



LAB FURNITURE & FUME CUPBOARDS
PLASTIC FANS & FABRICATION

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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

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OPERATING AND MAINTENANCE INSTRUCTIONS
FOR 'G' SERIES FANS

ORDER NO: 1234

FAN SIZE: G250

FAN SERIAL NO: 1234

VOLUME: 0.32m³/sec

PRESSURE: 420Pa

FAN SPEED: 1320 rpm

DRIVE ARRANGEMENT: Indirect

MOTOR MAKE: TEC

kW: 0.75

FRAME SIZE: 80

SPEED: 1440

ENCLOSURE: IP 55

SUPPLY: 415-3-50

FULL LOAD CURRENT: 1.63 Amps

DOL STARTING CURRENT: 9.78 Amps

Fan Case:

Fabricated from polypropylene sheet.

Impeller:

Forward curved multi-vane construction, moulded in polypropylene.

Stand:

Fabricated from mild steel rolled sections with a hot dipped galvanised finish.

Drive/Shaft Guard:

Fabricated from aluminium and finished in black epoxy resin.

Anti Vibration Mountings:

TMS08100 manufactured by A V Industrial Products or equivalent.

Motors:

TEC machines or equivalent manufacture relevant standard – BS 4999, ISO 9001, EN29001 Class ‘F’ insulation and designed to IP 55 unless otherwise stated.

Bearings:

These are generally plummer blocks complete with double row, self-aligning ball bearings attached to shaft with taper sleeves. Manufacture – SKF or equivalent.

<u>Fan Type</u>	<u>Race</u>	<u>Taper Sleeve</u>	<u>Block</u>
G250	1306 EK TN9	H306	SNH 507-606

Drive:

Wedge belt drives are employed which conform to ISO R 608 and BS 3790 standards. The taper lock principle is used to fix pulleys to shafts.

The following drive assembly is fitted to your fan:

Fan Pulley:	90	dia	x	1	Grooves	SPZ
Fan Bush:	1610	with		25	Bore	
Motor Pulley:	80	dia	x	1	Grooves	SPZ
Motor Bush:	1210	with		19	Bore	
1 Off	SPZ	Wedgebelt		Size	1060	

Installation of a Fan:

The fan should be sited on a level base, or alternatively, utilise a purpose made grillage. Anti-vibration mountings should be positioned between the fan and the supporting structure in order that vibration is not transmitted. It is important that the fan is fitted with flexible connections on both the inlet and discharge. The connections must be aligned so that no external forces are brought to bear on the fan case.

The performance figures are based on good inlet conditions to the fan. Poor inlet conditions (i.e. banjo connections, loose inlet flexibles, bends adjacent to the inlet etc.) should be avoided since they are detrimental to the performance and induce airborne noise.

The motors are suitable for direct on line starting below 4 kW. It is strongly recommended that starters with 'single phasing protection' be employed in order to safeguard the motor from installation faults.

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, and for this feature, by a competent person before the supply is applied to the motor.

Connection 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.

It may be necessary to 'jog' the motor in order to determine the rotation. Instructions on reversing the rotation are given on the relevant connection diagram. If the fan and motor has been put in storage, check that no foreign matter, such as paper, etc., is present inside, as this can lead to disintegration of the impeller upon starting.

Test the installation resistance between phases, also to earth, with a 'Megger' at 500 v. This should not be less than 1 ohm. The motor should be taken to a dry, warm place until the correct resistance value is attained.

If these motors are not fitted with anti condensation heater coils and intermittent use is envisaged in a cold environment, a further check should be made to ensure that the terminal box is free from condensation.

Before Starting the Fan:

Check that the impeller is free to rotate without catching. Check that the cable entry to the motor terminal box is secure and weatherproof.

Check that the ductwork is free from debris and that it is of adequate construction to withstand the pressure developed. Check that dampers in the system are shut when starting up to avoid the possible overloading of the motor. When commissioning, the dampers may be adjusted to give the design duty required.

After Starting the Fan

Immediately check that the current being drawn does not exceed the full load current shown on the motor name plate.

If you are using a 3 phase motor make sure that the currents measured do not vary by more than 5%.

Maintenance

Fan Case:

The case requires little attention other than a wash occasionally to remove atmospheric grime. The drain point should be kept clear of any build up of contaminant sedimentation.

If you are to work within the fan case then find out what fume/material may have passed through the system and protect yourself accordingly.

Impeller and Shaft:

The impeller should be visually inspected periodically and any foreign matter carefully removed with water and mild detergent. The shaft should be inspected for corrosion. Rust must be removed with a wire brush and a suitable rust remover and inhibitor applied. Always wear adequate protection.

Motor:

The motor should be kept as clean as possible. Check that the cowl intake vents are not choked – 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 operation 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 manufacturers instructions.

Bearings:

All bearings are housed, in plummer blocks, and are self-aligning with built-in seals to prevent the ingress of foreign matter or moisture. On assembly, the generous capacity of the plummer block ensures sufficient lubricant for the life of the bearing. Regreasing may be considered necessary if the running is extended or extremes of temperature or excessively dirty or wet conditions are encountered. Avoid over-greasing since this may induce overheating and premature bearing failure. If a bearing shows any sign of wear, it should be replaced immediately, owing to out of balance forces. The ball bearing plummer blocks have ball races, which may be replaced. The recommended grease is Shell Albida RL2 or equivalent.

Removal of Drive:

1. Isolate the fan from the electricity supply.
2. Remove drive guards.
3. Remove fan shaft pulley using the taper lock release system.
4. Remove the belts
5. Remove the motor pulleys in a similar way to 3

For further information see the attached drawing titled “Drive Alignment / Tensioning”.

Removal of Bearings:

Before removal of the fan shaft, measure, and note, the overhang from the rear of the pedestal to the end of the shaft.

For further information see the attached drawing titled “Bearing Assembly”.

Removal of Ball Races:

Mark the positions of the plummer blocks onto the pedestal. The bearing caps are identified so that they do not become interchanged on re-assembly. The inboard bearing is dismantled first. The tabbed locking washer is located and the locking tab carefully bent out of the slotted locking ring nuts.

The locking ring is turned to release the locking taper. It may be necessary to apply external force to the taper with non-ferrous drift or a soft-faced mallet, in order to release the taper.

Care must be exercised here so that the shaft is not marked.

This procedure is repeated for the outboard bearing. Note, that this is the ‘fixed bearing’ denoted by the locking ring either side of the race within the block. These are pulled out and cleaned or greased.

When both locking tapers are free, the bearing mounting bolts are released and blocks slid from under the shaft. Ensure that the plastic impeller does not contact the inside of the case or damage may result. The plummer blocks should be degreased, cleaned and dried ready for re-assembly. New seals should be fitted.

Replacement of:

Sub-assemble the new races and taper locking sleeves. Support the impeller and shaft.

Slide on the inboard bearing race, locking threads facing position previously marked.

Repeat for the outboard bearings.

Partially tighten taper sleeves and set to final position. Finally tighten the mounting bolts with the blocks in the final positions previously marked.

Set the shaft overhead and tighten the taper locking sleeves. Lock the sleeve nuts with the tabbed washers.

Replace the locking rings in the outboard bearings.

Change the blocks with the correct amount of grease.

The grease should be trowelled into the races and worked into the bottom of the block. Avoid over greasing as this can lead to bearing failure.

The caps should be replaced and fully tightened. The bearings should be checked for free running.

NOTE!

If the fan is not used for any length of time, then the bearings should be turned regularly to avoid race damage, which may induce premature failure of the bearing.

Prior to altering the speeds of these fans, it is important that you consult our technical staff for advice.

Our policy is one of continuous improvement and we reserve the right to alter any details of our products at any time without giving notice.

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