

EN Extraction fan (60Hz)

FUA-1800/2100/2700/3000/4700



EN User manual

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EN - ORIGINAL INSTRUCTION

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PREFACE

Using this manual

This manual is intended to be used as a work of reference for professional, well-trained and authorized users to be able to safely install, maintain and repair the product mentioned on the cover of this document. This manual should always be kept with the product, as well as a duplicate copy be kept by the end user or service department after installation.

Pictograms and symbols

The following pictograms and symbols are used in this manual:

Ĩ	TIP Suggestions and recommendations to simplify carrying out tasks and actions.
	ATTENTION! A remark with additional information for the user. A remark brings possible problems to the user's attention.
	WARNING! Procedures which, if not carried out with the necessary caution, may damage the product or cause serious personal injury.
4	WARNING! Denotes risk of electric shock.
	WARNING! Important warning to prevent fire.

Text indicators

Listings indicated by "-" (hyphen) concern enumerations. Listings indicated by "•" (bullet point) describe steps to perform.

Service and technical support

For information about specific adjustments, maintenance or repair jobs which are not dealt with in this manual, please contact the supplier of the product. Make sure you have the following specifications at hand:

- product name
- serial number

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These data can be found on the identification plate.

INTRODUCTION

1.1 Identification of the product

The identification plate contains, among other things, the following data:

- product name
- serial number
- supply voltage and frequency
- power consumption

1.2 General description

The FUA is an extraction fan that is specially designed to remove welding and other fumes, dust, oil mist and exhaust gases.

The fan is intended and designed for mounting to filter units and vehicle exhaust extraction systems or can be used as a central fan.

1.3 Product combinations

The fan can be used with all filter units, fume extraction and hose reel/drop systems.

1.4 Options and accessories

The following products can be obtained as an option and/or accessory:

Universal mounting bracket for freestanding, wall, or ceiling mounting:					
- MB-FUA/S1	- FUA-1800/2100/2700				
- MB-FUA/S2	- FUA-3000/4700				
Mounting bracket to mount the crane, UK extractor crane or F	e fan on a FlexMax extension EB boom arm:				
- MB-FUA/C1	- FUA-1800/2100/2700				
- MB-FUA/C2	- FUA-3000/4700				
Filter-fan adapter to mount the fan on a MF-30, MF-31 or MistEliminator:					
- FF-FAN/S	- FUA-2100				
- FF-FAN/B	- FUA-3000/4700				
Outlet transition from rectangu	lar to round:				
- OL-250/FUA-3000	- FUA-3000				
- OL-250/FUA-4700	- FUA-4700				
- OL-315/FUA-4700	- FUA-4700				
Soft connection:					
- SC-160	- FUA-1800/2100/2700				
- SC-250	- FUA-3000/4700 (+OL-250)				

1.5 Technical specifications

Motor design	NEMA
Fan type	centrifugal
Speed of revolutions	≈3500 rpm
Insulation class	F
Protection class	IP 55
Max. starts/stops per hour	30
Max. airflow temperature	176°F (80°C) continuously
Frequency	60Hz
Connection voltages	- 115/208-230V/1ph/60Hz - 208-230/460V/3ph/60Hz - 575V/3ph/60Hz
Power:	
- FUA-1800	- 0.75 HP (0.55 kW)
- FUA-2100	- 1 HP (0.75 kW)
- FUA-2700	- 1.5 HP (1.1 kW)
- FUA-3000	- 1.5 HP (1.1 kW)
- FUA-4700	- 3 HP (2.2 kW)

Refer to the available product data sheet for detailed specifications.

1.6 Noise level

Refer to Table I on page 9. Go through sub tables A, B and C to get the noise levels in dB(A).

1.7 Dimensions

Refer to Fig. I on page 10.

1.8 Pressure drop

Refer to Fig. II on page 11 and onwards.

- A FUA-1800
- B FUA-2100
- C FUA-2700
- D FUA-3000
- E FUA-4700

1.9 Ambient conditions

Min. operating temperature	-4°F (-20°C)
Nom. operating temperature	68°F (20°C)
Max. operating temperature	104°F (40°C)
Max. relative humidity	80%

PRODUCT DESCRIPTION

2.1 Components

The fan consists of the following main components:

- Fig. 2.1/Fig. 2.2
- A outlet
- B motor
- C housing
- D inlet
- E fan wheel



Fig. 2.1 Main components FUA-1800/2100/2700



Fig. 2.2 Main components FUA-3000/4700

2.2 Operation

The inlet of the fan is to be connected to the outlet of a central filter system, extraction arm or vehicle exhaust extraction system. The extracted air is blown out at the side of the fan through a duct. Depending on the local regulations, the air can either be recirculated or exhausted to the atmosphere.

There are various options to control the fan.

2.2.1 Control equipment

Plymovent provides control equipment for controlling the fan. Refer to the manual of the selected control equipment.

3 SAFETY

General

The manufacturer does not accept any liability for damage to the product or personal injury caused by ignoring of the safety instructions in this manual, or by negligence during installation, use, maintenance, and repair of the product mentioned on the cover of this document and any corresponding accessories. Specific working conditions or used accessories may require additional safety instructions. Immediately contact your supplier if you detect a potential danger when using the product.

The user of the product is always fully responsible for observing the local safety instructions and regulations.

User manual

- Everyone working on or with the product must be familiar with the contents of this manual and must strictly observe the instructions therein. The management should instruct the personnel in accordance with the manual and observe all instructions and directions given.
- Do not change the order of the steps to perform.
- Always keep the manual with the product.

Pictograms and instructions on the product (if present)

- The pictograms, warning and instructions attached to the product are part of the safety features. They must not be covered or removed and must be present and legible during the entire life of the product.
- Immediately replace or repair damaged or illegible pictograms, warnings and instructions.

Users

- The use of this product is exclusively reserved to authorized, well-trained and qualified users. Temporary personnel and personnel in training can only use the product under supervision and responsibility of skilled engineers.
- Use common sense. Stay alert and keep your attention to your work. Do not use the product when you are under the influence of drugs, alcohol or prescription medicines.

Intended use¹

The product has been designed as an extraction fan for extracting fumes and gases which are released during the most common welding processes, as well as the extraction of exhaust gases. Using the product for other purposes is considered contrary to its intended use. The manufacturer accepts no liability for any damage or injury resulting from such use. The product has been built in accordance with state-of-the-art standards and recognized safety regulations. Only use this product when in technically perfect condition in accordance with its intended use and the instructions explained in the user manual.

Technical specifications

The specifications given in this manual must not be altered.

Modifications

Modification of (parts of) the product is not allowed.

Installation

- The installation of this product is exclusively reserved to authorized, well-trained and qualified technicians.
- Inspect the product and check it for damage. Verify the functioning of the safety features.
- Electric connection is to be executed in accordance with local

 [&]quot;Intended use" as explained in EN-ISO 12100 is the use for which the technical product is suited as specified by the manufacturer, inclusive of his directions in the sales brochure. In case of doubt it is the use which can be deduced from the construction, the model and the function of the technical product which is considered normal use. Operating the machine within the limits of its intended use also involves observing the instructions in the user manual.

requirements, codes and/or laws. Ensure compliance with the EMC regulatory arrangements.

- During installation, always use Personal Protective Equipment (PPE) to avoid injury. This also applies to persons who enter the work area during installation.
- Do not install the product in front of entrances and exits which must be used for emergency services.
- Mind any gas and water pipes and electric cables.
- Make sure that the workshop, in the vicinity of the product, contains sufficient approved fire extinguishers.

Use

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WARNING

	WARNING
$\mathbf{\lambda}$	Fire hazard! Do not use the product for:
	- extracting flammable, glowing or burning particles
	or solids or liquids
	 extracting of aggressive fumes (such as
	hydrochloric acid) or sharp particles
	- sucking cigarettes, cigars, oiled tissues, and other
	burning particles, objects, and acids
	WARNING!
	Do not use the product for:
	- aluminium laser cutting
	- paint mist
	 extraction of hot gases (more than 176°F/80°C
	continuously)
	- grinding aluminium and magnesium
	- flame spraying
	- extraction of cement, saw dust, wood dust etc.

- sucking cigarettes, cigars, oiled tissues and other burning particles, objects and acids
- explosive environments or explosive substances/ gases
- Note: this list is not all-encompassing.
- Check the working environment. Do not allow unauthorized persons to enter the working environment.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.

Service, maintenance and repairs

- During service, maintenance and repair jobs, always use Personal Protective Equipment (PPE) to avoid injury. This also applies to persons who enter the work area during installation.
- Always use tools, materials, lubricants and service techniques which have been approved by the manufacturer. Do not use worn tools and do not leave any tools in or on the product.
- Safety features which have been removed for service, maintenance or repairs, must be put back immediately after finishing these jobs and it must be checked that they still function properly.

4 INSTALLATION

4.1 Unpacking

Check that the product is complete. The package should contain:

- extraction fan incl. inlet grid 3 mm (0.12 in.)
- connection flange with grid

4.1.1 Options and accessories

The MB-FUA/S1-2 kit should contain:

- mounting bracket
- tube clamps (4)
- hardware

The MB-FUA/C1-2 kit should contain:

- mounting bracket
- hardware

The OL (outlet transition)² should contain: - square to round outlet transition

The SC (soft connection) should contain:

- soft connection with 2 hose clamps

If parts are missing or damaged, contact your supplier.

4.2 Installation

4.2.1 Tools and requirements

The following tools are necessary for installing the fan:

- wrench 10 mm
- wrench 13 mm
- wrench 17 mm
- screwdriver

4.2.2 Installing the fan on an MB-FUA-S1/S2

For use as a stand alone or for mounting on the wall, ceiling or a platform. The motor can be installed resting on the stand. The motor of the FUA-1800/2100/2700 can also be installed upside down (hanging from the stand, not shown).

To install the fan on an MB-FUA-S1/S2 stand, proceed as follows:

Fig. 4.1

- Install the stand in the desired place.
- Attach the tube clamps (B) as desired, if applicable.
- Tighten the tube clamps with suitable hardware (not supplied; material depending on wall, floor or ceiling type).
- Position the fan on the stand as desired.
- Tighten the bolts (A).



Fig. 4.1 Installing the fan on an MB-FUA-S1/S2

4.2.3 Installing the fan on an MB-FUA-C1/C2

For use on an extractor (UK, FlexMax or FEB) or use with vehicle exhaust extraction systems. To install the fan on an MB-FUA-C1/C2 bracket, proceed as follows:

Fig. 4.2

- Use the mounting holes (A) and suitable hardware (not supplied, material depending on wall type) to install the bracket on the wall.
- Position the fan on the bracket.
- Tighten the bolts (B).

Only applicable for FUA-3000/4700.
 FUA-1800/2100/2700 come pre-installed with outlet transition.



Fig. 4.2 Installing the fan on an MB-FUA-C1/C2

4.2.4 Changing the outlet position

The fan outlet can be positioned in various directions (see Fig. 4.3).



Fig. 4.3 Variable outlet position

To change the outlet position of the fan, proceed as follows:

Fig. 4.4

Position Fig. 4.3A or C

- Define the desired outlet position.
- If necessary, loosen the motor plate by unscrewing the bolts (A).
- Turn the motor in the desired position.
- Tighten the bolts of the motor plate.



Fig. 4.4 Changing the outlet position (45°, 60° or multiple)

Fig. 4.5

Position Fig. 4.3B

- Define the desired outlet position.
- Loosen the 2 socket screws of the hub and remove the fan wheel (B).
- Loosen the 4 bolts (C).
- Turn the motor plate (A) 90° clockwise or counterclockwise.
- Install the disassembled parts in reverse order.



Fig. 4.5 Changing the outlet position (90°)

4.2.5 Installing the fan directly on an arm

The FUA-1800/2100/2700 can be used on the KUA or LM-2 extraction arm. In that case, no additional bracket is needed. The necessary hardware is delivered with the arm.

To install the fan directly on the arm, proceed as follows.

Fig. 4.6

- Loosen the screws of the inlet grid (A).
- Position the inlet of the fan on the bracket.
- Tighten the bolts (B).



Fig. 4.6 Installing the fan directly on an arm

4.2.6 Duct connection of FUA-1800/2100/2700

Inlet connection

We advise the use of a soft connection for the inlet to reduce the noise and the vibrations of the fan.

To connect the fan to a hose, proceed as follows:

Fig. 4.7

- Loosen the bolts of the inlet grid (A).
- Remove the grid.
- Install the connection flange (B) with the bolts of the inlet grid.
- Tighten the bolts.
- Attach the soft connection to the connection flange.
- Tighten the hose clamp (C).
- Attach the soft connection to the hose.
- Tighten the hose clamp (D).

Outlet connection

ATTENTION!

In case the fan is not placed directly next to the filter system, make sure the extraction duct is sufficiently supported.

We advise the use of a soft connection for the outlet to reduce the noise and the vibrations of the fan and to avoid damage to the duct.

To connect the fan to a duct, proceed as follows:

Fig. 4.7

- Attach the soft connection to the outlet of the fan.
- Tighten the hose clamp (E).
- Attach the soft connection to the duct.
- Tighten the hose clamp (F).



Fig. 4.7 Connecting the fan to a hose and duct (FUA-1800/2100/2700)

4.2.7 Duct connection of FUA-3000/4700

Inlet connection

We advise the use of a soft connection for the inlet to reduce the noise and the vibrations of the fan.

To connect the fan to a hose, proceed as follows:

Fig. 4.8

- Attach the soft connection to the connection flange.
- Tighten the hose clamp (B).
- Attach the soft connection to the hose.
- Tighten the hose clamp (C).

Outlet connection

ATTENTION!

In case the fan is not placed directly next to the filter system, make sure the extraction duct is sufficiently supported.

We advise the use of a soft connection for the outlet to reduce the noise and the vibrations of the fan and to avoid damage to the duct. In addition, we advise the use of a (square to round) outlet transition.

To connect the fan to a duct, proceed as follows:

Fig. 4.8

- Loosen the bolts of the outlet grid (A).
- Remove the grid.
- Attach the outlet transition to the outlet of the fan with the bolts of the grid (D).
- Tighten the bolts.
- Attach the soft connection to the outlet transition.
- Tighten the hose clamp (E).
- Attach the soft connection to the duct.
- Tighten the hose clamp (F).



Fig. 4.8 Connecting the fan to a hose and duct (FUA-3000/4700)

4.3 Electric connection

ATTENTION! Electric conne with local requ

Electric connection is to be executed in accordance with local requirements, codes and/or laws. Ensure compliance with the EMC regulatory arrangements.

WARNING!

Make sure that the fan is suitable for connection to the local mains. Information about the connection voltage and frequency can be found on the identification plate. The cables must be connected in conformance with the local codes and/or laws and regulations and can only be carried out by qualified and authorized technicians.

The proper motor wiring connections (shown on the motor nameplate) should be verified and configured for the supply voltage provided.

To connect the starting device, proceed as follows:

- Connect the fan to the chosen starting device according to the information on the identification plate on the motor.
- Connect the starting device to the mains according to the separately supplied electrical diagram.
- Check the direction of rotation of the motor. For this purpose the fan contains an arrow indicating the prescribed direction of rotation. The rotation is visible through the cooling fan.
- If necessary, for reversing the direction of rotation, see motor nameplate.

USE

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Refer to the documentation supplied with the selected control equipment how to control the fan.

5 MAINTENANCE

The fans require no specific maintenance.

TROUBLESHOOTING

If the product does not function (correctly), consult the checklist below to see if you can remedy the error yourself. Should this not be possible, contact your supplier.

7

WARNING!

Always switch **off** the fan and disconnect it from the mains before carrying out the activities below. First read the maintenance regulations at the beginning of this manual.

Symptom	Problem	Possible cause	Solution		
Motor does not start.	Fan does not function.	No voltage.	Repair electrical supply.		
		Power supply cord defective.			
		Loose contacts.	Repair the contacts.		
		Motor protection switch defective.	Replace the motor protection switch.		
		Motor defective.	Repair or replace motor.		
Motor makes a humming sound, but does not run.	Fan does not function.	Motor uses 2 phases instead of 3 (three-phase motor only).	Repair the phase connection.		
		Motor capacitor defective/not connected (single phase motor only).	Repair or replace the motor capacitor.		
Motor stops Fan does not auto-matically. function.		Motor protection switch activated.	Let the fan cool down for some time. Check setting of motor protection switch (MPS) according to electrical diagram.		
		Motor defective.	Repair or replace the motor.		
Poor suction. Fan does no function properly.		Inverted direction of rotation of the motor (three- phase motor only).	Change the direction of rotation.		
		Motor defective.	Repair or replace the motor.		
		Extraction fan polluted.	Clean the extraction fan.		
		Outside air is being extracted.	Check or replace the sealing material.		
Vibrations in the fan.	Fan not steady.	Imbalance in the extraction fan.	Clean the extraction fan.		

8 SPARE PARTS

The following spare parts are available for the product. Refer to the exploded views;

- FUA-1800/2100/2700: Fig. III on page 14
- FUA-3000/4700: Fig. IV on page 15

Article no.	Description
FUA-1800	0.75 HP
0000100585	Inlet flange FUA-1800
0000100588	Outlet grid FUA-1800/2100
0000100597	Inlet grid (fine) FUA-1800/2100
0000101944	Connection flange with grid
0000102687	Motor 0.75 HP; 115/208-230V/1ph/60Hz (NEMA)
0000102688	Motor 0.75 HP; 208-230/460V/3ph/60Hz (NEMA)
0000102689	Motor 0.75 HP; 575V/3ph/60Hz (NEMA)
0000103124	Fan wheel FUA-1800 (NEMA)
0000103333	Motor plate FUA-1800/2100/2700 (NEMA)
FUA-2100	1 HP
0000100588	Outlet grid FUA-1800/2100
0000100597	Inlet grid (fine) FUA-1800/2100
0000101944	Connection flange with grid
0000102690	Motor 1 HP; 115/208-230V/1ph/60Hz (NEMA)
0000102691	Motor 1 HP; 208-230/460V/3ph/60Hz (NEMA)
0000102692	Motor 1 HP; 575V/3ph/60Hz (NEMA)
0000102813	Fan wheel FUA-2100 (NEMA)
0000103260	Inlet flange FUA-2100 (NEMA)
0000103333	Motor plate FUA-1800/2100/2700 (NEMA)
FUA-2700 3	1.5 HP
0000100586	Inlet flange FUA-2700 (NEMA)
0000102693	Motor 1.5 HP; 115/208-230V/1ph/60Hz (NEMA)
0000102694	Motor 1.5 HP; 208-230/460V/3ph/60Hz (NEMA)
0000102695	Motor 1.5 HP; 575V/3ph/60Hz (NEMA)
0000102814	Fan wheel FUA-2700 (NEMA)
0000103333	Motor plate FUA-1800/2100/2700 (NEMA)
FUA-3000 3	1.5 HP
0000102693	Motor 1.5 HP; 115/208-230V/1ph/60Hz (NEMA)
0000102694	Motor 1.5 HP; 208-230/460V/3ph/60Hz (NEMA)
0000102695	Motor 1.5 HP; 575V/3ph/60Hz (NEMA)
0000102815	Fan wheel FUA-3000 (NEMA)
0000103334	Motor plate FUA-3000 (NEMA)
FUA-4700 3	3 HP
0000102699	Motor 3 HP; 208-230/460V/1ph/60Hz (NEMA)
0000102700	Motor 3 HP; 208-230/460V/3ph/60Hz (NEMA)
0000102701	Motor 3 HP; 575V/3ph/60Hz (NEMA)
0000102816	Fan wheel FUA-4700 (NEMA)
0000103335	Motor plate FUA-4700 (NEMA)

9 ELECTRICAL DIAGRAM

Refer to the motor nameplate.

10 DISPOSAL

After life of the product, dispose it of in accordance with federal, state or local regulations.

Table I

Sub table A: Sound power levels (L_w) in dB

Sound power is a measure of sound energy per time unit. For a sound source, unlike sound pressure, sound power is neither room dependent nor distance dependent. Sound power is a theoretical value that is not measurable. It is calculated and expressed in watts and as sound power level L_w in decibels.

The table below chows the sound	nowar lovals in dB calculated	according to AMCA Standard 201
	DOWEI IEVEIS III UD CAICUIALEU	

	Statia			Octave band number & center frequency number (Hz)						
	bressure	Airflow	1	2	3	4	5	6	7	8
	(in. WG)	(CFM)	63	125	250	500	1000	2000	4000	8000
00	0	836	109	100	91	91	87	86	82	76
18(2.4	715	105	98	89	88	83	83	78	71
-A	4.8	530	100	99	87	86	81	80	74	68
Ę	7.15	331	104	97	81	82	79	76	70	65
00	0	1115	97	98	91	93	88	88	83	80
21(2.5	890	90	95	91	93	86	84	79	75
-Al	5	660	95	96	89	90	84	81	75	71
Ę	7.62	447	88	94	89	89	83	79	72	70
00	0	1107	78	88	90	89	86	84	83	80
27(2.95	900	79	87	89	87	85	81	79	74
-AL	5.35	700	83	84	88	84	83	79	76	71
ц	7.75	500	80	82	88	87	85	79	74	70
00	0	1818	89	91	97	99	94	90	84	81
30	2.2	1570	95	91	98	100	91	87	81	78
-AL	4.4	1320	88	90	98	96	88	84	78	75
ц	6.66	977	89	91	95	94	86	82	75	72
8	0	2614	99	93	92	93	92	91	87	86
47(2.4	2343	98	95	94	93	92	90	85	83
-AL	5	2040	98	95	93	92	89	87	82	80
ц	8.05	1528	95	92	96	91	86	85	80	77

Sub table B: Conversion of sound power level (L_w) to sound pressure level (L_p)

A sound source produces sound power, which generates a sound pressure fluctuation in the air. <u>Sound power</u> is the distanceindependent cause of this, whereas <u>sound pressure</u> is the distance-dependent effect.

The table below shows the dB value to be deduced from the values of sub table A to the achieve the sound pressure level at a certain distance.

	Sound pressure level						
At a distance of:	1 m (3.3 ft)	2 m (6.5 ft)	3 m (9.8 ft)	4 m (13.1 ft)			
Ref.: sound power levels (L_w) in sub table A	-11 dB	-17 dB	-21 dB	-23 dB			

Sub table C: A-weighting of sound pressure level

The most common weighting that is used in noise measurement is A-weighting. Like the human ear, this effectively cuts off the lower and higher frequencies that the average person cannot hear.

The table below shows the A-weighting related to the different frequencies.

Octave band number	1	2	3	4	5	6	7	8
Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
A-weighing	-0.8	-0.2	0	0	0	-0.2	-0.8	-3.0

Note: dB(A) levels are not licensed by AMCA International.





FUA-1800/2100/2700

Fig. I

FUA-3000/4700

	FUA-1800		FUA-2100		FUA-2700		FUA-3000		FUA-4700	
	mm	inch								
Α	-	-	-	-	-	-	275	10.8	348	13.7
В	Ø 159	Ø 6.3	Ø 159	Ø 6.3	Ø 159	Ø 6.3	205	8.1	205	8.1
С	125	4.9	125	4.9	125	4.9	145	5.7	145	5.7
D 1~	403	15.9	403	15.9	430	16.9	489	19.3	508	20.0
3~	375	14.8	375	14.8	400	15.8	459	18.1	478	18.8
E	455	17.9	455	17.9	455	17.9	512	20.2	591	23.3
F	244	9.6	244	9.6	244	9.6	228	9.0	258	10.2
G	Ø 160	Ø 6.3	Ø 160	Ø 6.3	Ø 160	Ø 6.3	Ø 250	Ø 9.8	Ø 245	Ø 9.6
Н	433	17.1	433	17.1	433	17.1	583	23.0	733	28.9
I	201	7.9	201	7.9	201	7.9	247	9.7	297	11.7

B FUA-2100

D FUA-3000

E FUA-4700

0000103355/240315/A FUA-1800/2100/2700/3000/4700 (60Hz)

FUA-3000/4700

