

BOMA

IDROPULTRICI PROFESSIONALI
NETTOYEURS PROFESSIONNELS
PROFESSIONELLER HOCHDRUCKREINIGER
PROFESSIONAL HIGH PRESSURE WASHER
HIDROLIMPIADORAS PROFESIONALES

FORLI

Idropulitrice acqua calda
Nettoyeur à eau chaude
Heisswasser-Hochdruckreiniger
Hot water high pressure washer
Hidrolimpiadora agua caliente



L-LC003.01-BMA

**MANUALE D'USO E MANUTENZIONE
USE AND MAINTENANCE MANUAL
NOTICE D'UTILISATION ET D'ENTRETIEN
BEDIENUNGS-UND WARTUNGSHANDBUCH
MANUAL DE USO Y MANTENIMIENTO**

CE

ATTENZIONE

- L'APPARECCHIATURA DEVE ESSERE COLLEGATA ALLA RETE ELETTRICA TRAMITE INTERRUOTORE MAGNETOTERMICO DIFFERENZIALE CON SENSIBILITA' NON SUPERIORE A 30 Ma E PORTATA ADEGUATA ALLA POTENZA DELLA MACCHINA (VEDERE TARGA DATI)
- LA PORTATA MINIMA DELL'ACQUA IN ALIMENTAZIONE NON DEVE ESSERE INFERIORE A QUANTO INDICATO IN TARGA DATI
- LA PRESSIONE DELL'ACQUA IN ALIMENTAZIONE NON DEVE SUPERARE 3 BAR. SE SUPERIORE DOTARSI DI IDONEO RIDUTTORE DI PRESSIONE

ATTENTION

- L'APPAREIL DOIT ÊTRE CONNECTÉ AU RÉSEAU ÉLECTRIQUE À L'AIDE D'UN DISJONCTEUR MAGNÉTOTHERMIQUE DIFFÉRENTIEL AVEC UNE SENSIBILITÉ N'EXCÉDANT PAS 30 Ma ET UN DÉBIT ADAPTÉ À LA PUISSANCE DE LA MACHINE (VOIR PLAQUE D'IDENTIFICATION)
- LE DÉBIT MINIMAL DE L'EAU DANS L'ALIMENTATION NE DOIT PAS ÊTRE INFÉRIEUR À CELUI INDiqué DANS LA PLAQUE D'IMMATRICULATION
- LA PRESSION DE L'EAU DANS L'ALIMENTATION NE DOIT PAS DÉPASSER 3 BARS. SI SUPERIEUR, IL FAUT SE DONNER D'UN RÉDUCTEUR DE PRESSION CONVENABLE

WARNUNG

- DAS GERÄT IST AN DAS STROMNETZ ÜBER EINEN FI-SCHUTZSCHALTER MIT MAGNETOTHERMISCHER AUSLÖSEEINHEIT ANZUSCHLIESSEN, DESSEN AUSLÖSEEMPFINDLICHKEIT MAX. 30 mA BETRAGEN UND DESSEN STROMFESTIGKEIT DER GERÄTELEISTUNG ENTSPRECHEN SOLL (SIEHE TYPENSCHILD).
- DER ZULAUFSEITIGE WASSERDURCHSATZ DARF NICHT UNTER DEM IM KENNSCHILD ANGEgebenEN MINDESTWERT LIEGEN.
- DER ZULAUFSEITIGE WASSERDRUCK DARF DEN MAXIMALWERT VON 3 BAR NICHT ÜBERSCHREITEN. BEI ÜBERSCHREITUNG IST EIN GEEIGNETES DRUCKREDUZIERVERNITL ZU VERWENDEN.

WARNING

- THE EQUIPMENT MUST BE CONNECTED TO THE POWER GRID THROUGH A CIRCUIT-BREAKER WITH A SENSITIVITY NOT EXCEEDING 30 mA AND FEED FLOW RATE SUITABLE FOR THE POWER OF THE MACHINE (SEE DATA PLATE)
- THE MINIMUM FEEDING FLOW RATE MUST NOT BE LESS THAN INDICATED IN THE PLATE
- THE FEEDING WATER PRESSURE MUST NOT EXCEED 3 BAR. IF HIGHER, YOU MUST BE PROVIDED WITH SUITABLE PRESSURE REDUCTION VALVE.

ATENCIÓN

- EL APARATO DEBE SER CONECTADO A LA RED ELÉCTRICA MEDIANTE INTERRUPTOR MAGNETOTÉRMICO DIFERENCIAL DE SENSIBILIDAD NO SUPERIOR A 30 Ma Y CAPACIDAD ADECUADA A LA POTENCIA DE LA MÁQUINA (VER PLACA DE DATOS).
- EL CAUDAL MÍNIMO DEL AGUA DE ALIMENTACIÓN NO DEBE SER INFERIOR AL INDICADO EN LA PLACA DE DATOS.
- LA PRESIÓN DEL AGUA DE ALIMENTACIÓN NO DEBE SUPERAR 3 BARES. SI ES SUPERIOR, UTILIZAR UN REDUCTOR DE PRESIÓN ADECUADO.

OPGELET

- HET APPARAAT MOET OP HET ELEKTRICITEITSNET WORDEN AANGESLOTEN VIA EEN MAGNETOTHERMISCHE DIFFERENTIEELSCHAKELAAR MET EEN GEVOELIGHEID VAN MINDER DAN 30 mA EN EEN VERMOGEN PASSEND BIJ HET VERMOGEN VAN DE MACHINE (ZIE TYPEPLAATJE).
- HET MINIMUMDEBIET VAN DE WATERTOEVEROER MAG NIET LAGER ZIJN DAN HET OP HET TYPEPLAATJE AANGEGEVEN DEBIET.
- DE DRUK VAN HET TOE TE VOEREN WATER MAG NIET MEER DAN 3 BAR BEDRAGEN. INDIEN HOGER, ZORG DAN VOOR EEN GESCHIKTE DRUKREGELAAR.

ВНИМАНИЕ

- ОБОРУДОВАНИЕ СЛЕДУЕТ ПРИСОЕДИНЯТЬ К ЭЛЕКТРОСЕТИ ЧЕРЕЗ ТЕПЛОМАГНИТНЫЙ ДИФФЕРЕНЦИАЛЬНЫЙ ВЫКЛЮЧАТЕЛЬ С ПОРОГОМ СРАБАТЫВАНИЯ НЕ ВЫШЕ 30 мА И МОЩНОСТЬЮ В СООТВЕТСТВИИ С МОЩНОСТЬЮ МАШИНЫ (СМ. ПАСПОРТНУЮ ТАБЛИЧКУ)
- МИНИМАЛЬНЫЙ РАСХОД ПОДАЧИ ВОДЫ ДОЛЖЕН БЫТЬ НЕ НИЖЕ УКАЗАННОГО НА ТАБЛИЧКЕ ТЕХНИЧЕСКИХ ХАРАКТЕРИСТИК
- ДАВЛЕНИЕ ПОДАЧИ ВОДЫ НЕ ДОЛЖНО ПРЕВЫШАТЬ 3 БАР. ЕСЛИ ОНО ВЫШЕ, СЛЕДУЕТ УСТАНОВИТЬ РЕДУКТОР ДАВЛЕНИЯ

1 Using the manual

1.1 Using the manual

This manual has been written by the Manufacturer and is an integral part of the machine. The high pressure washer manual is intended for the end user. It includes a description of how to use the machine and its technical specification. The user must be aware of the information it contains as it enables the machine to be used safely, with knowledge of its operating principles and limits. It also contains information on transport, starting up, adjustment and maintenance.

1.2 Keeping the manual

The manual must be kept carefully throughout the useful life of the machine, including during disposal. The manual must be kept in a dry location near the machine and must always be available for qualified personnel and the operator. Please note that the manual reflects the technical situation at the moment in which the machine is put on sale and may not be considered inappropriate in the case of updating. The Manufacturer reserves the right to modify products and the manual at any moment without being obliged to update previous products and manuals, unless the modifications concern a risk to the health and safety of people or damage to things.

2 General warnings

2.2 Working in complete safety

The safety instructions contained in this use and maintenance manual cover the various operations which may be performed on the machine. Safety symbols are included in the text at points which require particular attention. It is extremely important to follow these safety instructions at all times. Failure to do so could cause injury to persons and/or damage to the machine or other equipment. In consideration of this, a number of fundamental safety instructions are given below:

Please read and make sure you understand this section of safety instructions before installing, operating, carrying out maintenance on or repairing the machine. Read and follow the safety instructions contained in the text with reference to specific operations. Where necessary, always wear personal protection devices (P.P.D.), such as goggles, gloves, safety footwear, etc. Be aware of and respect the safety instructions in this manual, general accident prevention rules and safety regulations

2.3 Safety signs

The symbols given below are adopted in the use and maintenance manual to draw attention to the corresponding information. The symbols are used to warn personnel of danger or possible sources of danger. Make sure you understand them. Failure to pay attention to the symbols could result in personal injury, death and/or damage to the machine or equipment. The warnings may be of three types as described in the table below:

 Danger signs	A triangle with a border
	Indicates instructions relating to actual or possible dangers
 Prohibition signs	A circle with a diagonal bar
	Indicates instructions relating to prohibited actions.
 Obligation signs	Solid circle
	Indicates information which must be read and respected.

Depending on the information to be communicated, the warnings may contain symbols which, through an association of ideas, help understand the type of danger, prohibition or obligation.

2.4 Danger signs



Generic danger. This sign is used to draw attention to dangerous situations which could result in damage to persons, animals and things. Failure to respect the instructions associated with the warning may represent a danger



Danger of explosion and/or fire

This sign is used to draw attention to a risk of explosion and/or fire. Failure to respect the instructions associated with the warning may result in explosion and/or fire.

2.5 Prohibition signs



Generic prohibition. This sign is used to draw attention to certain manoeuvres, operations or behaviours which are prohibited. Failure to respect the prohibitions associated with this sign could result in damage to things, animals and people.

2.5.1 Obligation signs



Generic obligation. This sign is used to draw attention to instructions which must be respected by the operator. Failure to respect the instructions associated with this sign could result in damage to things, animals and people.



Obligation to use particular P.P.D.. This warning is used to draw attention to the obligation to use particular personal protection devices while carrying out the operations. Failure to respect the instructions associated with this signal could result in serious damage or the death of the operator.



Obligation to use suitable protection (in order) for the eyes, hands and respiratory tract and appropriate garments.



IMPORTANT - Failure to know and respect the signs and warnings could result in personal injury, death and/or damage to the machine or equipment.

2.6 Physical and intellectual requisites of the operator

No special qualification is required to use this sweeper. The operator needs to read this manual only. The operator must be intellectually capable of understanding and correctly applying the instructions and safety regulations contained in this manual and on the machine itself in written and symbolic form. He must be capable, including physically, of performing the required operations on the machine and of using it and performing maintenance in safety. The machine must be used by authorised operators only, instructed in its use and having read the manual.



IMPORTANT! The operator or user is responsible for accidents and danger to third parties or their possessions.



The operator may not operate the machine under the influence of substances (alcohol or medicinal products) which could reduce the normal level of attention or perception or lead to slow reaction times.

2.7 Incorrect or improper use

Use other than those described in this manual is considered incorrect or improper and therefore not in conformity with safety regulations.



IMPORTANT: Incorrect or improper use of the machine could cause personal injury, death and/or damage to the machine or equipment.

Examples of possible incorrect or improper use which could cause personal injury or damage to the machine and other equipment are given below:

- **Unauthorised modification or replacement of parts of the machine;**
- **Failure to observe the safety instructions;**

- **Failure to observe the installation, use, operation, maintenance and repair instructions or performance of these operations by unqualified personnel;**
- **Use on unsuitable and incompatible surfaces.**

3 Operation and technical specification

3.1 Operating the machine

The high pressure washer is a professional machine for high pressure washing with hot water. It is designed to clean tools, machines, vehicles, buildings and other surfaces suitable for treatment with a pressurised water jet. All other uses not mentioned are inappropriate.

3.2 Conditions of use

The high pressure washer has been designed to perform the functions described in section of this manual only. The machine must be used in environments conforming to those described in the paragraph on admissible environmental values.

3.3 Noise

Lp dB(A) 93 (uncertainly 1,5) . Lwa dB(A) 96

Reference Standard EN60335-2-79

3.4 Vibrations

The vibrations produced are minimal and do not represent a source of danger for the operator.

No particular procedures must be adopted in order to safeguard the operator from the effects of the vibrations produced. In the event of abnormal vibrations, the operator should immediately stop the machine and contact maintenance personnel.

3.5 Protection class of machines (IP)

Protection class against solid objects (protected against dust)	5
Protection class against water (protected against splashes of water)	4

3.6 Admissible environmental values

Admissible environmental values		
Admissible temperatures	operating	-10°C - 50°C (50° F - 113° F)
Variations in ambient temperature		Max. 1.1°C / Min (Max 2°F / Min)
Relative humidity range		75% or less
Vibrations		≤ 0.5 G

The machine is not suitable for operating in environments at risk from fire or explosion.



The machine may not be used in areas with an explosive atmosphere. Machines and relative components or equipment designed to operate in explosive atmospheres must be indicated with the (ATEX) mark in accordance with EN 60079-14 (CEI 31-33) "Electrical constructions for explosive atmospheres with the presence of gas".

4 Transport and installation

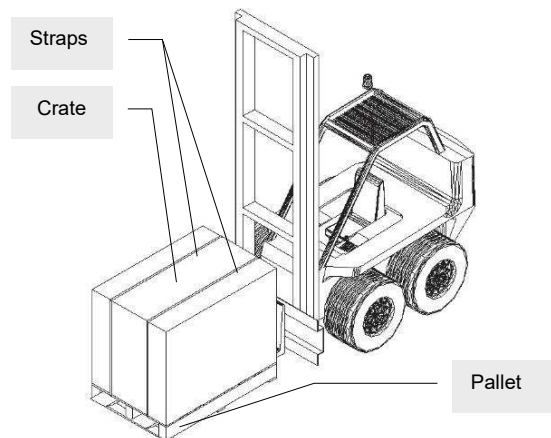
4.1 Lifting and handling

IMPORTANT - Follow the instructions below.



The machine can be delivered from the Manufacturer on a pallet and packed in a special cardboard box. Before unpacking, the machine

can be transported and handled by means of a lift truck with a capacity of at least 250 kg.



To unpack the machine, remove the straps holding the cardboard box to the pallet and remove the box. After the machine has been unpacked, it must be lifted by passing lifting straps through the two rear hooks. A number of safety instructions relating to transport are given below. **The lifting and handling operations required for installation must be performed using adequate lift equipment and by specialist personnel trained to perform this type of operation, adopting all the precautions necessary and recommended in order to prevent damage to people or things.**

4.2 Installation



IMPORTANT - Before proceeding with installation read the following warnings carefully. Failure to observe the following warnings could cause injury, death or damage to equipment.

For reasons of space, the machine is delivered with the handle folded. Slacken the knobs, position the handle then tighten the knobs again.

5 Description

Below is a list of the contents of the package delivered to the customer. If one of the parts listed below is missing, contact the dealer immediately. To avoid loss during transport, the key is enclosed in the bag with the technical documents.

- 1 machine
- 1 high pressure hose with M22 connectors
- 1 handgrip
- 1 wand with nozzle
- 1 liter of descaling
- 1 quick coupling
- 1 key mm 4
- 1 use and maintenance manual

6 Operator instructions

6.1 Safety warnings



IMPORTANT - Failure to observe the following safety rules may cause injury or damage to equipment.

6.1.1 Checks to be performed before starting up the machine.



Before using the machine, make sure all safety devices are positioned correctly and are in good condition.

6.2 Prohibited operations



Adjustment, maintenance and/or lubrication may not be performed with the machine on.

6.3 Training

All users must be suitably trained, including with hands-on experience of the machine. This training should emphasise:

- The need for attention and concentration while working;
- Children and unfit persons must not use the machine.
- Hold the trigger and wand firmly
- Do not use the machine on uneven surfaces
- Do not direct the jet at animals or persons
- Do not direct the jet towards live parts
- Do not unplug the power plug by pulling the cable
- Do not use electrical extensions
- Do not use the machine with faulty guards

7 Using the high pressure washer

7.1 Water connection

Connect the machine to the mains water supply using a hose with a diameter of not less than 1/2" (use the quick coupling provided). Connect the high pressure hose to the machine and the wand by screwing up the M22 diameter screw couplings tightly. Mount the nozzle on the wand terminal and the wand terminal on the trigger.

7.2 Electrical connection

Mount the plug on the cable. Plug into the power socket, making sure the main switch on the machine and power line are both in the OFF position. **Important:** check that the power supply voltage and frequency required by the machine correspond to those of the power line (check the machine rating plate). **Important:** the power socket must be protected by a differential circuit-breaker in compliance with current regulations and standards.

7.3 Electrical boards

The electrical board in the FORLI model has the panel shown in the following figure, with:

- switch (general)
- Boiler thermostat.
- Detergent tap
- Water pressure gauge

7.4 Tanks

Fill the tanks with the respective products: diesel (main filler), detergent (small filler) and water softener through the filler under the object compartment lid on the cowling. Each tank has an identification label near the corresponding filler.

7.5 Start up

Open the mains water tap.

Turn the main switch on. The OK light comes on to confirm that the machine is powered correctly. Hold the wand firmly and turn the main switch on the appliance to the ON position. Press the lever on the handgrip a number of times to eliminate the air present in the circuit. When the jet is constant, set the thermostat to the required temperature. The first time the boiler is turned on, it may give off a little smoke caused by the presence of air in the circuit.

Before turning the machine off, set the thermostat to OFF, wait until the water has cooled down completely (1 or 2 minutes), then turn the main switch off.

7.6 Work method

FORLI and FORLI Plus series high pressure washers are fitted with a Delayed Total-Stop control which shuts the machine

down a few seconds after the trigger has been released. When the trigger is pressed again, the machine starts up normally. The high pressure washer has a "micro-leak control" function which shuts the machine down after repeated start-ups caused by dripping (leaks). If this function trips, the machine stops. To start it again, turn the main switch to OFF, then back to ON (reset). The high pressure washer is fitted with a "no use" function which shuts the machine down after 20 minutes of inactivity. If this function trips, the machine stops. To start it again, turn the main switch to OFF, then back to ON (reset). This function can be cut out, but the operation must be performed by a qualified professional.

7.7 Pressure regulation valve

The pressure regulation valve enables water pressure to be reduced to a maximum of about 25 bars. When this value is decreased, the valve reduces the quantity of water to be heated, allowing the temperature to be increased. This function enables water at temperatures of more than 100°C to be delivered for short periods (value varies according to model and flow rate). **Important: with such high temperatures, great care must be taken when manipulating the jet. Important: prolonged use of high temperatures leads to a rapid accumulation of limescale.**

7.8 Washing with detergent

Open the tap on the panel and operate the lever on the trigger. The pump automatically takes up detergent from the tank. Spray the surface to be treated, release the lever on the trigger, then close the detergent tap. Operate the lever on the trigger again to begin rinsing. N.B.: detergent delivery will continue for a few seconds after the tap has been closed due to detergent left in the hoses. **Important:** do not spray detergent onto hot surfaces and rinse within the times recommended by the detergent manufacturer.

8 Routine maintenance



IMPORTANT - During routine maintenance, cleaning and extraordinary maintenance, personal protection devices provided must be worn.



IMPORTANT - Failure to observe the following safety rules may cause injury, death or damage to equipment.



IMPORTANT - All maintenance and cleaning must be performed with the machine off and the key taken out. In the case of the internal combustion engine model, the plug cable must be detached and the motor cold to avoid burns and fire. Do not allow personnel not involved in maintenance to approach the machine

8.1 Safety rules for routine maintenance

Routine maintenance involves a series of simple operations to be performed at regular intervals and according to the manufacturer's instructions. The Manufacturer has reduced the number and complexity of routine maintenance operations to enable them to be performed by personnel without technical expertise or complex equipment. It involves above all:

- Check the level of oil in the pump by means of the indicator on the pump itself.
- Clean the connectors and grease the connector gaskets



IMPORTANT - When replacing oil, it must be disposed of in respect of current legislation. Under no circumstances may it be disposed of in the environment.

8.2 Safety regulations for cleaning the machine

All cleaning operations must be performed with the machine stationary and turned off. When cleaning the machine or its components, the following precautions must be observed:

Do not clean electrical equipment with water or other fluids. To remove dust, use a clean brush or dry cloth only. Do not clean plastic surfaces with alcohol, detergent or solvents. Dispose of cleaning materials in respect of current legislation. Do not dispose of the materials used or cleaning residues in the environment. To clean, use water or compressed air and soft cloths. **IMPORTANT** - During cleaning, personnel protection devices must be worn

8.3 Safety regulations for repairs and extraordinary maintenance

For all operations over and above normal routine maintenance, contact an authorised repair workshop.



All operations must be performed by qualified personnel with the necessary technical skills to perform the operations in the maximum safety and in respect of current legislation.

It should be noted that the warranty offered by the manufacturer is invalidated if:

- The instructions given in the "use and maintenance" manual are not scrupulously respected;
- Routine maintenance is not performed as and when indicated;
- Lubricants other than those specified are used;
- Repairs or maintenance are performed by unqualified personnel;
- Non-original spare parts are used;
- Unsuitable tools are used.



IMPORTANT - The customer is responsible for verifying that original parts only are used when carrying out repairs. The use of non-original spare parts could jeopardise the safety of the machine.

When ordering spare parts, specify the model and serial number of the machine and the reference number of the component in the spare parts book and quantity.

9 Storing the machine

9.1 Storing the machine

If the machine is not used for long periods, protect exposed parts (not protected by paint, surface treatment or plastic) with protective rust prevention oils. If the machine is not to be used for particularly long periods, you should also clean it thoroughly. After performing these operations, seal the machine inside an opaque black multilayer nylon bag together with a suitable drying agent (silica gel).

10 Disposal

10.1 Disposing of the machine

At the end of its working life, the machine must be scrapped and disposed of by taking it to a local differentiated waste collection centre in compliance with current legislation which must be followed scrupulously. Before disposing of the machine, check the machine

rating plate. If it bears the  symbol, this means its disposal is regulated by EC directive 2002/96 on Waste Electrical and Electronic Equipment, WEEE. You should therefore seek information on the local electrical and electronic products collection system and follow the instructions. Disposing of this product illegally in the household waste could cause serious damage to the environment and human health and you may be liable to sanctions from the local authority.

11 Table of regular maintenance

OPERATION	ON DELIVERY	AFTER USE	Every 10 hours	Every 50 hours	Every 100 hours	OTHER
Check the functioning of all controls	X					
Check connector gaskets				X		
Check oil level in the pump	X			X		

12 Troubleshooting

The table below gives the most common problems which may arise during normal use of the high pressure washer. These problems are easy to resolve with operations classified as routine maintenance. If the problem is not present in the following table or cannot be eliminated following the instructions here, contact customer service.

PROBLEM	CAUSE	REMEDY
The machine does not start up	Electrical power supply absent or inadequate	Check the characteristics of the power line
	Electrical protection tripped	Contact customer service
Motor does not start but makes a noise	Inadequate voltage	Check the characteristics of the power line
Inadequate pressure	Nozzle blocked or distorted	Clean or replace
	Valve dirty or worn	Contact customer service
Vibrations and/or abnormal discharge	The pump is sucking in air	Check water supply connectors
	Air in the hoses	Vent the air by disconnecting the hose
	Pump gaskets worn	Contact customer service
	Suction delivery valves blocked	Unscrew valve caps, remove and clean (ideally contact customer service)
Pump noisy	Bearings worn	Contact customer service
"White" oil	Seepage of water into the oil (emulsion)	Have the seal pack replaced by customer service
Water leaks	Gaskets and/or pistons worn	Have the seal pack replaced by customer service
The water temperature does not reach the required level	No diesel oil is supplied	Fill the tank
	Dirty diesel filter	Clean the diesel oil filter
	Broken thermostat	Request the intervention
	The heating pipe coil is clogged with calcareous	Request the intervention