the section valves C (position "ON")
- = adjust maximum pressure valve B to the working value (in any case less than the safe maximum pressure the system can reach).

Pressure regulators with a volumetric valve (RPN-DPR-ERGO-REMO)

Adjusting the maximum pressure valve

- = put main control A in the drain position ("OFF").
- = loosen the hand wheel of maximum pressure valve B completely (anticlockwise).
- = open volumetric valve E completely.
- = start the pump by activating the power-takeoff of the tractor at 540rpm
- = open main control A (position "ON"), the manometer will be activated
- = open the drain tap on filter F slightly (only ERGO and REMO)..
- = close volumetric valve E completely. If the pressure rises over the maximum limit of the system, make sure maximum pressure valve B is open (see previous indications)
- = open all of the section valves C (position "ON")
- = adjust maximum pressure valve B to a value over that of the working pressure (generally 10 14 bar) and in any case lower than the safe maximum pressure that the system can reach.

Adjusting the volumetric pressure.

- = with the volumetric pressure valve E adjust the pressure to the value the treatment will be done at (the pressure is indicated on the nozzles tables on the basis of the tractor speed and litres/hectare to spray)

Warning! The working pressure must be adjusted with the volumetric valve and not with the maximum pressure valve. In the case the working pressure is too near to the calibrated pressure of the maximum pressure valve, the proportional valve may not be able to compensate the speed variations correctly.

Adjusting the compensated returns

= close only one tap of section C (position “OFF”).

= adjust the corresponding compensator G until you return to the pressure set previously (displayed on the manometer).

= open and close the tap of section C and check that the pressure remains constant.

= repeat the above operations for all the section taps.

If the types of nozzles aren't changed the regulations carried out will guarantee a constant spraying of the liquid also per treatments that are done at different working pressures.

NB: if the type of nozzle is changed then the calibrating will have to be done again.

4. 9 DELIVERY FILTERS (ONLY EQUIPPED MODELS)

Particularly useful when using small (low volume) nozzles.

In a central position with a manometer after the filter that shows any blockages in the cartridge. On the RVA version there is also a manometer before the cartridge to make it easier to find the problem.

The cleaning of the cartridge in the RPV-DPR-ERGO-REMO series is fully automatic (for ERGO and REMO see the previous paragraph), for the model RVA you should open the drain with the relevant lever for 2-3 minutes during the washing operations, as in the enclosed instructions.

You should clean the cartridge by hand periodically, on the basis of the product used. To clean, stop the pump. Wear rubber gloves and the other personal protective equipment when cleaning. Follow the instructions in the enclosed manual.



4. 10 SPRAYING COMPUTER (OPTIONAL)

Scrupulously follow the instructions in the relevant manual when using.

We don't recommend using the sprayer with the computer until you have had at least one lesson from the OTMA technicians.



4. 11 FILLING THE TANK

The machines for defensive crop treatments, in consideration of the safety of persons, animals and the protection of the environment, must only be filled indirectly from open water courses and only by free-falling water from the waterworks.

The pipe used for filling must never come into contact with the liquid inside the tank and therefore the water must always fall over the upper edge of the filling inlet and through the filter installed on it.

The tank is fitted with a transparent graduated band that shows the exact quantity of liquid inside. This reading is precise if the tank is on flat ground; the actual total capacity coincides with the highest number. All the filling systems fitted by OTMA on their production machines or on request are antipollution and stop the liquid overflowing out of the tank.

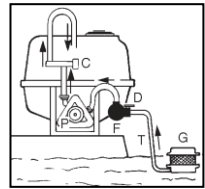
a) FILLING WITH THE 3-WAY DEVIATOR

It is possible to fill the tank using the pump and the floating filter kit G with 6 metres of rubber hose (the floating filter lets you always and only suck up clean water).

- = connect hose T to deviator D using the union hose adaptor supplied.
- = turn the lever of deviator D to the filling position.
- = place the other end of the hose, on which you fitted filter G, in the watering point.
- = start the power-takeoff leaving pressure regulator C in the draining position (you don't have to put the pump under pressure).
- = the filling speed in litres/minute is equal to the delivery of pump P.
- = visually check the level of the liquid in the tank and after filling stop the pump and put the lever of deviator D back in the working position.
- = disconnect pipe T from deviator D.

b) FILLING WITH THE SUCTION FILTER

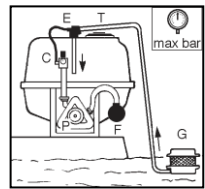
If the 3-way deviator isn't fitted you can fill the tank using the coupling on the cover of the suction filter. Unscrew the rear wing nut of the filter and using a G1"1/2 threaded union, connect pipe T with the floating filter to the coupling. Also in this case the filling speed in litres/minute is equal to the delivery of the pump.



c) FILLING WITH THE ANTIPOLLUTION EJECTOR

If you are filling with an antipollution hydroejector (mounted as standard on some models) then you should proceed as follows:

- = put roughly 20-30 L of water in the tank and start the pump.
- = remove the cap of ejector and insert filling pipe.
- = place the other end of the hose, on which you fitted filter, in the watering point.
- = open the tap that supplies the ejector (on pump P or pressure regulator C).
- = increase the pressure until it reaches a value which is sufficient to suck up the liquid.
- = visually check the level of the liquid inside the tank and after filling disconnect pipe from the ejector, close the tap and replace the cap.



4.12 MIXING

The active principle can be mixed using the relevant stirrers before and during the treatment. Correct mixing and stirring is the basis of the correct distribution on the crops. We recommend some useful accessories such as the premixer for powders and liquids (see the following paragraph).

To mix the product in the tank proceed as follows:

a) high-pressure machines from 30 to 60 bar: run the stirrer (or ejector) for roughly 10-15 minutes at the maximum pressure available

b) low pressure machines, max 20 bar

= with a drilled pipe on the drain, run the pump at roughly 540 RPM with the pressure regulator on drain for at least 10-15 minutes.

= with the stirrer on a delivery, run the pump supplying the stirrer (or ejector) at the maximum pressure available for at least 10-15 minutes.

Some models with very small tanks aren't equipped with mixers, you should use the drain of the pressure regulator: run the pump at roughly 540 RPM with the pressure regulator in the drain position for at least 10-15 minutes.

4.12.1 MANUAL PREMIXING

Dilute the active principle by hand before introducing it into the tank, (you must wear suitable protective clothing such as rubber gloves, a mask or goggles)

4.12.2 PREMIXER ON COVER (OPTIONAL):

Open the cover and pour all of the chemical powder into the filter, close the cover and open the supply tap until all of the powder has dissolved. (s, overalls, etc.).

4.12.3 PREMIXER ON HOPPER WITH TIN WASHER (OPTIONAL)

Premixers are available on request, such as the FULL-MIX 40 (FIG. N°10), to mix the product in the tank proceed as follows:

= check that all the taps of the premix are closed and open the supply tap on the sprayer, delivering liquid at a pressure of roughly 10-12 bar (never exceed 15 bar).

= press lever 4 for a few seconds introducing 3-4 litres of water into the hopper.

= open the premix, overturning the cover as shown in the photo and introduce the product to mix into the hopper 1, close the cover again.

= press lever 4 to mix the product in the hopper, watching the level of the liquid which could overflow. To prevent overflowing and to help powder products dissolve, open tap 6) to drain into the tank.

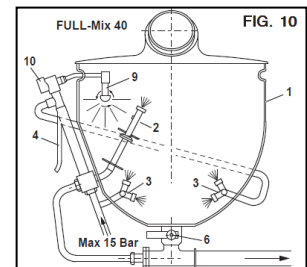
= after emptying, close tap 6.

To wash the tin, proceed as follows:

= open the premix, overturning the cover as shown in the photo

= supply the premix using the control to regulate a pressure to under 3- 4 bar

= introduce the tin into the hopper, insert washing pipe 2 into the tin, press the tin onto the pipe until it has been completely washed.



= open tap 6 to drain into the tank at the same time.

= after emptying, close tap 6.

NB: If the tin washer isn't supplied with clean water and isn't fitted with the optional electrical pump, you must rinse again by hand with clean water.

THE LIQUIDS USED FOR RINSING SHOULD BE INTRODUCED INTO THE TANK AND BE SPRAYED ON THE FIELD.

At the end of the operations, wash the hopper:

= check that the cover and all the taps of the premix are closed and open the supply tap on the sprayer, delivering liquid at a pressure of roughly 10- 12 bar (never exceed 15 bar).

= open safety tap 10.

= press lever 4 to activate jets 3 and 9, watching the level of the liquid which could overflow. To prevent overflowing, open tap 6) to drain into the tank.

= after washing, release lever 4 and close taps 6 and 10.

There is also a version of the premixer, similar to the one described, equipped with an independent pressure regulator that is connected directly to the pump.

For further information please refer to your handbook.

4. 13 WASHING THE SPRAYER

Thoroughly wash the machine after each treatment pumping clean water through the circuit and clean the suction and delivery filters.

Dirty equipment is very dangerous for the people and environment. Discharging the residues of washing in the environment without taking precautions is forbidden as this pollutes watercourses. Distribute the residues on the treated field.

4. 13. 1 CIRCUIT WASHER AND TANK WASHER

Some machine models are fitted with a circuit washer tank (FIG.11). This tank must be filled with clean water and used to rinse the entire circuit including the suction, delivery, pump, pressure regulator, jets and nozzles. Thanks to the practical rotary nozzle it also rinses the inside surfaces of the tank.

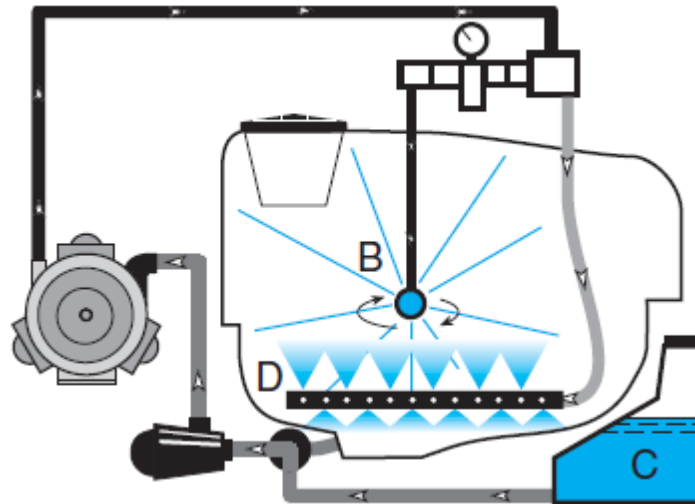
NB: To completely clean the tank and the pipes of any residues of the various active principles, we recommend adding 2kg of soda to the washing liquid for every 100 L of water.

At the end of the treatment, wash the circuit and the tank.

- a) Stop the diaphragm pump disengaging the power-takeoff.
- b) Check you have filled the circuit washer tank (C).
- c) Make sure the main control of the pressure regulator is OFF and that all the boom sectors are closed.
- d) Turn suction deviator A to the circuit washer position (H₂O).
- e) Start the diaphragm pump by engaging the power-takeoff.
- f) Increase the engine speed until all of the liquid in circuit washer tank C has been sucked up.
- g) Turn the diaphragm pump off and turn deviator A to the work position (TANK).
- h) Turn the main control to ON, so there is pressure in the circuit.
- i) Start the diaphragm pump again and use the tank washing tap on the regulator (or on pump) that supplies jet B.

- j) After a few minutes you can close the tank washing tap
 - k) Distribute the washing residues over a portion of the field where it won't cause damage.
 - l) After you have finished washing, stop the diaphragm pump.
- NB: at the end of the washing cycle, if there is the risk of frost, pour roughly 500 grams of normal antifreeze for auto vehicles into the tank.

FIG. 11



5. HORIZONTAL BOOMS FOR HERBACIOUS CULTIVATIONS (HERBICIDES)

5.1 MECHANICAL HERBICIDE BOOMS

These are made of steel painted with epoxy paint or hot galvanised. The jet booms are made of stainless steel or mopen with the jets mounted normally with a spacing of 50 cm.



All of the booms are folded on the central body and the external arms have safety joints to prevent breakages, if the end hits an obstacle during work. In the case of a knock the boom bends to avoid the obstacle and normally returns to the working position automatically. In any case the operator should try to avoid knocking against objects as this could damage both the boom and the obstacle in time; all the more so if the two elements can get stuck.

It is easy to see how to open and close the mechanical booms and where to put your hands which is indicated by the relevant stickers.

Check the connection and disconnection of the blocking devices on the mobile arms, indicated by the relevant stickers.

Take care as there is the risk of crushing the upper limbs in the hinges. Check that no one and nothing is in the area where the booms will open; particular attention should be paid to the presence of any electric power lines.

5.2 HYDRAULIC HERBICIDE BOOMS

The hydraulic herbicide booms are similar to mechanical booms.

As these booms are opened and closed hydraulically, they are generally built to be stronger.

The hydraulic plant can be fed from the hydraulic pump of the tractor or be fully independent.

- The hydraulics are controlled by a hydraulic distributor with mechanical or electro-hydraulic controls and switches in the cabin.

- All of the controls on both versions are sustained action controls and each lever or switch has a pictogram of the relevant operation it controls.

- With hydraulic booms that open to the side, you have to free the booms from the support stops by lifting them, opening the arms only when the boom is completely free.

WARNING: with hydraulic booms, don't stand in the range of action of the machine.

Pay attention to the integrity and efficiency of the hydraulic components and in particular to the pipes to prevent the risk of bursting. Do a full check on the pipes and components at least once a year, we recommend replacing hydraulic pipes every 3-4 years.

5.2.1 OIL FEED FROM TRACTOR

Consult the use and maintenance manual of the tractor.

Connect the delivery and discharge quick-fit coupling to the respective connections, respecting the direction of flow.

= On booms that have a direct connection to the quick-fit couplings, each pair of couplings feeds a cylinder.

= For booms equipped with EDR electro-deviators, follow the diagram of the couplings supplied.

= For manual or electric distributors (Elettroil), the distributor inlet pipe is connected to the aluminium flow separator valve next to the distributor.

The flow separator must be adjusted correctly so it send less than 4-5 L/1° to the distributor.

To prevent the cylinders moving at a dangerous speed, adjust the relevant chokes near the cylinders. If the registration ring nuts aren't visible then fixed chokes are fitted. The chokes are fitted on the discharge line of the movement to slow.

Any impurities in the oil could block the chokes and as a consequence block the cylinder; remove the dirt if necessary.

The maximum pressure valves of the distributors are regulated to a pressure of around 150 bar.

To prevent the excessive heating of the oil we recommend supplying the distributor of the sprayer only when the cylinders are being used. We recommend having qualified personnel do any adjustments.

5.2.2 INDEPENDENT HYDRAULIC PLANT

In this case there is a tank, a filter and a hydraulic pump fitted with a flange behind the main pump of the sprayer.

The entire plant is designed to be used at 540 RPM. Periodically check the oil level in the tank and avoid filling it over 3/4 full as the oil might overflow.

The tank has a filler cap with a breather, when the need arises (for repairs or to replace a component) you can drain the oil by disconnecting the suction pipe of the pump and collecting the oil in a recipient.

WARNING: the oil used mustn't be dispersed in the environment and must be collected in the relevant containers.

5. 3 AIR-ASSISTED BOOMS

These are booms that use air to make the treatment more effective and decrease wind drift. They are equipped with a fan (normally hydraulic) and an AIR-SLEEVE that transports the airflow along the entire length of the boom.

They come with their own use and maintenance handbook, enclosed with the machine.

5. 4 SELF-LEVELING DEVICES

The self-levelling device keeps the boom parallel to the ground to be treated.

It works thanks to the effect of gravity in all the models. The oscillation can be blocked mechanically or hydraulically.

The work boom has a self-levelling device with an automatic block based on cables and springs. The self-levelling device only works on flat ground, for hilly terrain we recommend the version with trim corrector or hydraulic LEVELING, which lets the operator position the boom with an inclination that is suitable for the ground.

To use, check:

- a) that the boom has been mounted in the centre, the weight of the boom must be supported equally on the two halves. To check this, free the selflevelling device from the mechanical (or hydraulic) block and by moving the boom make sure it automatically adjusts its position to be parallel to the ground.
- b) in the models that have an adjustable connecting rod, by adjusting the same, it is possible to obtain small variations in trim that can be useful on slightly uneven terrain.
- c) in the hydraulic versions it is possible to fit a hydraulic cylinder instead of the connecting rod that is adjusted by hand.
- d) to complete the self-levelling device we recommend the dragging jetsaver protections
- e) keep the sliding parts well greased.

5. 5 LIFTING

The lifting devices are very useful to adjust the height of the boom on the basis of the height of the vegetation to be treated.

The height of the boom is adjusted as follows:

Mechanical lifting

= check that the support cable of the boom is inserted correctly in the winch and that the handle of the same is positioned so the cable is under tension.

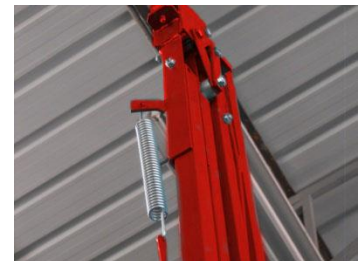
= loosen the 4 blocking screws positioned along the channels.

= adjust the height of the boom with the handle of the winch to the desired height.

The winch can be either the type with an automatic clutch or a manual ratchet with sustained action to avoid accidental release.

Nonetheless, please take care when making adjustments.

= after making the adjustment, tighten the 4 blocking screws again as the jolts caused by working on uneven ground could make the cable or the winch wear quickly.



= DON'T STAND under the boom when adjusting the height.
 Hydraulic lifting
 = the hydraulic version has a double-effect cylinder controlled by a special parachute stop valve.
 = to lift and lower the boom use the control on the electroil pushbutton panel or the quick-fit couplings connected to the lifting cylinder.
 = periodically lubricate the sliding guides with grease and check the guide bolts are tightened properly, with a suitable play.



5.6 DISTRIBUTION WITH HERBICIDE BOOM

5.6.1 DESCRIPTION OF TYPE OF JETS



Various types of jets are fitted; with a single fixed (threaded or quick-fit) or with multiple heads. Generally they have a non-drip diaphragm and are made out of reinforced plastic, suitable for pressures up to 15-20 bar, some models are nickel plated brass for pressures up to 40 bar. There are versions with 2-3-4 plastic nozzle heads and 2 brass heads.

5.6.2 DESCRIPTION OF TYPE OF NOZZLES

The nozzles are extremely important to obtain a correct distribution on the vegetation to be treated. Poor quality or worn nozzles have a tendency to create unevenly treated strips.

The nozzles are produced in various sizes, to work with a precise pressure range, to create certain types of larger or smaller drops; using nozzles for a purpose they are not envisaged for prejudices the precision and duration of the nozzles.

Available in various materials: plastic-brass-stainless steel-ceramic.

They are used at pressures from 1-5 bar producing medium-large drops; particularly suitable for pre-emergence and post-emergence weeding.

b) Conical nozzles

Generally made of ceramics, these nozzles consist of two parts; the actual nozzle and the slinger. They are particularly resistant to wear and designed to work from 1 to 16 bar producing a high density of small drops with a strong turbulence. This turbulence makes them suitable for penetrating luxuriant vegetation and so they are suitable for fungicides and insecticides.

When necessary they can also support slightly higher pressures.

c) Anti-drift nozzles

There are various models of nozzles that make it possible to reduce the effect of drift.

d) Mirror nozzles for liquid fertilizers.



5.6.3 DISTRUBUTION

a) Check that all the nozzles are in a good condition and are positioned correctly on the boom. The automatic positioning with quick heads is done for threaded heads with the relevant adjustment wrench.

Check that the total capacity of the nozzles is at least 25% less than the capacity of the pump.

b) Make sure the suction and delivery filters, as well as the non-drip membranes are clean and in a good condition and that the same quantity of liquid is supplied along the entire width of the boom.

c) Check that the height of the boom from the crops is suitable for regular distribution. For a boom with fan nozzles fitted at 50 cm from each other; this height is roughly 50 cm.

d) Working pressure.

The working pressure must allow appropriate pressure in the following of this handbook and also allow for the speed of the tractor to obtain the desired spraying in litres/hectare.

To assess the data, consult tables N° 1-15.

These tables are valid for spaces between the nozzles of 50cm.

To meet particular requirements OTMA can supply booms with different spaces between the nozzles and setups suitable for running at pressures over 20 bar.

See the table below for the data conversion.

USEFUL INFORMATION

During the distribution of the product watch the pre-established speed and pressure, following the data in the nozzles table.

The tables indicate the volume distributed per hectare for each type of nozzle at the desired speed and pressure and are calculated as follows:

$V = 600 \times Q / l \times V$ where:

V=volume to distribute (L/HA)

Q=capacity of the nozzle (L/MIN)

l=distance between the nozzles in metres (0.5)

V = tractor speed (Km/h)

e) Considering the wear of the nozzles and a possible pressure drop in time, to check them proceed as follows:

With the pump running at the pre-established pressure, measure the quantity of liquid that comes out of the nozzles in L/min. Multiply this by the figure in the table indicated below corresponding to the chosen treatment speed. The resulting figure is the exact quantity of liquid to distribute per hectare.

EXAMPLE: the nozzle delivers 2.2 L. per minute. The speed chosen for the treatment is 6 km/h, the quantity to distribute per hectare is $2.2 \times 200 = 440$ L/ha

5. 7 MARKER

The marker indicates the zone where the treatment has been applied.

It produces a chemical foam that doesn't damage the crops, which is deposited on the ground and disappears after roughly an hour. The marker is an accessory available on request. For the use and maintenance of the system follow the instructions in the specific handbook in the package or enclosed with machine manual.

WARNING: the foam liquid is ruined by frost, very hard water can change the yield and function.



6. ROW BOOMS

These are special small booms for localised chemical weeding on the row in fruit orchards.

Generally they are fitted behind a mounted group as shown in the diagram.

They have a joint that collapses automatically in a collision and the jet is protected by an ABS cover to prevent the leaves of the plants coming into contact with the chemical product.

When using the boom it shouldn't hit the plants as the treatment won't be done properly if it does. The boom has its own handbook as special nozzles are fitted and the tables can confuse the users of normal booms.

There are versions with level wheel and brush-type, anti-drift side protections made specifically for using systemic herbicides also in the presence of wind.

7. VERTICAL SPRAY BOOMS

Designed for high-pressure spraying in espalier orchard vineyards, they are best for spraying high volumes.

STRAIGHT BOOMS in the versions 3+3, 4+4, 5+5 with P39 brass butterfly jets with conical ceramic nozzle

User's instructions:

a) Check that all the nozzles are clean and free of foreign bodies

b) The capacity of the nozzles can be found in tables.

Multiply the capacity of the nozzle by the number of the same and check that the pump delivers at least 25% more than the maximum capacity.

c) Adjust the articulations and direct the jets making sure the spray reaches the target to be treated in the best way.

Each jet can also be closed with the relevant butterfly valve.

d) To regulate the quantity of litres per hectare, proceed as follows:

= Establish the width of the pass in m (distance between the rows, ex.4m)

= Define how many minutes are necessary to treat one hectare in table

N° 9, considering the speed at which you will be able to proceed.

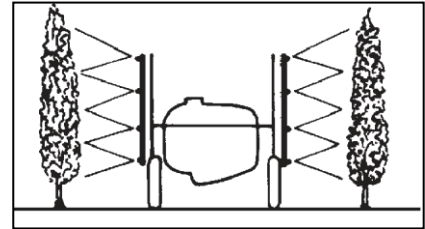
(EXAMPLE: 6 km/h, time = 25 min.)

= Table N° 8 shows that to spray 600 L per hectare in 25 minutes you must deliver 24 L/min.

= Table N° 1-4 shows the capacity at the various pressures. (Ex: to obtain 24 L/min with 10 x 1.2 diameter, regular cone, butterfly jets, regulate to 15 bar).

= Adjust the pressure to obtain the treatment desired.

WARNING! We recommend doing a test treatment with clean water to get to know the system and check the settings.



8. HAND LANCES

When using hand lances bear in mind the following notes:

- = Don't direct the jet of liquid towards electric power lines or zones where there is electrical current, houses or where people might pass.
- = Don't point the jet at people or animals.

The jet can cause serious injuries simply due to the mechanical force of the liquid under pressure.

- = Never block the spraying lever of the lance in an open position because if the lance falls it will be uncontrollable.

- = At the end of work after you have stopped the pump, make sure that

any residual pressure in the pipes under pressure has been drained to avoid

unexpected jets when putting the lance away.

There are various types of lances; with a lever, mitra spray gun and pistol grip.

For further information please refer to the handbook in the package.

The lever lance is controlled by opening lever A which, depending on how much it's pressed, produces a conical spray or direct jet. The standard nozzle is \varnothing 1.5

The mitra spray gun can produce a direct jet or a conical spray and the type of spray is selected by pushing lever B forwards or backwards. Use lever C to open the jet. The standard nozzle is \varnothing 2.5 Replacement nozzles are available for all of the lances and the capacities are indicated in the tables N° 16-18.



9. HOSE REEL

Available in the following sizes 20-50-100 , with mechanical, electrical and hydraulic rotation.

To use the system, consult the enclosed handbook as there are significant differences between each.

After work it is important to block the winding roller to stop the hose unwinding while you are moving the sprayer.



10. MAINTENANCE

(To be done with the machine and cardan shaft stopped)

The maintenance of the sprayer is essential for maintaining a high level of safety. Also consult the single handbooks of the main components of the sprayer. All of the maintenance operations and repairs must be carried out with the machine and cardan shaft stopped and the tank and circuit clean of any residues of chemical products.

10.1 PROGRAMMED MAINTENANCE

(TAB. N° 21)

We recommend using a table of programmed maintenance to follow in time to keep the sprayer in an efficient working condition.

For major and important maintenance jobs we recommend using the normal OTMA assistance service available from your reseller, using original OTMA spare parts.

10.2 ROUTINE MAINTENANCE

= After every treatment, wash the inside of the tank and the entire circuit as indicated in paragraph 4.11.

= Periodically check that the suction and delivery filters are clean (see figure)

= Check the oil level in the volumetric compensator of the pump

= The use of chemical products that are particularly damaging for a nitrile rubber mix (ex.. herbicides and products for rice fields) can cause the diaphragm to break before time.

In these conditions check the state of the components more often.

10.3 EXTRAORDINARY MAINTENANCE

At the end of a season of intense use, or every two years of normal use, it is a good idea to have a specialised service technician perform a general check on the machine.

10.4 MAINTENANCE OF THE HERBICIDE BOOM - SELF-LEVELLING DEVICE – LIFTING SYSTEM

(to be done with the machine and cardan shaft stopped)

a) Check the state of wear of the nozzles and replace them when the delivery is over 30-35% of the theoretical level. Don't clean with nails, bradawls or punches. Use small brushes or compressed air.

- drain the pressure and stop the machine

- dismantle the screw or bayonet ring nuts holding the nozzles

- clean with a small brush or compressed air, don't use nails, punches or bradawls

- reassemble the nozzles and the ring nuts, replacing the filters and seals.

b) Keep the joints greased.

c) If you are using the boom and you notice excessive pitching or the same closing on sloping ground, you can load the spring more by screwing in the relevant nut.

d) If the external arms droop downwards after some use you can realign them using the relevant adjustment screws:

- unscrew the locknut
- adjust the inclination by screwing in the screw
- tighten the locknut again to stop it unscrewing accidentally.

10. 5 REPAIRS

We recommend having the normal OTMA assistance service available from our reseller perform any repairs or contact a specialised workshop. During all of the repairs, in particular when welding, the machine and the circuit must be clean of any residues of chemical product. If the machine has to be lifted (for example to change a wheel) follow the instructions in point 4.3 of the present handbook.

Also make sure the machine is stopped, connected to the tractor, and use the relevant chocks to block the wheel still on the ground.

If you use a jack (manual or hydraulic) make sure you use a jack that is suitable for the frame so it can't slip and put it in the right position. The jack must be placed under the main frame of the machine near the wheel to change. Make sure the ground is compact: if necessary use wooden beams or other sufficiently resistant material to broaden the supporting base of the jack.

10. 6 STORAGE IN A WAREHOUSE AND TRANSPORTATION

The sprayer must be kept in a closed place away from excessive humidity and protected from frost. Especially if electrical pressure regulators, electrical motors, a spraying computer or similar components are fitted.

Before storing the machine, after you have washed it, apply a light coat of oil.

If the temperature might drop to below zero, drain any residual liquid or add roughly 0.5 L of normal antifreeze for auto vehicles.

To transport the machine follow the instructions in point 4.3 of the present handbook.

10. 7 PUTTING BACK INTO SERVICE AFTER WINTER LAYOUT

Before using the machine again after a long period of inactivity you should perform some general checks, following the instructions in point 4.4 and drain any antifreeze.

Never start the shaft of the pump if you think there may be ice inside. To check this, make sure you can turn the shaft by hand without connecting it to the tractor.

After you have connected the machine to the tractor (see point 4.5) following the instructions in the present user's handbook and in the enclosures of the pump, pressure regulator and accessories

10. 8 DEMOLITION AND DISPOSAL

When the sprayer will be put out of service you should wash it with great care to remove any residues of chemical product, follow the instructions in point 4.14 of the present handbook. ATTENTION: It is necessary to adopt appropriate Individual Protection Devices in manipulating waste.

The disposal of waste deriving from the demolition of the machine must be carried out respecting the environment, avoiding soil, air and water pollution.

Local legislation in force in the matter must be respected in any case.

Remember that waste is understood as any substance or object that enters into the categories

shown in attachment A in part IV of Legislative Decree 152/2006, that the holder has destroyed, has decided or is obliged to destroy.

Waste deriving from the demolition of the machine is classifiable as special waste.



10.8.1 MATERIALS FOR DEMOLITION

Non-dangerous special waste is that which can be recovered, according to the February 1998 Ministerial Decree:

- Iron, aluminium, stainless steel and copper materials
- Plastic materials
- Electronic cards
- Hydraulic oil
- Electrical plant

10. 8. 2 INDICATIONS FOR A SUITABLE TREATMENT OF WASTE

The Correct management of special waste envisages:

- stocking in suitable places, avoiding mixing dangerous waste with the non-dangerous.
- ensuring that authorised carriers and receivers carry out its transport and disposal/recovery.

Transport of one's waste to authorised collection centres is allowed exclusively if you are enrolled in the Environmental Management Register.

10. 8. 3 ELECTRICAL AND ELECTRONIC APPARATUS WASTE (EEAW)

The Italian government has adopted the European Parliament directives in the matter of the disposal of electrical and electronic waste (EEAW) (2002/95/CE and 2003/108/CE Directives) with Legislative Decree n° 151, July 25 2005).

The measures: in particular, the decree established measures and procedures aimed at:

- a) forestalling the production of EEAW;
- b) promoting the re-use, recycling and other forms of EEAW recovery, in order to reduce the quantity to send for disposal;
- c) improving, in terms of the environment, the actions of the subjects who participate in the lifecycle

of these apparatuses (producers, distributors, consumers and operators directly involved in the treatment of EAW);

d) reducing the use of dangerous substances in electrical and electronic apparatus.

The decree imposes the limitation and elimination of several substances present in EAW:

lead,

mercury, cadmium, chrome, hexavalent chrome, polybrominated biphenyl, polybrominated diphenyl and polybrominated diphenyl ethers.

The machine has been designed and created in conformity with this directive. Follow the indications shown below.

The symbol to the side, showing a barred garbage can on wheels, indicates the separate collection of the electrical and electronic apparatuses of the machine.

The user of the present machine can contact the collection centres instituted by the Local Authorities or the OTMA Company directly, or request withdrawal by the dealer, in order to carry out correct disposal of the waste.

OTMA



comet bp 105
pump



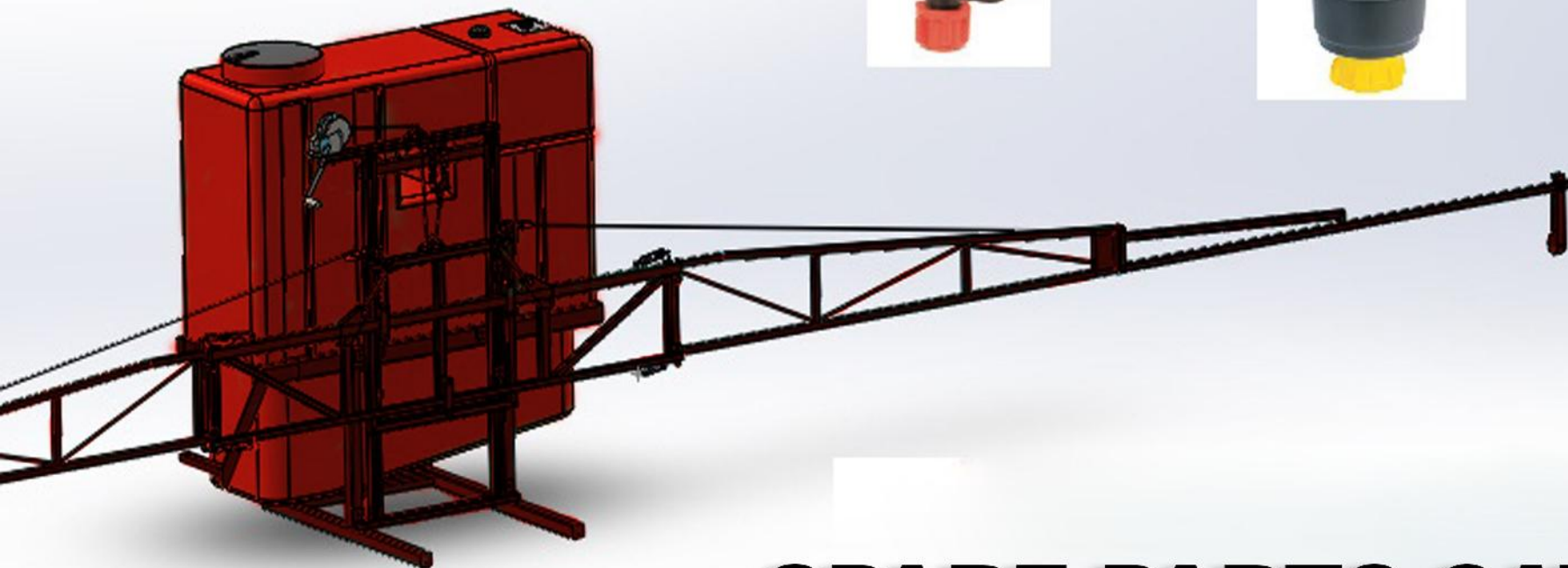
manual ARAG
command group
3 valve



ARAG
NOZZLES

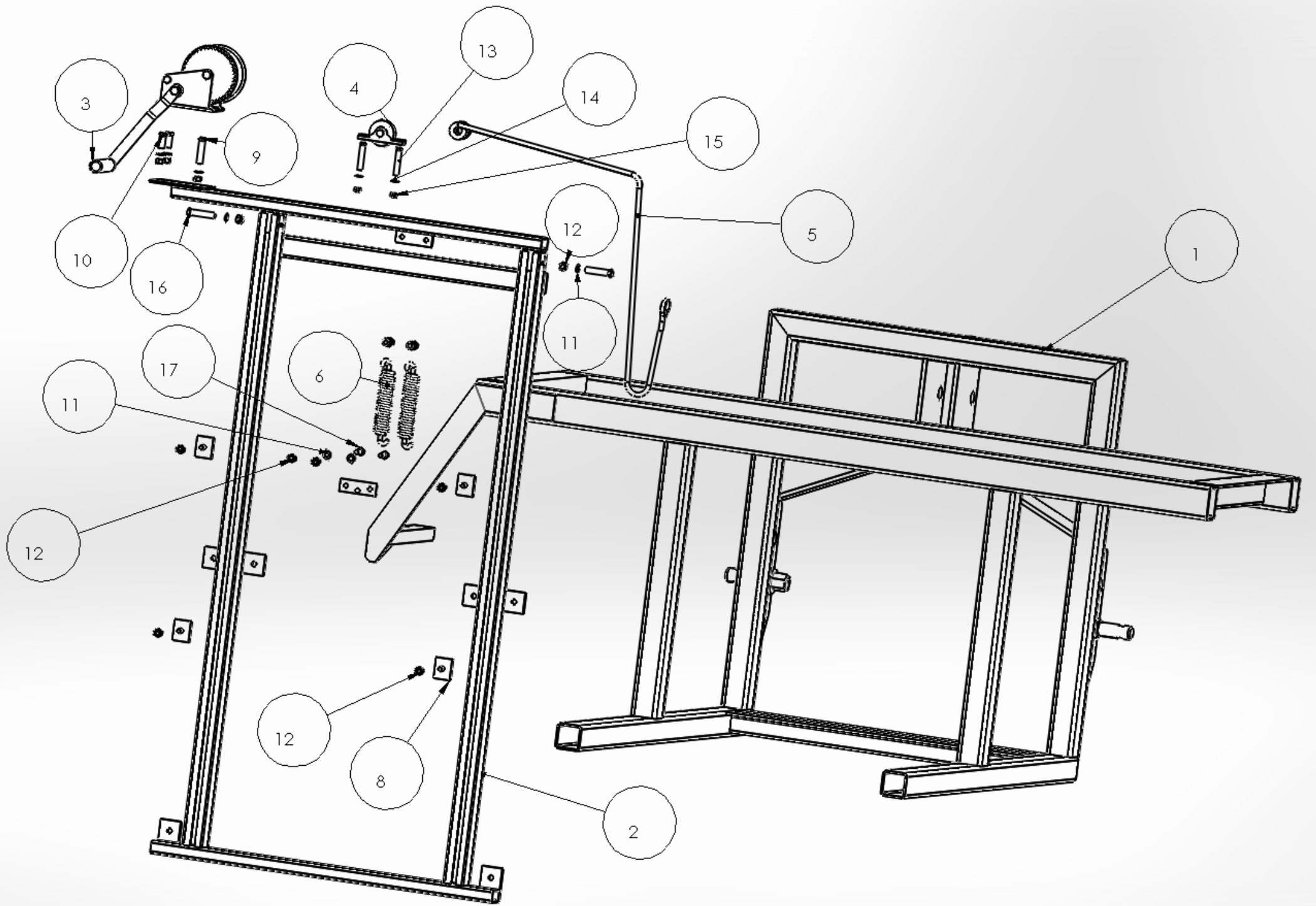


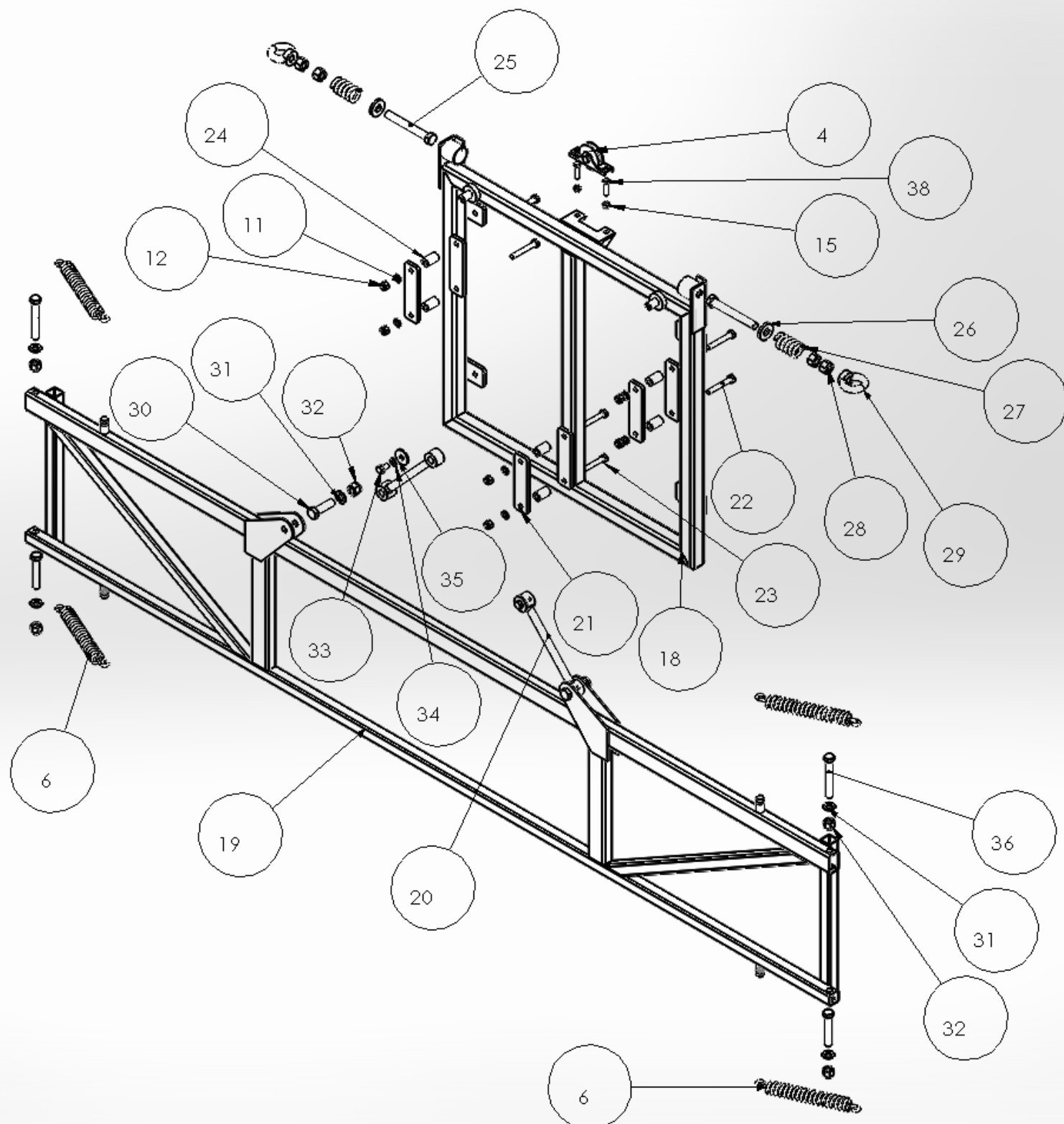
ARAG
FILTERS

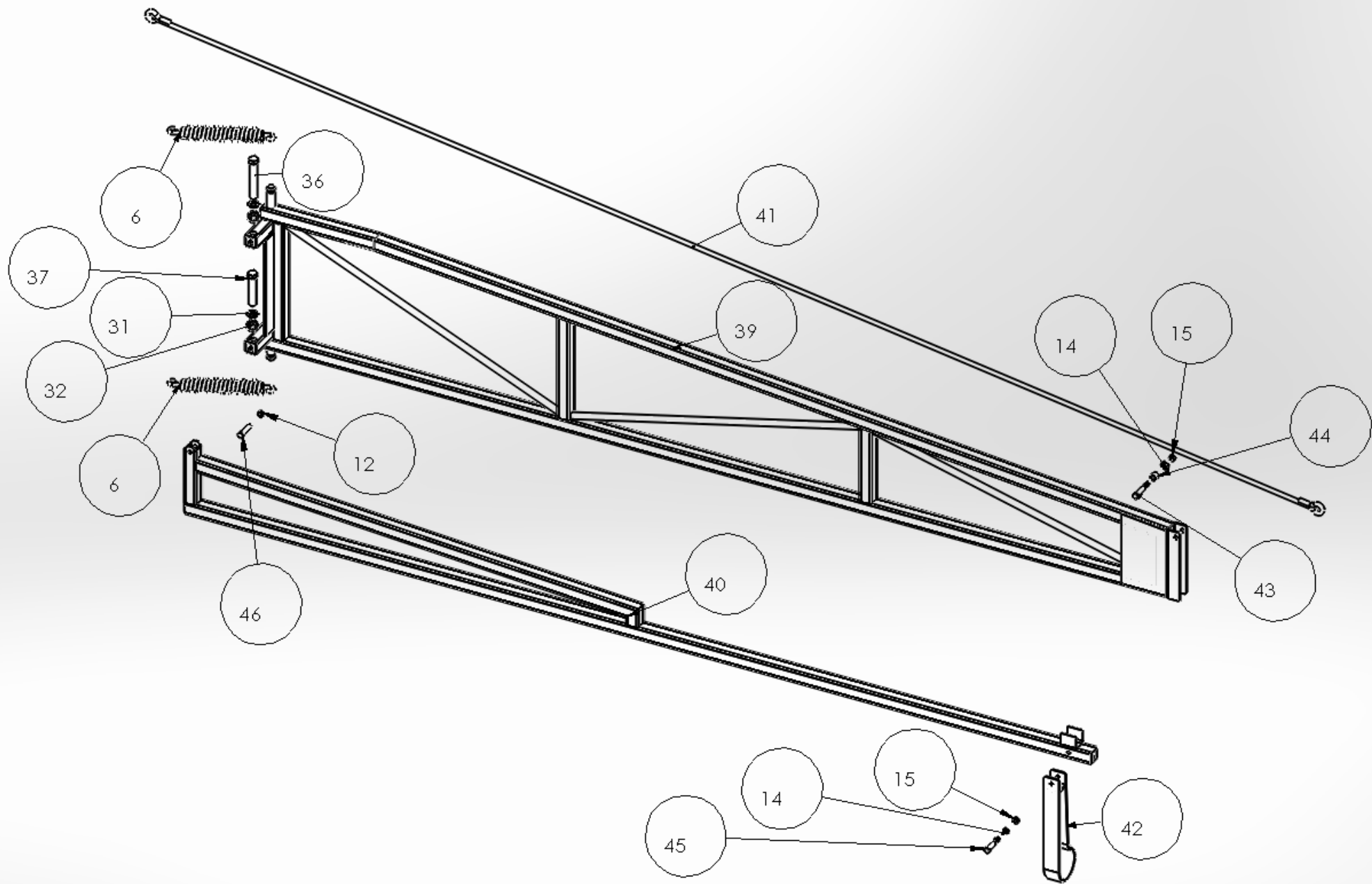


SPARE PARTS CATALOG

Mechanical Farming Sprayer 12m







MECHANICAL FARMING SPRAYER 12m							
N°	Code	Description	Quantity	N°	Code	Description	Quantity
1		Tank frame	1	29		O ring, M16	2
2		Booms lifting frame	1	30		Screw M14x60	2
3		Winch	1	31		Washer B14	6
4		Pulley	2	32		Screw nut M14	6
5		Cable	1	33		Screw M10x16	2
6		Spring	6	34		A10	2
7		Tile	1	35		Washer B10 ø30	2
8		Skater	4	36		Screw M14x100	2
9		Screw M10x55	1	37		Screw M14x80	2
10		Screw M10x30	2	38		Screw M8x35	2
11		Washer B10		39		Side frame	2
12		M10 Cotter pin		40		Bar	2
13		Screw M8x60	2	41		Lever	2
14		Washer B8		42		Holder	2
15		M8 Cotter Pin		43		Screw M8x60	2
16		Screw M10x60	2	44		Spacers INOX	2
17		Screw M10x30	4	45		Screw M8x55	2
18		Trolley	1	46		Screw M10x45	
19		Central frame	1				
20		Teeter	2				
21		Tile	3				
22		Screw M10x70	4				
23		Screw M10x110	2				
24		Spacers	6				
25		Screw M16x30	2				
26		Washer B16	2				
27		Spring	2				
28		Screw nut M16	4				