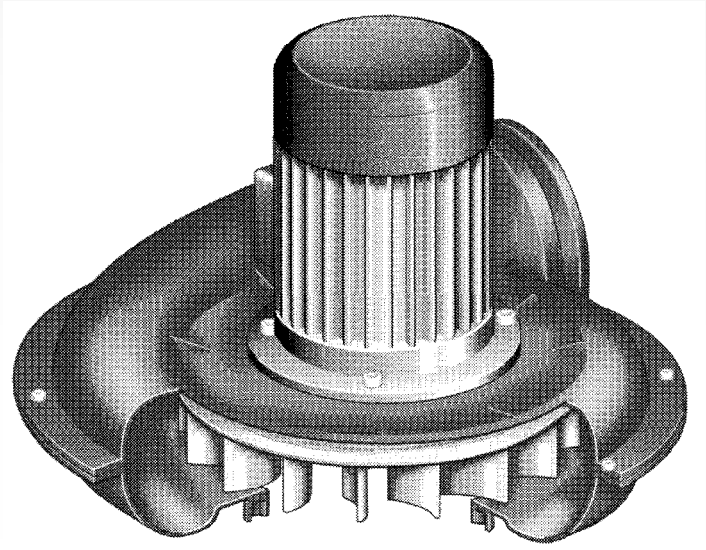
PLYMOVENT®
clean air at work

Extraction fan

FAN-28



EN **Installation and user manual**

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EN | ORIGINAL INSTRUCTION

All rights reserved. The information given in this document has been collected for the general convenience of our clients. It has been based on general data pertaining to construction material properties and working methods known to us at the time of issue of the document and is therefore subject at any time to change or amendment and the right to change or amend is hereby expressly reserved. The instructions in this publication only serve as a guideline for installation, use, maintenance and repair of the product mentioned on the cover page of this document. This publication is to be used for the standard model of the product of the type given on the cover page. Thus the manufacturer cannot be held responsible for any damage resulting from the application of this publication to the version actually delivered to you. This publication has been written with great care. However, the manufacturer cannot be held responsible, either for any errors occurring in this publication or for their consequences.

To improve comprehension for people whose first language is not English, we have written parts of this manual in Simplified Technical English (STE). STE is a controlled language originally developed for aerospace industry maintenance manuals. It offers a carefully limited and standardized subset of English, along with specific writing rules.

PREFACE

Using this manual

This manual is intended to be used as a work of reference for professional, well trained and authorised users to be able to safely install, use, maintain and repair the product mentioned on the cover of this document.

Pictograms and symbols

The following pictograms and symbols are used in this manual:

	**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.
	**CAUTION!** Denotes risk of electric shock.
	**WARNING!** Fire hazard! Important warning to prevent fire.
	**Personal protective equipment (PPE)** Instruction to use respiratory protection when you do service, maintenance and repair jobs, as well as during functional testing. We recommend to use a half-face respirator according to EN 149:2001 + A1:2009, class FFP3 (Directive 89/686/EEC).
	**Personal protective equipment (PPE)** Instruction to use protective gloves when you do service, maintenance and repair jobs.

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. He will always be willing to help you. Make sure you have the following specifications at hand:
- product name
- serial number

You can find these data on the identification plate.

1 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 FAN-28 is an extraction fan that is especially designed to remove welding fumes and gases that are released during the most common welding processes.

The fan is intended and designed for use with extraction arms and filter units.

1.3 Product combinations

1.3.1 Extraction arms and mounting brackets

You can use the FAN-28 in configurations with an extraction arm of Plymovent. The table below shows which type of additional mounting brackets you need in a specific configuration.

Connection to	Mounting brackets
Extraction arm	
T-Flex	▶ TNB
T-Flex/CW	*No additional brackets required*
Flex-2	▶ TNB
Flex-3 | Flex-4	▶ NMB
UltraFlex-3 | UltraFlex-4	▶ NMB
UltraFlex-4/LC	▶ NMB
NEC-2 | NEC-4	▶ TNB
Other	
Duct connection	▶ TNB

1.3.2 Control equipment

Manual switch on/off, wall-mounted:
- MPS range | Motor protection switch; specific type depening on the connection voltage

In configurations of an extraction arm with WL (working light), WL-AST (working light + automatic start/stop) and WCS (welding cable sensor), you must install a thermal relay (NTR range) in the control box (CB); the specific type depending on the connection voltage.

1.4 Options and accessories

The following products can be obtained as an option and/or accessory:
- SAS-160 | Duct silencer Ø 160 mm
- CKS | Connection kit (flexible hose 1 m / Ø 160 mm + two hose clamps)

1.5 Technical specifications

Physical dimensions and properties	
Fan type	radial
Inlet diameter	Ø 200 mm (Ø 7.87 in.)
Outlet diameter	Ø 160 mm (Ø 6.30 in.)
Weight	15 kg (33 lbs.)
Performance	
Unrestricted airflow	2400 m³/h (1413 CFM)
Speed: - 50 Hz - 60 Hz	 2800 rpm 3400 rpm
Noise level	69 dB(A) according to ISO 3746
Electrical data	
Power consumption	0,75 kW (1 HP)
Available connection voltages	115V/1~/50Hz | 120V/1~/60Hz 230V/1~/50Hz | 230V/1~/60Hz 230V/3~/50Hz | 400V/3~/50Hz 400V/3~/60Hz
Max. start/stops per hour	30
Insulation class	F

	Refer to the available product data sheets for detailed product specifications.

1.6 Dimensions

Refer to Fig. I on page 7.

1.7 Pressure drop

Refer to Fig. II on page 7.

1.8 Ambient conditions

Min. operating temperature	5°C (41°F)
Nom. operating temperature	20°C (68°F)
Max. operating temperature	40°C (104°F)
Max. relative humidity	80%

2 PRODUCT DESCRIPTION

2.1 Components

The product consists of the following main components:

Fig. 2.1
A Motor
B Outlet opening
C Fan housing
D Fan wheel
E Inlet opening

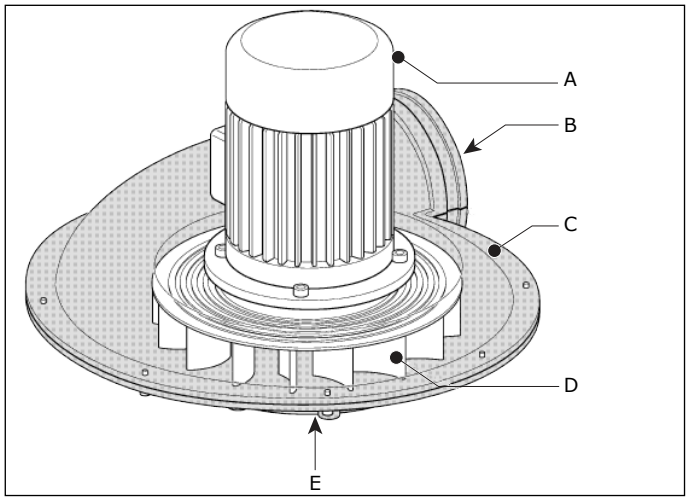


Fig. 2.1 Main components

2.2 Operation

The FAN-28 fan has been designed for extracting welding fumes and gases that are released during the most common welding processes.

The air is extracted through the inlet opening and exhausted via the outlet opening.

The fans are suitable for connection to:
- an extraction arm or crane
- a filter system

2.2.1 Control equipment

Plymovent provides various control equipment to control the fan. Refer to paragraph 1.3.2 for more information.

3 SAFETY INSTRUCTIONS

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. Observe all applicable 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.
- Keep the manual with the product.

Users

The use of this product is exclusively reserved to authorised, trained and qualified users. Temporary personnel and personnel in training can only use the product under supervision and responsibility of skilled engineers.

Intended use[1]

The product has been designed exclusively for extracting gases and particles which are released during the most common welding processes and for extracting vehicle 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 recognised 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

Do not change the specifications given in this manual.

Modifications

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

Installation

- The installation of this product is exclusively reserved to authorised, trained and qualified engineers.
- The electric connection must be executed in accordance with the local codes and requirements. 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.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (local restrictions may apply).

1. "Intended use" as explained in EN-ISO 12100-1 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.

- Do not install the product in front of entrances and exits that must be used for emergency services.
- Mind any gas and water pipes and electric cables.
- Make sure that the workspace is well illuminated.
- Stay alert and keep your attention to your work. Do not install the product when you are under the influence of drugs, alcohol or medicine.
- Air containing particles such as chromium, nickel, beryllium, cadmium, lead etc., should never be recycled. This air must always be brought outside the working area.

Use

WARNING!
Fire hazard! Do **not** use the product for:
- polishing applications in combination with grinding, welding or any other application that generate sparks (fibers from polishing or abrasive flap disks are highly flammable and pose a high risk of filter fires when exposed to sparks)
- arc-air gouging
- extracting flammable, glowing or burning particles or solids or liquids
- extracting of aggressive fumes (such as hydrochloric acid) or sharp particles
- extracting dust particles that are released when welding surfaces treated with primer
- sucking cigarettes, cigars, oiled tissues, and other burning particles, objects, and acids

WARNING!
Explosion hazard! Do **not** use the product for explosion-hazardous applications, e.g.:
- aluminium laser cutting
- grinding aluminium and magnesium
- explosive environments or explosive substances/ gases

WARNING!
Do **not** use the product for:
- extraction of hot gases (more than 70°C/158°F continuously)
- flame spraying
- oil mist
- heavy oil mist in welding fume
- extraction of cement, saw dust, wood dust etc.

- Inspect the product and check it for damage. Verify the functioning of the safety features.
- During use, always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area.
- Check the working environment. Do not allow unauthorised persons to enter the working environment.
- Protect the product against water and humidity.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.
- Make sure that the workshop, in the vicinity of the product, contains sufficient approved fire extinguishers (suitable for fire classes ABC).
- Do not leave any tools or other objects in or on the unit.

Service, maintenance and repairs

- Always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area.
- Do not leave any tools in or on the product.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (local restrictions may apply).

ATTENTION
Fully disconnect the fan from the main before you carry out service, maintenance and/or repair jobs.

Personal protective equipment (PPE)
Wear respiratory protection and protective gloves during service, maintenance and repairs.

4 INSTALLATION

4.1 Tools and requirements

You need the following tools and requirements to install the fan:
- basic tools
- electrical tools

4.1.1 To be sourced locally

- Hardware to install the mounting brackets NMB or TNB
- Mains cord

4.2 Unpacking

Make sure that the product is complete. The package contains:
- extraction fan
- mounting material to install the fan on the wall brackets NMB or TNB

4.3 Mounting

The mounting instructions of the fan depend on the selected wall bracket.

In case of mounting brackets type NMB, proceed with paragraph 4.3.1.

In case of mounting brackets type TNB, proceed with paragraph 4.3.2.

4.3.1 Mounting brackets NMB

Fig. 4.1
- Install the NMB as described in the corresponding manual.
- Instal the extraction arm as described in the corresponding manual.
- Install the fan (B) on the rotating flange (C) of the extraction arm with the supplied mounting material.
- Tighten the bolts firmly.
- Make sure that the seal between the connection flange and the fan is airtight.

Subsequently:
- Connect the outlet opening (A) of the fan to:
  - a spiral tube (Ø 160 mm); or
  - a flexible hose Ø 160 mm (CKS; ref. paragraph 1.4)
- Make sure that all connections are airtight.

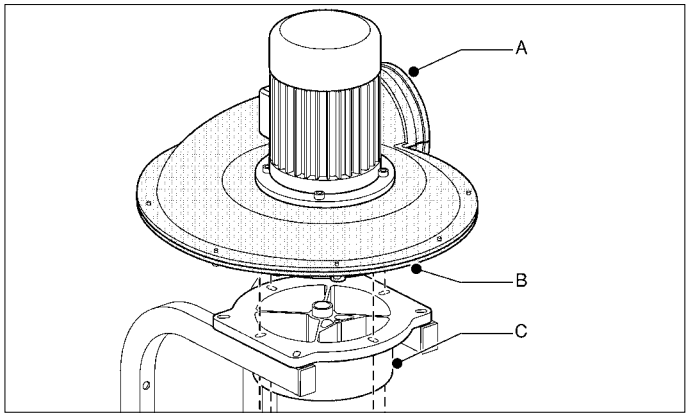


Fig. 4.1 Installation on NMB

4.3.2 Mounting brackets TNB

Fig. 4.2

- Install the TNB, including the connection flange (C), as described in the corresponding manual.
- Install the extraction arm on the connection flange, as described in the corresponding manual.
- Install the fan (B) on the connection flange (C) with the supplied mounting material.
- Tighten the bolts firmly.
- Make sure that the seal between the connection flange and the fan is airtight.

Subsequently:

- Connect the outlet opening (A) of the fan to:
  - a spiral tube (Ø 160 mm); or
  - a flexible hose Ø 160 mm (CKS; ref. paragraph 1.4)
- Make sure that all connections are airtight.

	In case the fan is connected to an extension crane (NEC), you must use the hose clamp (E) that is supplied with the crane.

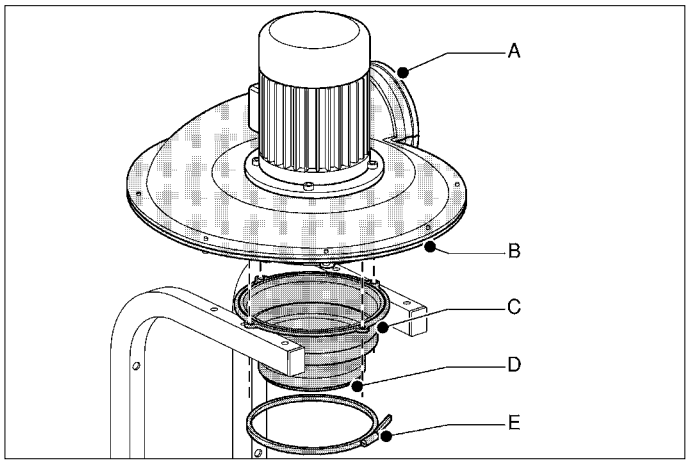


Fig. 4.2 Installation on TNB

4.4 Electric connection

	CAUTION! Make sure that the fan is suitable for connection to the local mains. You can find information about the connection voltage and frequency on the identification plate.

4.4.1 Mains cord

- Install a mains cord to the fan in accordance with the local requirements.

4.4.2 Control equipment

You can connect the fan via a control box (CB) or a motor protection switch (MPS).

To connect the control equipment, do the following.

- Connect the fan to the selected control equipment in accordance with the information on the identification plate on the motor.
- Connect the control equipment to the mains according to the separately supplied electrical diagram.

An arrow on the fan housing indicates the correct direction of rotation of the motor. The rotation is visible through the grid of the motor.

	CAUTION Be careful with rotating parts. Keep your hands and other objects away from the inlet opening of the fan.

- Make sure that the direction of rotation of the motor is correct.
- If necessary, invert the connection of the phases.

5 USE

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

6 MAINTENANCE

The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore we recommend to thoroughly inspect the complete product once every year beside the indicated periodic maintenance. For this purpose contact your supplier.

The maintenance activities in the table below indicated by [1] can be carried out by the user; other activities are strictly reserved for well-trained and authorised service engineers.

Component	Action	Frequency: every 12 months
Outside	Check the fan for damages	X [1]
	Clean it with a non-aggressive detergent	X [1]
Inside	Check the fan and fan housing for encrusted particles. Clean if necessary	X [1]
Sealing material	Check for damage. Replace if necessary	X [1]

7 TROUBLESHOOTING

If the fan 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.

WARNING
When you carry out the activities below:
- first de-energize the fan
- obey the safety regulations that are written in chapter 3

Symptom	Problem	Possible cause	Solution
The motor does not start	The fan does not function	No mains voltage	Connect the mains voltage
		The mains cord is defective	Repair or replace the mains cord
		Loose contacts	Repair the contacts
		Motor protection switch (MPS) defective	Replace the motor protection switch
		Control box (CB) defective	Repair or replace the CB
		Motor defective	Repair or replace the motor
The fan makes a humming sound, but does not run	Extraction capacity insufficient or no extraction at all	Motor uses 2 phases instead of 3 (3ph motor only)	Repair the phase connection
		Motor capacitor defective or not connected (1ph motor only)	Connect or replace the motor capacitor
Motor stops automatically	The fan does not function	Motor protection switch (MPS) is activated	Let the motor cool down for some time
		Inverted direction of rotation of the motor (3ph motor only)	Change the direction of rotation
		Motor defective	Repair or replace the motor
Poor extraction capacity	The fan does not function properly	Inverted direction of rotation of the motor (3ph motor only)	Change the direction of rotation
		Motor defective	Repair or replace the motor
		The fan is polluted	Clean the fan blades
	Extraction of false air	Damaged or worn sealing material	Replace the sealing material
Vibrations in the fan	Fan is not steady	Imbalance in the fan	Clean the fan blades

8 SPARE PARTS

The following spare parts are available for the fan;

- refer to exploded view Fig. III on page 7

9 DISPOSAL

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

CE DECLARATION

CE declaration of conformity for machinery

We, Plymovent Manufacturing B.V., Koraalstraat 9, 1812 RK Alkmaar, Netherlands, herewith declare, on our own responsibility, that the product:

- FAN-28

which this declaration refers to, is in accordance with the conditions of the following Directives:
- Machine Directive 2006/42 EC
- EMC 2014/30 EU
- LVD 2014/35 EU
- ErP Directive 2009/125 EC

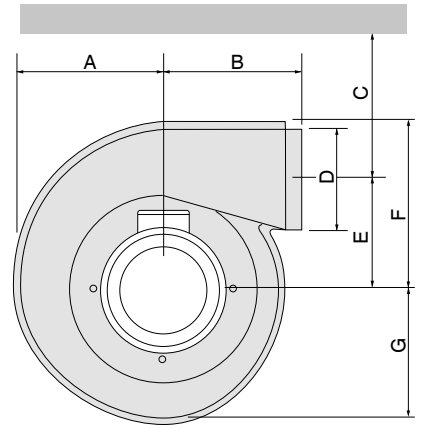
Signature:



Name: M.S.J. Ligthart
Position: Product Manager
Date of issue: 1st April 2020

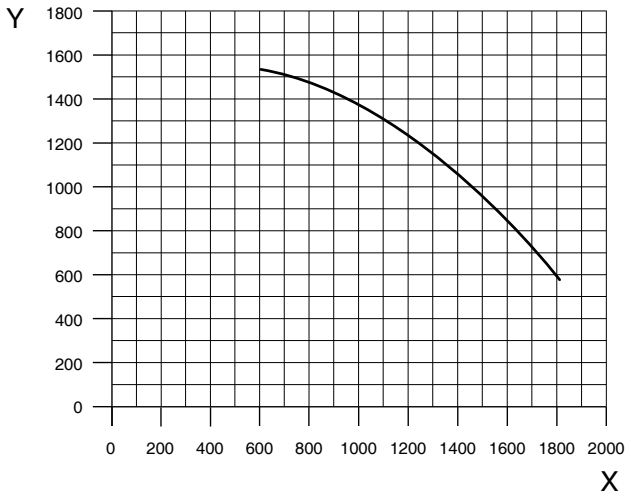
*An **installation** is defined as a combination of several finished products or components that are assembled by an installer at a given place. The various parts of the installation are intended to operate together in a particular environment and to perform a specific task. The entire installation must comply with the relevant directives and standards. The assembly instructions given by the manufacturer, as well as the whole method of installation, must be in accordance with good engineering practices within the context of installations, as well as installation rules. Considering the above, the installer will be responsible for completing the installation and issuing the final CE Declaration of Conformity.*

Fig. I Dimensions



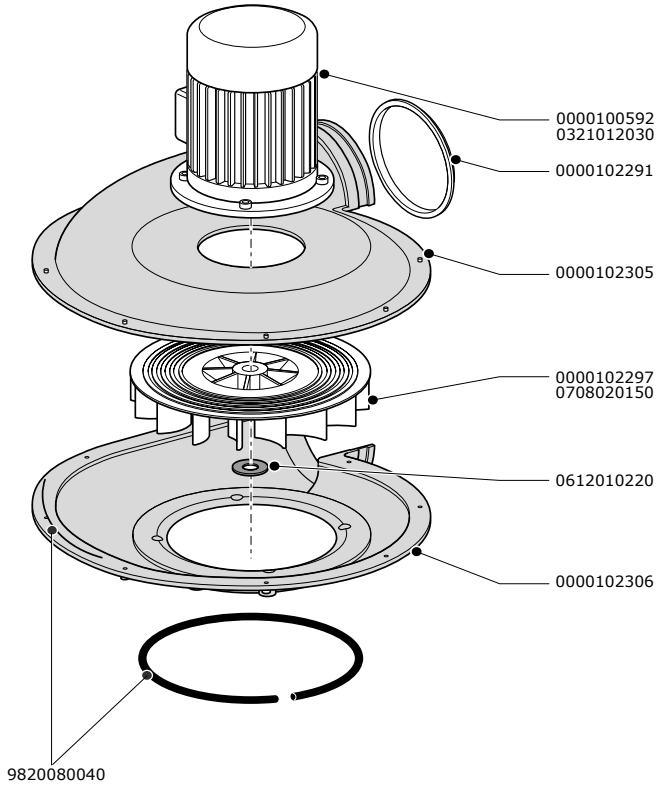
	mm	inch
A	250	9.84
B	230	9.06
C	130	5.12
D	160	6.30
E	167	6.57
F	275	10.83
G	225	8.86
H	Ø 160	Ø 6.30
I	300	11.81
J	70	2.75

Fig. II Pressure drop



X = Airflow (m³/h)
Y = Static pressure (Pa)

Fig. III Spare parts



Art. no.	Description
General	
0000102291	Sealing ring
0000102297	Aluminium fan wheel 50Hz
0000102305	Housing FAN-14/28/MNF/mobile units, motor side
0000102306	Housing FAN-14/28/MNF, suction side
0612010220	Adjusting ring 19x1
0708020150	Aluminium fan wheel 60Hz
9820080040	Sealing set FAN 14/28/MNF
FAN-28 (400V/3ph/50Hz)	
0000100592	Motor 0,75 kW, 230-400V/3ph/50-60Hz
FAN-28 (230V/3ph/50Hz)	
0000100592	Motor 0,75 kW, 230-400V/3ph/50-60Hz
FAN-28 (230V/1ph/50Hz)	
0321012030	Motor 0,75kW, 115-230V/1ph/50-60Hz
FAN-28 (115V/1ph/50Hz)	
0321012030	Motor 0,75kW, 115-230V/1ph/50-60Hz

PLYMOVENT®

clean air at work

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