



CAUTION: IT IS MANDATORY
TO READ AND THOROUGHLY
UNDERSTAND THE OPERATOR'S
MANUAL BEFORE USING THE
EQUIPMENT.

Operator's Manual - English

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Knapsack Sprayer Jacto

pjb



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1. Introduction

SAVE THESE INSTRUCTIONS: This manual contains information for the proper assembly, operation and care of your sprayer. Carefully read and follow the instructions contained in this manual before using your sprayer.

This equipment was designed for spraying plants protection products approved by regulatory authorities to be used in knapsack sprayers.

The product may be subject to national requirements for regular inspection by designated bodies, as provided for in Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides.

2. Specifications

Model	PJB-20/16
Maximum dimensions (L x W x H)	390 mm x 200 mm x 553 mm 390 mm x 200 mm x 480 mm
Net weight	4.9 kg/ 4.8 kg
Gross weight	5.7 kg/ 5.5 kg
Spray lance length	600 mm
Hose length	1350 mm
Chemical tank	
Capacity	20 L/ 16L
Residual volume	None
Filling opening diameter	115 mm
Material	Polyethylene
Pump	
Type	Diaphragm
Maximum pressure	60 psi (4,1 bar)
Open flow	2,1 L/min
Nozzle installed	Blue adjustable nozzle
Battery	
Type	Lithium Ion, rechargeable
Rated Voltage	14.54 V (16.4 V max.)
Capacity	84.3 Wh (5800 mAh)
Recharge time	5h
Autonomy*	5 - 14h

NOTE: See item *9.2. Pressure, flow rate and autonomy of each nozzle type*.

SAFETY GUIDELINES – DEFINITIONS

It is important for you to read and understand this manual. The information it contains relates to protecting YOUR SAFETY and PREVENTING PROBLEMS. The symbols below are used to help you recognize this information.



DANGER!

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING!

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION!

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTE: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

3. General Power Tool Safety Warnings



WARNING!

Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE.

The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

3.1. Work area safety

- a. Keep work area clean and well lit.** *Cluttered or dark areas invite accidents.*
- b. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** *Power tools create sparks which may ignite the dust or fumes.*
- c. Keep children and bystanders away while operating a power tool.** *Distractions can cause you to lose control.*

3.2. Electrical safety

- a. Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** *Unmodified plugs and matching outlets will reduce risk of electric shock.*
- b. Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** *There is an increased risk of electric shock if your body is earthed or grounded.*
- c. Do not expose power tools to rain or wet conditions.** *Water entering a power tool will increase the risk of electric shock.*
- d. Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** *Damaged or entangled cords increase the risk of electric shock.*
- e. When operating a power tool outdoors, use an extension cord suitable for outdoor use.** *Use of a cord suitable for outdoor use reduces the risk of electric shock.*
- f. If operating a power tool in a damp location is unavoidable, use a ground fault circuit interrupter (GFCI) protected supply.** *Use of a GFCI reduces the risk of electric shock.*

3.3. Personal Safety

- a. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** *A moment of inattention while operating power tools may result in serious personal injury.*
- b. Use personal protective equipment. Always wear eye protection.** *Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.*
- c. Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.**
- d. Remove any adjusting key (wrench, screwdriver...) before turning the power tool on.** *A wrench or a key left attached to a rotating part of the power tool may result in personal injury.*
- e. Do not overreach. Keep proper footing and balance at all times.** *This enables better control of the power tool in unexpected situations.*
- f. Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts.** *Loose clothes, jewellery or long hair can be caught in moving parts.*

g. If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.

3.4. Power tool use and care

- a. Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- b. Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c. Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- d. Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- e. Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- f. Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- g. Use the power tool, accessories and tool bits etc., in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

3.5. Battery tool use and care

- a. Recharge only with the charger specified by the manufacturer. A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- b. Use power tools only with specifically designated battery packs. Use of any other battery packs may create a risk of injury and fire.
- c. When battery pack is not in use, keep it away from other metal objects like paper clips, coins, keys, nails, screws, or other small metal objects that can make a connection from one terminal to another. Shorting the battery terminals together may cause burns or a fire.
- d. Under abusive conditions, liquid may be ejected from the battery, avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.
- e. Do not use a battery pack or appliance that is damaged or modified. Damaged or modified batteries may exhibit unpredictable behavior resulting in fire, explosion or risk of injury.
- f. Do not expose a battery pack or appliance to fire or excessive temperature. Exposure to fire or temperature above 60°C may cause explosion.

3.6. Service

- a. Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

4. Symbols

The label on your tool may include the following symbols. The symbols and their definitions are as follows:

V	volts	n0	no-load speed
A	amperes	 ou d.c.	direct current
W	watts	 ou a.c.	alternating current
Hz	hertz		earthing terminal
lbf/in² (lbf/poi²)	psi	l	litres
min	minutes	kg	kilograms
h	hours	m	meters

5. Important Safety Instructions for Battery Chargers

SAVE THESE INSTRUCTIONS: This manual contains important safety instructions for battery chargers. Before using charger, read all instructions and cautionary markings on charger, battery pack, and product using battery pack.

**WARNING:**
Shock hazard. Do not allow any liquid to get inside charger.

**CAUTION!**

- **Burn hazard.** To reduce the risk of injury, charge only designated JACTO batteries. Other types of batteries may burst causing personal injury and damage.
- Under certain conditions, with the charger plugged in to the power supply, the charger can be shorted by foreign material. Foreign materials of a conductive nature such as, but not limited to, steel wool, aluminum foil, or any buildup of metallic particles should be kept away from charger contacts. Always unplug the charger from the power supply when not charging battery. Unplug charger before attempting to clean.

**WARNING!**

- **DO NOT attempt to charge the battery pack with any chargers other than the ones in this manual.** The charger and battery pack are specifically designed to work together.
- **These chargers are not intended for any uses other than charging designated JACTO lithium rechargeable batteries.** Any other uses may result in risk of fire, electric shock or electrocution.
- **Do not expose charger to rain or snow.**
- **Pull by plug rather than cord when disconnecting charger.** This will reduce risk of damage to electric plug and cord.
- **Make sure that cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.**
- **Do not use an extension cord unless it is absolutely necessary.** Use of improper extension cord could result in risk of fire, electric shock, or electrocution.
- **An extension cord must have adequate wire size (AWG or American Wire Gauge) for safety.** When using more than one extension to make up the total length, be sure each individual extension contains at least the minimum wire size. When using an extension cord, be sure to use one heavy enough to carry the current that product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. The following table shows the correct size to use depending on cord length and nominal current presented in the label of the charger mentioned in this manual. If in doubt, use the next heavier gauge.

Extension Cord Total Length	Up to 15.2 m	From 15.2 m and up to 30 m	More than 30 m
Wire Size (AWG)	16	14	Not recommended
Wire Size (mm2)	1.5	2.5	Not recommended

- **Do not mount charger on wall or permanently affix charger to any surface.** The charger is intended to use on a flat, stable surface (i.e., table top, bench top).
- **Do not operate charger with damaged cord or plug** - have them replaced immediately.
- **Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way.** Take it to an authorized service center.
- **Do not disassemble charger;** take it to an authorized service center when service or repair is required. Incorrect reassembly may result in a risk of electric shock, electrocution or fire.
- **Disconnect the charger from the outlet before attempting any cleaning.** This will reduce the risk of electric shock. Removing the battery pack will not reduce this risk.
- **NEVER attempt to connect 2 chargers together.**
- **The charger is designed to operate on standard household electrical power. Do not attempt to use it on any other voltage.**
- **Battery chargers contain electronic parts.** Dispose of properly.

- **Do not incinerate the battery pack even if it is severely damaged or is completely worn out.** The battery pack can explode in a fire. Toxic fumes and materials are created when battery packs are burned.
- **Do not charge or use battery in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Inserting or removing the battery from the charger may ignite the dust or fumes.
- **If battery contents come in to contact with the skin, immediately wash area with mild soap and water.** If battery liquid gets into the eye, rinse water over the open eye for 15 minutes or until irritation ceases. If medical attention is needed, the battery electrolyte for Li-ion batteries is composed of a mixture of liquid organic carbonates and lithium salts.
- **Contents of opened battery cells may cause respiratory irritation.** Provide fresh air. If symptoms persist, seek medical attention.
- **Disposal of used batteries must be made at appropriate points and approved for receiving such material.** If a recycling center is not available in your area please contact CUSTOMER SERVICE: Dr. Luiz Miranda Street, 1650 CEP 17580-000 - Pompeia - SP - Phone: +55 (14) 3405-2113 - email: assistencia.tecnica@jacto.com.br - Opening Hours: Monday to Friday from 07h00 am to 11h30 am and from 13h00 pm to 17h18 pm.

5.1. Charging procedure

JACTO charger supplied with this sprayer is designed to charge JACTO batteries of the JB line. The JB1680 model is charged in 5 hours.

1. Remove the battery from the sprayer.
2. Plug the charger into an appropriate outlet before connecting the battery pack. Make sure the AC cord is well attached to the charger.
3. Connect the charger plug to the battery pack connector.
4. The charge light will remain red/orange while charging.
5. When battery pack is fully charged, charge light will change its color to green.
6. As soon as the battery is fully charged, disconnect the battery from the charger.
7. Unplug charger cord from outlet.

Recharge discharged batteries as soon as possible or battery life may be greatly diminished. For longest battery life, do not discharge batteries fully. It is recommended that the batteries be recharged after each use.

5.2. Important charging notes

- DO NOT charge the battery pack in an air temperature below 0°C or above 45°C. This is important and will prevent serious damage to the battery pack.
- The charger and battery pack may become warm to the touch while charging. This is a normal condition, and does not indicate a problem. To facilitate the cooling of the battery pack after use, avoid placing the charger or battery pack in a warm environment such as in a shed.
- Do not freeze or immerse charger in water or any other liquid.

6. Important Safety Instructions for Battery Packs



WARNING:

For safe operation, read this manual and manuals originally supplied with tool before using the charger. When opening the tool package for the first time, the battery pack will not be fully charged. Before using the battery pack and charger, read the safety instructions below. Then follow charging procedures outlined.



WARNING!

Burn hazard. Battery liquid may be flammable if exposed to spark or flame.

- Charge the battery packs only in **JACTO** chargers.
- **DO NOT splash or immerse in water or other liquids.** This may cause premature cell failure.
- **Do not store or use the tool and battery pack in locations where the temperature may reach or exceed 113°F (45 °C).**
- Never attempt to open the battery pack for any reason. If battery pack case is cracked or damaged, do not connect to charger. Do not crush, drop or damage battery pack. Do not use a battery pack or charger that has been dropped, run over or damaged in any way (i.e., pierced with a nail, hit with a hammer, stepped on). Damaged battery packs should be returned to service center for recycling.
- **Fire hazard. Do not store or carry battery so that metal objects can contact exposed battery terminals.** For example, do not place battery in aprons, pockets, tool boxes, product kit boxes, drawers, etc., with loose nails, screws, keys, etc. **Transporting batteries can possibly cause fires if the battery terminals inadvertently come in contact with conductive materials such as keys, coins, hand tools and the like.** Certain regulations prohibit transporting batteries on airplanes (i.e., packed in suitcases and carry-on luggage) UNLESS they are properly protected from short circuits. So when transporting individual batteries, make sure that the battery terminals are protected and well insulated from materials that could contact them and cause a short circuit. **NOTE: Batteries should not be put in checked baggage.**

6.1. Storage recommendations for batteries

- Store battery packs in clean, dry place and away from direct sunlight and excess heat or cold.
- Store batteries out of reach of children.
- For storage periods of more than one month, store battery with half charge. This extends battery life.

7. Important Safety Instructions for Sprayers



DANGER!

- **DO NOT spray flammable or combustible chemical products.** This will result in serious risk of fire and explosion.
- **DO NOT spray acids or corrosive chemicals.** This will result in serious risk of fire, explosion and leakage. Sprayer parts can be permanently damaged.



WARNING!

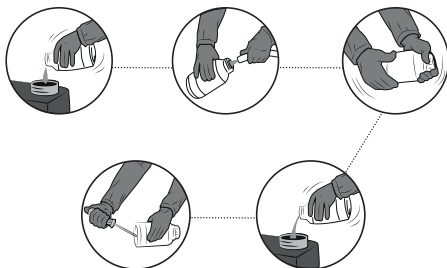
- **DO NOT use the sprayer for purposes other than spraying agricultural defensives approved by competent authorities.**

Always consider the following recommendations:

- **Check sprayer before spraying.** Ensure there is no leakage or missing parts. Do not use sprayer if it is not in good condition.
- **Do not eat, drink or smoke while spraying.** Serious risk of poisoning.
- **Do not mix chemical products, unless recommended by manufacturer.** Intense chemical reactions can occur.
- **Read the label of chemical products carefully.** Always follow manufacturer's recommendations.
- **High pressure present at end of nozzle and inside sprayer base.** Turn-off the sprayer completely and release pressure before attempting to repair or replace parts of the sprayer.
- **Do not direct spray towards bystanders.** Spray may be toxic.
- **After the use of herbicides always clean the equipment before using other formulations.**
- **Wear individual protection equipment.** Wear gloves, safety glasses, safety mask and protective clothing.
- **Clean yourself after spraying.** Take a shower with plenty of soap and water. Put on clean clothes.
- **The clothing used during spray application must be washed separate from other clothes of ordinary use.**
- **Keep chemical products out of reach of children and animals.** Lock up the chemical products to prevent untrained persons from handling them.
- **In case of intoxication, see a doctor immediately.** Show him/her the chemicals manufacturer's label.
- **Dispose of chemical containers properly.** Observe your local regulatory agency recommendations and follow manufacturer's disposal instructions.
- **Do not pollute the environment.**
- **During the transport in vehicles, the sprayer must be turned off and secured.** Always keep the trigger valve shut during transport and when not using the sprayer.

For example: in a 1000 ml container, put 250 ml of water.

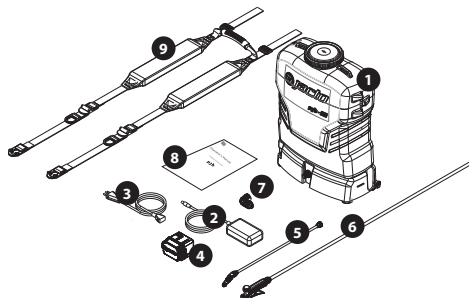
3. Install the container cap and tight it enough to avoid leakage during the agitation.
4. Agitate the container strongly in all ways (horizontal and vertical), for approximately 30 seconds to remove the residues that are on the container internal walls.
5. Take the container cap off and carefully pour the rinse water into the spray tank.
6. Keep holding the container over the spray tank opening for approximately 30 seconds to the last drop.
7. Repeat this operation twice more. This way, you complete the triple rinse.
8. Make the plastic and metallic containers useless by piercing the container bottom with a pointed instrument. This way, their labels are not damaged for identification purposes.



8. Preparation for use

8.1. Unpacking

Make sure the following components are in the box:



1. Sprayer tank;
2. Charger;
3. Charger cable;
4. Battery;
5. Spraying lance;
6. Trigger valve with hose;
7. Quick coupler;
8. Instruction manual;
9. Belt.

7.1. Triple rinse of empty agrochemicals containers

NOTE: Even the containers considered empty contain chemical residues. Therefore, discarding the containers without washing out the residues is extremely dangerous to man, animals and environment. In the case of metal, plastic and glass chemical containers, each container must be rinsed three times to ensure the residues are completely removed. This manual describes how to make the triple rinse in a correct, safe and effective way.

1. Immediately after emptying the container, you must keep it with the opening upside down over the sprayer tank opening or over the bucket that you are using to prepare the chemical mixture for at least 30 seconds, until no residue is left in the container, when the drops are falling in long intervals.
2. Hold the container in the upright position and fill it with water up to 1/4.

8.2. Assembling the lance to the trigger valve

Fit the lance into the trigger valve and thread enough so that there is no leakage, as shown in the image below:

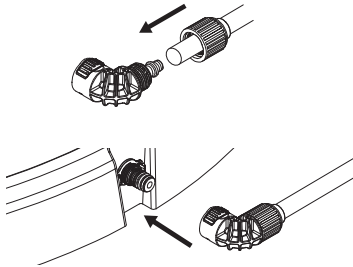


WARNING!

Do not overtighten the screw cap.

8.3. Assembling the hose to the sprayer

- Fit the hose through the S-20 nut, attach it to the connector and thread it.
- Plug the connector into the quick coupler and press until it clicks.



9. Operating Instructions

The following steps describe how to safely use the sprayer.

9.1. Choosing nozzle type

Our sprayers are compatible with all ISO certified nozzles or hydraulic tips. Each nozzle offers a range of options and specifications for product application, so it is extremely important to know how to choose the right nozzle for your equipment. See the table below to identify which nozzle is best suited for flow rate and droplet size

NOTE: The following nozzles are optional, so they do not accompany this sprayer.

Nozzle type	Identification (code)	Pressure (psi)	Droplet size (vmd)	Flow rate (l/min)
	JEF 8001 orange (1197534)	45	VF	0,40
	JEF 80015 green (1197535)	45	VF	0,60
	JEF 8002 yellow (1197536)	45	VF	0,80
	JSF 11001 orange (1197473)	30	F	0,33
	JSF 110015 green (1197475)	30	F	0,49
	JSF 11002 yellow (1197476)	30	F	0,65
	JHC 80015 green (1197555)	60	F	0,69
	JHC 8002 yellow (1197565)	60	F	0,92
	JHC 8003 blue (1197571)	60	F	1,36
	JDF 02 yellow (1197483)	30	M	0,65
	JDF 03 blue (1197485)	30	M	0,98
	JDF 03 red (1197486)	30	M	1,31
	AirMix 110015 green (255091)	20	C	0,41
	AirMix 11002 yellow (255109)	20	C	0,54
	AirMix 110025 lilac (255177)	20	C	0,68

DROPLET SIZE	
VF	Very Thin
F	Thin
M	Medium
C	Course
VC	Very course
XC	Extremely course



WARNING!

Use PPE to service and replace parts.

	1.0 bar (15 psi)* Use: mainly systemic herbicides
	1.5 bar (22,5 psi)* Use: mainly systemic and contact herbicides
	2.0 bar (30 psi)* Use: systemic and contact products
	3.0 bar (45 psi)* Use: mainly contact insecticides and fungicides

Replace any nozzle that has a flow rate higher than 10% of nominal flow rate.

Jacto recommends the use of the ECOVALVE pressure regulating valve accessory that favors a more homogeneous application.

9.2. Pressure, flow rate and autonomy of each nozzle type

Nozzle	Level	Pressure (psi)	Flow rate (L/min)	Autonomy (h)
01 (ORANGE)	Min.	30	0,38	13,0
	Med.	46	0,44	8,9
	Max.	61	0,50	5,6
015 (GREEN)	Min.	20	0,48	14,3
	Med.	35	0,59	8,8
	Max.	49	0,69	5,5
02 (YELLOW)	Min.	15	0,58	14,6
	Med.	27	0,72	8,5
	Max.	39	0,84	5,6
025 (PURPLE)	Min.	15	0,78	10,7
	Med.	23	0,87	7,5
	Max.	32	0,96	5,7
03 (BLUE)	Min.	15	0,85	9,8
	Med.	20	0,95	7,2
	Max.	25	1,05	5,9
04 (RED)	Min.	N/A *	N/A *	N/A *
	Med.	N/A *	N/A *	N/A *
	Max.	16	1,19	6,2

NOTE*: Nozzle has not reached working pressure (15 psi).

NOTE**: The values above may vary as to the wear, clogging and variation of the nozzles, the density and viscosity of the liquid to be applied, the temperature and relative humidity of the environment, the altitude and consequent atmospheric pressure of the site, the height of the lance spraying, etc.

NOTE***: The minimum working nozzle pressure should always be observed, so we do not recommend spraying at pressures below 15 psi for fan nozzles and below 45 to 60 psi for conical nozzles depending on the model. In addition, we do not recommend using ISO standard nozzles of brown color (05 gal/min at 3 bar pressure).

9.2. Calibration of battery powered knapsack sprayer

PROCEDURE

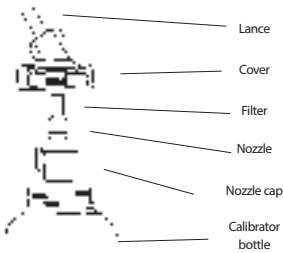
1. USING CALIBRATOR BOTTLE (OPTIONAL)
2. Hold the lance at the working height and spray to measure the application band width.
3. Based on the band width, calculate the total walking distance required to spray the desired area. Use the chart as shown next.



Band width (m)	0.5	0.7	1.0	1.2	1.5
Distance to walk (m)	50.5	35.7	25.0	20.8	16.7

- Remove the cap, nozzle and filter.
- Mount the calibrator cover to the lance.
- Reinstall the filter, nozzle and cap.
- Screw the calibrator onto the cover.

• Attach the calibrator bottle to the lance as shown:



Record the time it takes to walk 25 m²



Simulate the spraying of 25 m²

1. Hold the lance at the normal working height and spray into the bottle while walking the distance required to spray an area corresponding to 25 m².
2. Place the bottle on a level surface and observe the liquid level visible through the side of the bottle. Match the liquid level to the corresponding scale on the calibrator bottle.
3. Empty the bottle and repeat this operation to determine the average of two or more readings.

NOTE: For the volume in liters per bushel (L / alk), simply multiply the value obtained in liters per hectare (L / ha) by 2.42.

9.4. Solution preparation and tank filling

1. To dilute and premix the product, place 5 liters of water in a separate container;
2. Mix to a homogeneous solution and pour into the sprayer tank during filling.

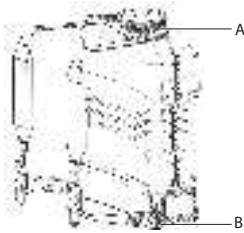
WARNING!
Use the correct dose and volume of chemical according to the product label.

9.5. Shoulder strap adjust

The tank is contoured for the operator comfort. The shoulder straps can be quickly adjusted to properly position the sprayer on the operator's back.

1. Mount the strap belt onto the tank as shown in position A.
2. Hook the buckle of the strap to the plastic couplers located at the side of the sprayer's base, as shown in position B.

- To tighten the strap belt, hold the strap buckle firmly with one hand and pull the handle downward with the other hand. To loosen the strap belt, hold the buckle firmly with one hand and pull the strap upward with the other hand.



9.6. Installing and removing the battery

To install the battery:

- Locate the battery housing, on the bottom of the sprayer's base, as shown in the figure.
- Identify the correct battery position according to the position guides. Do not force to install the battery in the wrong position.
- Press the battery until a "click" is heard.

To remove the battery:

- Press both locking buttons;
- Pull the battery out of the battery housing.



9.7. Turning the sprayer on and off

To turn on the sprayer, turn the potentiometer clockwise and after hearing/feeling a "click", the LED will light up on the panel indicating that the sprayer is on. To turn off the sprayer, turn the potentiometer counterclockwise until you hear/feel a "click". The LED will go out, indicating that the sprayer is off.

WARNING!

- Do not force the potentiometer to rotate beyond its limits, either by hand or with any tool.** This will damage the component.
- Do not press or pull the potentiometer.** This may damage the component.

NOTE: If the potentiometer knob comes off the shaft: Turn the potentiometer fully counterclockwise and replace the cap to align the strip on the cap with the symbol on the bottom of the panel.

9.8. Battery level indication

When turning on the sprayer, the LED status will indicate the approximate battery charge level:

- LED flashes 3 times: battery charge above 80%;
- LED flashes twice: battery charge between 50% and 80%;
- LED flashes once: battery charge between 15% and 50%;
- LED illuminates directly without flashing: battery almost discharged. Recharge as soon as possible.
- LED flashing continuously: battery completely discharged; or overvoltage detected (user attempts to connect a different battery from the original). The LED will remain flashing until the user turns off the sprayer.

When the battery is completely discharged during spraying, the pump automati-

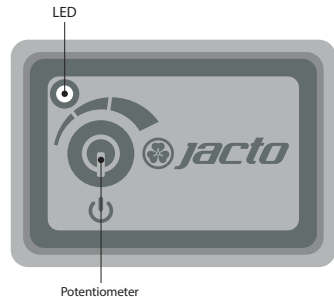
cally shuts off and the LED will remain flashing. Turn the sprayer off and recharge battery.

9.9. Pressure levels

To adjust the pressure level:

- Place the spraying lance in a safe direction and press the trigger to start spraying;
- Turn the potentiometer clockwise to increase the pressure, and counterclockwise to decrease it. Choose the level as desired.
- Pressure will remain constant throughout application.

Note: The pressure level may vary from approximately 15 to 60 psi depending on the nozzle used. See item "9.2. Pressure, flow rate and autonomy of each nozzle type".



9.10. Application



Wear appropriate protective clothing



Do not contaminate water



Spray downwind and avoid drift

Keep constant height

9.11. PPE



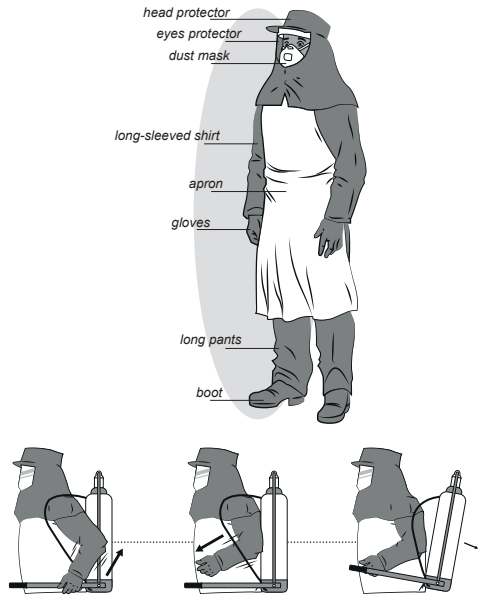
WARNING!

In case of an accident remove the sprayer immediately as shown in the illustration below.



WARNING!

Do not spray near people who are not using PPE or near springs, lakes or rivers.



11.1. Influence of climatic conditions

During application, some factors may determine the interruption of the spraying. Wind currents, for example, can drag drops to a greater or lesser distance in terms of its size or weight. The temperature and especially the relative humidity contribute to the rapid evaporation of the droplets.

The ideal conditions for spraying are:

- Relative humidity: minimum 50%;
- Wind speed: 3-10 km / h;
- Temperature below 30 C.

These limits should be considered according to technology application that will be used, adopting the safest class droplets within the boundaries of each situation.

Air velocity around the nozzle height	Description	Visible signs	Spraying
Up to 2km/h	Calm	Smoke rises vertically	Recommended only with course, very course drops
2 to 3 km/h	Nearly calm	The smoke is tilted	
3 to 7 km/h	Light breeze	The leaves range. Feel the light wind	Ideal for spraying
7 to 10 km/h	Light wind	Leaves and thin branches in constant motion	We recommend only the drift reduction technique
10 to 15 km/h	Moderate wind	Moving branches. Dust and pieces of paper are carried by the wind	
			Improper for spraying

Factors	Classes of drops according to weather conditions		
	Very small or small	Small or medium	Medium or large
Temperature	below 25° C	25 to 28° C	above 28° C
Relative humidity	above 70%	60 to 70%	below 60%

10. Maintenance and Storage

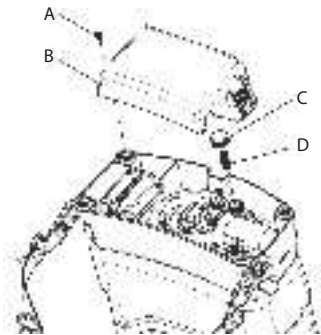
For extended product life, follow these important care instructions:

- When filling up the tank, always use the strainer provided. This will reduce the chance of undesirable debris that could damage the pump.
- Do not operate the sprayer without the pump suction filter. This can severely damage the pump. Periodically clean or replace this filter as follows:
 1. Empty the tank, make sure the sprayer is turned off and put it upside down;
 2. Remove screw A;
 3. Remove base cover B;
 4. Unscrew filter cover C;
 5. Clean or replace filtering element D.



WARNING!

Use of individual protective clothing and safety equipment is required.



- Only fill the tank with a water soluble agrochemical or an already mixed powder liquid form through the filling filter. Do not prepare mixtures directly in the sprayer tank;
- This sprayer is an electronic tool and must be protected from severe environmental conditions. When not using, do not leave the sprayer in sun, rain or frost;
- Do not submerge the sprayer completely or partially;
- After finishing the application, clean and wash all equipment in an approved decontamination area;

- Clean the sprayer before storage. Circulate fresh water through the tank, pump and hoses after each use. This will help remove chemical residues and extend life of sprayer parts;
- The spray lance can be conveniently stored on the clips on the side of the tank;
- Nozzles and filters must be periodically cleaned or replaced. Do not clean nozzles or filters with sharp hard objects, nor blow through them using the mouth;
- Before storage the sprayer during periods of harsh winter, in temperatures less than 0° C, circulate fresh water through the tank, pump and hoses. Release the trigger valve to drain all the liquid inside the sprayer. Use antifreeze if necessary. Make sure there is no liquid inside the tank before you storage the sprayer in a safe place.



WARNING!

Discard the liquid used to clean the sprayer in a proper and approved local for this purpose. Do not contaminate the environment.

11. Troubleshooting

If sprayer is not working as expected, consider the following table before contacting technical assistance.

Problem	Possible cause	How to find out	How to verify (finding)	How to solve	How to check if the problem was solved
Charger does not work / does not turn on the indicator light.	Outlet has no power or bad contact.	Practical check, multimeter or electrical test key.	Connect another known device and see if it turns on. Program the multimeter for AC voltage measurement and then check by plugging the test leads into the socket. The value must be between 100 and 240 volts. Using the test key, insert the test lead into the socket and touch the back of the key. You must find at least one hole that turns on the light.	If the outlet used has no power, replace it with another outlet that has power.	The connected device should work. The light on the charger should come on.
	Poorly connected cables.	Visual check.	Check if the connectors are properly connected.	Connect the charger until it is fully coupled.	The light on the charger should come on or change color when connected to the battery.
	Source is shorted or burnt.	Visual check or using a multimeter.	Program the multimeter for continuity measurement with the charger unplugged, checking for continuity between the charger input and output point (audible beep).	Replace charger.	The light on the charger should come on or change color when connected to the battery.
Charger shows green light but does not charge battery (Does not change light color when connected to battery). There is no power at the outlet of the plug that connects the battery.	Plug is poorly connected to the battery.	Visual check.	Analyze the charger by checking that the plug is properly connected.	Connect the plug correctly.	The charger light will change color from green to orange, which means the battery is being charged.
	Bad contact with plug terminals.	Visual check.	When connecting the plug, the light will switch on / off when the plug wire is moved.	Replace charger	When connecting the plug, the charger light should change color.
	Source is shorted or burnt.	Visual check using a multimeter.	Program the multimeter for continuity measurement, and check for continuity by positioning the multimeter rods at the input and output ends of the power supply.	Replace charger.	The charger light should turn on or change color when plugged into a power outlet and battery.
Battery does not hold charge or does not charge.	Damage to the board.	Contact an authorized technical assistance.	Contact an authorized technical assistance.	Contact an authorized technical assistance.	A new battery should be able to keep the equipment turned on.
	Damage to battery cells.	Contact an authorized technical assistance.	Contact an authorized technical assistance.	Contact an authorized technical assistance.	A new battery should be able to keep the equipment turned on.
	Battery fairing is defective.	Visual check of the outside of the battery.	Analyze the battery fairing for signs of dropping, cracking or rupture in its entirety.	If there is any sign of dropping, cracking or rupture, this may allow moisture to pass into the battery, causing irreversible damage. Replace the battery.	A new battery should be able to keep the equipment turned on.
Panel does not turn on.	Battery discharged	Practical test by connecting the charger to the battery. The light should change color. After that, charge for 15 minutes.	Recharge battery for 15 minutes. After putting the battery back in the equipment and turning the potentiometer clockwise, the equipment should operate.	Charge the battery.	Check if the panel turns on, otherwise go to the "battery does not hold charge" problem.
	Oxidation on the connectors.	Visual check of connectors.	Check if the connectors are properly connected and free of oxidation.	Adjust and clean all connectors.	Check if the panel has turned on and has no oxidation in the area of the connectors. / Equipment works normally.
	Potentiometer broken.	Visual check and touch.	When you turn the potentiometer, you do not hear/feel the panel click.	Replace the panel.	Check if the panel has switched on. / Equipment operates normally.
	Damage to the board.	Visual check and touch.	If the battery is charged, turning the potentiometer does not turn on the panel light.	Replace the panel.	Check if the panel has switched on. / Equipment operates normally.
Panel turns on, but there is no change in pressure level.	Damage to the board	Visual check using a multimeter.	With the panel connected to a charged battery, and the multimeter test leads attached to the connector, turning the panel potentiometer does not change the measured value.	Replace the panel.	Check if the panel has switched on. / Equipment operates normally.

Problem	Possible cause	How to find out	How to verify (finding)	How to solve	How to check if the problem was solved
Panel turns on, but the pump does not work.	Panel and pump connectors disconnected or in bad contact.	Visual check by opening the equipment base lid and analyzing all connections and terminals.	Visually analyze if the connectors are connected or if there are differences in the shape of the terminals.	Connect them if they are disconnected.	Pump should work normally.
	Pressure switch is unregulated.	Visual check using a calibrated pressure gauge and practical spray test where intermittent spraying can be found.	Using a calibrated pressure gauge and the blue adjustable nozzle installed, start the machine at maximum pressure and press the trigger. Spraying should be regular and continuous.	Using an allen wrench and the trigger pressed, adjust the pressure switch by turning the screw until continuous spraying is achieved. When we stop spraying, we should find a pressure between 60 and 70 psi.	Spraying should have a continuous flow without interruption, and the pressure found when spraying is stopped should be between 60 and 70 psi, which should be quantified by using a calibrated gauge.
	Wire solder and pump are irregular.	Visual check by opening the bottom lid of the equipment and checking for any disconnected wires.	Visually analyze if the solder between the wires or connectors is firm and well connected.	Solder or adjust the wires and connectors.	Pump should work normally.
	Pump with shaft locked.	Visual check.	Turn off the panel. Wait 30 seconds and turn on the panel at maximum pressure. Press the trigger. If there is no spraying, check if the pump is heated.	Replace the pump.	Spraying should occur normally.
Panel turns on, pump turns on, but there is no spraying.	Tank suction or suction filter clogged.	Visual check or practical test.	Disconnect the base lid of the equipment and check if the suction hose is clogged. Remove the filter lid and check if it is clean.	Clear or clean.	Spraying should occur normally.
	Assembly of hoses or components inverted.	Visual check.	Open the base lid of the equipment and check if there is consistency of the indicative arrow on the pump head with the flow of hoses (inlet/suction and outlet/pressure).	Position and assemble hoses or valves correctly as specified in the service manual.	Spraying should occur normally.
	Lance, hose, or nozzle filter clogged or damaged.	Visual check.	Check if the lance, hose, filter or nozzle is clogged or damaged.	Unclog or change lance, hose or spraying filter.	Spraying should occur normally.
	Sphere glued.	Visual check.	The equipment turns on, but does not pressurize the liquid.	Using a hose with a continuous water flow, place it over the suction tube with the machine turned on and the trigger lever pressed for a few seconds.	The equipment will start spraying after a few seconds.
Equipment working with intermittent spraying.	Pressure switch is unregulated.	Visual check using a calibrated pressure gauge and practical spraying test.	Install pressure gauge and blue adjustable nozzle, turn on the equipment at maximum pressure, press the trigger and check the spraying pattern. It should be uniform. After closing the lance trigger valve and the machine shuts down, the pressure should be between 60 and 70 psi.	Install the blue adjustable nozzle, turn on the equipment at pressure 5, press and lock the trigger, adjust the pressure switch by turning the allen wrench until uniform spraying and pump running continuously. Stop spraying and check pressure gauge until pressure is found between 60 and 70 psi.	Spraying should have a continuous flow without interruption, and the pressure found when spraying is stopped should be between 60 and 70 psi, which should be quantified by using a gauged gauge.
Sudden interruption of spraying during use.	Battery discharged.	Visual check.	After the interruption, the panel light (LED) will flash.	Charge the battery.	The sprayer should work by turning the potentiometer clockwise.
Charging is irregular or interrupted.	Bad contact with plug terminals.	Visual check.	When connecting the plug, the light will switch on / off when the plug wire is moved.	Replace charger.	When connecting the plug, the charger light should change color.
Spraying is irregular.	Nozzle wear.	Visual check of spraying pattern.	With the equipment working, make sure that there are no irregularities in the spray coming out of the nozzle.	Change full nozzle.	With the equipment working, observe the spray coming out of the nozzle. Uniform and continuous spraying should be found.

12. Important Return Safety Instructions

If it is really necessary to return the sprayer for repair, always perform the following:

1. Flush chemical residue from the pump, tank and hoses (performed in an approved containment area).
2. Circulate fresh water in the tank, pump and hoses.
3. Tag the sprayer with type of chemicals that have been sprayed.
4. Include complete description of operation problem, such as how sprayer was used, symptoms of malfunction, how many working hours per day, etc.
5. Remove the battery from the sprayer and keep it in clean and dry conditions. Battery must accompany the sprayer when it is returned for repairs.

Since the sprayer can contain residues of toxic chemicals, these steps are necessary to protect all the people who handle return shipments, and to help identify the reason for the breakdown.

13. Statement of Limited Warranty

MAQUINAS AGRÍCOLAS JACTO S.A. shall warrant the equipment described in this manual and shall repair or replace parts and components which, under normal operation and wear, in accordance with technical recommendations, show DEFECTS IN MATERIAL OR WORKMANSHIP, based on the following conditions.

13.1. Warranty period

03 (three) years from the date of sale to the original purchaser.

13.2. Warranty application

JACTO shall honor this warranty, free of charge, if any part or component shows defect in MATERIAL OR WORKMANSHIP, after final analysis at the factory.

13.3. This warranty shall be null & void in case of:

- Misuse of the equipment against specifications in this manual, overwork or accidents.
- Use the equipment to spray products not intended for plants protection or not approved by regulatory authorities to be used with knapsack sprayers.
- Preventive/basic maintenance performed by unauthorized people.
- Use of parts and components not supplied by JACTO.
- Modification of the equipment or any characteristic of the original design.

13.4. This warranty shall exclude

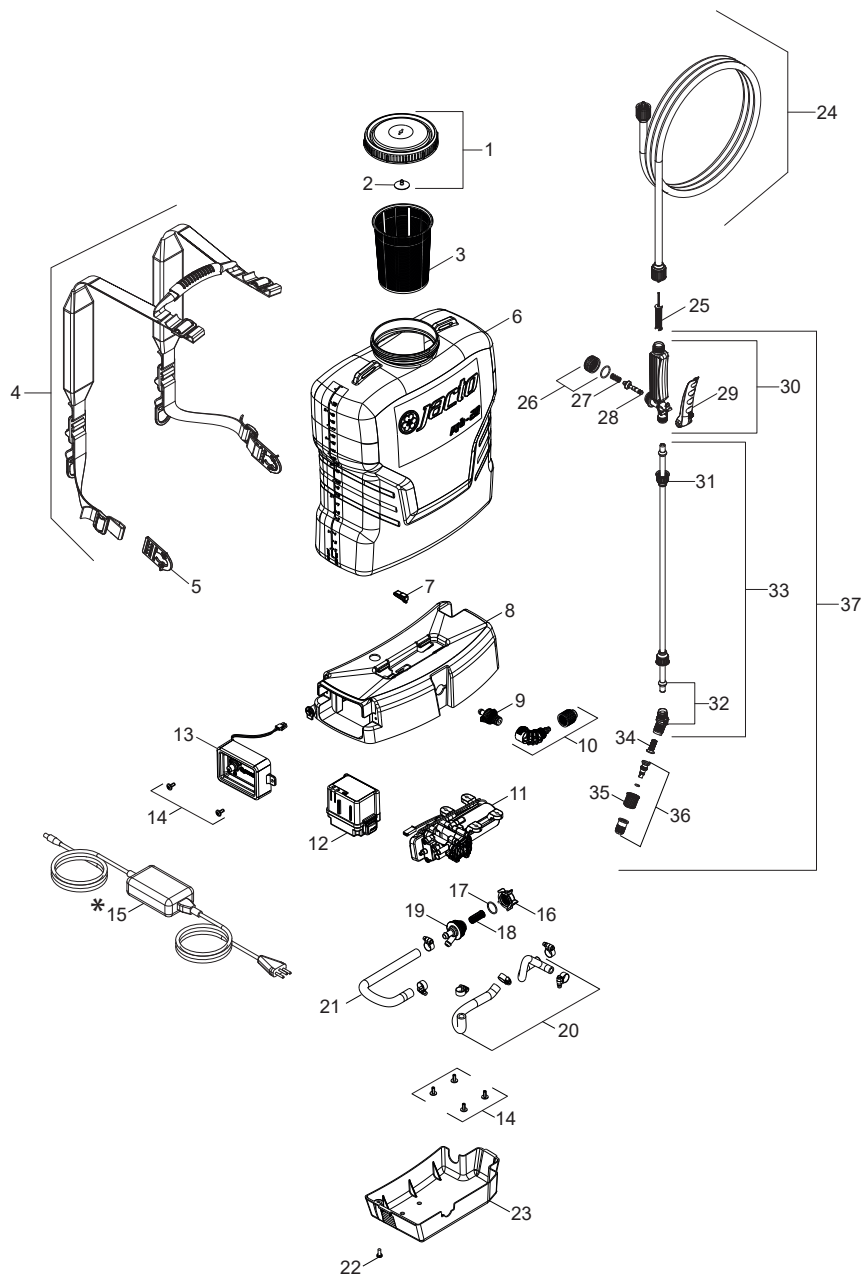
- PParts which show wear and tear due to use: spray nozzle, filters, seals, rechargeable battery, hydraulic pump, electronic panel, charger and its cables, agitator lever, belt, UNLESS THEY SHOW DEFECTS IN WORKMANSHIP, ASSEMBLY OR MATERIAL.
- Damages resulting from accidents.
- Transportation or freight of the equipment, parts and components in case such warranty is not approved.
- Transportation and travel time of technicians.

13.5. General terms

- Parts replaced within the warranty period shall be property of JACTO.
- The warranty on replaced parts and components shall expire together with the equipment warranty period.
- Eventual delays in performing services shall not give the owner right either to indemnity or to extension of the warranty period.

- JACTO reserves the right to modify its products or to interrupt the manufacture without prior notice.
- Any suggestion, questions and complaints shall be submitted to CUSTOMER CARE SERVICE: Dr. Luiz Miranda, 1650 ZIP CODE 17580-000 – Pompeia – SP – e-mail: assistencia.tecnica@jacto.com.br – Office hours: Monday – Friday, from 07h00 – 11h30 and 13h00 – 17h18.

14. Parts list / lista de peças / lista de piezas / pièces détachées

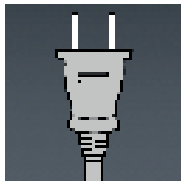


Nº	CODE/ CÓDIGO	DESCRIPTION/ DESCRIÇÃO/ DENOMINACIÓN/ DÉNOMINATION	QTY./QT./ CT./QTÉ
1	1220918	LID WITH DIAPHRAGM/ TAMPA COM DIAFRAGMA/ TAPA CON DIAFRAGMA/ COUVERCLE AVEC DIAPHRAGM	1
2	1220924	LID DIAPHRAGM (NITRILICA)/ DIAFRAGMA DA TAMPA (NITRÍLICA)/ DIAFRAGMA DE LA TAPA (NITRILE)/ DIAPHRAGM DE LA COUVERCLE (NITRILE)	1
3	1220919	TANK STRAINER/ COADOR/ COLADOR/ TAMIS	1
4	1220618	COMPLETE BELT WITH TRANSPORT HANDLE/ CINTA COMPLETA COM ALÇA/ CINTA COMPLETA CON ALZA/ COURROIE COMPLÈTE AVEC POIGNÉE	1
5	1220973	BUCKLE/ FIVELA DA CINTA/ HEBILLA/ BOUCLE	2
6	1220619	TANK 20L/ CORPO DO DEPÓSITO 20L/ CUERPO DEL TANQUE 20L/ RÉSERVOIR 20L	1
6a	1223765	TANK 16L/ CORPO DO DEPÓSITO 16L/ CUERPO DEL TANQUE 16L/ RÉSERVOIR 16L	1
7	1220929	BASE LOCK/ TRAVA DA BASE/ GRAPA DE LA BASE/ LOQUET DE LA BASE	1
8	1220641	ELECTRIC SPRAYER BASE/ BASE DO PULVERIZADOR ELÉTRICO/ BASE DEL PULVERIZADOR ELÉCTRICO/ BASE DU PULVÉRISATEUR ÉLECTRIQUE	1
9	1249239	CONNECTION AND SEAL/ CONECTOR COM ANEL/ CONECTOR CON ANILLO/ CONNECTEUR AVEC ANNEAU	1
10	1268712	QUICK CONNECTOR KIT/ KIT ENGATE RÁPIDO/ JUEGO DE ACOPLAMIENTO RÁPIDO/ KIT RACCORD RAPIDE	1
11	1265961	ELECTRIC PUMP/ BOMBA ELÉTRICA/ BOMBA ELECTRICA/ POMPE ELECTRIQUE	1
12	1268737	BATTERY JB 1680/ BATERIA JB 1680/ BATERÍA JACTO JB 1680/ BATTERIE JB 1680	1
13	1268711	PAINEL COMPLETO COM POTENCIÔMETRO/ PANNEAU COMPLET AVEC POTENTIOMETRE	1
14	1220622	FLANGE HEAD SCREW PHILLIPS SLOT 5 X 12 MM/ PARAF. CAB. FLANG. PH 5 X 12 MM/ TORNILLO PH 5 X 12 MM/ VIS DE TÊTE FLANGE 5 X 12 MM	6
15	*14.1. PLUG TYPE/ TIPOS DE PLUGUES/ TIPOS DE ENCHUFES		1
16	1268710	FILTER LID/ TAMPA DO FILTRO/ TAPA DEL FILTRO/ COUVERCLE DU FILTRE	1
17	1220934	O-RING 20.34 1.78 NITR 70 OR1-19/ ANEL O 20,34 1,78 NITR 70 OR1-19/ ANILLO O 20,34 1,78 NITR 70 OR1-19/ ANNEAU O 20,34 1,78 NITR 70 OR1-19	1
18	1220634	INLINE FILTER/ FILTRO DE LINHA/ FILTRO DE LINEA/ FILTRE DE LIGNE	1
19	1268713	BASE FILTER SUPPORT/ SUPORTE DO FILTRO DA BASE/ SOPORTE BASE DEL FILTRO/ SUPPORT ET FILTRE DE LA BASE	1
20	1268692	HOSE KIT PJB/ CONJUNTO DE MANGUEIRAS PJB/ JUEGO DE MANGUERAS/ KIT DE TUYAUX PJB	1
21	1268707	HOSE Ø3/8" X 300MM/ MANGUEIRA Ø3/8" X 300MM/ MANGUERA Ø3/8" X 300MM/ TUYAUX Ø3/8" X 300MM	1
22	1220947	PAN HEAD SCREW PHILLIPS SLOT M 5X0,8X12/ PARAF CAB.PAN.PH M 5X0,8X 12/ TORNILLO PH M 5X0,8X 12/ VIS TÊTE RONDE M 5X0,8X 12	1
23	1220640	BASE COVER/ TAMPA DA BASE/ TAPA DE LA BASE/ COUVERCLE DE LA BASE	1
24	1268706	COMPLETE HOSE FOR LP3/ MANGUEIRA COMP. LP3/ MANGUERA COMPLETA PARA LP3/ TUYAY COMPLET LP3	1
25	1168418	FILTER LP-3/ FILTRO LP-3/ FILTRE LP-3	1
26	1168544	TRIGGER VALVE CAP AND RING/ TAMPA DO REGISTRO C/ VEDAÇÃO/ TAPA DE LA VALVULA Y VEDACION/ COUVERCLE DU ROBINET	1
27	1222660	SPRING/ MOLA/ RESORTE/ RESSORT	1
28	1168422	NEEDLE LP-3 AND RINGS/ AGULHA LP-3 COM VEDAÇÕES/ AGUJA LP-3 CON VEDACION/ AIGUILLE COMPLÈTE LP-3	1

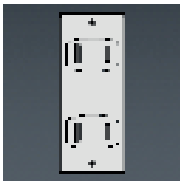
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29	1168421	TRIGGER VALVE LEVER LP-3/ ALAVANCA DO REGISTRO LP-3/ PALANCA DE LA VÁLVULA LP-3/ LEVIER COMPLET LP-3	1
30	1168419	TRIGGER VALVE ASSEMBLY LP-3/ REGISTRO COMPLETO/ VÁLVULA COMPLETA LP-3/ ROBINET COMPLÈTE LP-3	1
31	1220969	SCREW CAP 11/16/ PORCA CÔNICA 11/16/ TUERCA CONICA 11/16/ BOULON CONIQUE 11/16	2
32	635276	JOINT AND CONE PACKING/ JUNÇÃO E JUNTA CÔNICA/ UNIÓN CON JUNTA CÔNICA/ JOINT AND CONE PACKING	1
33	100131	STAINLESS STEEL LANCE/ TUBO DE PULVERIZAÇÃO/ TUBO DE PULVERIZACIÓN/ TUBE DE PULVÉRISATION	1
34	1168545	NOZZLE FILTER M50/60/ FILTRO DO BICO M50/60/ FILTRO DE LA BOQUILLA M50/60/ FILTRE DE LA BUSE M50/60	1
35	1168546	NOZZLE CAP/ CAPA DO BICO/ CAPA DE LA BOQUILLA/ COUVERCLE DE LA BUSE	1
36	1222664	BLUE ADJUSTABLE CONE NOZZLE/ BICO CONE REGULÁVEL AZUL/ BOQUILLA CONO AJUSTABLE AZUL/ BUSE CÔNE RÉGLABLE BLEU	1
37	1222665	COMPLETE LANCE/ LANÇA COMPLETA/ LANZA COMPLETA/ LANCE COMPLÈTE	1

14.1. Plug type/ tipos de plugues/ tipos de enchufes/ types de bouchons

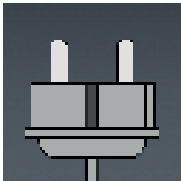
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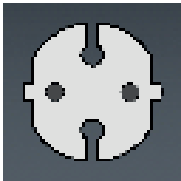
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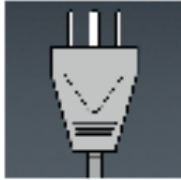
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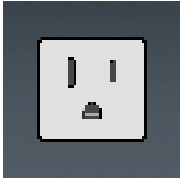
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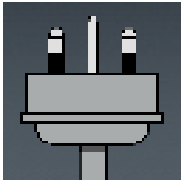
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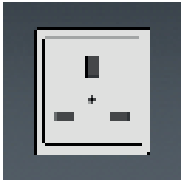
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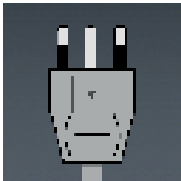
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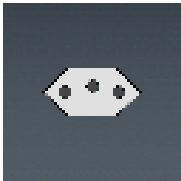
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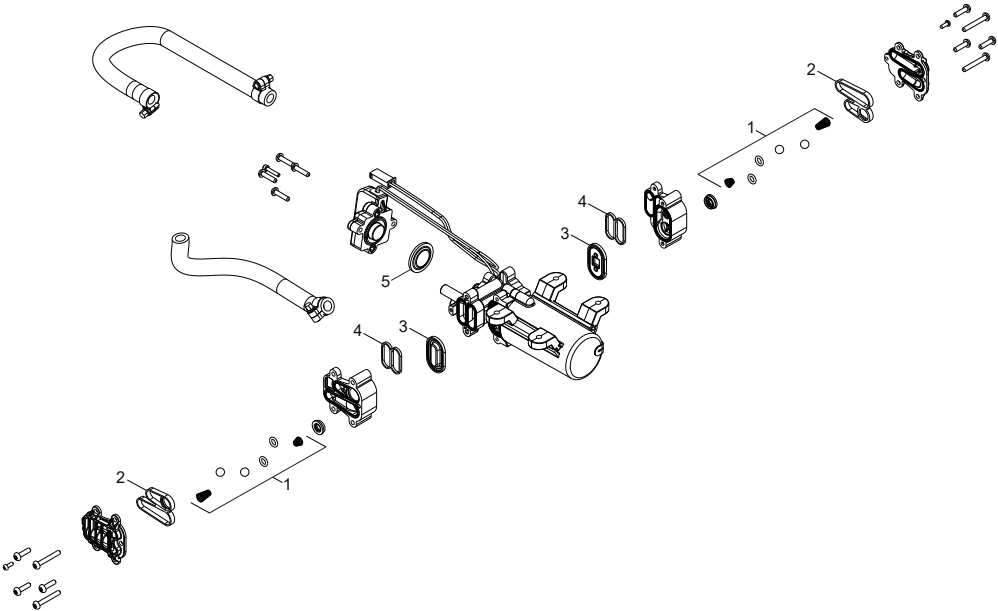
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14.3. Pump/ bomba/ pompe



Nº	CODE/ CÓDIGO	DESCRIPTION/ DESCRIÇÃO/ DENOMINACIÓN/ DÉNOMINATION	QTY./QT./ CT./QTÉ
1	1265959	VALVE AND SEALS KIT/ CONJUNTO DE VÁLVULA COM VEDAÇÕES/ CONJUNTO DE VÁLVULA CON EMPAQUETADURAS/ KIT DE LA VANNE AVEC JOINTS	1
2	1265948	PUMP HEAD SEAL/ VEDAÇÃO DO CABEÇOTE DA BOMBA (JEP)/ EMPAQUETADURA DEL CABEZAL DE LA BOMBA BOMBA (JEP)/ JOINT DE TÊTE DE POMPE (JEP)	2
3	1265943	PUMP DIAPHRAGM/ DIAFRAGMA DA BOMBA/ DIAFRAGMA DE LA BOMBA/ DIAPHRAGME DE POMPE/ DIAPHRAGME DE POMPE	2
4	1265947	HEAD SEAL/ VEDAÇÃO DO CABEÇOTE/ EMPAQUETADURA DEL CABEZAL/ JOINT DE TETE	2
5	1265958	PRESSURE SWITCH MEMBRANE/ MEMBRANA DO PRESSOSTATO/ MEMBRANA DEL PRESOSTATO/ MEMBRANE DU CONTACTEUR MANOMETRIQUE	1