

Safety and operating instructions

Submersible pumps WAP 2, WAP 3



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Introduction

Thank you for choosing Chicago Pneumatic brand products. For over a century, the Chicago Pneumatic brand has represented performance and innovation in the pneumatic tool industry.

Today the brand is found around the world on a range of pneumatic and hydraulic tools that includes breakers, rock drills, chipping hammers, clay-diggers, picks and busters, scabblers, pumps and a whole lot more.

The Chicago Pneumatic brand is associated with powerful and reliable products that are easy to maintain and that give good value for the money.

For more information please visit www.cp.com

Construction Tools EOOD

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About the Safety and operating instructions

The aim of the instructions is to provide you with knowledge of how to use the submersible pump in an efficient, safe way. The instructions also give you advice and tell you how to perform regular maintenance on the submersible pump.

Before using the submersible pump for the first time you must read these instructions carefully and understand all of them.

Safety instructions

To reduce the risk of serious injury or death to yourself or others, read and understand the Safety and operating instruction before installing, operating, repairing, maintaining, or changing accessories on the machine.

Post this Safety and operating instruction at work locations, provide copies to employees, and make sure that everyone reads the Safety and operating instruction before operating or servicing the machine.

In addition, the operator or the operator's employer must assess the specific risks that may be present as a result of each use of the machine.

Safety signal words

The safety signal words Danger, Warning and Caution have the following meanings:

DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Personal precautions and qualifications

Only qualified and trained persons may operate or maintain the machine. They must be physically able to handle the bulk, weight, and power of the tool. Always use your common sense and good judgement.

Personal protective equipment

Always use approved protective equipment. Operators and all other persons in the working area must wear protective equipment, including at a minimum:

- > Protective helmet
- > Hearing protection
- > Impact resistant eye protection with side protection
- > Respiratory protection when appropriate
- > Protective gloves
- > Proper protective boots
- > Appropriate work overall or similar clothing (not loose-fitting) that covers your arms and legs.

Drugs, alcohol or medication

▲ **WARNING** Drugs, alcohol or medication

Drugs, alcohol or medication may impair your judgment and powers of concentration. Poor reactions and incorrect assessments can lead to severe accidents or death.

- ▶ Never use the machine when you are tired or under the influence of drugs, alcohol or medication.
- ▶ No person who is under the influence of drugs, alcohol or medication may operate the machine.

Installation, precautions

▲ **WARNING** Whipping hydraulic hose

Hydraulic hoses under pressure can whip uncontrollably if screws loosen or are loosened. A whipping hydraulic hose can cause severe injuries.

- ▶ Depressurise the hydraulic system before loosening the connection of a hydraulic hose.
- ▶ Tighten the nuts on the connections of the hydraulic hoses to the required torque.
- ▶ Check that the hydraulic hose and the connections are not damaged.

▲ **WARNING** Hydraulic oil at high pressure

Thin jets of hydraulic oil under high pressure can penetrate the skin and cause permanent injury.

- ▶ Immediately consult a doctor if hydraulic oil has penetrated the skin.
- ▶ Never use your fingers to check for hydraulic fluid leaks.
- ▶ Keep your face away from any possible leaks.

▲ **WARNING** Hydraulic oil

Spilled hydraulic oil can cause burns, accidents due to slippery conditions and will also harm the environment.

- ▶ Take care of all spilled oil and handle it according to your safety and environmental regulations.
- ▶ Never dismount the hydraulic machine when the hydraulic oil is hot.
- ▶ Never run any hydraulic lines for attachment of the hydraulic machine through the drivers cab.

▲ CAUTION Skin eczema

Hydraulic oil can cause eczema if it comes in contact with the skin.

- ▶ Avoid getting hydraulic oil on your hands.
- ▶ Always use protective gloves when working with hydraulic oil.
- ▶ Wash hands after contact with hydraulic oil.

Operation, precautions

▲ WARNING Operating pressure

If the maximum operating pressure for the hydraulic machine is exceeded, it can result in material damage and personal injury.

- ▶ Always run the hydraulic machine with the correct operating pressure. See "Technical data".

▲ DANGER Unprotected impeller

An unprotected impeller can cause serious personal injury

- ▶ Never run the machine without suction strainer and base plate.

▲ WARNING Unexpected movements

The machine is exposed to heavy strains when used. Accessories may break due to fatigue after a certain amount of use. If the accessory breaks or gets stuck, there may be sudden and unexpected movement that can cause injuries. Furthermore, losing your balance or slipping may cause injury.

- ▶ If the discharge hose is kinked, it could be forced out of the operator's hands, which could cause injury. Always remove kinks, before the pump is started.
- ▶ Pay attention not to lose balance when submerging or taking out the pump from the water, use a proper lifting device.
- ▶ Always inspect the equipment prior to use. Never use the equipment if you suspect that it is damaged.
- ▶ Make sure that the pump and its accessories are clean and free of grease and oil.
- ▶ Moving parts may crush and cut, never check bores or passages with hands or fingers.
- ▶ Never strike or abuse the equipment.
- ▶ Check regularly for wear on the accessories, and check whether there are any signs of damage or visible cracks.
- ▶ Pay attention and look at what you are doing.

▲ WARNING Projectiles

During operating, particles or jets of liquid may become projectiles and cause personal injury by striking the operator or other persons. To reduce these risk:

- ▶ Use approved personal protective equipment and safety helmet, including impact resistant eye protection with side protection.
- ▶ Make sure that no unauthorised persons trespass into the working zone.
- ▶ Keep the workplace free from foreign objects.
- ▶ Jets of liquid from the discharge hose could contain solids travelling at a great speed. Do not direct the liquid jets towards other personnel.

▲ WARNING Slipping, tripping and falling hazards

There is a risk of slipping or tripping or falling, for example tripping on the hoses or on other objects. Slipping or tripping or falling can cause injury. To reduce this risk:

- ▶ Always make sure that no hose or other object is in your way or in any other person's way.
- ▶ Always make sure you are in a stable position with your feet as far apart as your shoulders width and keeping a balanced body weight.

▲ DANGER Electrical hazard

The machine is not electrically insulated. If the machine comes into contact with electricity, serious injuries or death may result.

- ▶ Never operate the machine near any electric wire or other source of electricity.
- ▶ Make sure that there are no concealed wires or other sources of electricity in the working area.

▲ WARNING Involuntary start

Involuntary start of the machine may cause injury.

- ▶ Keep your hands away from the start and stop device until you are ready to start the machine.
- ▶ Learn how the machine is switched off in the event of an emergency.
- ▶ Stop the machine immediately in all cases of power supply interruption.

▲ WARNING Noise hazard

High noise levels can cause permanent and disabling hearing loss and other problems such as tinnitus (ringing, buzzing, whistling, or humming in the ears). To reduce risks and prevent an unnecessary increase in noise levels:

- ▶ Risk assessment of these hazards and implementation of appropriate controls is essential.
- ▶ Operate and maintain the machine as recommended in these instructions.
- ▶ Always use hearing protection.

Maintenance, precautions

▲ WARNING Machine modification

Any machine modification may result in bodily injuries to yourself or others.

- ▶ Never modify the machine. Modified machines are not covered by warranty or product liability.
- ▶ Always use original parts, working tools and accessories.
- ▶ Change damaged parts immediately.
- ▶ Replace worn components in good time.

Storage, precautions

- ◆ Keep the machine and tools in a safe place, out of the reach of children and locked up.

▲ WARNING Accessory hazards

Accidental engagement of accessories during maintenance or installation can cause serious injuries, when the power source is connected.

- ▶ Never inspect, clean, install, or remove accessories while the power source is connected.

Overview

To reduce the risk of serious injury or death to yourself or others, read the Safety instructions section found on the previous pages of this manual before operating the machine.

Design and function

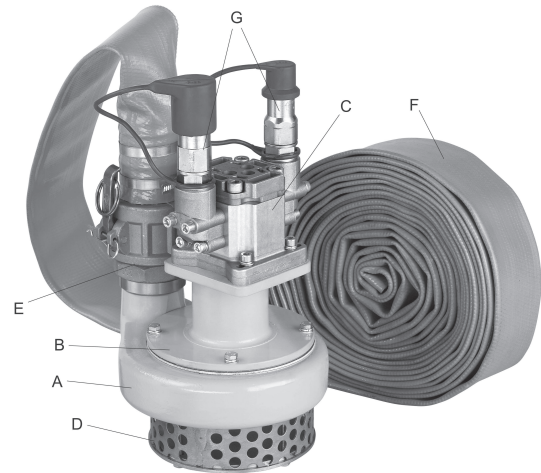
The hydraulic submersible pumps WAP 2 and WAP 3 are designed to meet the demand for efficient pumping. They offer a high performance in relation to weight, are spark-proof, and withstand running dry.

The WAP 2 water pump is delivered with a 10 m (32 ft) 50,8 mm (2 in.) discharge hose and the WAP 3 trash pump with a 10 m (32 ft) (3 in.) discharge hose. Both hoses are fitted with snap-lock quick-release couplings for easy connection.

The WAP 2 water pump and the WAP 3 trash pump can be connected to an Chicago Pneumatic power pack or any other hydraulic power source with the required specifications, see "Technical data".

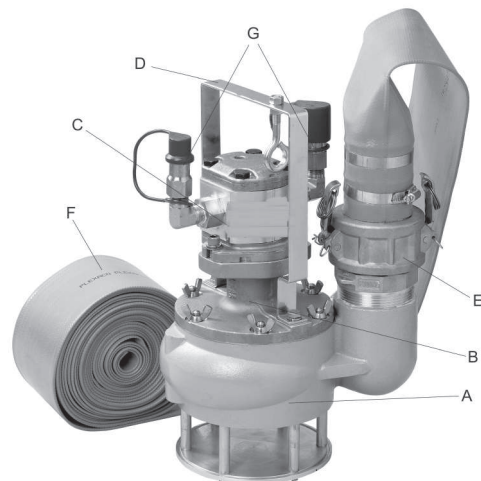
The hydraulic submersible pumps can be used for several different jobs, such as emergency pumping, pumping in tunnels and emptying of excavations and cellars. The WAP 2 water pump can handle solids up to 10 mm ($\frac{3}{8}$ in.), and the WAP 3 trash pump can handle solids up to 60 mm ($2\frac{1}{2}$ in.). No other use is permitted.

Main parts



WAP 2

- A. Pump housing
- B. Bearing housing
- C. Hydraulic motor
- D. Filter
- E. Discharge coupling
- F. Discharge hose
- G. Quick release couplings



WAP 3

- A. Pump housing
- B. Bearing housing
- C. Hydraulic motor

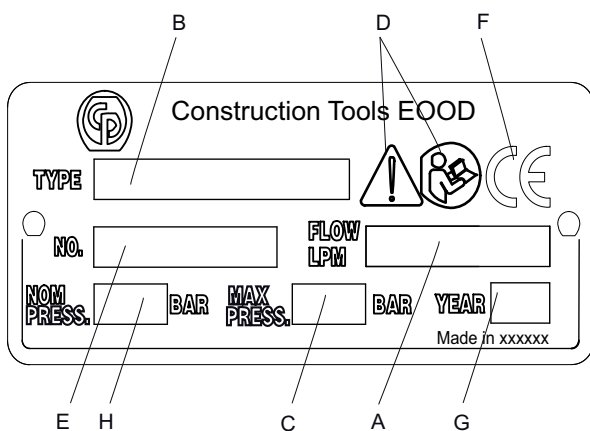
- D. Handle
- E. Discharge coupling
- F. Discharge hose
- G. Quick release couplings



Labels

The machine is fitted with labels containing important information about personal safety and machine maintenance. The labels must be in such condition that they are easy to read. New labels can be ordered from the spare parts list.

Data plate



- A. Maximum permitted hydraulic oil flow
- B. Machine type
- C. Maximum relief valve setting
- D. The warning symbol together with the book symbol means that the user must read the safety and operating instructions before the machine is used for the first time.
- E. Serial number (is also stamped in the valve housing).
- F. The CE symbol means that the machine is EC-approved. See the EC declaration which is delivered with the machine for more information.
- G. Year of manufacture.
- H. Maximum nominal operating pressure

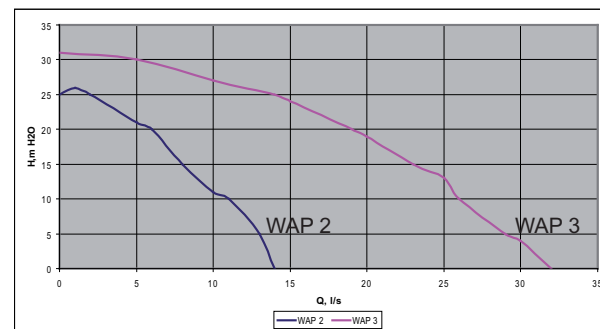
EHTMA category

The machine is clearly marked with EHTMA categories. It is important that any power source used is in a compatible category. If any doubt, consult an authorised supervisor.

Installation

Performance

To achieve standard performance, the WAP 2 water pump requires a nominal oil supply of 20 lpm (5 US gal/min) at a pressure of min. 100 bar (1400 psi), and the WAP 3 trash pump requires a nominal oil supply of 30 lpm (8 US gal/min) at a pressure of min. 140 bar (2000 psi). The hydraulic oil filter must have a filter rating of 25µ or higher.



H: Head (metres)

Q: Performance (litres per second)

The above data are based on nominal oil supply and pressure, see "Technical data".

Hoses

For connection on the machine, the hydraulic hose must be approved for a working pressure of at least 172 bar (2,500 psi) and have a 12.7 mm (½ in.) inner diameter. To resist exterior wear and tear, we recommend using a 2-layer hydraulic hose. The machine connection marked P (pump) is the oil inlet, and the connection marked T (tank) is the oil outlet. Always connect both hoses and make sure that all hose connections are tight. Never carry the machine by the hose.

Quick-release couplings

The original hydraulic hoses are fitted with Flat-Face quick-release couplings that are strong and easy to clean. The quick-release couplings are fitted so that the male connection supplies oil and the female connection receives oil.

NOTICE Wipe all couplings clean before connecting. Ensure that couplings are clean and correctly engaged before operation. Failure to do so may result in damage to the quick couplings and cause overheating and cause foreign matter to enter the hydraulic system.

Hydraulic oil

In order to protect the environment, use of biologically degradable hydraulic oil is recommended. No other fluids must be used.

- ◆ Viscosity (preferred) 20-40 cSt.
- ◆ Viscosity (permitted) 15-100 cSt.
- ◆ Viscosity index minimum 100.

Standard mineral or synthetic oil can be used. Make sure to only use clean oil and filling equipment.

When the machine is used continuously, the oil temperature will stabilise at a level which is called the working temperature. This will, depending on the type of work and the cooling capacity of the hydraulic system, be between 20-40°C (68-104°F) above the ambient temperature. At working temperature, the oil viscosity must be within the preferred limits. The viscosity index indicates the connection between viscosity and temperature. A high viscosity is therefore preferred, because the oil can then be used within a wider temperature range. The machine must not be used, if oil viscosity fails to remain within the permitted area, or if the working temperature of the oil does not fall between 20°C (68°F) and 70°C (158°F).

Operation

▲ **WARNING** Involuntary start

Involuntary start of the machine may cause injury.

- ▶ Keep your hands away from the start and stop device until you are ready to start the machine.
- ▶ Learn how the machine is switched off in the event of an emergency.
- ▶ Stop the machine immediately in all cases of power supply interruption.

Preparation before starting

The following checks should be made each time you start to use the pump. All these checks concern the serviceability of the pump. Some concern your safety:

- > Clean all safety stickers. Replace any that are missing or cannot be read.
- > Inspect the hoses generally for signs of damage.
- > Remove the protective caps from the quick-release couplings.
- > Clean the quick-release couplings if needed and connect the tail-hose to the extension hoses of the power source.
- > Connect the tool.
- > Ensure that the hydraulic couplings are clean and fully serviceable.
- > The correct rotation is counter clockwise seen from below. If rotation is clockwise, check the hoses. Incorrect connection may result in leaks and damage to the hydraulic motor.
- > Grease the bearing in the pump housing through the grease nipple in the bearing housing (3 strokes). All quality types of grease are applicable.
- > The suction strainer and base plate must always be fitted to the pump.
- > Ensure that any power source you plan to use is compatible with the pump model used, see the "Technical data". Chicago Pneumatic recommends using an LFD oil flow divider, if the flow from the power source can exceed the maximum allowed oil flow.

▲ **WARNING** Whipping hydraulic hose

Hydraulic hoses under pressure can whip uncontrollably if screws loosen or are loosened. A whipping hydraulic hose can cause severe injuries.

- ▶ Depressurise the hydraulic system before loosening the connection of a hydraulic hose.
- ▶ Tighten the nuts on the connections of the hydraulic hoses to the required torque.
- ▶ Check that the hydraulic hose and the connections are not damaged.

Start and stop

Starting the pump

- > Start the power source and allow it to run for a few minutes to warm up the hydraulic oil.
- > WAP 3 pump only: Attach a rope or other device to the handle of the pump and lower the pump into the water.
- > Activate the control valve of the power source to start the hydraulic oil flow.

Stopping the pump

- > When pumping is complete, activate the control valve to stop the hydraulic oil flow.
- > Stop the engine of the power source.
- > Disconnect the hoses and fit the protective caps to the quick-release couplings.

Connecting hoses

Inspect the couplings

- ◆ Make sure the couplings are clean and serviceable.

Connect the hoses

- ◆ Attach the return line hose.
- ◆ Attach the feed line hose.
- ◆ Rotate the collar on the female coupling to secure the coupling.

Check the hydraulic oil level

- ◆ Start the engine and run the power source to fill up the hydraulic circuit.
- ◆ Check the hydraulic oil level.

Disconnecting hoses

Prepare the power source

- ◆ Turn the by-pass valve to the OFF position.
- ◆ Stop the engine.

Remove the hoses

- ◆ Rotate the collar on the female coupling.
- ◆ Release the feed line hose.
- ◆ Release the return line hose.

Protective caps

- ◆ Fit protective caps over the ports to prevent contamination.

Operating

Pumping

- ◆ Use protective shoes, gloves, helmet, hearing protection, and impact resistant eye protection with side protection.
- ◆ Pump only water with the WAP 2 pump.
- ◆ Never use the machine to pump drinking water.
- ◆ Never exceed the max relief valve setting, stated on the pump.
- ◆ Never use the pump to extinguish fires.

- ◆ Never use the pump for pumping media, heated to more than 80°C.
- ◆ Never use the pump for pumping explosive media.
- ◆ Never use the pump for pumping corrosive agents.

When taking a break

- ◆ During all breaks you must place the machine in such a way that there is no risk for it to be unintentionally started. Make sure to place the machine on the ground, so that it can not fall.
- ◆ In the event of a longer break or when leaving the workplace: Switch off the power supply and then bleed the machine by activating the start and stop device.

Maintenance

Regular maintenance is a basic requirement for the continued safe and efficient use of the machine. Follow the maintenance instructions carefully.

- ◆ Use only authorised parts. Any damage or malfunction caused by the use of unauthorised parts is not covered by warranty or product liability.
- ◆ When cleaning mechanical parts with solvent, comply with appropriate health and safety regulations and ensure there is satisfactory ventilation.
- ◆ For major service to the machine, contact your nearest authorised workshop.

Every day

- ◆ Clean and inspect the machine and its functions each day before start working.
- ◆ Conduct a general inspection for leaks, damage, and wear.
- ◆ Change damaged parts immediately.
- ◆ Replace worn components in good time.
- ◆ Make sure that all the attached and related equipment, such as hoses and flow dividers are properly maintained.
- ◆ Clean the quick-release couplings before use.

Every month

- ◆ Inspect the hydraulic hoses and fittings thoroughly.
- ◆ WAP 3 pump only: Remove and clean the base legs and base plate. Remove any material that may have accumulated near the inlet port.

Periodic maintenance

After each operating period of approximately 150 impact hours or twice a year the machine must be dismantled and all parts be cleaned and checked. This work must be performed by authorised staff who are trained for this task.

Storage

- ◆ Disconnect the machine's hoses from the power source, see "Start and stop".
- ◆ Make sure that the machine is properly cleaned before storage.
- ◆ Always store the machine in a dry place.

Disposal

A used machine must be treated and scrapped in such a way that the greatest possible portion of the material can be recycled and any negative influence on the environment is kept as low as possible.

Before a used machine is scrapped it must be emptied and cleaned from all hydraulic oil. The remaining hydraulic oil must be deposited and any negative influence on the environment is to be kept as low as possible.

Technical data

Troubleshooting

Problem	Cause	Solution
Pump will not operate.	Pump not connected properly.	Check the performance and connection of the power source.
	Oil flow too low.	Check the power source and ensure that the flow is according to the technical specifications.
	Incorrect hydraulic oil viscosity.	Use oil with correct viscosity according to "Hydraulic oil".
Pump operates slowly or erratically.	Impeller jammed with debris.	Remove debris from impeller.
	Cold hydraulic oil.	Allow oil to reach operating temperature.
	Power source not adjusted correctly.	Consult manual for the power source.
	Oil flow too low.	Check the power source and ensure that the flow is according to the technical specifications.
	Air in the hydraulic system	Consult manual for the power source in order to remove air from the system.
	Incorrect hydraulic oil viscosity	Use oil with correct viscosity according to "Hydraulic oil".
Pump operates backwards	Hoses interchanged	Depressurise hydraulic system and switch hose connections.
Pump operates, but discharge is low	Only model WAP 2: Strainer blocked.	Clean inlet strainer.
	Only model WAP 3: Inlet port blocked.	Remove debris from the area around the base legs and base plate.
	Discharge hose blocked.	Remove and clean hose.

Machine data

Type	Weight kg (lb)	Dimensions H x W mm (in.)	Pump head maximum m (ft)	Pump flow maximum l/min (gal/min)	Operating pressure bar (psi)	Flow rate l/min (gal/min)	EHTMA Category
WAP 2	10.8 (23.8)	345 x 225 (13.6 x 8.9)	25 (82)	840 (222)	100 (1450)	18-24 (4-6)	C
WAP 3	13 (28.7)	450 x 300 (17.7 x 11.8)	32 (105)	1920 (507)	140 (2031)	26-38 (7-10)	D

Type	Maximum hydraulic return line pressure bar (psi)	Maximum relief valve setting bar (psi)	Discharge mm (in.)	Solids handling up to mm (in.)
WAP 2	15 (218)	172 (2495)	50 (2)	10 ($\frac{3}{8}$)
WAP 3	15 (218)	172 (2495)	75 (3)	60 ($2\frac{3}{8}$)

Noise declaration statement

Guaranteed sound power level **L_w** according to EN ISO 3744 in accordance with directive 2000/14/EC.

Sound pressure level **L_p** according to EN ISO 11203.

These declared values were obtained by laboratory type testing in accordance with the stated directive or standards and are suitable for comparison with the declared values of other tools tested in accordance with the same directive or standards. These declared values are not suitable for use in risk assessments and values measured in individual work places may be higher. The actual exposure values and risk of harm experienced by an individual user are unique and depend upon the way the user works, in what material the machine is used, as well as upon the exposure time and the physical condition of the user, and the condition of the machine.

We, Construction Tools EOOD, cannot be held liable for the consequences of using the declared values, instead of values reflecting the actual exposure, in an individual risk assessment in a work place situation over which we have no control.

Noise data

	Noise	
	Sound pressure	Sound power
	Declared values	
	EN ISO 11203	2000/14/EC
Type	L_p r=1m dB(A) rel 20µPa	L_w guaranteed dB(A) rel 1pW
WAP 2	84	95
WAP 3	81	92

EC Declaration of Conformity

EC Declaration of Conformity (EC Directive 2006/42/EC)

We, Construction Tools EOOD, hereby declare that the machines listed below conform to the provisions of EC Directive 2006/42/EC (Machinery Directive).

Submersible pumps	Pmax (bar)
WAP 2	172
WAP 3	172

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Rousse, 2010-01-01

