

LIFAair®

OPERATING AND MAINTENANCE MANUAL



LIFA Combi Cleaner 15
LIFA Combi Cleaner 40

Pneumatically operated brushing machines for ventilation duct cleaning

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IMPORTANT! Read these instructions carefully before operating the machine!

These instructions should always be available for the personnel operating the machine. Please read these instructions carefully before operating the machine. Following these instructions in detail ensures many years of trouble-free use.



LIFA Combi Cleaner 15/40 brushing machine



LIFA Combi Cleaner 15



LIFA Combi Cleaner 40

Congratulations on your new LIFA Combi Cleaner 15/40 brushing machine!

LIFA Combi Cleaner 15/40 is a pneumatically operated duct cleaning machine for demanding cleaning tasks in round and rectangular ventilation ducts. LIFA Combi Cleaners are designed for the cleaning of small, medium and large ducts. The name Combi Cleaner states that it is combined with brushing and the possibility of spraying liquids or compressed air while brushing.

Both LIFA Combi Cleaner brushing machines can be used in grease duct cleaning. The length of the cleaning shaft is 15 meters (50 ft., CC15) or 40 meters (131 ft., CC40) or so they can be used in cleaning up to 25 m (82 ft., CC15) or 75 m (246 ft., CC40) of ventilation duct when accessed from one access door to both directions.

The use of compressed air gives an alternative to LIFA's electrically operated and hydraulic machines.

- Professional's first choice for cleaning of medium (**CC15: Ø160-600 mm (6-24")**) and large (**CC40: Ø400-1200 mm (10-47")**) grease or other exhaust ducts.

- Max air volumes: **CC15: 340 l/min (12 CFM), 7 bar (100 PSI), 7 bar**
CC40: 450 l/min (14 CFM), 7 bar (100 PSI).

- Operation radius 25 meters (82 ft., CC15) or 75 meters (246 ft., CC40).

- Rotating speed can be adjusted stepless up to 1000 rpm (CC15) or 670 rpm (CC40).

- Operation valve changing rotating direction to clockwise and counter clockwise.

- The brushed off debris is removed by sucking it to a negative air collector, such as a LIFA Hepa Clean 1100, 2500, 4000 or LIFA Air Clean 3500 (accessory).

A **centering device** for the shaft is available as an accessory for the LIFA Combi Cleaner brushing machines. The centering device **helps to push the brush in the duct** and **centres the brush** in the channel so the brush reaches all parts of the duct. The use of the centering device is recommended especially when brushing ducts $\text{Ø} \geq 400 \text{ mm}$ and rectangular ducts from 400 mm in height.

Safety Precautions

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

- The equipment must not be positioned or used 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 compressed air hose must be disconnected 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: filtered mouth mask, helmet, earmuffs, safety goggles, overall with long sleeves, protection shoes and other necessary protective equipment that the task at hand requires.

LIFA Combi Cleaner brushing machines have 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, the

LIFA Combi Cleaner 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 lightning, air conditioning, ladders and trestles 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 risk of fire, e.g. flammable liquids, gases, combustible dust or other sensitive substances nearby. Use antistatic brushes and safety grounding 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. Compressed air connection

Make sure that the compressed air matches the information on the CE-plate and the operating instructions.

7. Noise level

The noise level of LIFA Combi Cleaner is low (<70 dB) and it is not dependant of the operating environment.

8. 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 Combi Cleaner 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 must 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 Combi Cleaner 15

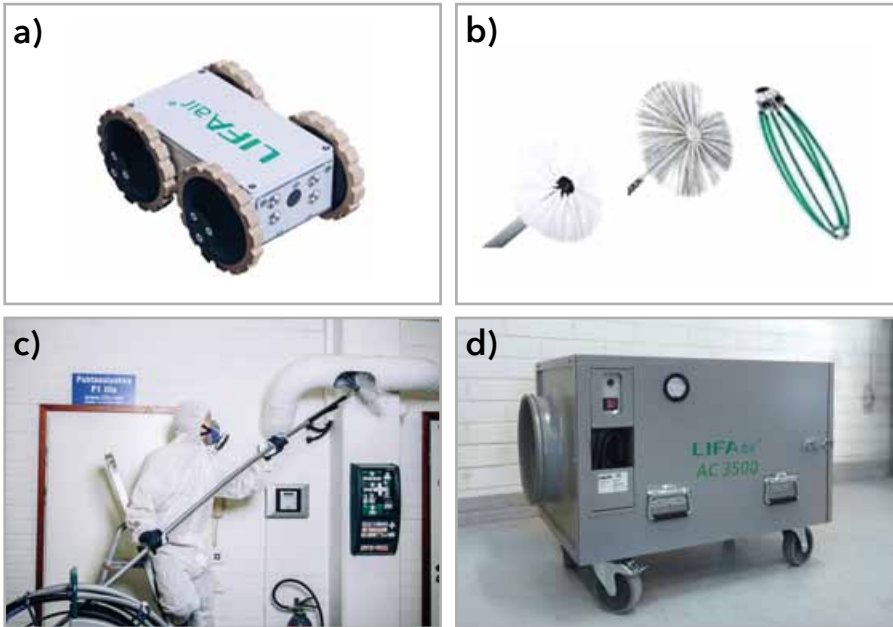
1. Quick coupling for the nozzles
2. Compressed air valves
 - a) Air hose connector, speed control valve
 - b) Change of rotation speed
3. Compressed air connection (outer), a connection to fluids/compressed air on the opposite side
4. Water separator



LIFA Combi Cleaner 40

1. Pushing handle and reel drum locking hasp
2. Fast coupling for the nozzles
3. Operation valve
 - Change the rotation direction
 - The control of the centering device (accessory)
4. Air supply connector and speed adjusting valve for brush motor (the connector for liquids/air-jetting is on the opposite side of CC40)
5. Water separator with hose to brush motor air supply valve. When using machine, connect compressed air to water separator.

Operating Principles



Before beginning the work, check the ductwork with **a)** LIFA Duct Control (accessory) equipment and choose the suitable **b)** brushes and nozzles based on the size and construction of the duct as well as the composition of the removable dirt.

- 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, entering duct as directly as possible.
- Choose a **right sized brush** (depending on the size of the duct and type of dirt). 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 mainly for grease exhaust duct cleaning.

- If the purpose is to spray coating or disinfectant into the duct at same time, place a compressed air or low-pressure air sprayer into the machine depending on the purpose of use. Choose a correct nozzle (check the accessory list).
- Make sure that the working area is cleared and there are no extra people.
- Ensure that all the employees performing the work have adequate **protective equipment**.
- Make sure that there is enough low pressure in the ductwork and that LIFA HepaClean or LIFA AirClean negative pressure unit (NPU) is installed correctly. The brushed off debris is removed by sucking it to the negative pressure unit.
- Connect the compressed air into the machine. Before connecting the compressed air, check that the compressed air tab is off and air valves are in the centre position.
- Place the brush **inside the ventilation duct** that is going to be cleaned.
- When the operator, who is feeding the shaft into the duct gives a permission to start rotation, the other worker at brushing machine turns the operation valve. This is done by opening the compressed air tab first and then the compressed air valve can be turned in to the other side, depending on

the rotating direction. The valve of the compressed air tab adjusts the rotating speed. In the fully open position the rotating speed of the brush is the fastest possible.

- When the shaft is being fed to the duct **sharp angles and screws etc. that can damage the shaft must be beware of**.
- Adjust the rotating speed of the brush. Note that when cleaning "soft" internally insulated ducts the rotating speed should be much lower than in normal ducts. Too high rotation speed may damage the ventilation duct.
- 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 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 Combi Cleaner brushing machines may be used for grease duct cleaning. Please ask us more about our grease removal concept!

Service and Maintenance

Before any maintenance compressor needs to be disconnected and all pressure from machine released.

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 washed with mild detergent and water.

Maintenance

Lubricating Combi Cleaner 15 motor

Remember to lubricate the pneumatic motor at the end of each working day by spraying few seconds of light motor oil* to the air inlet connector (not to the water separator) when the operation valve and air inlet valve are open (Image 1). Tilt the device slightly so that the oil goes deeper into the tube.

Connect compressed air to the connector and run motor few seconds to one direction only (Image 2).

Repeat the oil spraying and connect compressed air to the air connector and run the motor few minutes to the same direction as first time until the oil reaches the motor (motor starts to run faster, and some oil mist can be seen coming out from the motors air outlet).

Now the motor is lubricated and ready for next use.



Image 1
Spraying light motor oil* to the air hose connector when the operation valve and air inlet valve are open.

* Würth Rost Off Plus, WD 40, CRC 5-56 or analog



Image 2
Connect compressed air to the connector and run the motor few seconds.

Lubricating Combi Cleaner 40 motor

Remember to lubricate the pneumatic motor at the end of each working day by spraying few seconds of light motor oil* to the air inlet connector (not to the water separator) when the operation valve and air inlet valve are open (Image 1). Tilt the device slightly so that the oil goes deeper into the tube.

Connect compressed air to the connector and run motor few seconds to one direction only (Image 2).

Repeat the oil spraying and connect compressed air to the air connector and run the motor few minutes to the same direction as first time until the oil reaches the motor (motor starts to run faster, and some oil mist can be seen coming out from the motors air outlet).

Now the motor is lubricated and ready for next use.

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.

Liquid hose: After use, the hose should be rinsed with clean water, so they will not get blocked and there will be no residues of old detergents. Corrosive detergents and solvent substances may damage the inside of the hose. After rinsing the hose should be run clean with compressed air.

Liquid nozzles: After use, the nozzles and the hoses should be rinsed with water, so they will not get blocked and there will be no residues of old detergents. Corrosive detergents and solvent substances may damage the inside of the hose. After rinsing the hose should be run clean with compressed air.

NOTE! Possible repairs must be carried out by the manufacturer or a servicer authorized by Lifa Air Oy Ltd. Third party repairs will void the warranty.



Image 1
1. Open air inlet valve and operation valve.
2. Spray light motor oil* to the air hose connector.

* Würth Rost Off Plus, WD 40, CRC 5-56 or analog



Image 2
Connect compressed air to the connector and run the motor few seconds.

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. The compressed air has been connected into the machine and the connector valve is open, but the brush still doesn't rotate.
 - a) Make sure that the compressed air valve isn't stuck, and it is in open position.
 - b) Make sure that the feed of the compressed air or the cleaning shaft hoses aren't stuck.
2. The cleaning brush doesn't start to rotate even though the compressed air is coming to the motor.
 - a) Make sure that any of the compressed air joints aren't leaking. If the joints are leaking the pressure may be so low that the motor does not rotate.
 - b) Switch the compressed air off from the machine and make sure that the motor isn't stuck by rotating it with e.g. a wrench from the brush adapter. The motor should rotate considerably freely. Therefore, do not use excessive force. If the motor does not rotate freely, do the procedures that are instructed in the maintenance - air motor.
3. When loaded, the brush does not rotate.
 - a) Check the size of the brush in comparison to the duct. Too big brush may cause the motor to stop (if you don't have enough air power).
 - b) Make sure that the main valve is open entirely.
 - c) Make sure that the pressure in the compressed air compressor is adjusted high enough (about 7 bar).
4. Nothing is coming out from the liquid/compressed air nozzles even though the liquid/compressed air is attached to the machine.
 - a) Make sure that the valve is in an open-position.
 - b) If you are spraying liquids make sure that there is enough pressure in the low-pressure sprayer (2-5 bar)
 - c) Make sure that the nozzles aren't stuck.
 - d) Check that the joints are in right places.
 - e) If there are any old detergents etc. left in the hose, they may cause the hose to clog. The hose can be tried to open by spraying warm water or mild detergent solution in to the hose.

Technical Data

LIFA Combi Cleaner 15 and 40 brushing machines


	LIFA Combi Cleaner 15	LIFA Combi Cleaner 40
Operating power	Compressed air	Compressed air
Operating voltage and frequency	-	-
Motor	0.11 kW (0.15 hp)	0.4 kW (0.6 hp)
Fuse	-	-
Max torque	3 Nm (2.2 ft•lb)	6,5 Nm (4.8 ft•lb)
Brush connection	M12	M12
Duct size recommendation	160–600 mm (6.3–23.6")	400–1200 mm (15.7–47.2")
Brush rotation speed	Continuous adjustment max. 1000 rpm	Continuous adjustment, max. 670 rpm
Rotation controls	Manual / Air valve	Manual / Air valve
Nozzle connection	Quick coupling	Quick coupling
Air volume consumption	340 l/min (12 CFM), 7 bar	450 l/min (14 CFM), 7 bar
Measurements:		
Height:	910 mm (35.8")	1290 mm (50.8")
Length	640 mm (25.2")	1100 mm (43.3")
Width	480 mm (18.9")	570 mm (22.4")
Weight:	17 kg (37 lbs)	45 kg (99 lbs)
Cleaning shaft	15 m (49.2 ft.)	40 m (131.2 ft.)
Accessories	Y-gear, 3-brush-gear, mechanical centering device, spray bottle, nozzles	Y-gear, 3-brush-gear, pneumatic centering device, spray bottle, nozzles

Large variety of nozzles and accessories available for spraying disinfectants to ducts and sub floor spaces.


CE-plate is situated behind the protective switch for motor above the motor. Plugging in, maintenance and spare part supply must be done in accordance with the information given in this plate.

Spare parts and accessories


COMBINATION BRUSHES WITH NYLON CENTER AND DISK

			CC15	CC40
6420281010507	200/400 mm (8/16 inch)		x	
6420281010514	300/500 mm (12/20 inch)		x	
6420281012624	400/600 mm (16/24 inch)		x	x
6420281010736	500/700 mm (20/28 inch)		x	x
6420281013027	600/800 mm (24/32 inch)		x	x
6420281010743	700/900 mm (28/35 inch)			x
6420281021848	800/1000 mm (32/39 inch)			x
6420281012334	1000/1200 mm (39/47 inch)			x
6420281021916	1300/1500 mm (51/59 inch)		x	


SOFT BRUSHES WITH NYLON CENTER

			CC15	CC40
6420281010583	400 mm (16 inch)		x	
6420281010590	500 mm (20 inch)		x	x
6420281010606	600 mm (24 inch)		x	x
6420281010613	700 mm (28 inch)		x	x
6420281010620	800 mm (32 inch)		x	x
6420281010637	900 mm (35 inch)			x
6420281010644	1000 mm (39 inch)			x

AGGRESSIVE NYLON BRUSHES (grease brush) WITH NYLON CENTER

			CC15	CC40
6420281010750	200 mm (8 inch)		x	
6420281010767	300 mm (12 inch)		x	
6420281010774	400 mm (16 inch)		x	x
6420281010781	500 mm (20 inch)		x	x
6420281010798	600 mm (24 inch)		x	x





ABRASIVE BRUSHES WITH NYLON CENTER, TYNEX BRISTLE

			CC15	CC40
6420281023439	200/400 mm (8/16 inch)		x	
6420281021213	400/600 mm (16/24 inch)		x	x
6420281023484	600/800 mm (24/32 inch)		x	x
6420281023507	800/1000 mm (32/39 inch)			x
6420281024290	1000/1200 mm (29/47 inch)			x
6420281024306	1300/1500 mm (51/59 inch)			x

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

			CC15	CC40
6420281020216	Grease Duct chopper, Large 800 mm (32 inch) adjustable for ducts 500–1100 mm (20-43 inch)			x
6420281020209	Grease Duct chopper, Small 350 mm (14 inch) adjustable for ducts 250–550 mm (10–22 inch)		x	x

OTHER ACCESSORIES(WITH SPECIAL ADAPTER)

6420281020865	Mechanical centering device for LIFA Combi Cleaner 15	
6420281024559	Pneumatic centering device for LIFA Combi Cleaner 40	
7720281060038	Low pressure spraying unit 5l, stainless steel	
6420281012006	Foam Nozzle	

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 by 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 Oy Ltd representative from whom the buyer has bought the machine from OR when agreed mutually in writing beforehand to the factory postage paid to:

Lifa Air Oy Ltd
Vellamonkatu 30 B
FI-00550 Helsinki
FINLAND

Tel. +358 9 3948 58
Email: sales@lifa.net

Please note that the machine must be **cleaned of hazardous materials before** sending it to the manufacturer or a servicer authorized by manufacturer for maintenance. In case the machine has not been cleaned appropriately, Lifa Air Oy Ltd will charge the customer for the cleaning of the machine.

Lifa Air Oy 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: Lifa Air Oy Ltd
Manufacturer's address: Vellamonkatu 30 B,
 FI-00550 Helsinki, Finland
Manufacturer's telephone: +358 9 3948 58
Manufacturer's website: www.lifa.net, www.lifa-air.com
Model: LIFA Combi Cleaner 15
 LIFA Combi Cleaner 40

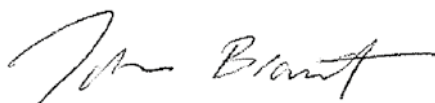
Lifa Air Oy Ltd is ISO 9001 and ISO 14001 Certified.

Lifa Air Oy 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 fulfils requirements for CE-marking.

Lifa Air Oy Ltd 10.01.2018



Johan Brandt, CEO

LIFA Air Product Family

	SC 20	SC 25 Multi	Hydmaster 40	CC 15	CC 40	AirJet Combi 20	DC Robo
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") L640 (25.2") W480 (18.9")	H1290 (50.8") L1100 (43.3") W570 (22.4")	H1290 (50.8") L1100 (43.3") W570 (22.4")	H910 (35.8") L640 (25.2") W480 (18.9")	H1290 (50.8") L1100 (43.3") W570 (22.4")	H910 (35.8") L640 (25.2") W480 (18.9")	H190 (7.5") L410 (16.1") 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

LIFAair®

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Please read these instructions carefully before operating the machine.
Following these instructions in detail ensures many years of trouble-free use.