V0 SERIES

Product model: V0 18 V / V0 HD

V0 AND V0 HD USER'S GUIDE AND SAFETY MANUAL

JETTING
DARE TO DO IT DIFFERENTLY.

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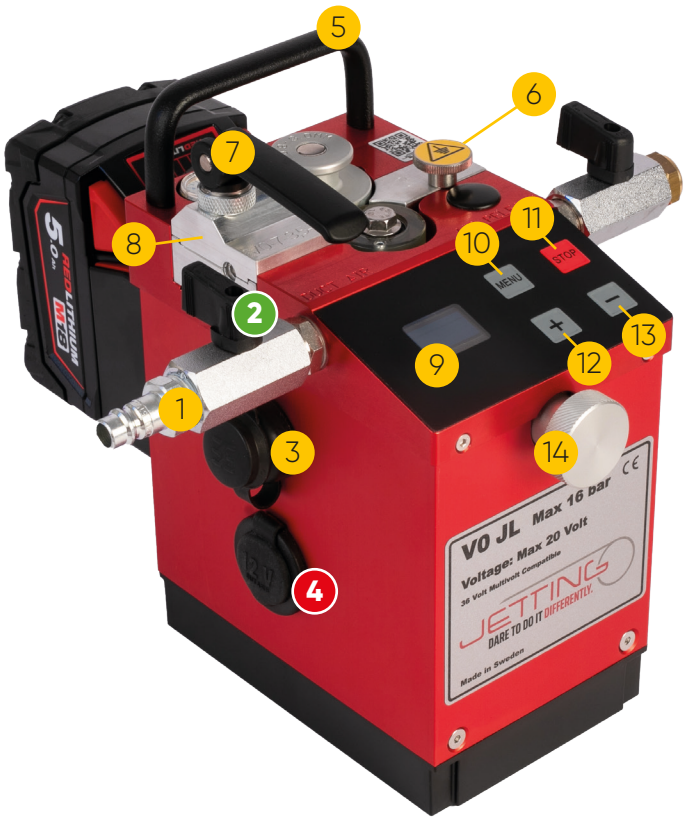

1. Quick Connector
2. **Air Valve**
3. Jetlogger socket
4. **12 Volt Socket**
5. Handle
6. Ground Cable
7. Clamp Bracket
8. Duct Clamps
9. Display
10. Menu Button
11. Stop Button
12. + Button
13. - Button
14. Drive Wheel Lever

15. Battery
16. Battery mount
17. **Power on/off**
18. Manometer
19. Drive Wheel
20. Cable Guides
21. Pressure Wheel
22. Duct Air Release Valve

Important Safety Notice

Read and understand all procedures and safety instructions before using the V0/V0 HD fiber blowing machine. Please note all safety information on this page and take note of specific safety requirements outlined in the procedures of this manual. Failure to follow these instructions may result in serious personal injury or death.

Warning: The noise level will exceed 70 dB.

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1. General information

The V0 and V0 HD is unique devices for installing fiber optic directly into a duct. The V0/V0 HD consist of an air block/duct clamp and a drive wheel that, when combined installs a fiber into an airtight duct.
The V0 has 0-60 N in pushing force and speed is 0-250 m/min.
The V0 HD has 0-200 N in pushing force and speed is 0-110 m/min.

The V0/V0 HD built in adjustable clamp force, greatly optimize the pulling stress on the fiber.
The electronic fiber protection system stops the motor within 250 ms. If the wheels are not running synchronized (like if the fiber hits an obstruction).

The V0/V0HD comes standard with a digital LCD Meter Display, 2 pcs 18 V, 5 Ah lithium batteries and charger in a hard side case.

These operating instructions contain a full description of the V0/V0 HD, which have been designed for the purpose of feeding fiber through a duct. The duct must have previously been installed underground or overhead to receive the fiber optic and must be of sufficient length on exit to be received by the machine. The duct must be of material with sufficient compression strength for it to be adequately sealed in the duct clamps of the machine. The duct must be airtight up to a pressure of 16 bar.
Duct sizes range from 3 mm-16 mm, while fiber optic fiber(s) range from 0,5 mm-6,5 mm.

The V0/V0 HD consists of an air block/duct clamp that is made in two halves that clamp together around the duct. The duct clamp holds a seal that the fiber optic fiber is fed through before entering the duct. The duct clamp and fiber seals can be interchanged to accommodate different duct and fiber sizes. The duct is mechanically clamped between the duct clamps at the exit of the duct clamp, preventing movement in any direction. Seals conform around the duct when clamped.

The fiber optic is fed through the duct by a combined pulling/pushing force. The pulling force is achieved when pressurized air is fed into the air block and forced into the duct, generating drag on the fiber from the airflow passing over it. The pushing force is created by engaging the drive wheel system. As the drive wheel feeds fiber into the duct, drag force is created by the airflow. The fiber optic floats in the duct, minimizing any resistance to being pushed in by the drive wheel.

The use of the V0/V0 HD for operations other than those described in this manual are considered dangerous and are discouraged. Use of this machine for work other then what is intended, relieves the manufacturer from any responsibility, civil or penal. The manufacturer's responsibility ceases, and the warranty is voided when one of the following occurs:

A. When V0/V0 HD is used for purposes other than what is detailed in this manual.
B. Tampering and/or modifications carried out without written approval of the manufacturer.
C. Not using original manufactured replacement parts.
D. Poor maintenance.
E. Not using supplied safety devices or equipment.
F. Connection of this unit to machines and/or parts not produced or authorized in writing by the manufacturer.
G. The V0/V0 HD should not be used to install any fiber other than optic fiber specified within the range outlined in this instruction manual.

Jetting AB is not responsible for injuries incurred as a result of improper use of the V0/V0 HD.

2. Technical information

2.1. Condition of use

1. Temperature from -25° C to +40° C (V0 JLP Version with tablet: Temperature from 0° C to +35° C)
2. Humidity from 20 % to 90 %
3. Weather conditions relevant to working conditions
4. Natural and/or artificial lighting of the work site, >200 lux

2.2. Air compressor requirements

1.	Pneumatic pressure	16 bar maximum
2.	Required air flow	0.14 - 11 m3/min
3.	Air hose fittings	Cejn type
4.	Air Conditions:	Dry, clean, and oil-free

2.3. Operational capacities V0

1.	Pushing force	0-60 N
2.	Pushing speed	0-250 m/min
3.	Fiber cable sizes	0,5 mm to 6,0 mm
4.	Duct sizes	3-16 mm

2.4. Operational capacities V0 HD

1.	Pushing force	0-200 N
2.	Pushing speed	0-110 m/min
3.	Fiber cable sizes	0,5 mm to 6,5 mm
4.	Duct sizes	3-16 mm

2.5. Electrical requirements

1.	Power requirements	18 V 5 Ah
2.	Power connection	Milwaukee standard

2.6. Physical specifications

1.	Height	220 mm
2.	Length	215 mm
3.	Width	120 mm
4.	Weight	2,8 kg (without battery)
5.	Transport box incl. machine, and accessories.	H 370 x W 600 X D 450, Weight approx 14 kg

2.7. Wheel drive specifications V0

1.	Maximum pushing force	60 N
2.	Adjustable clamp force	

2.8. Wheel drive specifications V0 HD

1.	Maximum pushing force	200 N
2.	Adjustable clamp force	

2.9. Ductcoupling requirements

1. Must withstand maximum air pressure of 16 bar
2. Must withstand axial loading and vibration
3. Must be a compression type coupler
4. Must fit snugly
5. Duct ends must be cut off squarely and deburred
6. Duct must be fully seated into the coupler

3. Safety Regulations

Read and understand all procedures and safety instructions before using the V0/V0 HD. Please note all safety information on this page and take note of specific safety requirements explained by procedures outlined in this manual. Failure to follow these instructions may result in serious personal injury, property damage, or death. The equipment must only be handled by trained and authorized personnel who have read and understood all documentation. **In the event of mishaps or breakdown, see section 3.1.**

The machine is delivered in a custom hard case. When transported, the machine shall be placed in the hard case. The hard case must be locked, and when transported by car, the locked case should be strapped in a safe way, preventing it from overturning if the car brakes hard.

3.1. Machine Safety Shutdown

1. Push the Power Button.
2. Close the air valve.
3. Turn off the compressor.
4. Open the duct air release valve.
5. Disassemble the unpressurized air hose from the Machine.

Push the Power Button again to deactivate the emergency stop.

3.2. Workplace Safety

1. Wear personal protective equipment: ear protection, hard hat, safety glasses, steel reinforced safety shoes, and light leather work gloves (OSHA-approved or Personal Protective Equipment Directive 89/686/EEC-compliant).
2. The operator is responsible that no children or unauthorized persons are close to the machine while in operation.
3. Do not operate the machine without mounted duct clamp and cable guide.
4. It's strictly forbidden to wear loose fitted clothing and jewelry when operating the machine.
5. Check machine before starting for worn or damaged parts, loose nuts and bolts etc.
6. If machine is left unattended, ensure that unauthorized use is prevented.
7. Keep long hair securely tied back.
8. The safe use of this equipment requires operators to stand on stable ground.
9. Be careful when handling cables and live wires
10. Be careful when handling pressurized lines and hoses.
11. Stay clear of cables or lines under tension.
12. Use the machine only for its intended purpose.
13. Do not place cable drums too close to the unit. Position the drum 2 meters from machine.
14. Keep hands away from drive wheels and moving parts during operation.
15. Beware of hot and cold surfaces, machine uses compressed air.
16. The machine is equipped with a handle; use this when lifting or handling the machine. The machine weighs only than 2,8 kg (6,1 lb). but when lifting, be careful and avoid personal injury and machine damage.
17. Beware of exposed electrical contacts. Do not touch, or allow metal objects to come into contact.
18. Machine may cause additional fire hazard if involved in an existing fire due to compressed air.
19. No personnel are to be in manholes or ducts when the Fiber Blowing Machine is being operated
20. Ensure no personnel are in the manhole at the far end of the cable run. Severe personal injury may result.
21. The machine must be operated on firm ground.
22. Only use the machine for its intended purpose, do not use the belt drive without the air chamber to push or to retrieve cable, blow air in the far end to help cable recovery.

23. Do not tamper with pressure relief valves or pressure reducing valves.
24. The compressed air supply must not be allowed to enter the air chamber or duct before the belts have been closed on to the cable. Do not turn the air on until a reasonable length of cable 100 m (300 ft) has been installed into the duct.
    FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY, AS THE CABLE COULD BE EJECTED FROM THE FIBER BLOWING MACHINE WITH HIGH FORCE AND VELOCITY.
25. Ensure the cable drum rotates freely on its stand; the cable should leave from the top of the drum.
26. The cable should enter the machine in a clean and dry condition. In damp, dusty atmospheres, the cable should be cleaned continuously as it enters the machine.
27. Do not open the air chamber until all the air has been exhausted and the air pressure gauge reads zero.

3.3. Working with air

The V0 series, using pressurized air to install cables at high speeds.
Please observe the following precautions when using the machine:

1. Compressed air generates flying debris. Serious personal injuries can occur.
   Always wear personal protective equipment.
2. Ensure no personnel are in the destination access vault during the blowing operation.
3. Never open the air chamber when pressurised. ⚠ **Do not open until the air pressure gauge read zero.**
4. Only AUTHORIZED, fully trained personnel should operate the air compressor.

3.4. Electrical devices

The motor, controller, and digital display are electrical devices. Electrical shock hazards exist that could result in severe personal injury or death. Observe the following precautions to avoid electrical hazards:

1. Do not operate in or near water. This includes setting the unit on a wet surface or exposing to rain.
2. Do not operate when there is lightening or extreme weather. An earth stake driven into the group as added protection is recommended if there is any chance of extreme weather developing.
3. Do not remove the digital display cover. There are no user-serviceable parts inside. Leave servicing to qualified service personnel.
4. The drive should be switched off before connecting or disconnecting any cords.
5. Important safety Information about batteries and chargers:
   - Never submerge the battery in water.
   - Never leave the battery in the machine when cleaning.
   - If you suspect your lithium battery has water inside do not use or attempt to recharge.
   - Never use the charger or battery if the leads, contacts or casings are damaged.
   - Dropping the battery may damage the cells or circuit components inside.
   - A LITHIUM BATTERY THAT HAS BEEN SUBMERGED IN WATER OR SUSTAINED DAMAGE IS A FIRE HAZARD. DO NOT USE THE BATTERY. Place outdoors in a noncombustible container well away from flammable materials. DO NOT RECHARGE THE BATTERY.
   - Avoid charging your battery in temperatures below 5° C or above 40° C.
   - Do not exposing the battery to temperatures below -28° C or above 40° C.
   - Do not exposing the tablet in JLP Version to temperatures below 0° C or above 35° C.
   - Do not wrap or cover as the charger generates heat during use.
   - Never expose the charger to rain, moisture or damp. If you suspect any of thes have occurred then do not use the charger.
   - Only charge your battery using the compatible Jetting charger provided with your battery. Never discharge your battery other than in normal use on the V0/V0 HD.
   - At the end of the battery's life, dispose at your local recycling centre.

6. Charging your lithium batteries. Place your battery and charger on a hard level surface and connect the battery to the charger first before plugging in the mains power. Never leave the charger connected to the battery with the mains supply switched off.

   We recommend you check/recharge your battery within 24 hours of use. It may take up to 7 hours for a Lithium battery depending on the capacity of the battery and depth of discharge when charging. Never leave your battery in a discharged condition for prolonged periods, this will reduce the life of the battery and your charger may be unable to recharge it. If the battery is not to be used for a period our advice is to store in a cool, dry place.
   Please ensure the battery is fully charged before storing and charge every month thereafter.

3.5. Working at night requirements

1. Operator must provide portable lighting that achieves a light intensity of at least 200 Lux (Lumens/m^2).

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4. Unpacking the Case

4.1. Blower components

Each V0/V0 HD STD Kit contains the following items:

- V0/V0 HD main unit
- 3 pcs driving wheels
- 2 pcs batteries 18 V 5 Ah Lithium batteries
- 220-240 V charger for batteries
- Duct clamps (varying related to order)
- Cable guides (varying related to order)
- Fiber cable seal kit (varying related to order)
- O-ring
- O-ring cord
- Micro lube
- Ground cable
- Assortment box

5. Set Up the Machine

This manual contains setup and operating instructions for the V0/V0 HD.

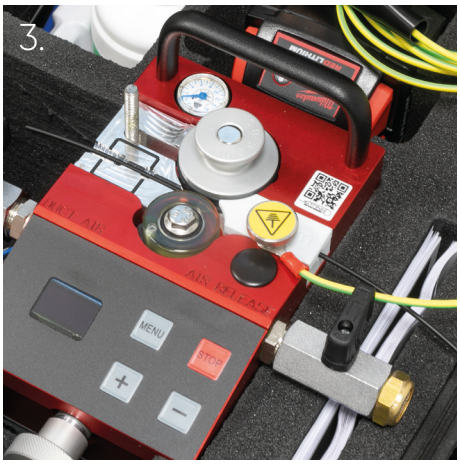
Do not connect power or air supply until the installation is complete. The machine setup and machine operation should be done with the machine in it's hard case.

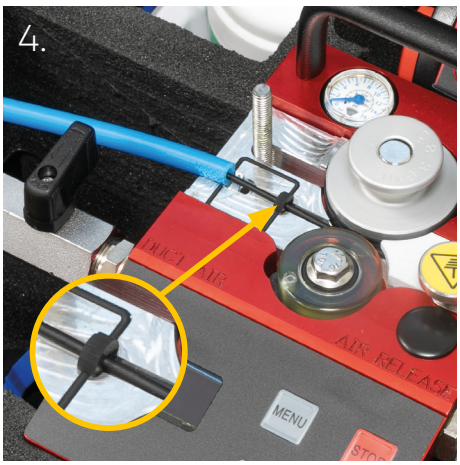
5.1. Determine fiber cable size

1. Determine fiber cable size to be installed.

5.2. Select and install duct clamp, cable guide, cable seal and drive wheel

1. Choose duct clamp, cable guide, cable seal and drive wheel that fit the current duct and fiber cable.
2. Place the lower duct clamp in the machine, edge to edge with the machine's outer edge.
3. Place the cable guides in the machine and thread the fiber cable through the cable guide.
4. Mount your chosen cable seal on the fiber cable and place the duct in the duct clamp.
5. Place the upper duct clamp over the lower one and tighten the clamp bracket.
   IMPORTANT! The expansion unit is the mechanical function that clamps the duct clamp so that the duct is tight and that the seal between the duct clamp halves works. A certain amount of leakage can be accepted.
   The lower threaded part (ring)* of the expander unit can be adjusted so that the expander function clamps in an optimal way. This means that the position in which the expander unit is turned downwards to squeeze can be adjusted so that it ends up in an optimal position without interfering with handling against the duct clamp, pressure gauge, etc.
   ⚠ **In case of incorrect handling, the ring of the expander unit will crack and come out of threads.**
6. Mount the "external cable guide" in it's bracket on the hard case. *Accessories





5.3. Ground the Machine

1. Use the grounding cable to ground the machine. For example, attach the ground cable to a metal stake anchored in the ground.

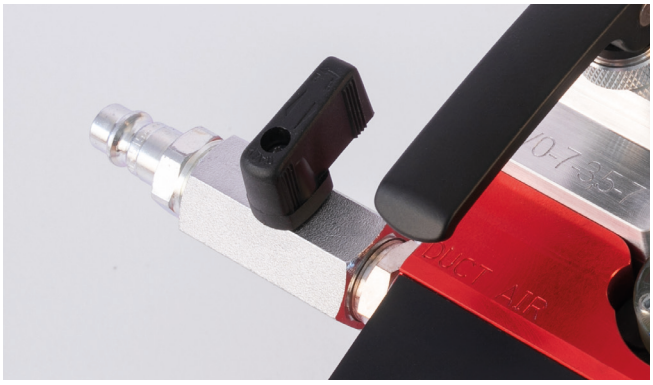
5.4. Connect battery to blower

1. The power button is on top of the battery connector.

Do not connect the air supply until the installation is complete. Always use clean, oil-free, and dry air. Route all hoses in a safety way to prevent tripping hazards.
To avoid creating tripping hazards, Place the air hose away from the work area and secure it to a stable object.

5.5. Connect air compressor

1. Ensure the air control valve is closed before connecting the air hose.
2. Connect the compressor hose to the blower unit. The unit uses a standard quick connect air compressor coupling.



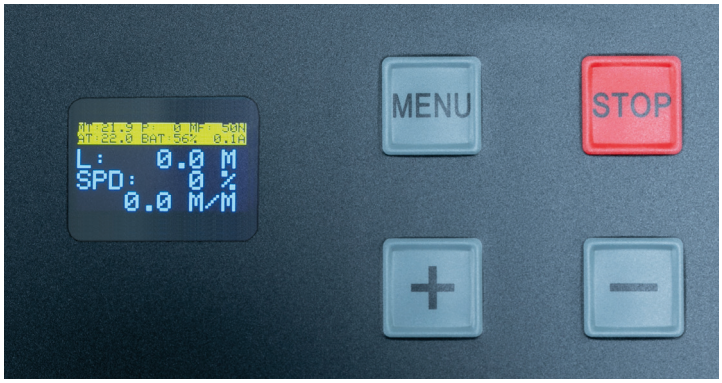
5.6. Placement of Cable Drum

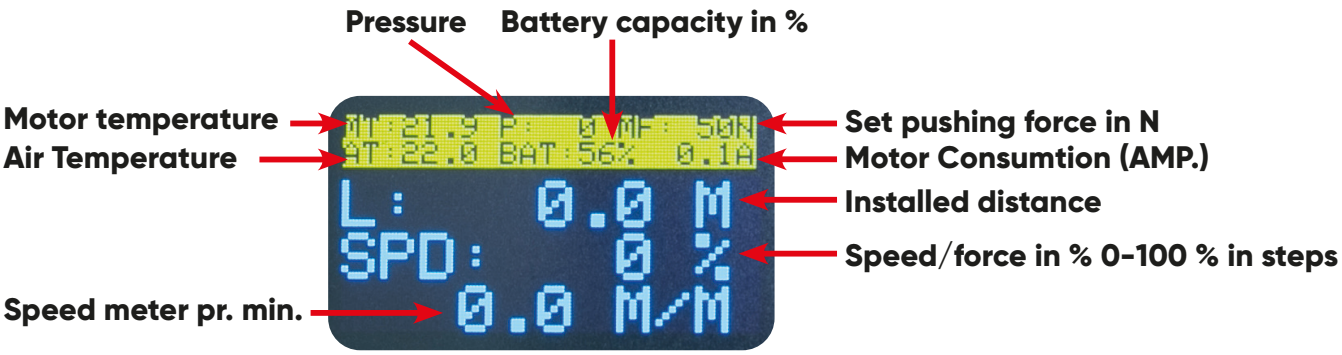
The cable drum should be positioned in line and at least 2 meters away from V0/V0 HD. The fiber cable should not enter the V0/V0 HD at an angle greater than 10 degrees from the intended direction of travel.

5.7. Display Functions

Switching the counter / Meter or Feet

1. Machine should be switched off / no power.
2. Press down the 2 buttons "STOP" and "-" (Minus)
3. Switch on the machine and keep pressing down the 2 buttons for 1 second. Release the buttons and the value should now be switched.
4. To switch back – repeat above action





Visit www.jetting.se for instructional videos.

6. Cable Crash test

Fiber Cable Crash Testing is a very quick and easy step to be completed before attempting the installation of fiber cable with the V0/V0 HD. This test is necessary to set the push force control of the motor below the point that the V0/V0 HD may cause fiber cable damage as a result of over pushing or encountering an obstruction in the sub-duct system.

Every fiber cable has different pushing values and these values vary depending on duct I.D.

Always wear protective equipment: hard hat, safety glasses, safety shoes and work glove.

IMPORTANT
Turn off the fiber security system because then you can register when the pushing force is too high = damaged cable.

Disable the cable protection
To deactivate the cable protection system, hold the 'STOP' button and the minus button for 3 seconds. Depending on the cable size, apply the appropriate force, but roughly calculate with 10 N per mm = for a 5mm cable, use 50N.
Then run the cable to a stop; if the machine tears the cable or the cable is damaged, then reduce the force (N) or increase it if the cable is okay. After running, save the log and review the values you have obtained. Then adjust your settings for optimal results. Do not forget to re-enable the cable protection.

Crash Test: For all types of fibers > 0,5 mm diameter
The pushing force is adjusted by pressing the Menu button and set with + and – button. To return to main screen/start menu, push the meny button 2 times, or wait 5 s.

Please observe:
For model V0, the preset pushing force is 6 N, and can be set between 6-60 N
For model V0 HD, the preset pushing force is 6 N, and can be set between 6-200 N

The last inserted pushing force will stay in the memory even if the device will be switched off. This will also be the case if the V0 HD battery needs to be replaced during operation.

1. Set wheel clamp force to the lowest possible setting that will allow for a desirable installation speed.
2. Insert the fiber cable and seal inside the duct clamp as it would be for the actual installation.
3. Install a 1 to 2 m test length of duct into the V0/V0 HD clamp and insert clamp into the air block.
4. Block the end of the test length of duct.
5. Tighten the wheel pressure on to the fiber cable with the wheel drive engaged in the forward direction until the fiber cable starts to install.
6. Ram the fiber cable into the blocked end of the duct.
7. Wheel should stop in the fiber cable before the fiber cable folds over.
8. Reduce the pushing force on the fiber cable until the wheel stops.
9. Repeat step 6-8 until the fiber cable folds. This is your push force slip limit.
10. Loosen up the wheel on the fiber cable a quarter turn and perform test once more to confirm no fold over has occurred.
    KEEP THIS SETTING APPLIED TO THE FIBER FOR ACTUAL INSTALLATION!
11. Swap out test length of duct with actual installation duct and proceed to operating the V0/V0 HD.

7. Machine operations

1. Verify adjustable pushing force
Set the pushing force for the specific cable, recommended by the cable manufacturer. If crash test has been performed, verify adjustable pushing force is set to the established crash test value and speed is set at maximum.

2. Engage wheel drive
The wheel drive can be operated in forward. For installation, engage the wheel drive in forward by pressing + button. Install the fiber cable into the duct using push only until the installation has slowed.

3. Engage air
Slowly open the air control valve to allow air flow to the air block. Do not apply maximum air pressure and flow at initial air engagement. Do not open the air supply before adequate fiber cable has been pushed in (>100M).

Always wear protective equipment: hard hat, safety glasses, safety shoes and work glove.

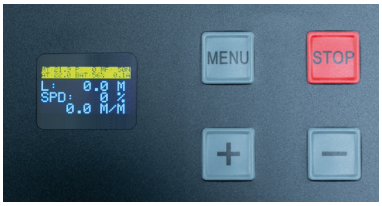
4. Adjust speed
Use the + and – buttons to adjust the drive speed. Activate the machine operation by pushing +. The machine starts in a smooth way, ramping up the speed and pushing force gently, to the set value. Pushing the – button will decrease speed and force. Match the amount of compressed air being used, in gently steps, so that forces are working together, not against each other.

5. Wheel drive engages forward
The wheel drive engages forward by the + button. By the – button the drive wheel will reverse.
Please note that the fiber protection system is disabled in reverse drive.
Please observe: To reach the programmed pushing force, you must exceed at least 40% in speed. Reaction time of 250 ms is achieved when operating/driving at a speed of 36 meters per minute (40% speed). For example, if you go 90 meters per minute, it is 100 ms.

6. Disabling fiber protection
To disable the fiber protection system, press and hold "STOP" and "-" button for 3 seconds. This will be effective until next reset or power cycle of the machine.

7. Activate fiber protection
To reactivate the fiber protection system, press and hold "STOP" and "+" button for 3 seconds or switch on/off the main power supply.
Please observe: With the fiber protection the max. pushing is 60 N (V0) and 200N (V0 HD).

8. Reset of inserted values & total milage/distance
To reset all values, push the stop button for 6 s. To monitor the total milage/distance since the machine was operated the first time, push 2 times on the menu button. To go back to the start menu, wait for 5 s or push the menu button.



8. Maintenance

Disconnect the air supply and vent any air pressure before servicing any component on the V0/V0 HD. Avoid handling leaking connections, valve seals, or inadequately sealed duct clamps. DANGER! Risk of compressed air penetrating the skin causing air embolism. In case of suspicion, immediately contact emergency medical care.

Procedure	Daily	Weekly	Monthly	60 days	90 days
Clean all units and components thoroughly with a dry cloth.	✓				
If used in moisture weather. Remove the machine from the hard case and leave it to dry completely	✓				
Check/charge batteries in original charger	✓				
Inspect hoses, cables, connections, fastening elements, couplings and screws for any signs of damage or looseness.	✓				
Check wheels for wear. Replace if excess wear has occurred. Excessive wear has occurred when the wheels are no longer able to effectively grip the fiber optic	✓				
Duct pack seal replacement					✓
Change rubber rings on drive wheel	Every 50 km unless excessive wear is occurring				
Seals replacement	Every 10 km unless excessive wear is occurring				
Wheel cleaning and tightening	Inspect wheel and tighten before and after each use. Clean after each use, or when necessary				

9. Repair & Service

Repair & Service should be performed by Authorized Jetting Service Center or Jetting AB.
See Authorized Jetting Service Center at www.jetting.se.

10. Troubleshooting

Fiber becomes jammed in the duct	1. Inform the people at the other end of the duct that a problem has been experienced and the operator is going to shut down the system. 2. Shut off the pneumatic air supply with the air control valve, allowing the air pressure to be depressurized from the duct and the duct clamp air block. 3. Using the counter or the measurement on the fiber, determine where the blockage might be located. 4. Notify supervisor about problem and determine a solution accordingly.
Drive wheel does not pull the fiber	1. Assist the cable drum manually.
Difficult to restart the fiber blowing session after a stop.	1. Put more or less air to the system. 2. The session can be restarted after the air pressure has increased and stabilized.
Machine does not start	1. Battery is low, check battery level in the display. 2. Overtemp may have occurred. The display shows "OVERTEMP" and the motors needs to cool down below 75 degrees Celsius. Do not use compressed air or water to cool down the machine.

11. Documentation and Recycling

Order Documentation
For documentation, user manuals, and technical information, please visit www.jetting.se. Alternatively, contact your local distributor for assistance.

Feedback on Documentation
Comments regarding our product documentation can be sent to info@jetting.se.
We appreciate all feedback.

Disposal
Adhere to the regulations of your country regarding the recycling and disposal of the product.

12. EC Declaration of Conformity

EC DECLARATION OF CONFORMITY FOR MACHINERY

Original

Directive 2006/42/EC, Annex II 1A

Manufacturer (and where appropriate his authorised representative):

Company: Jetting AB

Address: Murgatan 1
522 35 TIDAHOLM
SWEDEN

Hereby declares that:

Type of machinery: Fibre blowing machine

No. of machinery: V0/V0 HD

Complies with the requirements of Machinery Directive 2006/42/EC.

Complies also with applicable requirements of the following EC directives:

2014/30/EU, EMC

The following harmonized standards have been applied:

EN ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2018 Safety of machinery - Electrical equipment of machines - Part 1: General requirements

The following other standards and specifications have been applied:

Authorized to compile the technical file:

Name: Håkan Johansson

Address: Murgatan 1, 522 35 TIDAHOLM

Signature:

Place and date: Tidaholm 2021-04-14

Signature: Håkan Johansson

Name: Håkan Johansson

Position: VD

13. Notes

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V0/V0 HD 18 V USER'S GUIDE AND SAFETY MANUAL

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