



LAB FURNITURE & FUME CUPBOARDS
PLASTIC FANS & FABRICATION

APMG Limited
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THE DURAFAN RANGE OF CORROSION RESISTANT FANS

GENERAL HEALTH AND SAFETY DATA

The fan's main purpose is to develop a pressure drop, which can be used to move a gas from one place to another, to do this it uses a rotor.

This type of machine always carries a remote chance that the impeller may disintegrate. Clearly such a device needs to be sited with care.

In order to minimise this risk please keep the following points in mind:

- a) The fan case is non load bearing
- b) Use flexible connections
- c) Ensure that any motor of 4 kW capacity and above is fitted with a means of soft start, and stop
- d) Prior to initial start up make sure the rotor turns freely in the fan case
- e) After start up make sure the gas temperature does not exceed 25°C
- f) If you are to use an indirectly driven fan then before increasing the fan speed make sure it is both safe to do so and that the motor has sufficient power

Connection to the electrical supply should only be made by a qualified electrician and should comply with the prevailing regulations.

These Operating & Maintenance Instructions should be read and understood prior to work being undertaken.

ALL COPIES SHOULD BE KEPT IN A SAFE PLACE AS FURTHER COPIES WILL BE CHARGEABLE

IF YOU ARE IN DOUBT PLEASE DO NOT HESITATE TO CONTACT US



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OPERATING AND MAINTENANCE INSTRUCTIONS
FOR 'G' SERIES FANS

ORDER NO: 1234

FAN SIZE: H450

FAN SERIAL NO: 1234

VOLUME: 1.39m³/sec

PRESSURE: 1050Pa

FAN SPEED: 1420 rpm

DRIVE ARRANGEMENT: Direct

MOTOR MAKE: TEC - ATEX II 2G EExde IIC T4

kW: 4.0

FRAME SIZE: 112

SPEED: 1420

ENCLOSURE: IP66

SUPPLY: 415-3-50

FULL LOAD CURRENT: 7.90 Amps

STARTING CURRENT: 45.82 Amps

Instructions for the

INSTALLATION AND MAINTENANCE

of the Durafan® 'H' series range of forward curved centrifugal fans

ATEX Code 11 2 G c 11B T4 Tamb -10°C to +40°C

Introduction

The Durafan® 'H' series range of forward curved centrifugal fans are designed to handle corrosive gases.

The range comprises ten sizes from 280 to 1090 (inlet diameter) with duties up to 25m³/sec @ 2000Pa FSP.

Fans are manufactured to a high standard and assembled and tested to strictly controlled works procedures. APMG will not accept responsibility for faults on fans that have had work on them carried out by unauthorised personnel.

General Description

The Durafan® 'H' series range is designed to provide a high level of protection against corrosion from a wide range of corrosive gases.

All parts in contact with the air stream are manufactured from corrosion resistant thermoplastic materials.

The fan and drive arrangement have been robustly constructed from rolled steel sections which have been hot dipped galvanised after manufacture. All fixings are of 316 grade stainless steel. Fans can be supplied with either an indirect or direct coupled drive arrangements and a full range of ancillaries is available including anti-vibration mountings and flexible inlet and outlet connections.

Health & Safety

Health & Safety at Work etc. Act 1974. It is essential that all personnel shall adhere at all times to safe working practices and that equipment is installed, earthed and guarded in accordance with current legislation.

A centrifugal fan is a dynamically stressed flow machine, which may only be operated by qualified personnel as and when all safety instructions have been adhered to and only when the fans are in goods state of repair and balance.

Only trained and competent engineers should carry out work on this fan.

It is essential that all operating and maintenance instructions appertaining to the fan and associated equipment have been read, understood and implemented before fan use.

All personnel must be aware of any harmful gases, liquids and substances which may be passing through the fan which would require the use of protective clothing, glasses, special handling etc. and in particular, correct action to be taken if accidents occur (immediate remedies, antidotes etc.).

WARNING

- 1. Plastic fans are adversely affected by high and low temperatures. This fan is designed to handle air at between +5°C and +40°C and operate in ambient air at -10°C to +40°C unless otherwise agreed at time of tender. Operating this fan outside this range may lead to failure.**
- 2. The construction materials have been selected specifically to handle only the gases specified by you at time of tender.**

Handling

Fans of this type are heavy (see specification section), use appropriate lifting equipment. **DO NOT** attempt to lift them manually.

A Forklift truck can be used lifting from below the fan support frame. If a crane is to be employed use the lifting holes provided.

Always handle the fan with care, plastic components are easily damaged and knocks can cause misalignment of key components.

Storage

If fans are to be placed in storage, chose an area where they are protected from damage. If the storage period is likely to be more than one month arrangements should be made to turn the fan impeller periodically to prevent damage to the bearings.

INSTALLATION

Prior to installation the fan should be inspected thoroughly paying particular attention to signs of damage or knocks.

Check that the impeller is free to rotate.

Check the inside of the fan casing for foreign bodies; this point is also relevant to the ductwork system. Foreign bodies, which are allowed to be drawn into the rotating fan impeller, may become trapped on the fan blades leading to out of balance forces or result in catastrophic failure.

The fan should be located in an area that provides adequate access for maintenance procedures. This applies particularly to the drive belt access cover, the motor terminal box and the inspection door. On larger fans the inlet duct should incorporate a removable section to enable easy access to the fan impeller.

The performance of this fan can be affected by poor duct design; avoid the use of Banjo type connections and bends adjacent to the inlet.

The fan should be securely bolted to a level base. A concrete base provides the best structure but if the fan is to be installed on a steel platform. Sections should be adequate strength to prevent flexing.

The fan casing is none load bearing. Inlet and outlet ducts must be independently supported and we strongly recommend the use of inlet and outlet flexible connections.

Starters

Fans fitted with motors of 4.0kW and below can be started direct on line. Fans with motors above 4.0kW should be started using a Star/Delta starter or other type of soft start.

Rotation

The performance of this fan will be drastically impaired if not run with the correct rotation. The correct rotation is indicated by the arrow attached to the fan casing. See motor wiring diagram for rotation change instructions.

Electrical Installation & Safety

It is important that the motor enclosure is soundly earthed by a metallic conduit run, by separate earth continuity conductor, or by separate earth bonding. In all cases the installation must be made and tested for earth continuity, by a competent person before the supply is applied to the motor.

Wiring diagrams are supplied with each motor pertinent to its installation. Check that the supply details correspond with the data carried on the motor rating plate. Check the security of all electrical connections, plugs, sockets etc. before switching on the supply.

MAINTENANCE

WARNING

Whenever work is being carried out on our fans, the electrical supply should be switched off and the isolator locked and/or the fuses withdrawn.

IMPORTANT

Motor bearings have the potential to produce incandive hot surfaces. It is paramount that routine inspection procedures be put into place in accordance with the information provided with this fan.

General

Maintenance of our fans is matter of routine, which is usually determined by the process conditions and the location of the fan. Clearly the worse these conditions are, the more often these routines must be carried out.

If the process gas stream contains particulates or the location is an area where airborne dust particles can settle, particular care must be taken to ensure build-up of deposits do not accumulate.

Clearances on moving parts must be maintained and a routine for cleaning must be established.

Classic indications of solids build-up on the impeller are out of balance forces leading to abnormal vibration. A routine of vibration monitoring must be included in the maintenance schedule.

When deposits are found these should be removed thoroughly. Care should be exercised, particularly when cleaning the inside of the fan as it is likely that these deposits may be harmful. A risk assessment should be carried out.

Motor

The motor should be kept as clean as possible. Check that the cowl intake vents are not obstructed – this would restrict the flow of cooling air to the motor and cause overheating. On assembly, bearings are correctly packed with grease sufficient for at least two years continuous operating without attention under normal conditions (Equivalent to approximately 5 years of 12 hours per day service). The recommended grease is Shell Alvania RA, or other maker's equivalent. The maintenance of the motor bearings is described in the manufacturer's instructions.