

AMP - User manual for 60 bar aqua misting pump system for cooling and humidifying



This unique type plate is placed both inside the cabinet and on the head frame.

1.0 MODEL INFO

Item nr.	AMP 21x-3 2.2 kW, 540 l/h	AMP 22x-3 2.2 kW, 1200 l/h	AMP 42x-3 4 kW, 1200 l/h	AMP 43x-3 4 kW, 1800 l/h
Max. pressure [bar]	70	70	70	70
Water flow max [l/h(l/min)]	1:1 - 540 (9)	1:1.5 - 800 (13.3)	1:1 - 1200 (20)	1:1.2 - 1500 (25)
Different speed	1:1 - 1:1.5 - 1:2 - 1:3	1.5 - 1:2 - 1:3	1:1 - 1:1.2	1:1 - 1:1.2 - 1:1.5 - 1:2
Different capacity [l/h]	540 360 270 180	800 600 400	1200 1000	1800 1500 1200 900
Voltage [Vac]	3 x 400	3 x 400	3 x 400	3 x 400
Current [Amp]	4.5	4.5	7.95	7.95
Oil type	SAE 15/40	SAE 15/40	SAE 15/40	SAE 15/40
Standard filter type	10" – 5 My	10" – 5 My	20" – 5 My	20" – 5 My
Dimension wall – Direct	W100xH65xD35	W100xH65xD35	W100xH90xD35	W100xH90xD37
Dimension wall – V-Belt	W65xH90xD42	W65xH90xD42	W60xH120xD42	W60xH120xD46
Weight (all incl. approx.)	51 kg	55 kg	65 kg	72 kg
Dimension shipment	80x60xH55 [cm]	80x60xH55 [cm]	80x60xH55 [cm]	80x60xH55 [cm]
Noise level (approx.)	70-75 dB(A)	70-75 dB(A)	75-80 dB(A)	75-80 dB(A)

This user manual applies to various models and combinations.

If your purchase does not include a controller unit and is without motor protection, the electrical information at page 9-10 in this manual is not significant for you.

If you buy a direct-driven system the information about the drive is different from the belt-driven ones, but all other information and the accessories are the same for both types of systems.

When your purchase includes a **SAFE misting®** controller, you will find a separate instruction for this controller.

VERY IMPORTANT:

Motor protection and all other electrical wiring must be installed in accordance with local electrical law.

For more information about the AMP product series, contact: sales@amn-misting.com

2.0 SAFETY INSTRUCTIONS AND WARNINGS

Before installing your new aqua misting pump, please read the following instructions carefully to avoid damages to the user, surroundings, and the pump system itself.

2.1 BEFORE OPERATING THE PUMP SYSTEM

Before operating the pump system, carefully inspect the shipment to locate possible missing parts or damages. Please report anything, which is not satisfying, to the supplier of this system.

The plug on top of the high-pressure pump **must be replaced** with the enclosed oil dip stick.

Oil level must be checked.

The insulation on the wire must be flawless, and without cracks. In doubt, please contact the supplier of this system.

Please see if the voltage displayed on the registration plate on the motor is equal to the voltage in your power supply.

2.2 CURRENT CONNECTION

Wrong current connection of the pump system can lead to life threatening electrical chocks. The pump system must only be connected to electrical circuits with earth leak circuit breaker.

2.3 SAFETY INSTRUCTIONS

This pump system can produce a high pressure. Wrong handling can lead to serious injuries.

For your own sake and safety of other persons please follow the rules listed below:

The pump system must not be operated if cable or safety devices are damaged.

The pump system may only be used for humidifying of air – it may not be used as a high-pressure cleaner.

Water pressure from the pump system should never be pointed at people, animals etc.

2.4 SAFETY DEVICES ON THE PUMP SYSTEM

The high-pressure pump is on the pressure side equipped with a bypass valve. This valve leads the water, which is not needed on the high-pressure site, back to the suction side of the filter. Do not mount a ball valve or similar, which can shut off waterflow between the pump system and nozzles + from the pump system and back to the filter section.

The pump unit will be over heated if more than 80 % (Capacity of the pump) is running in circulation, which may cause breaking the pump, valves, nozzles etc. The temperature may not exceed 50 °C.

2.5 MOTOR OVERLOAD PROTECTION

The motor is fitted with a motor protection relay which protects the motor against overload. At an increased power consumption (error) the motor protection relay will automatically turn off the power supply and the motor are switched off. Before rebooting the pump system at the red button (inside the cabinet), the cause of failure must be found and repaired.

Be aware that the motor is not overheated if it has too many start/stops etc.

2.6 MOTOR CONNECTION TO POWER

All systems have CEE plug 400 Vac pre-installed. In case of pump service, the CEE plug must be removed from socket to avoid any hazard.

3.0 OPERATION DIRECTIONS

3.1 WATER CONNECTION

Water connection to the pump uses a regular water hose minimum 3/4" in diameter and minimum 1.5 bar pressure (The pump itself just need more than 0 bar). The water is lead into the pump through low pressure filters. Flow direction is indicated by an arrow on the filter housing. Please check the filters for impurities by routine. Filter house is delivered with a standard 5µm cartridge filter inside.

3.2 START/STOP PROCEDURE

Start

Observe that the stop button on the electrical box is set to "OFF" to assure it is turned off. Turn on the water supply and turn the power switch to "MAN". Your system will now be filled with water. Now the pump system is ready for manual or automatic operation.

Stop

Stop the pump system by turning the power switch to "OFF" and pump system will stop immediately.

3.3 PRESSURE REGULATION

The pump has a pressure regulation. Factory settings are 60 bar (+/- 10 bar). This basic adjustment must not be changed. Pressure regulation is automatic with different numbers of nozzles.

3.4 FUNCTION

The pump system is provided with a manual and an automatic mode.

MAN:

Used when the pump system must run continuously (manual), such as soaking etc. In the manual position, there is no security system for pressure, bleed-off etc.

OFF: Pump system is turned off.

AUTO:

Used when the pump system must run automatically (normal position). Can start the pump system by external thermostat, timer, or other control systems. If the pump system does not reach operating pressure within a given period of 20 sec., it will turn off. Before re-starting the pump system, the cause of failure must be found. This function is controlled by a 25-bar pressure switch. To restart – turn off the switch and return to "AUTO" mode again.

V-belt drive:

After few hours of operation, make a control, that the operation in total is OK including an extra control, that the pulley is tensioned and in the right position. Inside the belt house, you find an extra V-belt – for service if needed.

4.0 MAINTENANCE

Your pump demands just a minimum of maintenance, however before operation, the oil level must be checked.

Pump routine maintenance:

After the first 50 hours: Oil change. (Oil type 15W-40).

Every 500 hours: Oil change (minimum each year).

Every 1000 hours: Replace the valves – Replace piston seal rings (or replace a service pump).

Bad seal rings, condense or cleaning with water can eventually lead to water in the oil.

In extreme conditions/use – Please check/replace oil etc. regularly.

If you have too much water leak, you can replace the entire pump unit with a service pump.

Filters:

The water filters must be checked and changed regularly. Minimum once a year.

Check pressure before and after the filter. If pressure loss exceeds 1 bar, the filter must be changed.

Pre-cleaning:

Before connecting the water supply hose and the high-pressure hose/pipe: Pipe system and couplings should be cleaned for dust and sand (no particles inside pipes).

To empty the pump for water:

Disconnect the hose/pipe before and after the pump and demount filter house.

Start the pump system “MAN”. Let the motor run for approx. 30 sec. until the pump system is totally empty for water.

Dry out fittings and other parts with e.g., high-pressure air to ensure all parts are completely dry.

The pump system should be mounted in a place free of frost and if not possible, you need to protect the pump system with an anti-freeze fluid.

If the pump system by mistake is frozen, do **NOT** start. De-freeze pump system and accessories before start-up.

NEVER START A FROZEN PUMP SYSTEM!

Pump for multiple sections service – pipeline with high pressure:

Before you make service on the decentralized solenoid valve or when the system is stopped over a long period as the winter-season.





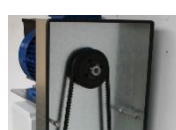




Make a pressure relief by opening the valve at the end of the pipeline or loosening a cutting ring fitting on the pipeline for taking of the high pressure.



5.0 TROUBLESHOOTING AND SOLUTIONS

Error	Possible cause	Correction
The pump system will not start	Blown fuse. No power supply.	Change fuse Connect power.
The pump system stops shortly after start-up	Wrong current connection. Water pressure cannot be reached.	Check power supply matches type plate. Check if your water supply can provide sufficient water flow. Water supply more than 0 bar (specification 1,5 bar). High pressure more than 40 bar.
Pressure is unstable and bumping	Water supply is insufficient or clogged. Water inlet filter is clogged. Impurities in valves or broken valves.	Check water supply. Filters must be checked or changed. Clean or change valves.
No working pressure	No water inlet. System is frozen. Broken valves. Pipe system leaking.	Check water inlet connection / filters. De-freeze. Change valves. Repair pipe systems.
Pump unit loses water	Leaking gaskets	Check and repair gaskets. Replace the pump

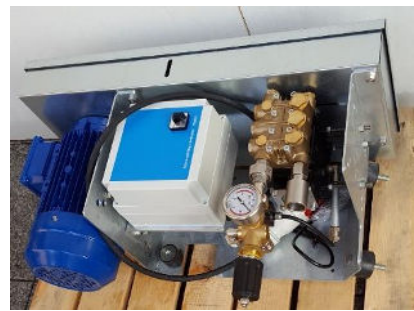
Quick guide for use of AMP Pumps 2024-1.

	<p>Filter change: Change - Max 500 hour or 1 year or pressure difference > 1 bar</p>
	<p>Oil service: Mineral oil SAE 15W-40: Change every max. 500 hours or 1 year bad seal rings, condense or cleaning with water can eventually lead to water in the oil.</p>
	<p>Easy access: Twist the cabinet out to make oil change and easy service access.</p>
	<p>Accumulator control: 1 bar pressure accumulator must be controlled every max. 500 hours or once every year.</p>
	<p>Control of the V-belt: Push with 1 kg pressure on center of V-belt through inspection hole - and the belt should move from 4 to 6 mm. If more than 6 mm, you need to tighten. Control every max. 500 hour or 1 year Extra V-belt enclosed with pump system purchase.</p>
	<p>Electrical fault: Motor thermal relay will stop power supply in case of circuit fault. To restart press the red button</p>
	<p>Pressure fault: Switch of to “0” before restart. “MAN” position is without any security functions.</p>
	<p>Pressure change: Adjust with wrench 60 bar +/- 10 bar</p>
	<p>Gauges: All gauges must show values outside the red areas.</p>

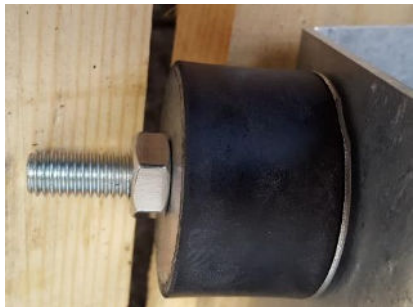
This quick guide is also delivered in a laminated version with the pump.

Delivery and mounting of the pump.

Delivery:



Demounting from transportation pallet:



When ordering a universal pump with AMP 52-1.

If you order a pump AMP 52-1 you can optimize the system for one or multiple sections. For one section just demount the check valve and take of the short in terminal 23,24.

Delivered pump to handle multiple sections:

- The system will be able to handle capacity down to 0.0 l/h with a temperature safety system.
- The pump and low-pressure solenoid valve operate simultaneously.
- A non-return valve ensures that water remains in the main pipeline and therefore provides a better, faster, and more even misting.

When changed for 1 section integrated with Bleed-off:

- Bleed-off valve for eliminating the pressure when pump stop (No dripping from nozzles)
- Low pressure solenoid valve open 1 sec. before pump start (reduced vacuum at start)

What you MUST change if you run for one section:

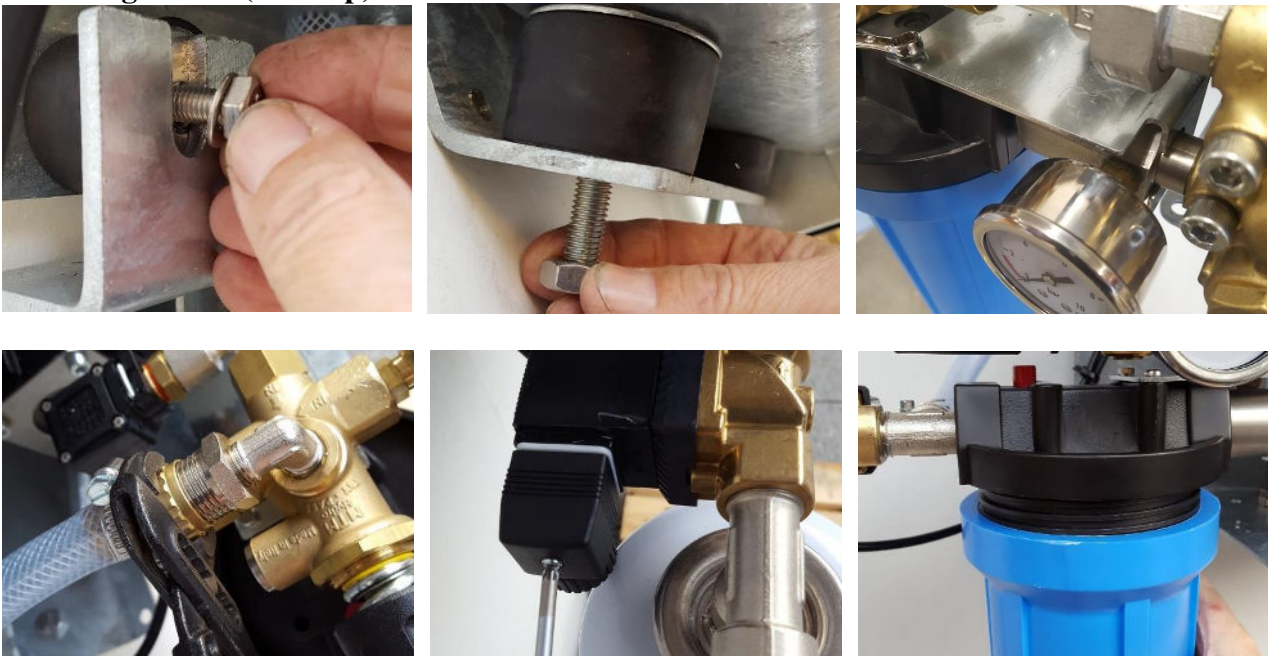


Take of the short wire (jumper) from terminal 23|24 and the program change to one section incl. bleed-off.

Wall mounting:



Mounting details (close up):

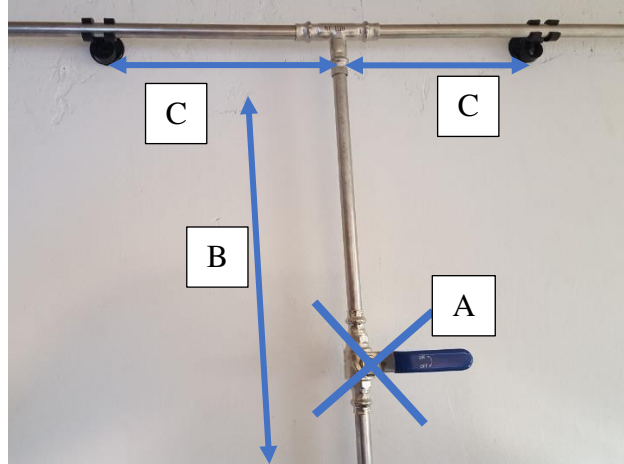


Low-pressure water connection and power supply:



CEE plugs are used for simple start-up and as a main safety “circuit breaker”.

High-pressure connection with stainless steel pipe (Normal connection):



A = ball valve not allowed
 B = Free distance (without pipe hanger) from pump to pipe > 1 mtr.
 C = Free distance to pipe hanger > 0.5 mtr.

High-pressure connection AMP 16 (Extra equipment):



High-pressure gauge and venting of the pipeline (Extra equipment).

AMN 884 can show pressure inside the pipeline, after the pump/check valve, when stopped.

AMN 885 can be used after the pump/check valve. Can take out the pressure inside the pipeline + can be used together with start-up procedures for air out of the pump.



AMN 884 (Extra equipment)



AMN 885 (Extra equipment)

How to replace a pump (service pump):



View of the replacement pump



Demount the high-pressure pipe. Demount the by-pass hose



Demount the high-pressure set.



Demount the filter set

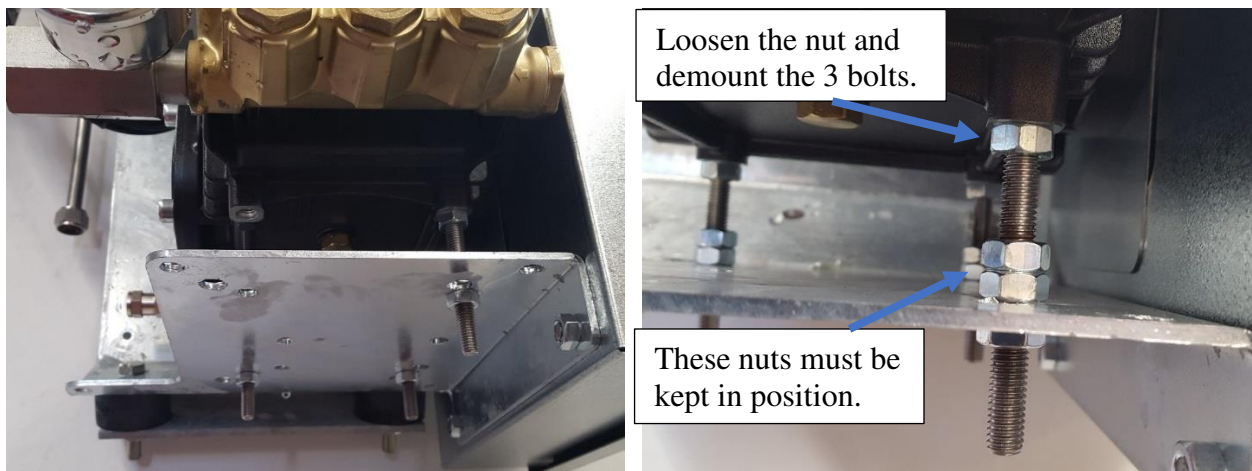
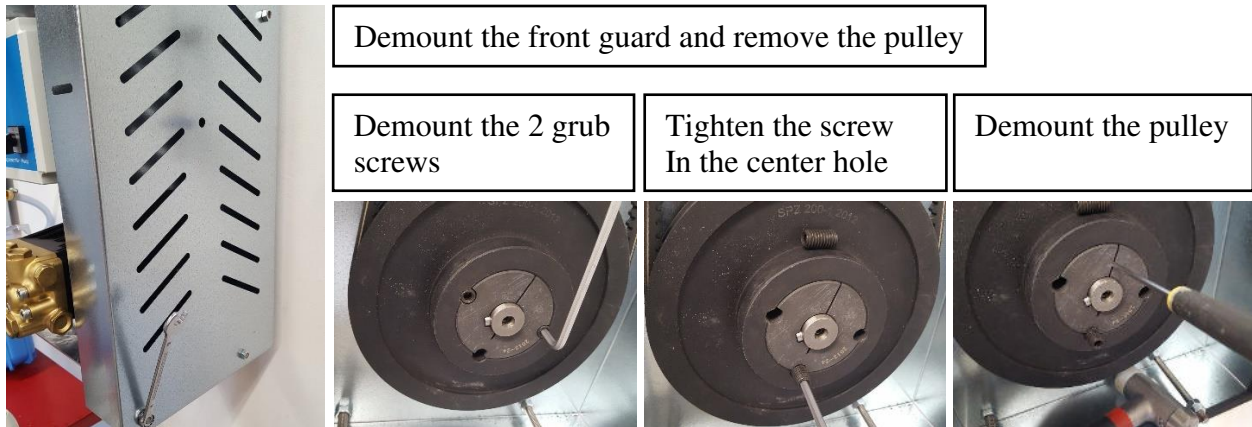


The pump is ready for demounting



Demount the gauge. Demount the fitting.





Demount the 3 nuts below the pump and you can take out the pump from the position.

Make all the steps backward when replacing the new service pump. The bolts in the bottom of the pump – if the same position and same length of the bolts - the belts are properly tensioned again. Make sure that the belt is tightened properly.

Control of the V-belt:

Push with 1 kg pressure on the center of the belt through the inspection hole - and the belt should move from 4 to 6 mm. If more than 6 mm, you need to tighten it. Adjust the 3 nuts set below the pump.

Frost protection of the pump and pipeline.

If the system should be shut down for the winter, make sure that it is frost-protected. It is almost impossible to drain all the water from the system, so instead, fill it with anti-freeze windshield washer fluid (Min. approved for -21°C)

You will need about 1 liter of anti-frost fluid per 10 meters of pipe + some extra for pumps, filters etc.

AMP 48 remote wi-fi control for service, can with success be used for this job.

1. Empty the filter house and insert a new cartridge filter.
2. Arrange a tank with a higher level than the inlet to the pump (It can be a pressure tank or a separate low-pressure pump)
3. Put the $\frac{3}{4}$ " low-pressure hose down in the tank, ready for water to the pump (no air inside the hose)
4. Make a manual start of the pump, be sure the pump works OK and makes the right pressure without any disturbing sounds.
5. Open the end of the high-pressure pipe – one by one if more pipelines.
6. Start the pump and stop again when anti-freeze fluid comes out of the end of the pipeline. Close the end of the pipeline and proceed to the next pipeline and redo the step – when all pipelines are filled with anti-freeze fluid continue to the next step.
7. Ensure that the end of each pipeline is closed properly.
8. Start the pump with normal pressure and let all the nozzles spray minimum 30 sec.

The system is now frost-protected.

In the springtime or when you are sure to avoid freezing the system, make the same again, but this time with normal water directly from the pipeline, instead of anti-frost fluid.

Check the pump and pipeline for errors. Change the oil in the pump (SAE 15/40) and the system is now ready for a new season.

An example of a pump and container that is useful for this job.

