SERVICE MANUAL

MC 9P & MC 10P



NILFISK

Preface

This service manual contains detailed description of the main repair work on the MC 9P & MC 10P.

Repair work requires a suitable testing workplace with the necessary water and power supply.

If operating errors are evident, refer the customer to the operating instructions.

A fault in the cleaner can have several causes as described in the section on troubleshooting.

Refer to the illustrated spare parts lists during repairs. They show the assembly position and the sequence in which the individual components should be assembled.

See "Technical Service Bulletin" (TSB) sheets. They include information on technical modifications that have been made after this repair manual was printed.

"Technical Service Bulletin" sheets are also valid as a supplement to the spare parts list until publication of a new edition.

Repair manuals and "Technical Service Bulletin" sheets should be available at the site where repairs are carried out.

It is not permitted to give them to third parties.

Use original Nilfisk spare parts only.

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For your own safety



Repair work should be carried out by persons instructed in electrical installations or by trained electricians only. MC9-series, MC10-series

Ultra HPW - Mobile - EI - CW 400V 3~ 50Hz, 440V 3~ 60Hz, IPX5.

2006/42/EC:

EN 1829-1:2021

EN 1829-2:2008

2014/30/EU:

EN 61000-3-11:2019

EN 61000-3-12:2011

EN 61000-6-2:2019

EN 61000-6-4:2019

2011/65/EU: EN 63000:2018

2000/14/EC - Conformity assessment

procedure according to Annex V:

- Measured sound power level: 95-100 dB(A); Guaranteed sound power level: 98-104 dB(A)

ESD measures (electrostatic discharge)

Take the following ESD precautions before carrying out any repairs to the electronics:

- Touch the earth conductor before repairing the cleaner (to discharge electrostatic charge from your body).
- Wear wrist band if necessary.
- Use a conductive floor covering or a conductive table cover.
- Never touch the printed circuit board or electronic components (always hold on to plastic).
- Transport electronic components in conductive packaging (e.g. ESD bag).

Additionally:

Also see national regulations before using the cleaner, always read the operating instructions and keep them readily available. Only allow the high pressure cleaner to be used by persons who have been trained in its use and who have been explicitly authorized to use it.



SAFETY INSTRUCTIONS FOR SERVICE TECHNICIANS

Before any repair work is started make sure the power supply to the machine is disconnected from/in the wall socket.

Repair work must be carried out by instructed technicians in electric installations, or by trained electricians.

Check machine safety before start working with the machine:

Check that machine is connected to the correct power supply based on the machine ID plate.

Check the power supply cable and plug for visible damages

Check high pressure hose, couplings and fittings for visible damages

Check Trigger Gun and lance for visual damages

When lifting heavy components such as pumps, motors etc. it must be considered if it's allowed to lift the weight by hand. If components are too heavy a support tool, e.g., crane must be used to lift the heavy components. Always check the legislation with your local authorities.

Make sure you have the correct tools and special tools available for your repair job.

Personal Protection Equipment (PPE)

For PPE there are different demands, which are set by local Working Environment Authorities depending on your location.

These demands must be complied with at all times.

However due to the force of the VHPW machines, Nilfisk recommends the PPE mentioned on page 20-21 to be worn by both the VHPW trigger gun operator and the 2nd supporting operator for optimal protection.

Prior to commencing any water blasting work, the area must be barricaded to restrict unauthorized access.









Before starting the VHPW

Go to page 22, machine data and look up the VHPW model you are about to use. The info provided there will assist you when reading through this manual.

Prior to beginning work, all equipment must be inspected to ensure that it is in safe working condition.

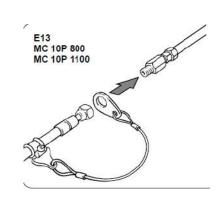
Safety valve and Unloader valve: Check that tamper evident sealings are unbroken to verify that adjustments are correct.

MC 10P 800/1100 ONLY: Rupture disc device: Check that tamper evident sealing on rupture disc device is unbroken.

High pressure hose line: Check daily for visual damage.

Do not use high pressure hoses with kinks, compressed areas or other kind of defect to connectors, threads or O-rings. Do not use high pressure hoses if the metal wire layer of the hose is exposed or if the hose has any other defects that can be identified visually.

MC 10P 800/1100 ONLY: Verify that the hose connector safety device in both ends of the hose is correctly secured to the hose and has no damages. (See Page 17 Hose Type guide for info on correct mounting of the connection safety device). Verify the high pressure hose and the spraying device with accessories is suitable for the maximum operating pressure indicated on Page 17 Hose Type Guide. Replacement hoses must always follow the demands set in Table on Page 17;Hose Type Guide. Always place the high pressure hose in such a way that vehicles cannot drive over it.



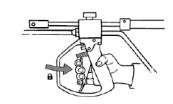
A

Spraying device: Check daily for visual damage that could impair pressure integrity. Handle and store the spraying device in such a way that it will not get large mechanical shock (e.g. falling onto a concrete floor).



MC 10P 800/1100 ONLY:

Inspect the dump gun cartridge assembly after each use and lubricate. Also inspect prior to use if there is doubt about last inspection. Failing to clean or replace cartridge can cause a malfunction. See Page 65-66 Dump gun maintenance" for detailed guidance.



Nozzle: Verify that the nozzle size and attachment to nozzle fitting is correct. (See Page 67 Nozzle Type Guide) Verify there is no damage near the nozzle outlet hole.

Main power cable: Verify the outer shielding of the cable is intact.

Always place the main power cable in such a way that vehicles cannot drive over it.

Personal Protection Equipment (PPE): For PPE there are different demands set by local Working Environment Authorities depending on your location. These demands must be complied with at all times. However due to the force of the VHPW machines, Nilfisk recommends the PPE mentioned in Page 20-21 to be worn by both the VHPW trigger gun operator and the 2nd supporting operator for optimal protection.



Prior to commencing any water blasting work, the area must be barricaded to restrict unauthorized access.

Blasting Method: We recommend using a 2 operator* blasting method. The role of the 2nd operator is to attend the pump unit and keep close watch on the 1st operator for fatigue.

By using this blasting method the operators can take turns operating the machine. It is not recommended to operate the trigger gun for more than 20 minutes continuously.

- * Operators must be trained in:
- How to operate the VHPW and the basic blasting protocol before being allowed to use the VHPW.
- Preparing the VHPW for use.
- Holding the trigger gun correctly for blasting due to recoil force from the trigger gun.
- Understanding of the correct way to operate the VHPW.
- Basic maintenance and troubleshooting.





Guidelines for safe use of the VHPW

Treat the machine as a high-speed cutting tool.

Always follow local legal requirements regarding minimum age for operating a VHPW.

Always use a proper plug and socket specially designed with ground connection. Only connect to an installation with ground connection. A certified electrician shall make the installation. It is strongly recommended that the electric supply to the machine includes a Residual Current Device/GFCI. Always follow local rules regarding RCD/GFCI.

Always keep the VHPW and its accessories in good working condition. Check the machine for defects, especially the insulation on the electric cable. DO NOT start up the machine if there are any defects. Have the machine serviced.

When using the VHPW and its accessories, eye protection must be worn at all times to protect against repelling or ricocheting matters that can cause eye damage.

Ear protection must be worn at all times when using the VHPW to prevent hearing related injures. Noise warning sticker with noise emission value can be found on the machine. Suitable clothing and footwear must be worn while using the VHPW to protect the operator(s). Do not try to clean clothes or footwear with the VHPW trigger gun since this can cause serious damage. See Page 20-21 Personal Protective Equipment (PPE).

Precautions must be made to keep bystanders away from the working range.

DO NOT spray-clean on the VHPW, yourself, others or live animals. The high-pressure jets are capable of causing severe injuries.

While repairing or servicing the equipment and its accessories always make sure the machine is turned off, depressurized and disconnected from the main power supply. Furthermore the lock out/tagout procedure explained in this manual must be performed before repair or service can take place. Only allow trained personnel to operate the machine. Activating the trigger/gun will cause an immediate backwards force. Therefore always hold trigger gun with both hands. When pausing during operation or ending the work task always follow the instruction specified in section G of this manual.

Only use high-pressure hoses, connections and nozzles specified by Nilfisk.

IMPORTANT - Do not use the machine in a possible explosive environment in accordance with EN-50014.











WARNING

To prevent accidents from happening, ensure the safety of the person(s) using the equipment and to protect bystanders and nearby placed inventory or machinery, the following safety requirements must be met:

It is not permitted to clean hazardous material (e.g. asbestos) with high pressure, without using proper PPE and equipment

Persons under the influence of alcohol, drugs or medicine must not operate the machine.

Do not touch the electrical plug and socket with wet hands.

Always unplug power supply when cleaning and maintaining the machine.

Do not use the machine if important parts are damaged – i.e. safety devices, high pressure hoses, spray handle.

The user is obliged to observe all national working environment and working safety regulations concerning "operation of high-pressure washers".

Do not spray directly onto electrical equipment or on the machine itself with high pressure water. Electrical shock may occur.

Do not operate the machine with damaged or removed fan cover. Motor will overheat and malfunction. If the VHPW has areas that can get hotter than the limit set by the authorities, these areas will be marked with the following symbol:



Avoid touching these areas with bare hands before the VHPW has cooled down.



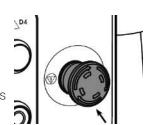




The machine is equipped with the following safety devices:

Emergency stop Button: (Do not use during normal working conditions).

This machine is equipped with an emergency stop on the control panel. When engaged, it will override all other functions and machine operating modes. The objective is to stop the VHPW as quickly as possible without creating additional hazards.



To use the emergency stop function, user need to tap hard on the button. When activated, the high pressure machine will immediately come to a total stop.

To reset the machine, turn the button clockwise to release.

The VHPW will remain in its neutral state.

On MC 9P and MC10P 500 residual pressure can be built up in the hose/

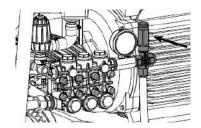
gun. Make sure to release any residual pressure from hose/gun.

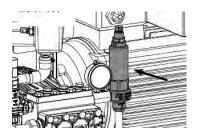
To start up the VHPW again, user needs to press the start button again.



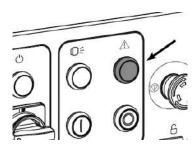
MC 9P & MC 10P 500 ONLY:

Safety valve: When the VHPW is over pressurized, the safety valve will start to open and excess water is dumped. The safety valve system is factory set and sealed with a tamper-evident sealing. Breaking the seal and performing unauthorized adjustments to the safety valve system may void the warranty for the VHPW.

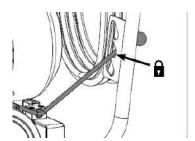




Overload relay: The overload relay protects the motor against overloading. When the overload trip, the trip indicator light will come on. When the sensor has cooled sufficiently the trip indicator light will turn off, and the VHPW can be switched on again.



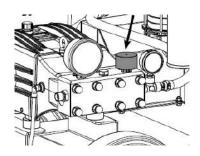
Wheel brake: The left rear wheel can be locked in place to prevent the machine from rolling on an inclined surface of no more than 10 degree.



MC 10P 800/1100 ONLY:

Rupture disc: A rupture disc is a safety system designed to protect the VHPW against over pressure. When the VHPW is over pressurized, the rupture disc within the rupture disc housing will break and excess water is dumped. The rupture disc housing is equipped with a protective cover which ensure the dumped water is directed downwards and therefore cannot hit user(s) directly.

Once the rupture disc has been broken due to over pressure it must be discarded and replaced with a new one of the same specification. For rupture disc specs see Page 68-69 Rupture disc specifications.



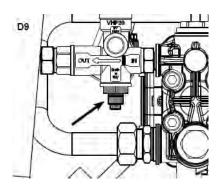


MC 9P & MC 10P 500 ONLY:

Thermal dump valve:

The thermal dump valve protects the pump and LP water line against increased water temperatures when the VHPW is running in bypass mode. When the machine is running in bypass mode and the temperature of the water in the system becomes higher than approx. 60°C, the thermal dump valve will open and dump water. By dumping water from the bypass system cold water will be drawn into the water system to replace the dumped hot water. Water dump will continue until the water temperature in the system decreases to below approx. 60°C, after which the thermal dump valve will close again. This feature is present on the VHPW to prevent damage to the machine caused by too hot water in the water system. This safety feature is NOT intended to be used as a means to extend bypass time.

Do not let the machine run in bypass for more than 5 minutes.







Setting up the unit

Operation Information:

The VHPW is rated as IPX5. Parking the machine outdoor will not pose any damage to the machine. Ensure ventilation to the motor is unblocked at all times.

IMPORTANT: ambient temperature should be above 0°C and not higher than 40°C.

Ensure the VHPW always has 1 meter free space on all sides for safe use and maintenance.

Before operating the VHPW make sure to park it on a flat surface with an incline no higher than 10 degrees. If parked on an incline greater than 10 degrees the machine can become unstable and may endanger user(s).

The machine must always be parked with the parking brake engaged.

The VHPW can be connected to a potable water source because it is equipped with a water break tank (WBT).

Check that the water supply is able to deliver the required pressure for WBT to fill up.

If the flow of the water supply is very low, the machine can empty the WBT at a higher pace than it is refilled. This will cause the level switch in the bottom of the WBT to engage and the VHPW will turn off. When water level in the WBT reaches a height that will disengage the level sensor, the VHPW can be turned on again.

This machine is designed to work with clean fresh water only. Sea water and chemicals should not be used since

this will shorten the lifespan of the pump.

Check the oil level. On level ground, the oil should be above MIN level, when the oil is cold. See "Technical Data" for oil type info an oil quantity.



MC 9P 350 & 500 + MC 10 500:

Mount the supplied ½" high pressure hose onto the VHPW's ½" high pressure outlet fitting. Always use 2 wrenches.

Always use the torque values indicated on Page 17 Hose type guide

NOTE: The trigger gun for **MC 9P 350 & 500 + MC 10P 500** must not be mounted yet. The procedure for venting the water line and pump from air as described in "Switching on the unit" must be followed prior to mounting the trigger gun.

MC 10P 800 & 1100:

Mount the M24 high pressure hose onto the VHPW's M24 high pressure outlet fitting. Always use 2 wrenches.

Always use the torque values indicated on Page 17 Hose type guide.

Next, mount the trigger gun (Dump gun) onto the other end of the high pressure hose. Always use 2 wrenches.

Always use the torque values indicated on Page 17 Hose type guide.

Prepare the water supply by attaching a water hose to the low pressure water inlet. Turn on the water supply tab to start filling the water break tank with water. When the tank is full the flow will cut off automatically to prevent overflow.



Hose mounting/dismounting instruction.

Mounting hose on VHPW high pressure outlet:

Always use two wrenches for this procedure. One for tightening the hex on the hose adaptor and one for holding the VHPW outlet fitting in position.

MC 10P 800/1100 ONLY:

For pressure above 500 bar the high pressure hose must always be secured to the VHPW high pressure outlet with a connector safety device.

A connector safety device is pre-mounted in each end on all hoses compatible with MC 10P 800/1100. See Page 17 Hose type guide, for image of correct mounting of the connector safety device to the HP outlet port.

Mount the hose fitting onto the VHPW HP outlet fitting.

MC 10P 800/1100 ONLY: Place the connector safety device plate in between hose and extension nipple fitting when assembling. Tighten with your fingers.

Place wrench 1 onto the VHPW HP outlet fitting and wrench 2 onto the hose nipple fitting to make a setup where the VHPW HP outlet fitting can be kept in a fixed position during assembly.

Start tightening the hose fitting clockwise with wrench 2 while holding wrench 1 in its starting position. As the resistance grows higher with the tightening of the threads, pay close attention to holding back on wrench 1 so the HP outlet fitting does not get tightened further. Observe that the correct hose fitting torque value is achieved see Page 17 Hose type guide.

For dismounting use the same procedure but with counter clockwise direction for loosening. Always verify that the correct shut down procedure for the VHPW has been followed before disassembly of the hose line.



Connecting two hoses for extension purposes:

Always use two wrenches for this procedure. One for tightening nipple/hose fitting and one for holding back on the other nipple/hose fitting.

MC 10P 800/1100 ONLY:

For pressure above 500 bar—all high pressure hoses must always be secured to each other using connector safety devices. A connector safety device is pre-mounted in each end on all hoses compatible with MC 10P 800/1100. See Page 17 Hose type guide for image of correct mounting of connector safety devices for hose extensions.

Mount the extension nipple fitting onto the hose being extended.

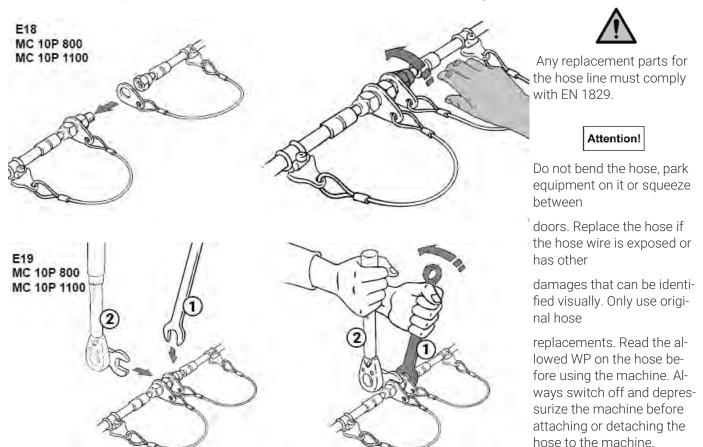
MC 10P 800/1100 ONLY: Place the connector safety device plate in between hose and extension nipple fitting when assembling. Tighten with your fingers.

Place wrench 1 on the extension nipple fitting and wrench 2 on the hose fitting of the hose being extended to make a setup where the extension nipple fitting can be kept in a fixed position during assembly. Tighten with wrench 2 while holding back with wrench 1 to ensure the position of the fitting in wrench 1 remains unchanged. Observe that the correct hose fitting torque value is achieved (See Page 17 Hose type guide)

Mount the extension hose onto the extension nipple fitting.

MC 10P 800/1100 ONLY: Place the connector safety device plate in between extension hose and extension nipple fitting when assembling. Tighten with your fingers. Place wrench 2 on the extension nipple fitting and wrench 1 on the hose fitting of the extension hose to make a setup where the extension nipple fitting can be kept in a fixed position during assembly. Tighten with wrench 1 while holding back with wrench 2 to ensure the position of the fitting in wrench 2 remains unchanged. Observe that the correct hose fitting torque value is achieved (See Page 17 Hose type guide)

For dismounting use the same procedure but with counter clockwise direction for loosening. Always verify that the correct shut down procedure for the VHPW has been followed before disassembly of the hose line.







Switching on the unit

Connect the main power cord to a grounded 3 phase main power supply. Turn on main power.

Turn on the main power isolator switch on the VHPW.

MC 9P 350 & 500 + MC 10 500:

to installed feeder pump.

Press the green power button to start the main motor. Ensure the motor turns counter clockwise as indicated by the arrow on the motor fan cover. (View from motor fan end). Rotation direction is only valid for MC 10P 800/1100 due

When the VHPW is powered up, water will start to flow out from the open HP hose end. This is to ensure that the pump is free from air pockets which would cause cavitation and to avoid getting pressurized air into the HP hose on 1st start up, that can cause a puff when the trigger is activated for the first time. Power of the VHPW.

Mount the trigger gun to the open end of the ½" high pressure hose. Always use the procedure for tightening described in Hose mounting and Dismounting and follow the torque value listed on Page 17 Hose type guide

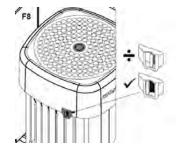
NOTE:

MC 9P 350 has a guick coupling between gun and lance, so here no tools are needed.

MC 10P 800 & 1100:

Turn on the booster pump selector switch.

Make sure the booster pump turns counter clockwise (View from motor fan end of booster pump).



Verify that water inlet pressure measured on the inlet pressure gauge is between 2 and 7 bar.

If pressure falls below 2 Bar, bleed out any air trapped in the water system by unscrewing the bleed screw under the stainless steel filter housing, and tighten back when pressure meets the requirement. If this does not help go to the trouble shooting guide.

Press the green power button to start the main motor.

Ensure the motor turns counter clockwise as indicated by the arrow on the motor fan cover (View from motor fan end). Allow the motor to run for a few seconds for the star delta connection to switch over automatically.

The VHPW is now ready for operation. Get a firm grip with both hands on the trigger gun handle and the secondary handle See page 19. Press the trigger and start blasting.





After using the unit or before leaving it unattended VHPW machine logout/tagout procedure.

This procedure is to be used when work is halted due to breaks etc. It establishes lockout on the VHPW to prevent injury to personnel.

All operators shall comply with the procedure. Equipment shall be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel.

Do not attempt to operate any switch, valve, or other main switch equipped with a lock.

Responsibility: The responsibility of this procedure being followed is binding upon all operators.

All operators shall be instructed in the safety significance of the lockout procedure by a designated individual responsible for this. Each new or transferred affected operator shall also be instructed by the designated individual in the purpose and use of the lockout procedure.

Sequence of lockout procedure:

Notify all affected operators that a lockout is required and the reason therefore.

- 1. If the VHPW is operating, shut it down by pressing the stop button.
- 2. MC 10P 800/1100 ONLY: Turn off the booster pump switch when the motor has come to a full stop.
- 3. Turn the main isolator switch to the off position.



WARNING: Release residual pressure in the trigger gun.

Lock the main isolator switch with a suitable lock to disable the operation of the machine.

Verify the E-box is locked securely and remove keys. The key must be kept with an assigned individual to prevent any unauthorized modification to the machine control settings.

Enable the trigger safety lever on the gun. Verify it in engaged by checking the trigger cannot be activated.

MC 10P 800/1100 Dump Gun ONLY:

On the dump gun the trigger safety is built in and therefore the trigger cannot be activated accidentally.

After ensuring that no personnel are exposed and as a check on having disconnected the power sources, operate the main switch, (MC 10 800/110: Booster switch), and push start button to ensure the VHPW will not operate.

WARNING Return operating controls to neutral position after the test.

The equipment is now locked out.

Restoring equipment to normal operation:

When the VHPW is to be used again at its normal operation, check the area around the machine to ensure no one is exposed. Barricade the area of working zone to prevent people entering. When the area is clear and neutral positions of controls on VHPW is verified, remove all locks. Turn on the main isolator switch, unlock the trigger gun lock and start the normal operating procedure for switching on the VHPW.





Machine shut down procedure when work is completed.

Press the red stop button and ensure the motor comes to a complete stop.

MC 10P 800/1100 ONLY: Turn off the booster pump switch when the motor has come to a full stop.

Turn off the main power isolator switch.

Turn off main power outlet and remove VHPW main power plug from the outlet.



WARNING! Release residual pressure in the trigger gun.

Disconnect the trigger gun and hose(s) by following the hose mounting/dismounting instruction on Page 12 Hose mounting/dismounting instruction. Carefully store them in a safe place.

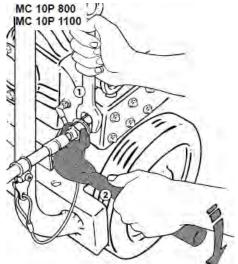
IMPORTANT.

First time using this equipment, read the safety section in the "Instruction For Use" book before operating the equipment.



High Pressure Hose Fittings & Torque

	MC 9P 350	MC 9P 500	MC 10P 500	MC 10P 800	MC 10P 1100
Hose compliance*	EN 1829-2				
Hose identification*	Hose manufacturer name or ID				
Hose manufacturing date*	ddmmyy	ddmmyy	ddmmyy	ddmmyy	ddmmyy
Max. hose working pres- sure (WP)*	7200 PSI / 500 Bar	7200 PSI / 500 Bar	7200 PSI / 500 Bar	15000 PSI / 1100 Bar	15000 PSI / 1100 Bar
Hose size*	ID ½" or DN 12	ID 1/2" or DN 12	ID ½" or DN 12	ID ½" or DN 12	ID 1/2" or DN 12
Hose fitting (Both ends)	1/2" BSPP-F SWIVEL	1/2" BSPP-F SWIVEL	1/2" BSPP-F SWIVEL	M24 -F SWIVEL	M24 -F SWIVEL
Recommended torque value for hose fittings (Nm)	40-50 Nm	40-50 Nm	40-50 Nm	90-105 Nm	90-105 Nm
HP hose pre-mounted with 2x connector safety devices?	NO	NO	NO	YES	YES
Nilfisk hose spare part number	700550097	700550097	700550098	106404655	106404655
Nilfisk connector safety device item number	-	-	-	106404650	106404650
Nilfisk hose extension fitting item number	106404745	106404745	106404745	106403212	106403212
Nilfisk hose sleeve item number	750mm: 700799097 1400mm: 700799107				



Valid for all models

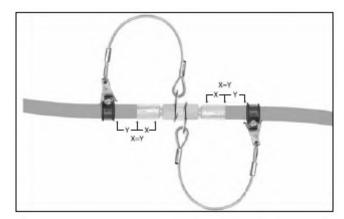
*Info is printed on hose

The hose fittings must be tightened with the correct recommended torque.

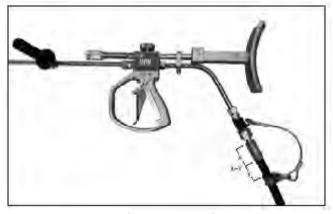
NOTE: An open spanner for torque wrench is needed.



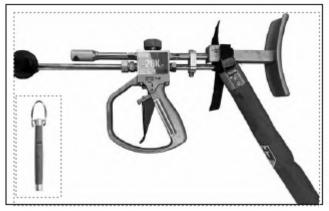
SAFETY INSTRUCTIONS FOR MACHINES ABOVE 500 bar



Correct mounting of fitting + 2x connector safety devices when mounting an extension hose.



Correct mounting of connector safety device between hose and dump gun.



Note: If desired by the user or demanded by local laws/regulations, the connector safety device can be exchanged to a hose sleeve protection as shown in above image. See Nilfisk VHPW Accessory catalogue for further info on the hose sleeve.



WARNING: Any replacement parts for the hose line must comply with EN 1829-2.

Do not bend the hose, park equipment on it or squeeze between doors. Replace the hose if the hose wire is exposed or has other damages that can identified visually. Only use original hose re-placements. Read the allowed WP on the hose before using the machine. Always switch off and depressurize the machine before attaching or detaching the hose to the machine.



The high pressure hose connector safety device must be mounted correctly. See picture to the left.

X and Y has the same measurements.

The purpose of the safety device is to catch the hose end, IF the hose is forced out of the hose connector.

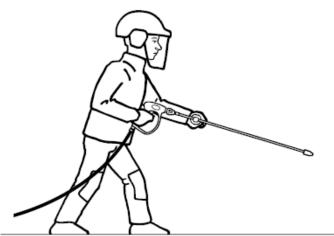


In the hose connection nut are drilled two pressure release holes. If pressure release of the high pressure hose is forgotten prior to disconnecting, these 2 holes will slowly release the pressure.

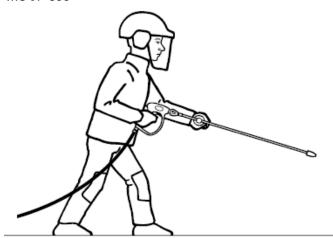


Working positions

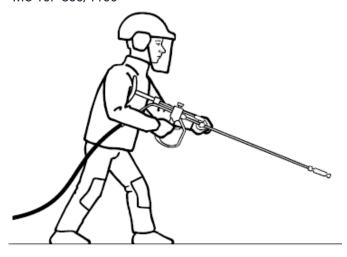
MC 9P 350-500







MC 10P 800/1100



Recoil Force

VHPW item number	VHPW name	Recoil force (N)	Nozzle type	Nozzle size	Shoulder rest
107147021	MC 9P-350/1260 400/3/50	93,9	Fan jet 15°	1505	N/A
107147022	MC 9P-350/1500 440/3/60	93,9	Fan jet 15°	15045	N/A
107147024	MC 9P-500/960 400/3/50	84,3	Fan jet 15°	1503	Available as accessory
107147025	MC 9P-500/960 440/3/60	84,3	0° jet	0003	Available as accessory
107147030	MC 10P-500/1800 400/3/50	158,1	Fan jet 15°	15055	Mandatory. Pre-mounted on trigger gun
107147031	MC 10P-500/1680 440/3/60	147,6	0° jet	0005	Mandatory. Pre-mounted on trigger gun
107147032	MC 10P-800/990 400/3/50	110	Fan jet 15°	15025	Built into trigger gun
107147033	MC 10P-800/1170 440/3/60	130	0° jet	0003	Built into trigger gun
107147034	MC 10P-1100/870 400/3/50	108,1	0° jet	0002	Built into trigger gun
107147035	MC 10P-1100/900 440/3/60	118,1	0° jet	0002	Built into trigger gun

In the above table the recoil force for each machine is listed in Newton (N).

Note: The specified recoil force is only valid for the nozzle supplied with the machine at purchase. Info on the supplied nozzle is listed under Nozzle type and Nozzle size.



SAFETY INSTRUCTIONS FOR MACHINES ABOVE 500 bar

PPE—Personal Protection Equipment

There are several safety precautions for users and service techs that must be fulfilled when working with/on VHP equipment (above 500 bar). A part of that is Personal Protection Equipment—PPE.

Below are the PPE Nilfisk recommend to use and sell as accessories.



JACKET W / HAND PROTECTION 2000 Bar Comes in size M, L, XL



TROUSERS 2000 Bar Comes in size M, L, XL



SAFETY HELMET W/EAR MUFF-FACE



SAFETY BALACLAVA



SAFETY GOGGLES



SAFETY INSTRUCTIONS FOR MACHINES ABOVE 500 bar

PPE—Personal Protection Equipment

There are several safety precautions for users and service techs that must be fulfilled when working with/on VHP equipment (above 500 bar). A part of that is Personal Protection Equipment—PPE.

Below are the PPE Nilfisk recommend to use and sell as accessories.





HAND PROTECTION 2000 bar-Left
HAND PROTECTION 2000 bar-Right



GAITERS 2000 bar



APRON STANDARD 2000 BAR



HOSE PROTECTION 36x750 mm Hose protection 36 x 1400 mm

Motor speed Max working pressure			orking pressure		Flow rate	rate	Nozzle	Power Connection	Dimensions (Lx- WxH)	Weight
œ	kW	RPM	Psi	Bar	Gpm	I/min	Type/size	V/~/Hz/Amp	mm	\$
₩		1460	5220	360	5.55	21	Fan jet 15° / 1505	400/3/50/32	980 x 500 x 1100	245
18		1760	5220	360	5.55	21	Fan jet 15° / 15045	440/3/60/32	980 x 500 x 1100	245
18		1460	7250	200	4.23	16	Fan jet 15° / 1503	400/3/50/32	980 x 500 x 1100	255
8		1760	7250	500	4.23	16	0° jet / 0003.	440/3/60/32	980 x 500 x 1100	255
30		1470	7250	200	7.93	30	Fan jet 15° / 15055	400/3/50/63	1180 x 750 x 1670	470
30		1765	7250	200	7.40	28	0° jet / 0005	440/3/60/63	1180 x 750 x 1670	470
30		980	12470	860	4.36	16,5	Fan jet 15° / 15025	400/3/50/63	1180 x 750 x 1670	585
30		1175	12470	860	5.15	19,5	0° jet / 0003	440/3/60/63	1180 x 750 x 1670	565
30		980	15950	1100	3.83	14,5	0° jet / 0002	400/3/50/63	1180 x 750 x 1670	565
30		1175	15950	1100	3.96	5	0° let / 0002	440/3/60/63	1180 x 750 x 1670	585



Revised on: 6/24/2022 12:49:00 PM

Item number: 107147021

Model: MC 9P-350/1260 400/3/50

NILFISK

Product status: Released

Product line: Customer:

Customer item number: -Customer PM: None

Created on: 6/24/2022 2:40:00 PM Created by: SER

Revised by: None Approved on: 6/24/2022 2:40:00 PM Product status: Released

Approved by: SER MPU item number: 107147501

Service manual data		
PUMP:		
Pressure p _{pump} @ Q _{nom}	bar	330
Pressure pgun @ Qnom	bar	330
Retaining/opening pressure	bar	
Flow Q _{nom}	Vmin	20.7
Suction height dry	m	0
Suction height primed	m	0
Pump type		VHP
Number of pistons	- 1	3
Pump piston type	1 -	Full Ceramic
Cylinder stroke	mm	0
Pump oil type	- 2	SAE 15W-40
Pump oil amount per pump		1.04
ELECTRIC:		
Electrical data	V/ph/Hz	400V/3ph/50Hz
Current @ V ₁	A	26
Current limiter	A	20
High voltage test voltage	V	1250
HV insulation resistance min.	MΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	1460
Electric diagram item number	76 (1	106420600
UNIT DATA:	3	
Nozzle Size	- 4	1505
Max. inlet temperature (suction)	°C	
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C	40
Gun Type	14	Gun 360 bar
Lance primary/secondary	34 - 41	1/None
High pressure hose	40 10	???
Sound power typeplate	dBA	98
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1
Cleaning Impact	kg-force	

kg LxWxH (mm)

% (+/-)

C 32

IPX5 245

1100x500x980

Fuse size

Protection Class

Detergent suction

Size - Machine alone

Weight - Machine incl. standard acc.



Item number: 107147022 Model: MC 9P-350/1260 440/3/60 Product line: Created on: 6/27/2022 3:20:00 PM Revised on: 6/24/2022 12:49:00 PM Customer: Created by: SER Revised by: None **NILFISK** Customer item number: -Approved on: 6/27/2022 3:20:00 PM Product status: Released Customer PM: None Approved by: SER Product status: Released MPU item number: 107147564

Service manual data		
PUMP:		
Pressure p _{pump} @ Q _{nom}	bar	350
Pressure pgun @ Qnom	bar	350
Retaining/opening pressure	bar	
Flow Q _{nom}	l/min	19.2
Suction height dry	m	0
Suction height primed	m	0
Pump type		VHP
Number of pistons		3
Pump piston type		Full Ceramic
Cylinder stroke	nom	0
Pump oil type		SAE 15W-40
Pump oil amount per pump	1	1.04
ELECTRIC:		
Electrical data	V/ph/Hz	440V/3ph/60Hz
Current @ V,	A	24
Current limiter	A	20
High voltage test voltage	V-	1250
HV insulation resistance min.	ΜΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	1760
Electric diagram item number	1.5	106420600
UNIT DATA:		
Nozzle Size		15045
Max. inlet temperature (suction)	°C	
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C	40
Gun Type		Gun 360 bar
Lance primary/secondary	21	1/None
High pressure hose	1	???
Sound power typeplate	dBA	102
Vibration ISO 5349 Lance 1	m/s²	<1,5; +/-1
Cleaning Impact	kg-force	
Fuse size	A	C 32
Protection Class	122	IPX5
Weight - Machine incl. standard acc.	kg	245
Size - Machine alone	LxWxH (mm)	1100x500x980
Detergent suction	% (+/-)	



Item number: 107147024 Model: MC 9P-500/960 400/3/50 Product line: Created on: 6/24/2022 2:40:00 PM Revised on: 6/24/2022 12:49:00 PM Customer: Created by: SER Revised by: None **NILFISK** Customer item number: -Approved on: 6/24/2022 2:40:00 PM Product status: Released Customer PM: None Approved by: SER Product status: Released MPU item number: 107147502

Service manual data		
PUMP:		
Pressure p _{pump} @ Q _{nom}	bar	500
Pressure p _{gun} @ Q _{nom}	bar	500
Retaining/opening pressure	bar	
Flow Q _{nom}	Vmin	15.3
Suction height dry	m	0
Suction height primed	m	0
Pump type	. D	VHP
Number of pistons	14	3
Pump piston type	0	Full Ceramic
Cylinder stroke	mm	0
Pump oil type	12,7	SAE 15W-40
Pump oil amount per pump	Í	1.04
ELECTRIC:		
Electrical data	V/ph/Hz	400V/3ph/50Hz
Current @ V ₁	Α	26
Current limiter	A	20
High voltage test voltage	V	1250
HV insulation resistance min.	ΜΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	1460
Electric diagram item number		106420600
UNIT DATA:	-	
Nozzle Size		1503
Max. inlet temperature (suction)	°C	
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C.	40
Gun Type		Gun 500 bar
Lance primary/secondary	1 -	1/None
High pressure hose	14.	???
Sound power typeplate	dBA	100
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1
Cleaning Impact	kg-force	
Fuse size	A	C 32
Protection Class	-	IPX5
Weight - Machine incl. standard acc.	kg	255
Size - Machine alone	LxWxH (mm)	1100x500x980
Detergent suction	% (+/-)	



Item number: 107147025 Model: MC 9P-500/960 440/3/60 Product line: Created on: 6/27/2022 3:20:00 PM Revised on: 6/24/2022 12:49:00 PM Customer: Created by: SER Revised by: None **NILFISK** Customer item number: -Approved on: 6/27/2022 3:20:00 PM Product status: Released Customer PM: None Approved by: SER Product status: Released MPU item number: 107147503

Service manual data		
PUMP:		
Pressure p _{pump} @ Q _{nom}	bar	500
Pressure p _{gun} @ Q _{nom}	bar	500
Retaining/opening pressure	bar	
Flow Q _{nom}	Vmin	15.3
Suction height dry	m	0
Suction height primed	m	0
Pump type		VHP
Number of pistons		3
Pump piston type		Full Ceramic
Cylinder stroke	mm	0
Pump oil type	-	SAE 15W-40
Pump oil amount per pump	l l	1.04
ELECTRIC:		
Electrical data	V/ph/Hz	440V/3ph/60Hz
Current @ V ₁	A	24
Current limiter	A	20
High voltage test voltage	V	1250
HV insulation resistance min.	ΜΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	1760
Electric diagram item number		106420600
UNIT DATA:		
Nozzle Size		0003
Max. inlet temperature (suction)	°C	
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C	40
Gun Type		Gun 500 bar
Lance primary/secondary		1/None
High pressure hose		???
Sound power typeplate	dBA	99
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1
Cleaning Impact	kg-force	2000000
Fuse size	A	C 32
Protection Class	9	IPX5
Weight - Machine incl. standard acc.	kg	255
Size - Machine alone	LxWxH (mm)	1100x500x980
Detergent suction	% (+/-)	23.7



Item number: 107147030

NILFISK

Model: MC 10P-500/1800 400/3/50

Created on: 6/24/2022 2:40:00 PM

Created by: SER

Approved on: 6/24/2022 2:40:00 PM

Approved by: SER

Revised on: 6/24/2022 12:49:00 PM

Revised by: None Product status: Released

Product status: Released MPU item number: 107147505

Customer item number: -

Customer PM: None

Product line:

Service manual data		
PUMP:	2 =	
Pressure p _{pump} @ Q _{nom}	bar	500
Pressure p _{gun} @ Q _{nom}	bar	500
Retaining/opening pressure	bar	
Flow Q _{nom}	Vmin	28
Suction height dry	m	0
Suction height primed	m	0
Pump type	8	VHP
Number of pistons		5
Pump piston type		Full Ceramic
Cylinder stroke	mm	0
Pump oil type	14.1	SAE 15W-40
Pump oil amount per pump	1)	3.5
ELECTRIC:		
Electrical data	V/ph/Hz	400V/3ph/50Hz
Current @ V ₁	A	49
Current limiter	A	37
High voltage test voltage	V	1250
HV insulation resistance min.	ΜΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	1470
Electric diagram item number	V	106420604
UNIT DATA:		
Nozzle Size	12 11	15055
Max. inlet temperature (suction)	°C	161
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C	40
Gun Type		Gun 500 bar
Lance primary/secondary	2	1/None
High pressure hose		???
Sound power typeplate	dBA	102
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1
Cleaning Impact	kg-force	
Fuse size	A	63
Protection Class		IPX5
Weight - Machine incl. standard acc.	kg	470
Size - Machine alone	LxWxH (mm)	1670x750x1180
Detergent suction	% (+/-)	



Item number: 107147031 Model: MC 10P-500/1680 440/3/60 Product line: Created on: 6/27/2022 3:20:00 PM Revised on: 6/24/2022 12:49:00 PM Customer: Created by: SER Revised by: None **NILFISK** Customer item number: -Approved on: 6/27/2022 3:20:00 PM Product status: Released Customer PM: None Approved by: SER **Product status: Released** MPU item number: 107147507

DI ME		
PUMP:		
Pressure p _{pump} @ Q _{nom}	bar	500
Pressure pgun @ Qnom	bar	500
Retaining/opening pressure	bar	
Flow Q _{nom}	Vmin	25.5
Suction height dry	m	0
Suction height primed	m	0
Pump type		VHP
Number of pistons	13	5
Pump piston type	4	Full Ceramic
Cylinder stroke	mm	0
Pump oil type	57	SAE 15W-40
Pump oil amount per pump) i	3.5
ELECTRIC:		
Electrical data	V/ph/Hz	440V/3ph/60Hz
Current @ V ₁	A	44
Current limiter	A	37
High voltage test voltage	V	1250
HV insulation resistance min.	ΜΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	1765
Electric diagram item number	-	106420604
UNIT DATA:		
Nozzle Size	8	0005
Max. inlet temperature (suction)	°C	
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C	40
Gun Type		Gun 500 bar
Lance primary/secondary	2	1/None
High pressure hose		???
Sound power typeplate	dBA	104
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1
Cleaning Impact	kg-force	
Fuse size	A	63
Protection Class	2	IPX5
Weight - Machine incl. standard acc.	kg	470
Size - Machine alone	LxWxH (mm)	1670x750x1180
Detergent suction	% (+/-)	



Item number: 107147032 Model: MC 10P-800/990 400/3/50 Product line: Created on: 6/24/2022 2:40:00 PM Revised on: 6/24/2022 12:49:00 PM Customer: Created by: SER Revised by: None **NILFISK** Customer item number: -Approved on: 6/24/2022 2:40:00 PM Product status: Released Customer PM: None Approved by: SER Product status: Released MPU item number: 107147508

Service manual data		
PUMP:		
Pressure p _{pump} @ Q _{nom}	bar	825
Pressure pgun @ Qnom	bar	825
Retaining/opening pressure	bar	
Flow Q _{nom}	Vmin	16.3
Suction height dry	m	0
Suction height primed	m	0
Pump type		VHP
Number of pistons	÷	3
Pump piston type		Tungsten Carbide
Cylinder stroke	mm	0
Pump oil type		SAE 15W-40
Pump oil amount per pump		3.8
ELECTRIC:		
Electrical data	V/ph/Hz	400V/3ph/50Hz
Current @ V ₁	A	45
Current limiter	A	37
High voltage test voltage	V	1250
HV insulation resistance min.	ΜΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	980
Electric diagram item number		106420606
UNIT DATA:		
Nozzle Size	12 1	15025
Max. inlet temperature (suction)	°C	
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C	40
Gun Type	- C 11 H	Dump gun 15Kpsi
Lance primary/secondary	A	1/None
High pressure hose		???
Sound power typeplate	dBA	102
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1
Cleaning Impact	kg-force	
Fuse size	A	63
Protection Class	16	IPX5
Weight - Machine incl. standard acc.	ka	565
Size - Machine alone	LxWxH (mm)	1670x750x1180
Detergent suction	% (+/-)	-
	1-11	



Revised on: 6/24/2022 12:49:00 PM

Revised by: None

Item number: 107147033

NILFISK

Model: MC 10P-800/1170 440/3/60 Product line: Created on: 6/27/2022 3:20:00 PM

Customer: Created by: SER

Customer item number: -Customer PM: None Approved by: SER

Approved on: 6/27/2022 3:20:00 PM Product status: Released

Product status: Released MPU item number: 107147506

Service manual data		
PUMP:	7	
Pressure p _{pump} @ Q _{nom}	bar	820
Pressure p _{gun} @ Q _{nom}	bar	820
Retaining/opening pressure	bar	
Flow Q _{nom}	Vmin	19.6
Suction height dry	m	0
Suction height primed	m	0
Pump type	2 1 11	VHP
Number of pistons	12 11 11	3
Pump piston type	2	Tungsten Carbide
Cylinder stroke	mm	0
Pump oil type		SAE 15W-40
Pump oil amount per pump	()	3.8
ELECTRIC:		
Electrical data	V/ph/Hz	440V/3ph/60Hz
Current @ V ₁	A	50
Current limiter	A	37
High voltage test voltage	V	1250
HV insulation resistance min.	MΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	1175
Electric diagram item number		106420606
UNIT DATA:		
Nozzle Size		0003
Max. inlet temperature (suction)	°C	~
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C	40
Gun Type	·	Dump gun 15Kpsi
Lance primary/secondary	10	1/None
High pressure hose		???
Sound power typeplate	dBA	104
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1
Cleaning Impact	kg-force	
Fuse size	A	63
Protection Class		IPX5
Weight - Machine incl. standard acc.	kg	565
Size - Machine alone	LxWxH (mm)	1670x750x1180
Detergent suction	% (+/-)	



Item number: 107147034

NILFISK

Product status: Released

Model: MC 10P-1100/870 400/3/50

Created on: 6/24/2022 2:40:00 PM Created by: SER

Approved on: 6/24/2022 2:40:00 PM

Revised by: None Product status: Released

Revised on: 6/24/2022 12:49:00 PM

Customer PM: None Approved by: SER

MPU item number: 107147524

Service manual data			
PUMP:			
Pressure p _{pump} @ Q _{nom}	bar	950	
Pressure pgun @ Qnom	bar	950	
Retaining/opening pressure	bar	1100	
Flow Q _{nom}	/min	14.2	
Suction height dry	m	0	
Suction height primed	m	0	
Pump type	12 = 131	VHP	
Number of pistons		3	
Pump piston type		Tungsten Carbide	
Cylinder stroke	mm	0	
Pump oil type	-	SAE 15W-40	
Pump oil amount per pump		3.8	
ELECTRIC:			
Electrical data	V/ph/Hz	400V/3ph/50Hz	
Current @ V ₁	A	50	
Current limiter	A	37	
High voltage test voltage	V	1250	
HV insulation resistance min.	ΜΩ	1	
Earth circuit resistance max.	Ω	0.2	
Speed	rpm	980	
Electric diagram item number		106420606	
UNIT DATA:			
Nozzle Size	- 1	0002	
Max. inlet temperature (suction)	°C		
Max. inlet temperature (primed)	°C	35	
Max. inlet temperature (pressure fed)	°C	35	
Max. water inlet pressure	bar	10	
Min. water inlet pressure	bar	1	
Max. ambient temperature	°C	40	
Gun Type	1	Dump gun 20Kps	
Lance primary/secondary	12 111	1/None	
High pressure hose	ji i	7??	
Sound power typeplate	dBA	102	
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1	
Cleaning Impact	kg-force		
Fuse size	A	63	
Protection Class	-	IPX5	
Weight - Machine incl. standard acc.	kg	565	
Size - Machine alone	LxWxH (mm)	1670x750x1180	
Detergent suction	% (+/-)		

Product line:

Customer item number: -

Customer:



Item number: 107147035 Model: MC 10P-1100/900 440/3/60 Product line: Created on: 6/27/2022 3:20:00 PM Revised on: 6/24/2022 12:49:00 PM Customer: Created by: SER **NILFISK** Revised by: None Customer item number: -Approved on: 6/27/2022 3:20:00 PM Product status: Released Customer PM: None Approved by: SER Product status: Released MPU item number: 107147509

Service manual data		
PUMP:		
Pressure p _{pump} @ Q _{nom}	bar	1020
Pressure pgun @ Qnom	bar	1020
Retaining/opening pressure	bar	
Flow Q _{nom}	Vmin	14.7
Suction height dry	m	0
Suction height primed	m	0
Pump type		VHP
Number of pistons	+	3
Pump piston type		Tungsten Carbide
Cylinder stroke	mm	0
Pump oil type		SAE 15W-40
Pump oil amount per pump		3.8
ELECTRIC:		24 1/
Electrical data	V/ph/Hz	440V/3ph/60Hz
Current @ V ₁	A	50
Current limiter	A	37
High voltage test voltage	V	1250
HV insulation resistance min.	ΜΩ	1
Earth circuit resistance max.	Ω	0.2
Speed	rpm	1175
Electric diagram item number	-	106420606
UNIT DATA:		
Nozzle Size		0002
Max. inlet temperature (suction)	°C	
Max. inlet temperature (primed)	°C	35
Max. inlet temperature (pressure fed)	°C	35
Max. water inlet pressure	bar	10
Min. water inlet pressure	bar	1
Max. ambient temperature	°C	40
Gun Type	2	Dump gun 20Kpsi
Lance primary/secondary	A	1/None
High pressure hose		???
Sound power typeplate	dBA	100
Vibration ISO 5349 Lance 1	m/s ²	<1,5; +/-1
Cleaning Impact	kg-force	200000
Fuse size	A	63
Protection Class	0	IPX5
Weight - Machine incl. standard acc.	kg	565
Size - Machine alone	LxWxH (mm)	1670x750x1180
Detergent suction	% (+/-)	

Construction - MC 9P 350





- 1. Lifting eye
- 2. Compartment for HP hose
- 3. Water inlet connection
- 4. Water break tank
- 5. Water inlet filter
- 6. E-box
- 7. Unloader

- 8. Level switch water break tank
- 9. Safety valve
- 10. Water outlet connection
- 11. Manometer
- 12. Dump valve
- 13. Pump
- 14. Drain hose
- 15. Parking brake

,



- 1. Handle
- 2. Power cable
- 3. Electric motor
- 4. E-box electric motor
- 5. Unloader return hose
- 6. Water line to pump
- 7. Pump oil level glass
- 8. Spray handle
- 9. Spray lance

Construction — MC 9P 500





- 1. Lifting eye
- 2. Compartment for HP hose
- 3. Water inlet connection
- 4. Water break tank
- 5. Water inlet filter
- 6. E-box
- 7. Unloader

- 8. Level switch water break tank
- 9. Safety valve
- 10. Water outlet connection
- 11. Manometer
- 12. Dump valve
- 13. Pump
- 14. Drain hose
- 15. Parking brake

,



- 1. Handle
- 2. Power cable
- 3. Electric motor
- 4. E-box electric motor
- 5. Unloader return hose
- 6. Water line to pump
- 7. Pump oil level glass
- 8. Spray handle
- 9. Spray lance

Construction — MC 9P 350/500





A. Main power panel:

- 1. Main power control light
- 2. Main power switch

B. High pressure pump panel:

- 3. Control light pump
- 4. Start switch—high pressure pump
- 5. Warning light
- 6. Stop switch—high pressure pump
- 7. Emergency stop switch
- 8. Lock for E-box

Construction — MC 10P 500





- 1. Lifting eye
- 2. Compartment for HP hose
- 3. Water inlet connection
- 4. Water break tank
- 5. Water inlet filter
- 6. E-box
- 7. Water outlet connection

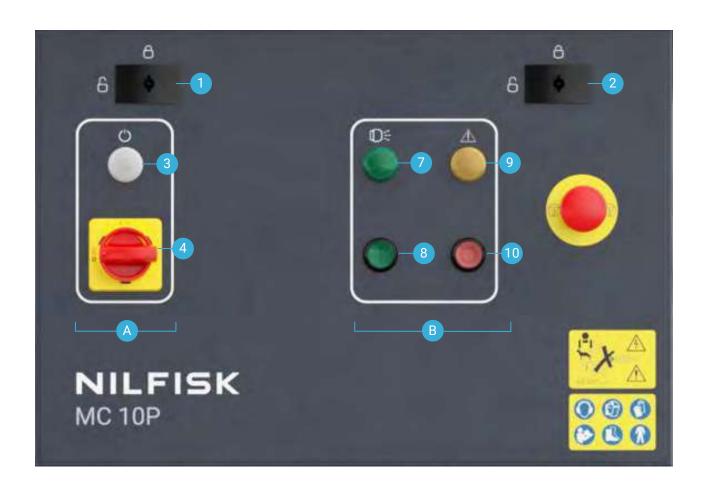
- 8. Manometer pump
- 9. Safety valve
- 10. Pump
- 11. Parking brake
- 12. E-box electric motor
- 13. Unloader return hose
- 14. Water inlet hose to water break tank



- 1. Handle
- 2. Power cable
- 3. Electric motor
- 4. Pump oil level glass
- 5. Spray handle
- 6. Spray lance
- 7. Level switch water break tank

Construction — MC 10P 500





- 1. Lock for E-box
- 2. Lock for E-box
- A. Main power panel:
- 3. Control light Main power
- 4. Main power switch

- B. High pressure pump panel:
- 7. Control light pump
- 8. Start switch—high pressure pump
- 9. Warning light
- 10. Stop switch—high pressure pump
- 11. Emergency stop switch

Construction — MC 10P 800/1100





- 1. Lifting eye
- 2. Compartment for HP hose
- 3. Water inlet connection
- 4. Water break tank
- 5. Water inlet filter
- 6. E-box
- 7. Water outlet connection
- 8. Manometer pump

- 9. Manometer water inlet pump
- 10. Pump
- 11. Secondary water filter
- 12. Booster pump
- 13. Parking brake
- 14. E-box electric motor
- 15. Water hose to pump
- 16. Water hose to water break tank



- 1. Handle
- 2. Power cable
- 3. Electric motor
- 4. Dump gun
- 5. Pump oil level glass
- 6. Spray lance
- 7. Coupling between motor and pump
- 8. Level switch water break tank

Construction — MC 10P 800/1100Panel



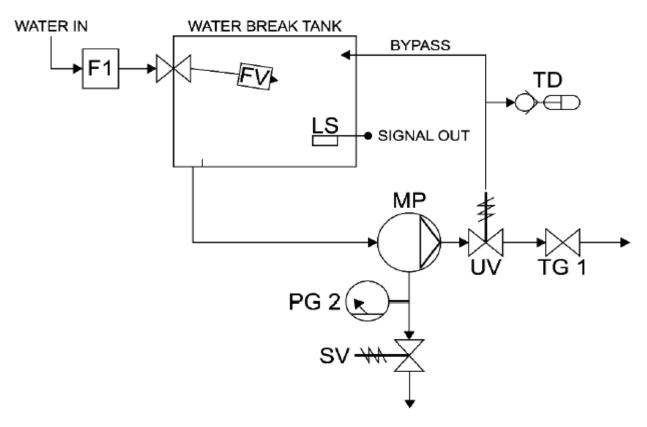


- 1. Lock for E-box
- 2. Lock for E-box
- A. Main power panel:
- 3. Control light Main power
- 4. Main power switch
- B. Booster pump panel:
- 5. Control light booster pump
- 6. ON/OFF switch booster pump

- C. High pressure pump panel:
- 7. Control light pump
- 8. Start switch—high pressure pump
- 9. Warning light
- 10. Stop switch—high pressure pump
- 11. Emergency stop switch



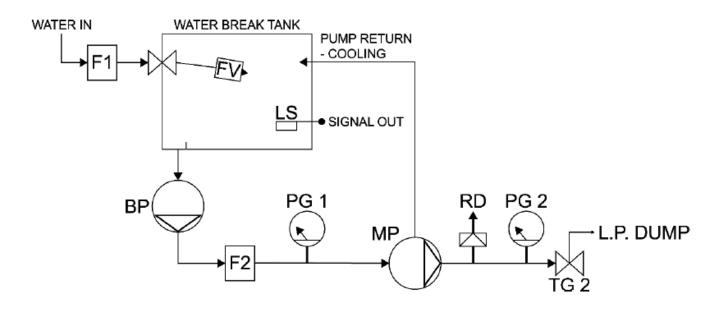
Machine schematics; MC 9P 350/500 & MC10P 500



Symbol	Description	Symbol	Desription
BP	Booster Pump	RD	Rupture Disc
F1	Filter-Inlet	SV	Safety Valve
F2	Filter-Mineral	TD	Thermal Dump Valve
FV	Float Valve	TG1	Trigger Gun—Dry Shut Type
LS	Level Sensor	TG2	Trigger Gun—Dump Type
MP	Main Pump	UV	Unloader Valve
PG1	Pressure Gauge—Water In- let Pump		
PG2	Pressure Gauge—Outlet Pump		



Machine schematics; MC 10P 800/1100

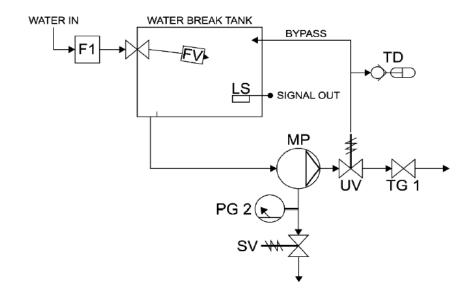


Symbol	Description	Symbol	Desription
ВР	Booster Pump	RD	Rupture Disc
F1	Filter—Inlet	SV	Safety Valve
F2	Filter—Mineral	TD	Thermal Dump Valve
FV	Float Valve	TG1	Trigger Gun—Dry Shut Type
LS	Level Sensor	TG2	Trigger Gun—Dump Type
MP	Main Pump	UV	Unloader Valve
PG1	Pressure Gauge—Water In- let Pump		
PG2	Pressure Gauge—Outlet Pump		

Function



Functional Description MC 9P 350/500 & MC10P 500

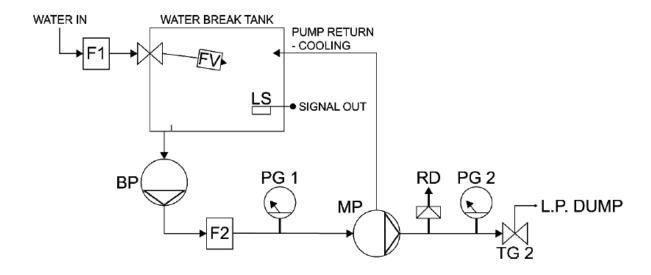


- BP: The booster pump ensures that the main pump (MP) is supplied with sufficient water flow through the MP water Inlet (2-7 Bar).
- F1: The water inlet filter ensures no dirt/debris/foreign objects etc. from the inlet water source can enter the low pressure water line and damage pump and other components. Filer insert is replaceable.
- F2: The secondary filter ensures no dirt/debris/foreign objects etc. from the Water Break Tank can enter the low pressure water line and damage pump and other components. This filter has a finer mesh than the F1 filter insert, and can therefore collect smaller objects. Filter insert is replaceable.
- FV: The float valve turns of the water flow into the water break tank from the inlet when WBT is full.
- LS: The level sensor ensures that the VHPW cannot operate without water. If the water level within the WBT be comes too low the sensor sends a signal to the E-box and the VHPW will shut off to prevent damage to the ma chine.
- MP: The main pump is a heavy duty crankshaft plunger pump.
- PG1: Pressure gauge 1 measures the water pressure on the low pressure water line before entering the main pump.
- PG2: Pressure gauge 2 measures the water pressure on the high pressure water line.
- RD: The rupture disc is a safety system designed to protect the VHPW against over pressure. When the VHPW is over pressurized, the rupture disc within the rupture disc housing will break and excess water is dumped. The rupture disc housing is equipped with a protective cover which ensure the dumped water is directed downwards and therefore cannot hit user(s) directly. Once the rupture disc has been broken due to over pressure it must be discarded and replaced with a new one of the same specification.
- SV: The safety valve is a safety system designed to protect the VHPW against over pressure. When the VHPW is over pressurized, the safety valve will start to open and excess water is dumped. The setting of the safety valve system is factory set. Incorrect setting may void warranty for the machine.
- TD: The thermal dump valve protects the pump and LP water line against increased water temperatures when the VHPW is running in bypass mode. This is done by continuously dumping the water to keep the water tempera ture below approx. 60° C.
- TG1: Trigger gun 1 is a dry shut off trigger gun type.
- TG2: Trigger gun 2 is a is a dump type trigger gun.
- UV: The function of the unloader valve is to unload the pressure from the VHPW by sending the water in bypass to the WBT.

Function



Functional Description MC 10P 800/1100



- BP: The booster pump ensures that the main pump (MP) is supplied with sufficient water flow through the MP water Inlet (2-7 Bar).
- F1: The water inlet filter ensures no dirt/debris/foreign objects etc. from the inlet water source can enter the low pressure water line and damage pump and other components. Filer insert is replaceable.
- F2: The secondary filter ensures no dirt/debris/foreign objects etc. from the Water Break Tank can enter the low pressure water line and damage pump and other components. This filter has a finer mesh than the F1 filter insert, and can therefore collect smaller objects. Filter insert is replaceable.
- FV: The float valve turns of the water flow into the water break tank from the inlet when WBT is full.
- LS: The level sensor ensures that the VHPW cannot operate without water. If the water level within the WBT be comes too low the sensor sends a signal to the E-box and the VHPW will shut off to prevent damage to the ma chine.
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Troubleshooting



Resolving "Sticky valves"

Symptom:

During initial start, water supply and VHPW is turned on but the pump does not deliver water through the high pressure water outlet.

The pump does not prime and is running dry.

Cause:

This can be caused by the inlet valves inside the pump being stuck. (e.g. pump inactivity or prolonged shipment/storage).

This phenomenon is called "Sticky salves".

Solution:

Water supply pressure of 2-5bar can be used to loosen up the valves if connected directly to pump inlet.

Follow this procedure:



Step 1: Loosen the hose clip on the bent rubber angle at the outlet of the WBT and disconnect the two. If WBT is full, water will pour down over the pump.

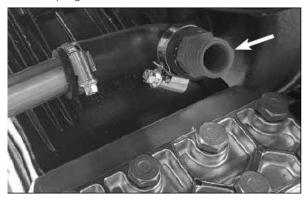


Step 3: Block the outlet port of the WBT with a short hose and turn hose upwards. Refill WBT so high that the level switch in the WBT will engage – enabling the VHPW to start up again.

Step 5: Verify the spraying device is not connected.



Step 2: Loosen the hose clip securing the bent rubber angle to the steel tube, turn the direction of the rubber angle to point outwards and tighten hose clip again.



Step 4: Mount a suitable fitting to the rubber angle and re-locate the water supply hose onto this location. Water supply pressure must be 2-3bar.

Step 6: Turn on water supply and VHPW. Let water flow into the inlet port for about 4-5 sec. Once a smooth flow of water is observed from the hose outlet, the sticky valve issue is resolved. Turn off machine, reconnect spraying device by following the mounting procedure in section E and start blasting.

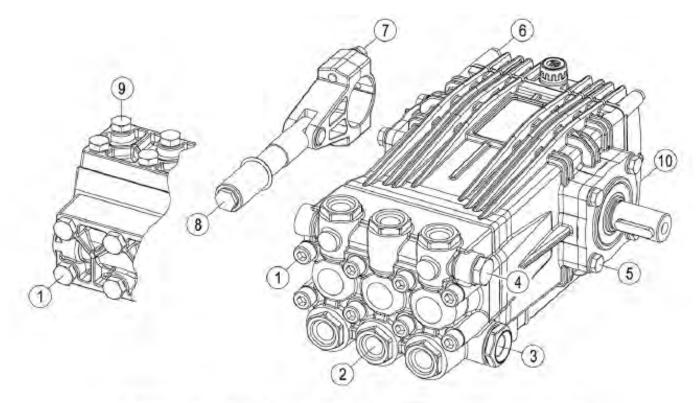
Troubleshooting



Symptom	Causes and remediations
Main switch is turned on; VHPW will not run.	Check power supply connection. Make sure the power plug is inserted correctly. Check if automatic fuse is cut-o\mathbb{N} . If yes turn on fuse again.
Motor is humming; Pump providing no or low pressure	Voltage is too low compared to specifi cation. Check main voltage. Motor phase is missing (For 3 phase application). Check the connection box voltage with a meter. High-pressure pump is blocked. Service required.
Pump pressure drops and the VHPW works irregularly	Inlet filter is clogged. Change filter insert or replace entire filter. Water supply pressure is in-sufficient to accommodate pump.
VHPW does not reach the proper working pressure when the spray-gun handle is activated.	Nozzle is clogged or worn out. Clean or replace nozzle. Pump seals are worn. Replacement needed. The pump sucks air. Check Low Pressure water pipeline for leaks that can cause suction into the LP pipeline. Bypass valve worn or dirt trapped in valve. Service required.
Pump continuously stops and starts when the spray gun trigger is activated	The HP nozzle is clogged. Turn on VHPW and dismantle the nozzle. Remove dirt or replace nozzle if damaged.
VHPW only works with approximately 2/3 of the maximum pressure, and the high-pressure hose is vibrating.	Bypass worn or dirt trapped in valve. Service required. The pump sucks air. Check Low Pressure water pipeline for leaks that can cause suction into the LP pipeline. Inlet water filter is clogged. Change filter insert or replace entire filter. Water supply pressure is in-sufficient to accommodate pump. MC 10P 800/1100 Only Low inlet booster pressure. Check booster pump. Valve flaps are not free of dirt and can therefore not fit tightly and move freely. Service required.
High pressure pump exceeds its rated pressure, and safety disc burst (MC 10P 800 & 1100 only), or safety valve dumps	Nozzle is clogged. Remove nozzle and clean out debris or replaced. Check machine is operating at the correct frequency.
Noise in pump crankcase.	Crankcase or motor bearings worn out. Service required Check oil level. Refill or change oil in crankcase.
Noise from the pump	The pump sucks air. Check Low Pressure water pipeline for leaks that can cause suction into the LP pipeline. One or more valve springs are broken or down. Service required Dirt in the valves. Service required Crankcase or motor bearings worn out. Service required.
Water in the oil/pump crankcase	Worn oil seals. Change seals and replace oil. The O-ring casing is worn out. Replace O-ring. The oil seals are worn out. Service required. High moisture in the air (condensing inside the crankcase). Increase interval of crank case oil exchange.



Torque-pump



POS.	DESCRIPTION	NOTE			
1	Head Bolts				
2	Valve Caps				
3	Inlet Cap	Loctite® 243			
4	Outlet Cap	- Medium Strenght - Treadlocking			
5	Bearing Flange Bolts	Color: Blue			
6	Rear Cover Bolts				
7	Connecting Rod Bolts	Loctite® 270 - High Strenght Treadlocking			
8	Plunger Bolts	Color: Green			
9	Valve Cover Bolts	20000000			
10	Oil Drain Plug				

POS.	PN - PS		PK - PKWT		B - BK			MS - MWT				
	N·m	1bf•ft	Loctite [®]	N•m	1bf•ft	Loctite®	N-m	1bf•ft	Loctite®	N-m	lbf•ft	Loctite
1	11	8	7	11	8		25	19		25	19	
2	100	75	243	100	75	243	100	75	243	100	75	243
3	80	60		110	80	1	100	7.5	243	110	80	
4	80	60	243	80	60	243	80	60	243	80	60	243
5	11	8		11	8	1	25	19		25	19	
6	11	8		11	8		25	19		11	9	
7					100	-	11	9	243		19K 1	
8	15	11	270	15	11	270	15	11	270	15	11	270
10	8	6	- 1	8	6		25	19		-8	6	



Disassembling



Remove the M10 bolts, and then remove the Outlet valve cover.



Insert an M6 screw and pull out the outlet valve cap.



Pull out the valve using a set of pliers. Check the valves for damages, replace if needed.



Use an O-ring picker tool to remove the O ring below the valve.



Loosen and remove the 10 mm bolts, except 2. Now remove the last 2 bolts and remove the manifold and pump head.



Remove the last 2 bolts for removing the manifold and pump head.



Disassembling



Backside



Front



Push the valve out with a brass mandrel. Be careful not to scratch the inside of the pump head.



Check the valve (1) for damages, and replace if necessary.

Use a finger to pull out the diffuser (2)



Push out the Pressure Ring (1) and the back ring (2) from the back with a brass rod. Be careful not to scratch the inside of the pump head.



Use a screwdriver or pliers to fish out the packing.

Be careful not to scratch the inside of the pump head.



Disassembling



Disassembled view of pump head & manifold



Pump assembling Lubricate seals and O-rings with waterproof silicone grease.



Assemble White & Black Packing and insert into pump



Mount the seals and back ring as shown above. Pay attention to the seal sequence from left to right, White (1), black (2), brown (3) and back ring (4).



Insert the Low Pressure Seal into the Pressure Ring.

Pay attention to the orientation, groove (1) facing outwards.



Insert the Pressure Ring (1) into the Pump Head, knock a few time with a mallet to compress the packing below



Turn the Pump Head over and insert the Diffuser (1). Note the orientation.

Insert the valve (2)



Apply waterproof silicone grease onto the surface of the Plunger.



Pump assembling



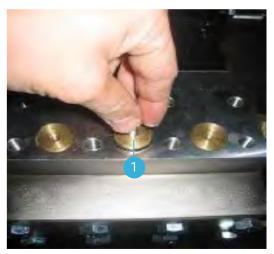
Mount the pump head. Push the pump head until there are no gab (1) between the crankshaft housing and pump head.



Mount the Manifold ensure that the cooling holes (1) are not blocked before assembling. Hand tighten the M10 bolts



Mount the Valve and O-ring into the Pump Head



Mount the valve cap (1). Note the orientation of the valve cap. Threaded hole (1) must be facing up



Mount the pump head. Push the pump head until there are no gab (1) between the crankshaft housing and pump head.



Mount the Manifold ensure that the cooling holes (1) are not blocked before assembling. Hand tighten the M10 bolts

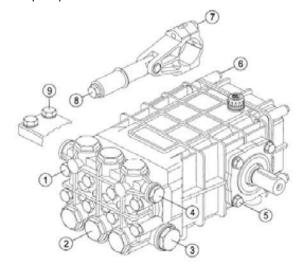


Pump assembling



Teighten all bolts with the specified torque. Specifications below.

Torque specifications

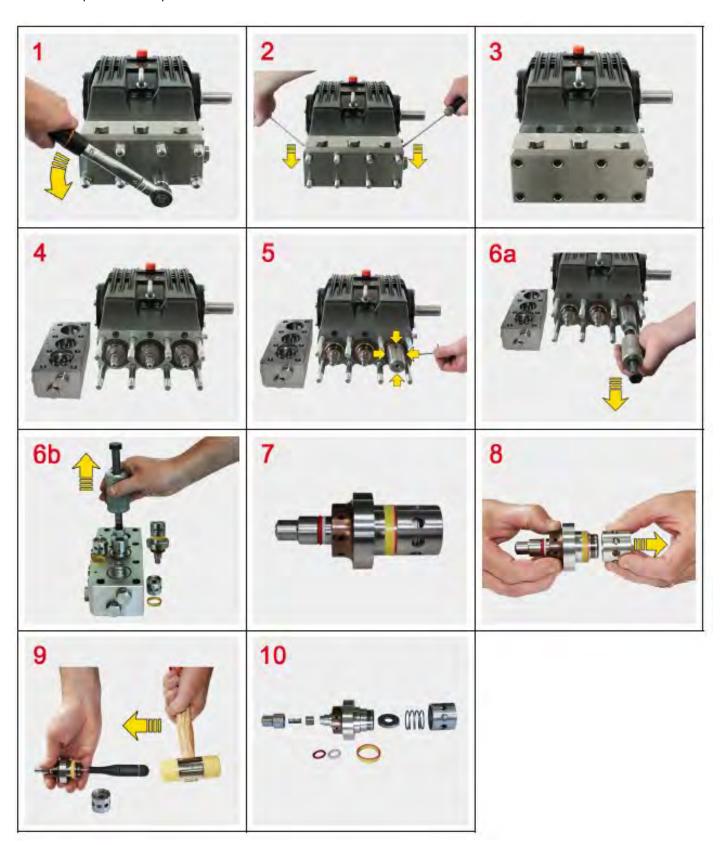


Torque specifications

Pos.	Description	N.m	lb.ft
1	Head Bolts	50	37
2	Valve Caps	N.A	N.A
3	Inlet Cap	140	103
4	Outlet Cap	80	60
5	Bearing Flange Bolts	25	19
6	Rear Cover Bolts	11	8
7	Connecting Rod Bolts	30	22
8	Plunger Bolts	15	11
9	Valve Cover Bolts	30	37

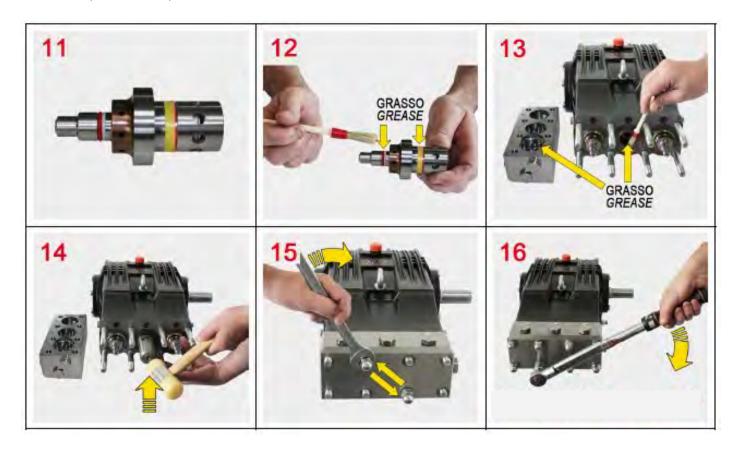


Check or replacement of pressure and suction valves





Check or replacement of pressure and suction valves





Check or replacement of water seals





Check or replacement of water seals

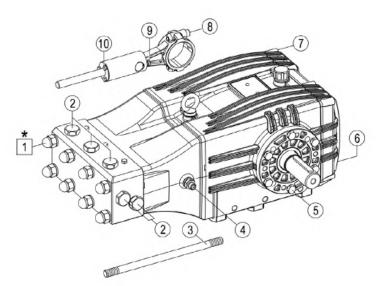


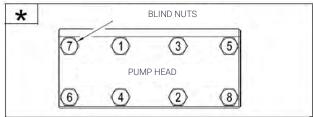


Check or replacement of water seals



Torque specification





The blind locking nuts on the pump head must be tightened in the following order:

1-2-3-4-1-5-6-7-8-5

First pre-tighten with 70 Nm

POS.	DESCRIPTION	Nm	lbf•ft	Loctite	NOTE
1	Head Blind Nuts	130	96		Vedi /See **
2	Inlet and Outlet Plugs	130	96	243	
3	Stud Bolt	30	22	243	
4	"Cooling System" Connector	50	37		
5	Bearing Flange Bolts	50	37		
6	Oil Drain Plug	11	8		
7	Rear Cover Screws	11	8		
8	Connecting Rod Screws	25	19	243	
9	Pin Screws	6	4.5	243	
10	Plunger Bolts	- 6	4.5	7	

Service / Repair MC 10P 800-1100 Motor assembly



Coupling - Motor side

Push the taper bushing onto the motor shaft. Ensure the taper bushing key slot is aligned with the motor shaft key slot. Depth of the taper bushing is enough for the coupling housing and shaft face to be levelled.

Attach the coupling housing into the taper bushing. Loosely secure the taper bushing by loosely tightening grub screws equally to prevent misalignment.

Apply grease and attach the coupling spacer.

Tighten with 22 Nm





FOR REMOVAL DNLY

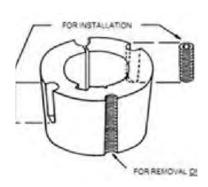


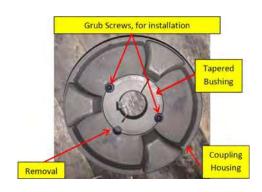


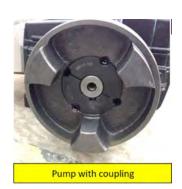
Coupling - Motor side

Push the taper bushing onto the pump shaft; ensure the taper bushing key slot is aligned with the pump shaft key slot. Ensure the depth of the taper bushing is enough for the coupling housing and shaft face to be levelled.

Secure the installation slot grub screws ensure to tighten the grub screws equally to prevent any misalignment. Tighten with 22 Nm







Service / Repair MC 10P 800-1100 Motor assembly



Align MPU / mount pump

Lift the pump onto the frame,

MC10-500 direct onto the frame

MC-800/MC-1100 spacer between frame

Mount flat washer, spring washer on bolt (x4) and loosely tighten so pump still can be aligned/adjusted.

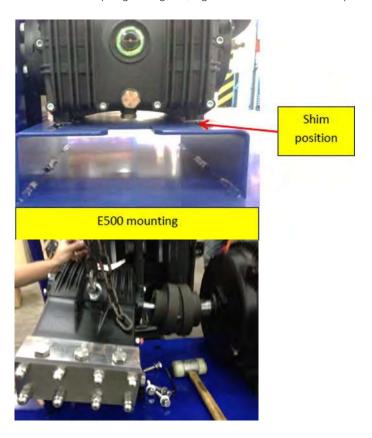
Shim pump where necessary. Alignment tolerances:

Angular = 1°

Parallel = 0.4mm

Axial = 1.1mm

When coupling is aligned, tighten the 4x bolts with specified torque-55 Nm

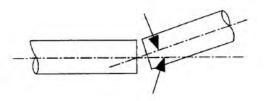




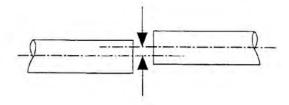
Service / Repair MC 10P 800-1100 Motor assembly



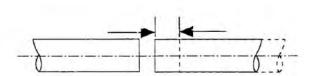
Align MPU / mount pump



ANGULAR MISALIGNMENT - shafts are at an angle to one another



PARALLEL MISALIGNMENT — shafts are in line angularly and parallel to each other, but are off-set radially.



AXIAL MISALIGNMENT — refers to errors in the axial spacing of coupling hubs/flanges, but also includes appplicational "end float" where shafts move axially increasing or decreasing the distance between shaft ends.





Service / Repair MC 10P Dump gun maintenance



Cartridge assembly spare parts

In below table it is indicated which machines have a dump gun. Also the Nilfisk cartridge assembly spare part numbers are provided.

VHPW item VHPW name number	Trigger gun type	Dump gun max. working pressure (psi/Bar)	Vilfisk cartridge assembly spare part number
107147032 MC 10P-800/990 400/3/50	Dump gun	15Kpsi / 1034 Bar	700551616
107147033 MC 10P-800/1170 440/3/60	Dump gun	15Kpsi / 1034 Bar	700551616
107147034 MC 10P-1100/870 400/3/50	Dump gun	20Kpsi / 1378 Bar	700551618
107147035 MC 10P-1100/900 440/3/60	Dump gun	20Kpsi / 1378 Bar	700551618

ATTENTION!

Always replace the cartridge if it has visible damages. Only use original cartridge replacements. Always switch off and de-pressurize the machine before dismounting the cartridge assembly

Dump gun maintenance

The most important part of the maintenance of the dump gun is to keep it clean and free of corrosion and any contaminants, which could cause a malfunction.

After each use of the dump gun the cartridge assembly must be unmounted and inspected. Thoroughly wash the internal chambers of the gun with clean water. Also wash the cartridge and inspect it for signs of wear or damage, paying particular attention to the seating surface of the valve. As the valve wears it will show small cuts in the metal where the high pressure water is bypassing. If this problem is found, the whole cartridge assembly must be replaced. Lightly lubricate o-rings and seals and reassemble. Wipe the outer surface of the gun to remove any signs of dirt or product blowback. Always finish by lubricating trigger and safety latch pivot points with a light oil.

How to remove the cartridge assembly



Using only your hand, unscrew the "Handi Change" cartridge nut located on the top of the gun block in a counter clockwise direction.



Pull up the cartridge assembly to remove it from its chamber inside the gun block.

Service / Repair MC 10P Dump gun maintenance





Using only your fingers, snap the cartridge assembly sideways out of the retaining groove at the lower end of the cartridge nut. Lubricate o-rings and seals. To assemble simply reverse the proces.



After re-assembly of the cartridge – the trigger must be dismounted for lubrication.

Use a mandrel to punch out the pins from the side shown in above picture. (Note: Verify you are driving out the pins from the correct side by ensuring the text "Drive pin out this side" is NOT present).



Lubricate the trigger in the indicated areas with a light oil.



Insert and re-mount the trigger into the trigger gun from the oppo-site side of the trigger gun (Note: Verify you are inserting the pins from correct side by ensuring the text "Drive pin out this side" is present)

Also verify that the knurling of the pins are in the correct end of the pin when driving in the pin again.

Service / Repair Nozzle Type Guide



In this table it is specified which nozzle is supplied with your machine at purchase along with the Nilfisk spare part number for replacement purposes.

If you wish to mount another nozzle on the lance pipe we recommend to purchase an original Nilfisk accessory nozzle that fits your VHPW.

VHPW item number	VHPW name	Nozzle type	Nozzle size	Nilfisk spare part number
107147021	MC 9P-350/1260 400/3/50	Fan jet 15°	1505	700550056
107147022	MC 9P-350/1500 440/3/60	Fan jet 15°	15045	700550015
107147024	MC 9P-500/960 400/3/50	Fan jet 15°	1503	700550389
107147025	MC 9P-500/960 440/3/60	0° jet	0003	700550051
107147030	MC 10P-500/1800 400/3/50	Fan jet 15°	15055	700550057
107147031	MC 10P-500/1680 440/3/60	0° jet	0005	700550053
107147032	MC 10P-800/990 400/3/50	Fan jet 15°	15025	700550952
107147033	MC 10P-800/1170 440/3/60	0° jet	0003	700550051
107147034	MC 10P-1100/870 400/3/50	0° jet	0002	106404656
107147035	MC 10P-1100/900 440/3/60	0° jet	0002	106404656



WARNING: Any replacement parts for the hose line must comply with EN 1829.

Always replace the nozzle if it has damages that can be identified visually. Only use original nozzle replacements. Always switch off and depressurize the machine before attaching or detaching a nozzle to the lance pipe. Always make sure that adaptor between lance pipe and nozzle is NOT loosened when exchanging nozzle.

Service / Repair MC 10P Rupture disc



In the table below is specified which rupture disc kit should be used when a rupture disc has been triggered and needs to be replaced. A rupture disc kit consists of a rupture disc, spring, ball, a name plate, and a wire for fixing the name plate to the rupture disc housing.



WARNING

When replacing the rupture disc always follow the torque value indicated on the name plate and remember to mount the drainage cup for safe discharge. Instruction for replacement is included with the rupture disc kit.

WHPW item number	WHPW name	Nilfisk rupture disc kit, spare part number
107147032	MC 10P-800/990 400/3/50	107144022
107147033	MC 10P-800/1170 440/3/60	107144022
107147034	MC 10P-1100/870 400/3/50	107144023
107147035	MC 10P-1100/900 440/3/60	107144023

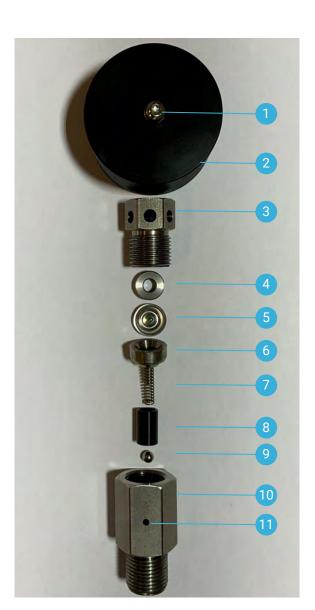
REPAIR INSTRUCTIONS NEXT PAGE

Service / Repair Burst Disc MC 10 800/1100





Burst disc on 800 bar MC 10





Burst disc on 1100 bar MC 10

- 1. Screw and washer for top cover.
- 2. Top cover
- 3. Top fitting
- 4. Washer, support
- 5. Burst disc
- 6. Seat f. burst disc
- 7. Spring
- 8. Spring guide
- 9. Ball, stainless steel
- 10. Fitting, bottom
- 11. Burst hole to outside

The burst disc is a safety component.

The burst disc will open, by braking the disc (5), if the pressure for whatever reason increases above the setting of the burst disc.

Burst disc settings:

800 bar pump: 1000 bar burst pressure1000 bar pump: 1240 bar burst pressure

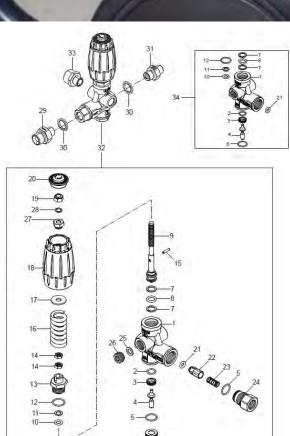


Bursted disc (1) to the right.

Service / Repair MC 9P Unloader Valve 350 Bar









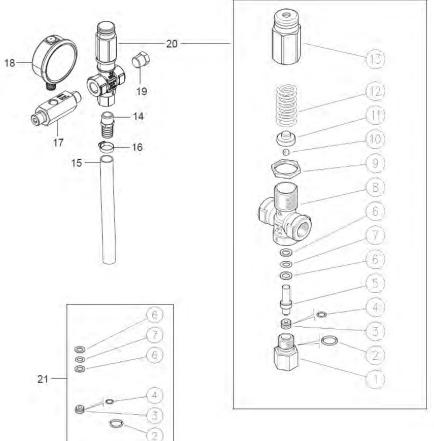
Every 500 working hours (approximately 12500 cycles of the system), check and lubricate the seals with water resistant grease.

Every 1000 working hours (approximately 25000 cycles of the system), check for wear of the seals and internal parts and, if necessary, replace with original parts. lubricate seals and parts with water resistant grease.

Service / Repair MC 9P Safety Valve 350 Bar









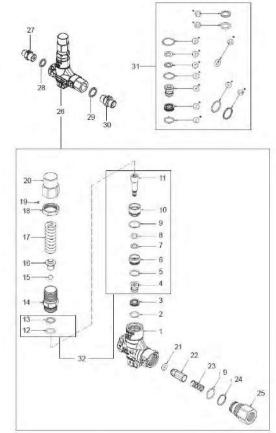
Every 800 working hours (approximately 20000 working cycles of the system), control the wear of the seals and internal parts and, if necessary, replace with original parts. lubricate seals and parts with water resistant grease.



Service / Repair MC 9P-10P Unloader Valve 500 Bar









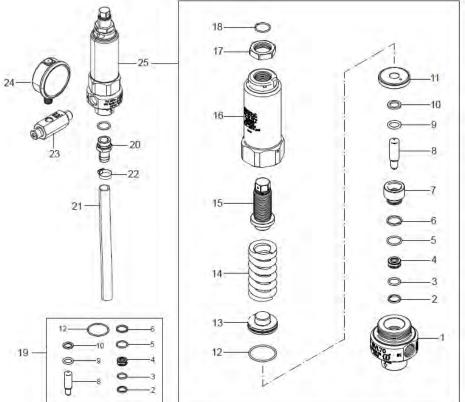
Every 500 working hours (approximately 12500 cycles of the system), check and lubricate the seals with water resistant grease.

Every 1000 working hours (approximately 25000 cycles of the system), check for wear of the seals and internal parts and, if necessary, replace with original parts. lubricate seals and parts with water resistant grease.

Service / Repair MC 9P-10P Safety Valve 500 Bar







Every 500 working hours (approximately 12500 cycles of the system), check and lubricate the seals with water resistant grease.

Every 1000 working hours (approximately 25000 cycles of the system), check for wear of the seals and internal parts and, if necessary, replace with original parts. lubricate seals and parts with water resistant grease.



Service / Repair Maintenance by operator



Regular Service. Period as indicated	Each use	1st 50 hrs	Every 500 hrs	When needed
Check pump oil level	•			
Change pump oil Recommended oil: See "Specifications" Usage: See "Specifications"		•	•	
Check water inlet filter. Clean or replace cartridge if needed	•			•
MC 10P 800/1100 ONLY: Check booster pump filter.	•			•
Check for air bubbles inside hose and pump.	•			•
MC 10P 800/1100 ONLY: Check booster pump pressure gauge; (Range 2-7bar)	•			•
MC 10P 800/1100 ONLY: Remove dump gun cartridge assembly after each use, clean, lubricate and reassemble or replace cartridge if needed. (See Table 8 for detailed instruction)	•			•
MC 10P 800/1100 ONLY: Remove dump gun trigger after each use. Lubricate and reassemble.	•			•
Clean motor fan (to ensure sufficient airflow). Do NOT operate the machine with damaged fan cover or fan			•	•
MC 10P 800/1100 ONLY: Clean booster pump motor fan (to ensure sufficient airflow). Do NOT operate the machine with damaged fan cover or fan			•	•

Service / Repair Maintenance by service technician



Ordinary Maintenance

The following maintenance must be carried out for each 500 (*400) hours of VHPW operation. This maintenance must be performed by a trained service technician only.

	MC 9P 350	MC 9P 500	MC 10P 500	MC 10P 800	MC 10P 1100
Unloader: Check and lubricate seals with waterproof grease.	•	*•	*•	N/A	N/A
Safety valve: Check and lubricate seals with waterproof grease.	*•	•	•	N/A	N/A
Trigger gun (Dry shut off type): Check and lubricate seals with waterproof	•	•	•	N/A	N/A

Extraordinary Maintenance

The following maintenance must be carried out for each 1000 (*800) hours of VHPW operation. This maintenance must be performed by a trained service technician only.

	MC 9P 350	MC 9P 500	MC 10P 500	MC 10P 800	MC 10P 1100
Unloader: Check wear of internal components and replace if dam-aged. Lubricate seals with waterproof grease.	•	*•	*•	N/A	N/A
Safety valve: Check wear of internal components and replace if dam-aged. Lubricate seals with waterproof grease.	*•	•	•	N/A	N/A
Trigger gun (Dry shut off type):: Check wear of internal components and replace if dam-aged. Lubricate seals with waterproof grease.	•	•	•	N/A	N/A
Main pump: Replace valves and piston seal rings.	•	•	•	•	•
Motor for pump. Grease the 2 grease points with Lithium grease ★ ★ every 5000 hours			**•	**•	**•



Motor for pump—grease points (1)

Service / Repair Maintenance by service technician



Oil type alternatives:

Use OIL type SAE 15W-40 or equivalent.

Here are some recommended types of oil:

BRAND TYPE

AGIP: F.1 Super motor oil 15W-40

BP: Vanellus C 15W-40

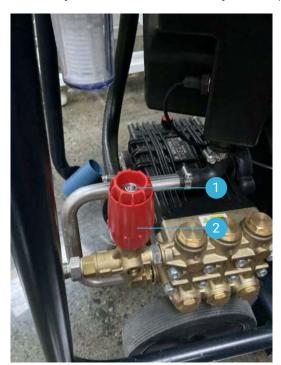
CASTROL: GTX 15W-40
ESSO: Uniflo 15W-40
MOBIL: Super M 15W-40

SHELL: Rimula R4 15W-40 / Helix Super 15W40 TOTAL: Rubia 15W-40 / Quartz 5000 15W-40

Always use the test manometer when adjusting unloaders and safety valves.

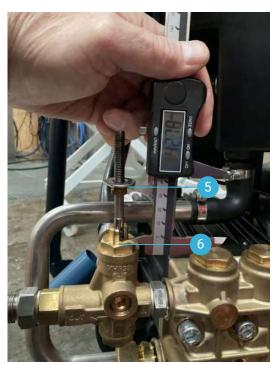
Adjustment method MC9-350:

Part 1 adjustment: Set maximum adjustment pressure for the unloader to 350-360bar





STEP 1 - Remove nut (1), handle (2), washer (3) and spring (4)



STEP 2 – Adjust the distance between lower side of washer (5) and pos. (6) to 42,8 mm

Loosen counter nut, adjust and tighten counter not again (7)



STEP 3 – Tighten counter nut (7)

Adjustment / Test Unloader adjustment 350 bar



Re-assemble the unloader. Install spring, washer, handle and the counter nut

Tighten then 8mm nut (1) so top of nut is level with end of threads. Install the black cap (3) on top of the handle

Turn the handle (2) clockwise all the way to its stop by hand. With correct nozzle installed in the lance check, using your test manometer, you have a max. pressure of 350-360 bar.

After adjustments always secure the settings by locking lacquer (4) or similar.





SAFETY VALVE ADJUSTMENT

STEP 1.

Tighten unloader and safety valve till reach 350bar without water drops coming from safety valve. The pressure is worked up to 350bar by alternately tightening unloader valve and safety valve. Check that the maximum pressure adjustment of unloader is in range 350-360bar(part 1 adjustment page 69).

STEP 2.

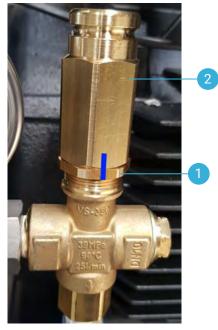
Loosen the counter nut (1). Loosen the spring tension by slowly turning adjustment fitting (2) counter clockwise until safety valve leaks a little bit—few drops of water dripping out of the safety valve bottom.

STEP 3.

Now again tighten the safety valve to the point where the dripping stops + additional turn 1 clockwise. Safety valve is now adjusted correctly. Tighten the counter nut (1) on the safety valve.

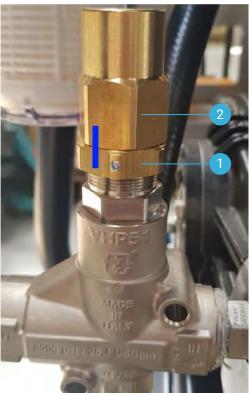
STEP 4.

Check that you have the correct working pressure according to the data sheet for your model in section "B"



Safety valve





Unloader valve



Safety valve

STEP 1.

Tighten unloader and safety valve till reach 500bar without water dripping from safety valve bottom. The pressure is worked up to 500bar by alternately tightening unloader valve and safety valve.

STFP 2

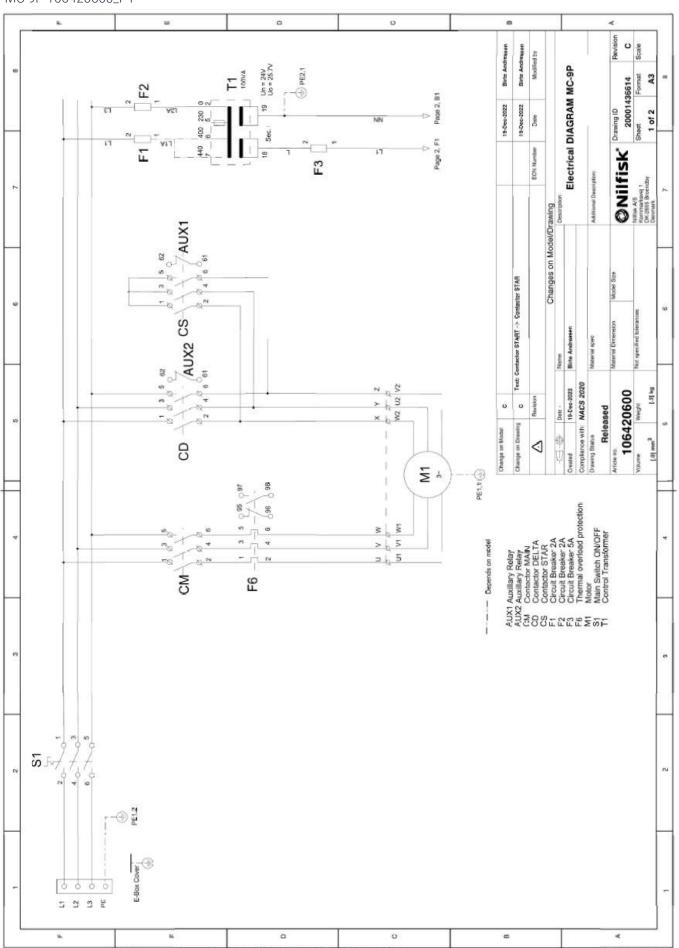
Loosen the safety valve till little leakage/dripping

STEP 3.

Now again tighten the safety valve till the point of just stop dripping + additional turn 1 round. Tighten the lock nut on the unloader and safety valve. Unloader and Safety valve is now finish adjusted.

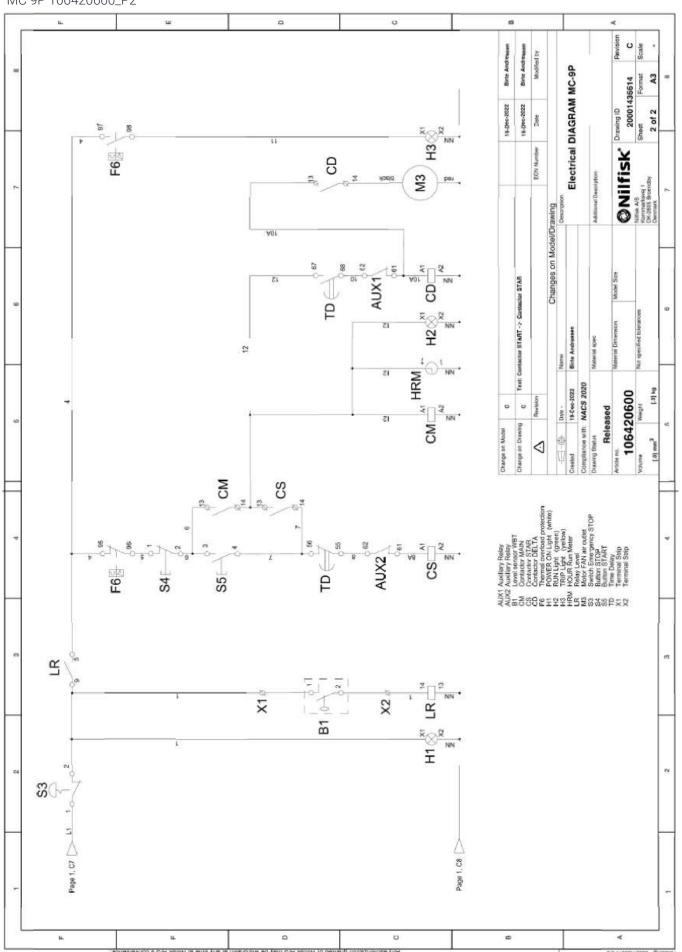


MC 9P 106420600_P1



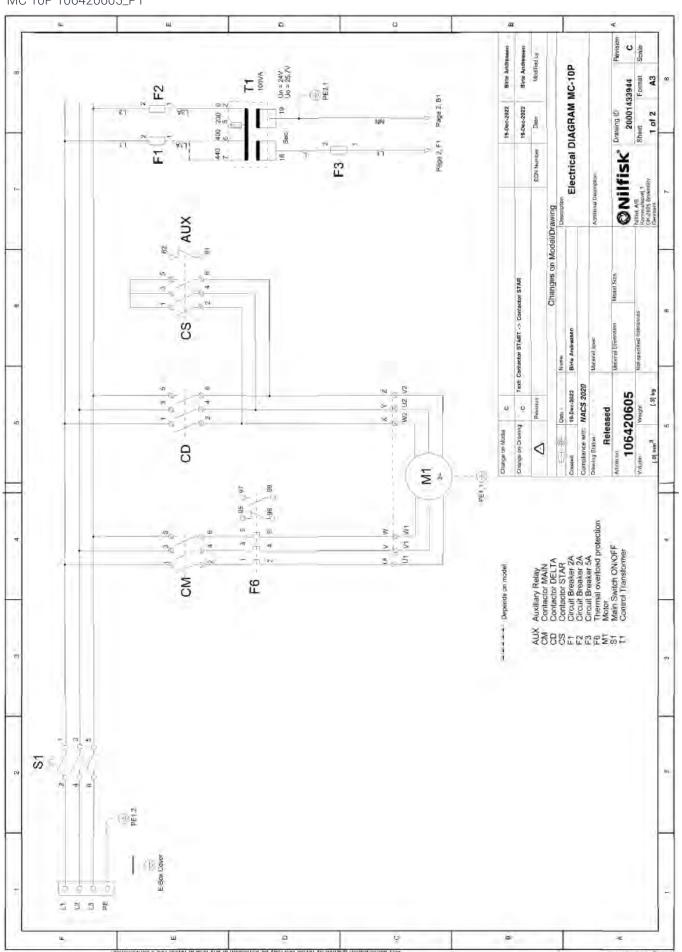


MC 9P 106420600_P2



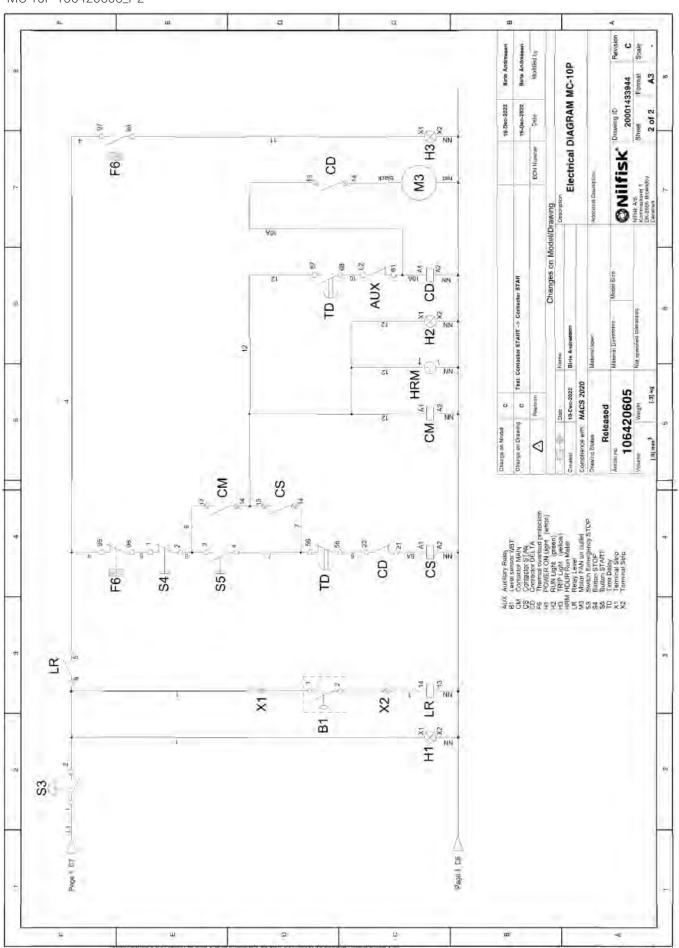


MC 10P 106420605_P1



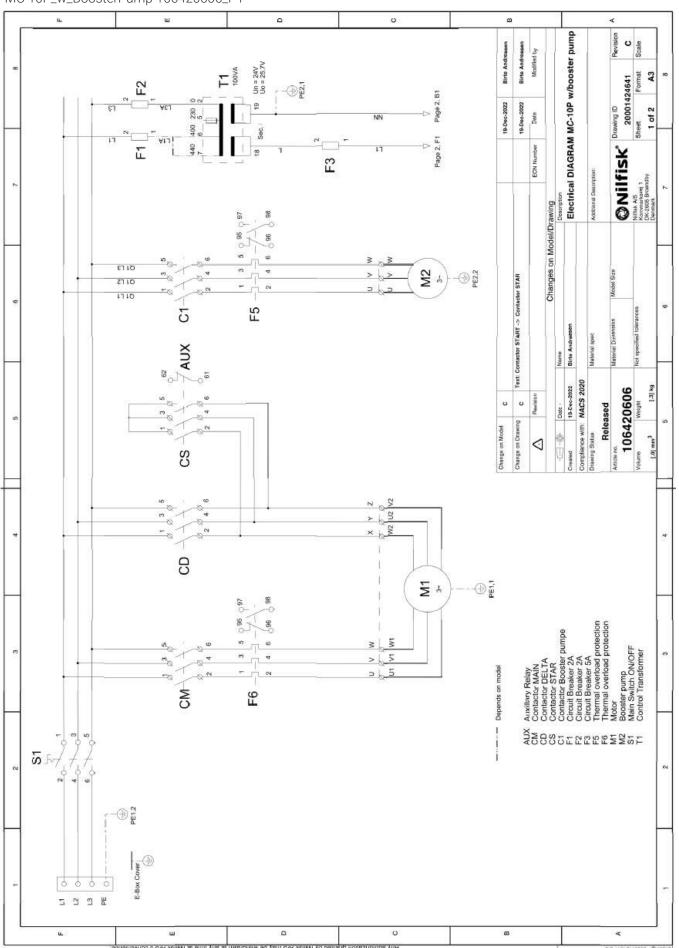


MC 10P 106420605_P2



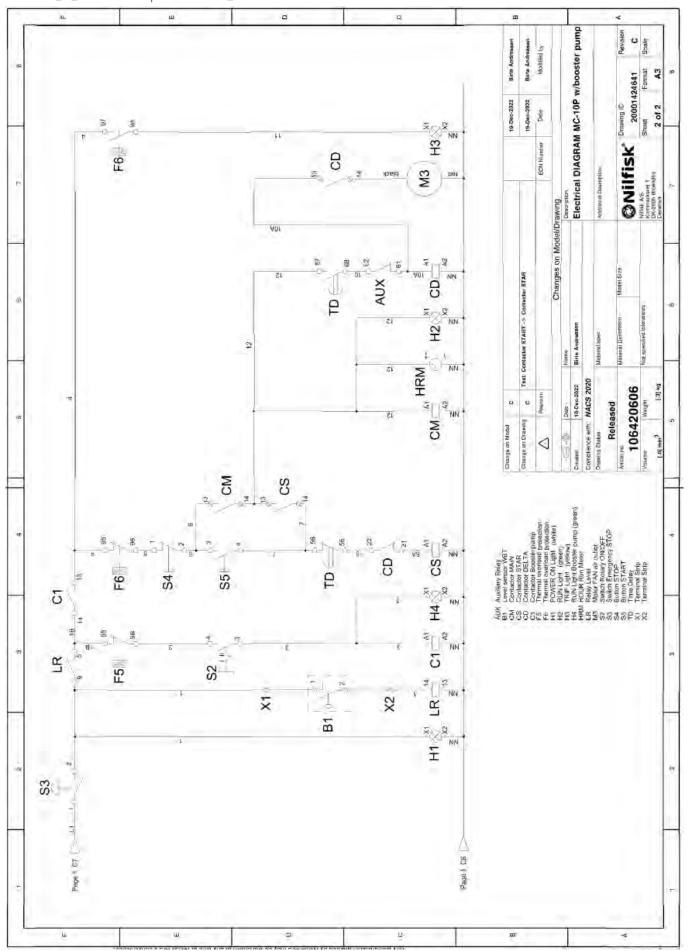


MC 10P_w_BoosterPump 106420606_P1





MC 10P_w_BoosterPump 106420606_P2



Special tools / Spare parts



Part Number	Description	Remarks
101221057	Service tool MC9 CK/NIL-K	Pump tools for MC 9P 350 bar
101221058	Service tool MC9-10 NIL-H/CH & NIL-A/Penta	Pump tools for MC 9P—10P 500 bar
101221059	Service tool MC10 NIL-Y/VY	Pump tools for MC 10P 800/1100 bar
101221060	Calibrated MC10 800-1100 pressure gauge	Test Manometer MC 10P 800/1100 bar
101221061	Calibrated MC9-10 350-500 pressure gauge	Test Manometer MC 9P-10P 350-500 bar
101221062	Loctite 243	For various pump connections
N/A	Tamper proof sealant	Loctite 7400 can be used