

LIFA Hydmaster 40

OPERATING AND MAINTENANCE MANUAL



LIFA Hydmaster 40

Electrically operated brushing machine for ventilation ducts, powered by a hydraulic motor

These instructions must always be available to personnel using the equipment. Please read instructions before operating the machine. Observing the instructions carefully will guarantee many years of trouble-free use.

IMPORTANT!

Read this manual before you operate the machine

Contents

| | |
|--|----|
| LIFA Hydmaster 40 brushing machine | 2 |
| Safety Precautions..... | 3 |
| General Directions | 4 |
| Construction and Control..... | 5 |
| Operating Principles | 6 |
| Service and Maintenance | 8 |
| Troubleshooting..... | 9 |
| Spare parts and accessories..... | 10 |
| Warranty | 12 |
| Recycling..... | 12 |
| Declaration of Conformity | 13 |
| LIFAair Product Family..... | 14 |

LIFA Hydmaster 40 brushing machine



Congratulations on your new LIFA Hydmaster 40 brushing machine!

LIFA Hydmaster 40 is an electrically operated hydraulic cleaning machine for demanding cleaning tasks in round and rectangular ventilation ducts. This brushing machine is designed for the brushing of medium and large ducts where exceptionally powerful force is required.

Hydmaster 40 can also be used in kitchen grease duct and industrial pipe line cleaning. The length of the cleaning shaft is 40 meters (131 ft.) or so it can be used in cleaning up to 75 m (246 ft.) of ventilation duct when accessed from the access door into both directions.

The hydraulic motor provides a notably more silent alternative to pneumatically operated machines that need compressors to work. The brush of Hydmaster 40 rotates in both directions. The rotation direction and speed is controlled with a foot pedal.

- For demanding cleaning of medium and large (Ø400 – 1200 mm (16-47")) ventilation ducts.
- Operation radius 75 meters (246 ft.)
- Rotating speed can be adjusted continuously up to 880 rpm
- Mechanically directed rotating direction to clockwise and counter clockwise.
- The brushed off debris is removed by sucking it to a negative air vacuum, such as a LIFA HepaClean 1100, 2500, 4000 or LIFA AirClean 3500 negative air machine unit (accessory).

A **centering device** for the brush is available as an **accessory** for the Hydmaster brushing machine. The centering device **helps to push the brush in the duct** and **centres the brush** in the duct so that no part of the duct will remain un-brushed. The use of the centering device is recommended especially in >400 mm (16") and rectangular ducts.

Safety Precautions

The following safety directions must be carefully observed to avoid injury to personnel or damage to the environment or to the LIFA Hydmaster 40 brushing machine itself. Following these instructions will ensure the safe and uninterrupted use of the machine.

- The equipment must not be positioned or use in places where there is a risk of explosion or hazardous substances.
- The equipment must not get wet and it must be protected from moisture, vibration and wind.
- Foreign objects must not be inserted or fitted into the equipment.
- The machine cannot be covered during the use
- The user must ensure that the appliance is adjusted for the task and that the statutory requirements are met.

1. Avoid contamination of the environment

The machine must be kept as clean as possible. The shaft must be cleaned before pushing it back to the machine. The brushes and the shell of the cleaning shaft must be cleaned after the work has been completed, before transporting the machine to another location.

2. General safety

The power must be switched off and the power cable unplugged when the machine is not being used. It is forbidden to make any modifications to the brushing machine or the accessories (for example brushes).

3. Operator safety

The person/persons performing the work must use personal protective equipment: respirator, helmet, earmuffs, goggles, overall, protection shoes and other necessary protective equipment that the task at hand requires.

LIFA Hydmaster 40 brushing machine has a strong rotating force. Clothes or hair can easily get caught in the brush and cause damage or accidents. **The brush must always be placed in the ventilation duct before switching on the machine.** The machine cannot be used when the brush is outside the ventilation duct. Because of the great rotating force, Hydmaster 40 is **recommended to be used by two persons**. One person directs the shaft into the duct while the other person feeds/draws the shaft and controls the rotating of the brush.

4. Workplace conditions

Make sure that the lighting, air conditioning, ladder and trestle are sufficient. If the brush generates static electricity or sparks in the duct do not use these types of brushes in the duct if there is any flammable liquids / gases, dust or other sensitive substances nearby. Use antistatic brushes and safety grounding and by following the special instructions in difficult conditions. Permitted operating temperature is 5 – 50 °C (41 – 122 °F).

5. The cleaning shaft

Check the condition of the cleaning shaft before every use. Be careful not to damage the shaft. If the shaft has been damaged take immediate contact to your local distributor. Minor scratches on the shaft surface can be fixed by coating it again with a heat shrinkable tube. During storage and transportation, the cleaned shaft must always be reeled into the drum.

6. Noise level

The sound level of LIFA Hydmaster is low (<70 dB) and it is not dependant of the operating environment.

7. Transportation and operating position

During the transportation, the machine must be tied firmly to prevent any damage to the machine or people. Before use make sure that all the components are in place and that the machine functions well. The machine must be transported, used and stored in an upright position. The machine must be positioned far enough from walls and other obstacles and placed firmly and straight. Ensure a free rotation of the brush.

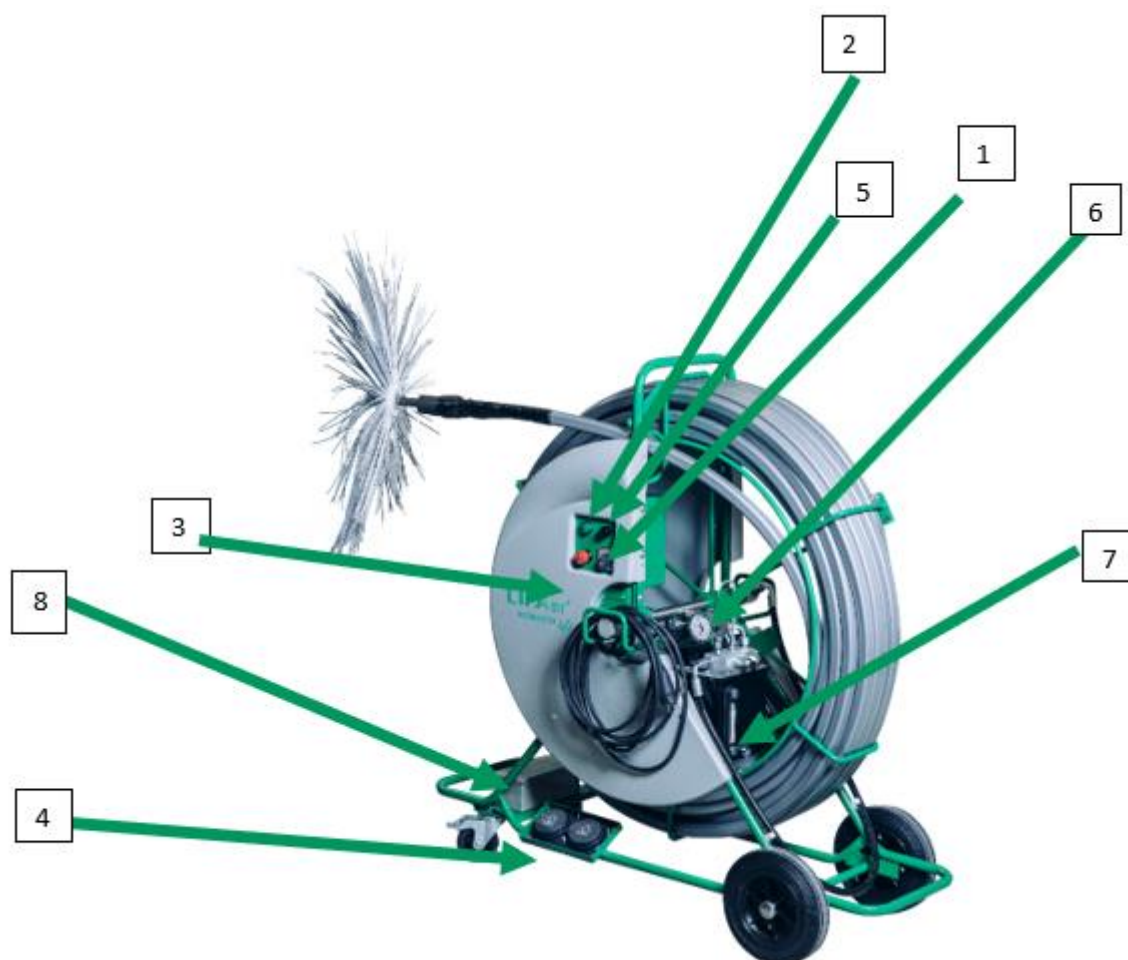
General Directions

1. LIFA Hydmaster 40 can only be used for the purposes that it is designed for and which are outlined in the instructions. It is forbidden to use the equipment for any other purposes without written permission from the manufacturer. If this equipment is used for a purpose other than in which it is designed for, the manufacturer does not take responsibility for any consequences.
2. Persons responsible for operating this equipment / supervising the use of this equipment must get acquainted with the structure, functions and the safe use of the equipment.
3. It is prohibited to remove or disable any technical protective / safety device while using the machine.
4. If the machine has to be installed in a way that protective / safety device is disabled or device functioning is limited, work supervisor / person in charge must immediately be notified of this.
5. Due to the nature of HVAC cleaning (done in intervals, team changing positions etc.), exposure to vibrations (hands only) is well below all defined levels.

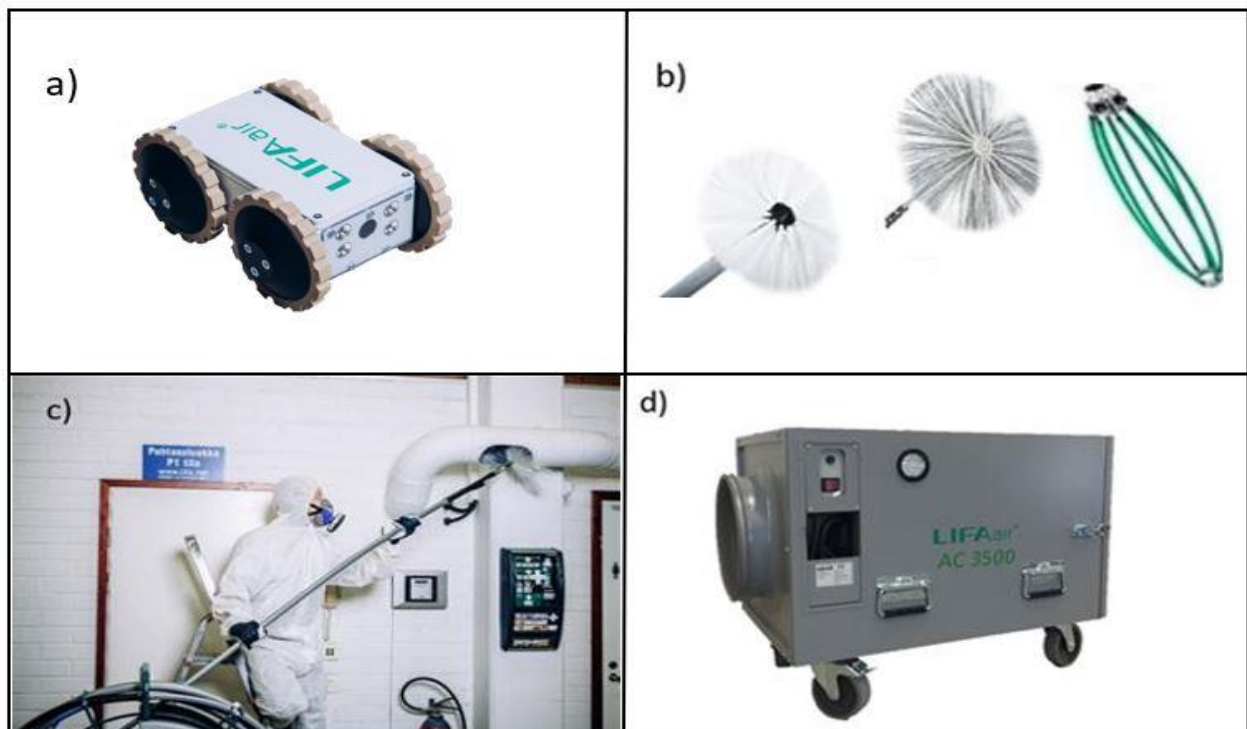
Construction and Control

LIFA Hydmaster 40:

1. Main switch
2. Power on indicator LED
3. Emergency stop switch
4. Pneumatic pedal - the change of the rotating and operating direction
5. Control of the rotating speed
6. Oil pressure meter
7. Oil level meter
8. Tool box



Operating Principles



Before beginning the work, check the ductwork with

- a) LIFA Duct Control (accessory) camera inspection equipment and choose the suitable
- b) brushes and other accessories based on the size and construction of the duct as well as the composition of the removable dirt.
- c) Place the machine in a firm position so that the shaft can be put directly inside the duct
- d) Ensure **enough low pressure in the channel network** by using LIFA HepaClean or AirClean negative pressure unit (NPU).

Before beginning the work, check the ductwork with LIFA Duct Control (accessory) camera inspection equipment. There may be air volume controllers, noise silencers, fire dampers etc. that can be damaged during the work.

- In large rectangular ducts, there might be supporter poles inside the duct. Use extra care, when dealing with ducts equipped with supporters. When cleaning **large rectangular or round ducts** the use of LIFA **centering device** (accessory) is **highly recommended**.
- Place the machine in a firm position.
- Choose a **right sized brush** (depending on the size of the duct). Make sure that the brush isn't too small or big for the duct that is going to be cleaned. Nylon grease /Tynex brushes are meant only for grease exhaust duct cleaning.
- Make sure that the working area is cleared and there are no extra personnel.
- Ensure that all the employees performing the work have adequate **personal protective equipment**.

Make sure that there is **enough low pressure in the channel network** and that LIFA HepaClean or AirClean negative pressure unit (NPU) is installed correctly. The brushed off debris is removed by sucking it to the NPU.

- Place the brush inside the ventilation duct that is going to be cleaned.
- Connect the machine into a current from the protective switch for motor.
- When the operator who is feeding the shaft into the duct gives a permission to start the machine, the machine can be started.

Avoid to feed to the duct sharp angles and screws etc. This can damage the shaft.

Adjust the rotating speed of the brush. Note that when cleaning “soft” ducts the rotating speed should be much lower than in normal ducts. Too high a rotation speed may damage the ventilation duct channel.

The brush can be rotated to clockwise and counter clockwise. Use both rotating directions to achieve the best cleaning result. In rectangular ducts, it may be required to clean one side first (with rotating the brush in one direction only) and after that another side.

Feed the shaft evenly into the duct without excessive force. The use of excessive force may harm the duct, machine or brush and influence on the cleaning result. Always insert the shaft gently and smoothly into the ductwork, to prevent the brush from ‘jumping’ and leaving unclean spots into the duct.

It is also advised to use the-one-and-only specially designed centering device and/or shaft holder by LIFA in big ducts and/or when full rotation speed is being used.

GREASE DUCTS: LIFA Hydmaster brushing machine may be used for grease duct cleanings. Please ask us more about our grease removal concept!

Service and Maintenance

When the machine is in daily professional use it should be delivered to its first regular maintenance to the manufacturer or to repair shop that has been authorized by the manufacturer after six months from the first commissioning date (approximately 100 hours). The warranty expires if the machine has not been delivered to its first maintenance on time.

Before any maintenance work the machine has to be plugged off from the mains!!

The following maintenance and upkeep work must be done in regular basis depending on the purpose of which the machine is being used. This enables a trouble-free use.

General Cleanliness:

Keep the machine as free from dirt and dust as possible. Dirt and grease may cause defects in the compressed air valves. The machine can be cleaned by wiping it with a rag.

Cleaning shaft:

The cleaning shaft **must be cleaned every time after use**. The dirt and grease that has collected to the plastic surface can be removed with a mild grease removal detergent that is meant for plastic surfaces. Some **lubricant** (synthetic Vaseline, lubricating oil etc.) must be put **between the turnbuckle and the outer bearing in the brush adapter regularly**.

NOTE!

Possible repairs must be carried out by the manufacturer or a servicer authorized by LIFAair. Third party repairs will void the warranty.

Troubleshooting

Possible problem situations and solutions are presented below. If you are not sure on how to handle problem situations do not hesitate to contact us. Our experts are pleased to advice and help you in a way we can get the desired outcome together.

1. Protective switch for motor does not stay on/does not go on (turn to construction and control)

- a) Make sure that the supply mains are attached to an electrical network with protective grounding (230V/50Hz) and that the supply mains are in order.
- b) Make sure that there is voltage in the electrical network and that a fuse has not burnt.

2. When loaded the machine does not stay on


- a) When the machine is being used continuously for long periods especially with large brushes the motor and the transmission may overheat. If that happens the automatics cuts off the operation. The machine is ready automatically when it is cooled.
- b) Make sure that there aren't other machines that have a big power consumption connected to the same electric circuit. The machine should have its own electric circuit so the machine can get the power it needs.

3. The cleaning brush does not rotate on steady rotating speed


- a) Make sure the level of the oil is sufficient. The minimum is in the +30 °C the maximum in the place of +80 °C.
- b) Make sure that the machine is placed firmly. If the machine has been used transported or stored in uneven place there may be some air in the hydraulic hoses. Because of this the brush motor may run unevenly for a while. Once the air has come out of the hose the motor will start to run normally.

Spare parts and accessories


SOFT BRUSHES WITH NYLON CENTER AND DISK

| | | |
|---------------|---|---|
| 6420281010507 | 200 / 400 mm (8/16 inch) |  |
| 6420281010514 | 300 / 500 mm (12/20 inch) | |
| 6420281012624 | 400 / 600 mm (16/24 inch) | |
| 6420281010736 | 500 / 700 mm (20/28 inch) | |
| 6420281013027 | 600 / 800 mm (24/31 inch) | |
| 6420281010743 | Soft brush with nylon center and disk 700 / 900 mm | |
| 6420281021848 | Soft brush with nylon center and disk 800 / 1000 mm | |
| 6420281012334 | Soft brush with nylon center and disk 1000 / 1200 mm | |
| 6420281021916 | Soft brush with nylon center and disk 1300 / 1500 mm | |


SOFT BRUSHES WITH NYLON CENTER

| | | |
|---------------|---|---|
| 6420281010545 | 200 mm (8 inch) |  |
| 6420281010569 | 300 mm (12 inch) | |
| 6420281010583 | 400 mm (16 inch) | |
| 6420281010590 | 500 mm (20 inch) | |
| 6420281010606 | 600 mm (24 inch) | |
| 6420281010613 | 700 mm (28 inch) | |
| 6420281010620 | 800 mm (32 inch) | |
| 6420281010637 | Soft brush with nylon center Ø 900 mm | |
| 6420281010644 | Soft brush with nylon center Ø 1000 mm | |

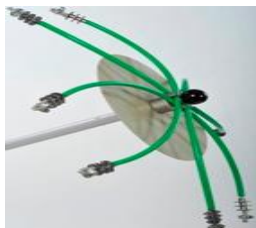
AGGRESSIVE NYLON BRUSHES (grease brush) WITH NYLON CENTER

| | | |
|---------------|------------------|---|
| 6420281010750 | 200 mm (8 inch) |  |
| 6420281010767 | 300 mm (12 inch) | |
| 6420281010774 | 400 mm (16 inch) | |
| 6420281010781 | 500 mm (20 inch) | |
| 6420281010798 | 600 mm (24 inch) | |





ABRASIVE BRUSHES WITH NYLON CENTER, TYNEX BRISTLE

| | | |
|---------------|---|---|
| 6420281023439 | 200 / 400 mm (8/16 inch) |  |
| 6420281021213 | 400 / 600 mm (16/24 inch) | |
| 6420281023484 | 600 / 800 mm (24/32 inch) | |
| 6420281023507 | Tynex brush with nylon center 800 / 1000 mm | |
| 6420281024290 | Tynex brush with nylon center 1000 / 1200 mm | |
| 6420281024306 | Tynex brush with nylon center 1300 / 1500 mm | |

GREASE AND HEAVY-DUTY BRUSH, CHOPPER (WITH SPECIAL ADAPTER)

| | | |
|---------------|---|---|
| 6420281020216 | Grease Duct chopper, Large 800 mm (32 inch) adjustable for ducts 500-1100 mm (20-43 inch) |  |
| 6420281020209 | Grease Duct chopper, Small 350 mm (14 inch) adjustable for ducts 250-550 mm (10-22 inch) | |

OTHER ACCESSORIES

| | | |
|---------------|--|---|
| 6420281021817 | Centering Device 40, mechanical for Hydmaster |  |
| 6420281013010 | Y-Gear -for rectangular ducts >200mm in height (incl. 2 pairs of wheels and extra lengthening arms) |  |
| 6420281011634 | LIFA 3-BRUSH GEAR SET; to rotate 3 brushes at same time in rectangular/OVAL ducts 100-250mm in height), set including 9 different types-sizes of brushes |  |
| 6420281010309 | Brush Adapter for LIFA brushes with nylon center |  |

Warranty

The warranty period is one (1) year starting from the date of purchase and is valid according to the regular terms of delivery, provided that these operational and maintenance instructions have been carefully followed. Using anything other than original LIFA accessories (brushes, filters etc.) in the equipment will void the warranty.

Repair is free of charge within the warranty period (proof of purchase / receipt must be presented) under the following conditions:

- The defect is caused due to defects in materials or defective components.
- Defects caused by normal wear and tear, misuse or insufficient maintenance are NOT covered by the warranty.
- The machine has been delivered to the first compulsory maintenance check within 6 months and/or 100 hours of use
- Any maintenance and repairs must be carried out by the manufacturer or by an authorized representative of the manufacturer. Manufacturer does not take responsibility for maintenance carried out by a third party.
- A written reclamation form has to be filled out and sent with descriptive photos to the manufacturer.

The appliance shall be delivered to the authorized Lifa Air representative from whom the buyer has bought the machine from OR when agreed mutually in writing beforehand to the factory postage paid to:

Oy Lifa Air Ltd
Vellamonkatu 30 B
FIN-00550 Helsinki, Finland
Tel. +358 9 3948 58
Email: sales@lifa.net

Oy Lifa Air Ltd reserves the right to introduce changes without a further notice.

Recycling

The machine can always be returned to the Lifa Air authorized representative from which the buyer has bought the machine from, or to the address above postage paid in case there is no recycling facility where the owner lives.

- Metal parts (frame, reel, motor) can be recycled as metal scrap.
- Electrical parts (frequency converter, main switch) should be returned to an authorized recycling depot
- Other parts can be recycled as mixed normal waste.

Declaration of Conformity

Manufacturer's name: Oy Lifa Air Ltd
Manufacturer's address: Vellamonkatu 30 B
FIN-00550 Helsinki, Finland
Manufacturer's telephone: +358 9 39 4858
Manufacturer's website: www.lifa.net, www.lifa-air-com
Model: LIFA Hydmaster 40

Oy Lifa Air Ltd, hereby states, with sole responsibility, that the machine models covered by this announcement comply with the requirements of the following EC directives and standards:

- EU Low Voltage Directive LVD 2014/35/EY
- EU Electromagnetic Compatibility Directive EMC 2014/30/EY
- EU Directive of the restriction of the use of certain hazardous substances in electrical and electronic equipment RoHS 2011/65/EC
- EN ISO 12100:2010 Safety of machinery
- EN 60204-1:2007 Safety of machinery. Electrical equipment of machines. General Requirements.

The product fulfills requirements for CE-marking.

Oy Lifa Air Ltd., 31.01.2018



Johan Brandt, CEO

Oy Lifa Air Ltd. is ISO 9001 and ISO 14001 Certified company.

LIFAair Product Family

| | Special Cleaner 20 | Special Cleaner 25 Multi | Hydmaster 40 | Combi Cleaner 15 | Combi Cleaner 40 | AirJet Combi 20 | Duct Cleaning Robot |
|--|--|---|--|--|---|--|--|
| Operating power | Electricity | Electricity | Hydraulics | Compressed Air | Compressed Air | Compressed Air | Compressed air (brush) + electricity (driving) |
| Operating voltage and frequency | 240 VAC (or 110-120 VAC), 1~, 50/60 Hz | 240 VAC (or 110-120 VAC), 1~, 50/60 Hz | 240 VAC (or 110-120 VAC), 1~, 50/60 Hz | -- | -- | -- | 12 VDC |
| Motor | 0,37 kW (0.5 hp) | 0,75 kW (1.0 hp) | 1,1 kW (1.5 hp) | 0,11 kW (0.15 hp) | 0,4 kW (0.6 hp) | -- | 0,11 kW (0,15 hp) |
| Fuse | 10 A | 10 A | 16 A | -- | -- | -- | 5 A |
| Max torque | 5 Nm (3.7 ft-lb) | 5 Nm (3.7 ft-lb) | 10 Nm (7.4 ft-lb) | 3 Nm (2.2 ft-lb) | 6,5 Nm (4.8 ft-lb) | -- | 3 Nm (2.2 ft-lb) |
| Brush connection | M12 | M12 | M12 | M12 | M12 | - | M12 |
| Duct size recommendation | 100 – 400 mm (3.9 – 15,7") | 250 – 800 mm (9.8 – 31,5") | 400 – 1200 mm (15,7 - 47.2") | 160 – 600 mm (6.3 - 23.6") | 400– 1200 mm (15,7 - 47.2") | -- | 200 – 700 mm (7,9 - 23.6") |
| Brush rotation speed | Continuous adjustment, 225-580 rpm | Continuous adjustment, 225-580 rpm | Continuous adjustment, 225 - 880 rpm | Continuous adjustment max. 1000 rpm | Continuous adjustment, max. 670 rpm | -- | Continuous adjustment, max. 1000 rpm |
| Rotation controls | Foot pedal, remote hand control (accessory) | Foot pedal, remote hand control (accessory) | Foot pedal, remote hand control (accessory) | Manual / Air valve | Manual / Air valve | -- | Manual / Air valve |
| Nozzle connection | - | Quick coupling | - | Quick coupling | Quick coupling | Quick coupling | Quick coupling |
| Air volume consumption | - | Nozzle type dependant | - | 340 l/min (12 CFM), 7 bar | 400 l/min (14 CFM), 7 bar | 100 - 600 l/min (3.5-21 CFM), 7 bar | 340 l/min (12 CFM), 7 bar |
| Measurements [mm] | H910 (35.8") | H1290 (50.8") | H1290 (50.8") | H910 (35.8") | H1290 (50.8") | H910 (35.8") | H190 (7.5") |
| | L640 (25.2") | L1100 (43.3") | L1100 (43.3") | L640 (25.2") | L1100 (43.3") | L640 (25.2") | L410 (16.1") |
| | W480 (18.9") | W570 (22.4") | W570 (22.4") | W480 (18.9") | W570 (22.4") | W480 (18.9") | W280 (11") |
| Weight | 38 kg (84 lbs) | 71 kg (157 lbs) | 93 kg (205 lbs) | 17 kg (37 lbs) | 45 kg (99 lbs) | 15 kg (33 lbs) | 8 kg (18 lbs) |
| Cleaning shaft | 20 m (65.6 ft.) | 25 m (82 ft.) | 40 m (131 ft.) | 15 m (49.2 ft.) | 40 m (131 ft.) | 20 m (65.6 ft.) | 25 m (82 ft.) (driving cable) |
| Accessories | Mechanical centering device, hand controller | Y-gear, mechanical centering device, hand controller, spray bottle, nozzles | Y-gear, 3-brush-gear, mechanical centering device, hand controller | Y-gear, 3-brush-gear, mechanical centering device, spray bottle, nozzles | Y-gear, 3-brush-gear, pneumatic centering device, hand controller | Mechanical centering device, spray bottle, nozzles | Y-gear, 3-brush-gear, spray bottle, nozzles |