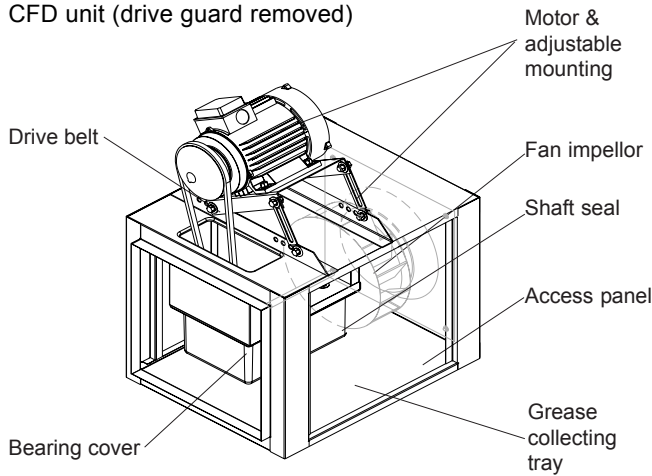





# Centrifume - CFD Units

## Installation, Operation and Maintenance Manual


Fig.1  
 CFD unit (drive guard removed)



**IMPORTANT**   
 The Unit should NOT be lifted by handles, lids, housings, shaft, motor or drive


When moving the unit, handle with care and in such a manner as to limit damaging the casework. Particular care must be taken when moving weatherproof units, any damage to the external powder coat finish may reduce the ability to resist corrosion. Units are to be rigged and lifted using spreaders, taking into account the weight of the unit, lifting gear should be arranged so as not to bear on the casework.

### 3 Installation

**IMPORTANT**   
 Only experienced fitters should undertake this work

The entire system must be considered for safety purposes and it is the responsibility of the installer to ensure that all of the equipment is installed in compliance with the manufacturer's recommendations, with due regard to the current HEALTH AND SAFETY AT WORK ACT and conforms to all relevant statutory regulations. Where a unit is installed so that a failure of components could result in injury to personnel, precautions should be taken to prevent such an injury.

For optimum unit performance, careful consideration must be paid to the location of the unit in relation to the ductwork and associated items; placing the unit directly adjacent to a bend in ductwork will impede airflow and reduce performance see *fig. 2*. Note: where provided, flanges and spigots should not

**IMPORTANT**   
 This manual must be read in full before installation, operation and maintenance of the units supplied

<b>Contents</b>		page
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## 1 Introduction

The CFD Centrifume is a range of duct mounted, belt driven fans, designed to meet the arduous conditions found in restaurant kitchen hood extract systems - hot air with high grease content. The standard ambient operating temperature of the unit is -20 to +35°C, with in-duct airflow up to 190°C.

For further technical details contact VES on **08702 404340**, quoting the sales order (SO) number and the unit type as found on the unit nameplate or visit **www.ves.co.uk**.

## 2 Receipt of Goods/Handling

Immediately upon receipt of goods, check for possible damage in transit, paying particular attention to fan impeller, motor and drive belts. Prior to installation please check to ensure smooth rotation of the impeller after transit.

Also check to ensure that any ancillary items are included. These will normally be supplied fitted or taped to the unit (in the case of small items).

In the event of any damage having occurred or if any item found to be missing, it is essential to inform VES Andover Ltd. within **3 working days** of delivery quoting sales order (SO) number and the unit type as found on the unit nameplate. After this period we will be unable to accept any claim for damaged or missing goods.

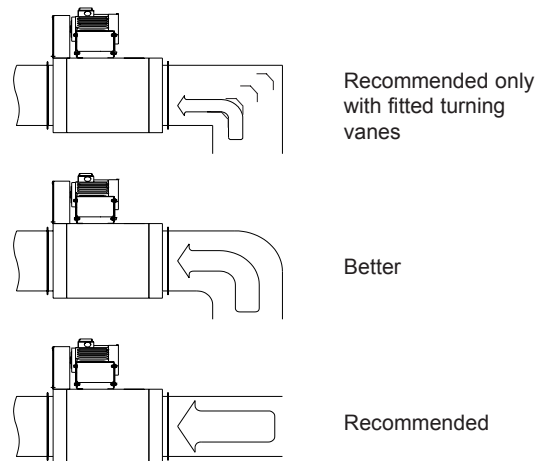


Fig.2 Recommended installation

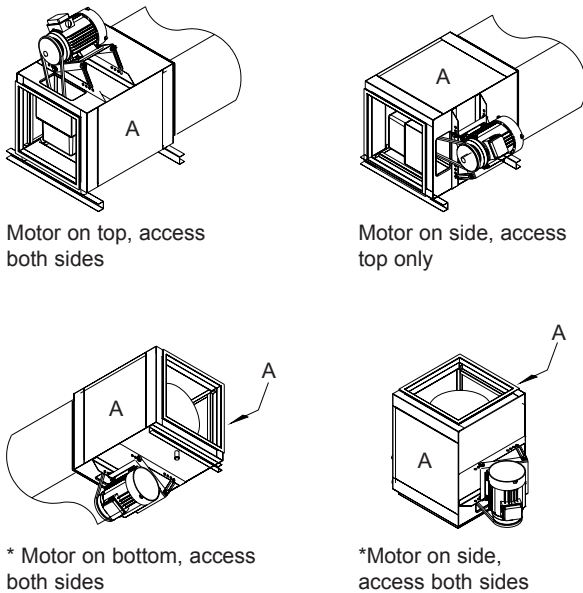
The CFD unit is designed to be mounted in any of the orientations as indicated in *fig. 3*. If supplied with feet and anti-vibration mounts the unit can be suspended from the ceiling using drop-rods, or bolted to the plant room floor. To aid installation, there is a label marked "top" - always install with the label pointing up.

It is the installer's responsibility to ensure that safe working access to the unit for maintenance is provided. Consideration must also be given by the installer for adequate illumination of the unit's location in order for safe maintenance.

# Centrifume - CFD Units

## Installation, Operation and Maintenance Manual

Fig.3 CFD orientation



\* Motor on bottom, access both sides  
 \* Motor on side, access both sides  
 \* In this orientation a grease collection tray is not available

### 4 Set-up

Motor and electrical details must be checked prior to connection to electricity supply. All motor information can be found on the unit data sheet supplied attached to the unit.

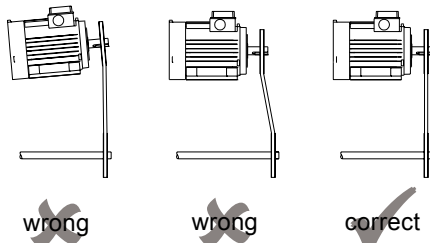


Fig.4 Pulley alignment

Ensure correct pulley alignment as indicated in fig.4 above. To check the tension of the drive belt apply a force perpendicular to the centre of the belt span sufficient to deflect the belt 16mm for every metre of span length, as indicated in fig.5. The force required to deflect the belt should be from 1.5 to 2kg. After the unit has been positioned, re-check that the impeller is smooth running as this may have moved during transit.

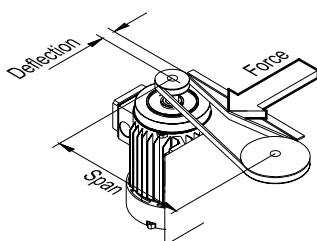


Fig.5 Belt tension

The impeller should rotate freely and this position is factory set. In the unlikely event of movement during transit realign the impeller with the inlet eye as follows:

Remove the access panels and loosen the four bolts holding the inlet eye in place (see fig. 6). Align the inlet eye and impeller ensuring the inlet eye is central to the impeller. Hand tighten the bolts and rotate the impeller to ensure the impeller runs smoothly, secure into position by tightening the retaining bolts.

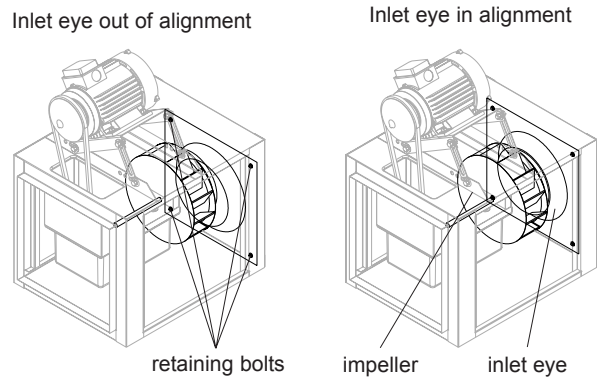


Fig.6 Impeller / inlet eye alignment.

Always make sure the fan is rotating in the correct direction. Direction of flow is indicated on the unit if unsure refer to fig. 7.

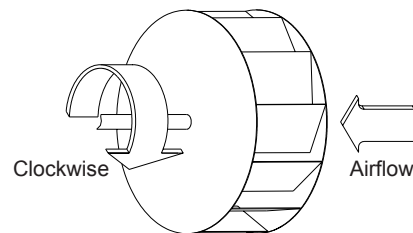


Fig.7 As viewed from the back of the impeller - correct rotation of impeller

### 5 Wiring

**IMPORTANT** Electrical supply must be fully isolated before attempting to affect any work on this unit

The CFD Centrifume units comprise a single inlet backward curve fan powered by a belt driven drive assembly, with optional termination to a local isolator.

All electrical connections to any unit must be carried out in accordance with the current edition of the I.E.E REGULATIONS and only competent electricians should be allowed to affect any electrical work to our units.

**IMPORTANT** Do not connect any unit to an electrical supply voltage outside of that indicated on the motor nameplate

A local isolator must be fitted and mains cables should be suitably sized see fig. 8 & 9 and terminated as shown on the appropriate wiring diagram see fig. 10-15. Ensure that suitable strain relief is fitted to the mains supply as appropriate.



# Centrifume - CFD Units

## Installation, Operation and Maintenance Manual

### 5 Wiring continued

Fig. 8 Standard electrical details • Three Phase 400V 50Hz

3 Phase Motor Details					
Model	Fan RPM	Motor size (kW)	Motor RPM	FLC**	SC*
CFD/080/STD/1100-3	1100	0.18	1330	0.60	1.38
CFD/080/STD/1400-3	1400	0.18	1330	0.60	1.38
CFD/080/STD/1700-3	1700	0.25	1340	0.70	2.24
CFD/080/STD/2000-3	2000	0.37	1370	1.18	3.89
CFD/080/STD/2300-3	2300	0.55	1400	1.60	5.76
CFD/080/STD/2600-3	2600	0.75	1410	2.20	9.68
CFD/100/STD/1300-3	1300	0.18	1330	0.60	1.38
CFD/100/STD/1550-3	1550	0.25	1340	0.70	2.24
CFD/100/STD/1800-3	1800	0.37	1370	1.18	3.89
CFD/100/STD/2050-3	2050	0.55	1400	1.60	5.76
CFD/100/STD/2300-3	2300	0.75	1410	2.20	9.68
CFD/100/STD/2500-3	2550	1.10	1385	2.80	12.32
CFD/140/STD/900-3	900	0.18	1330	0.60	1.38
CFD/140/STD/1100-3	1100	0.25	1340	0.70	2.24
CFD/140/STD/1300-3	1300	0.55	1400	1.60	5.76
CFD/140/STD/1500-3	1500	0.75	1410	2.20	9.68
CFD/140/STD/1700-3	1700	1.10	1385	2.80	12.32
CFD/140/STD/1900-3	1900	1.50	1400	3.60	20.52
CFD/140/STD/2100-3	2100	2.20	1400	5.30	25.44
CFD/160/STD/800-3	800	0.18	1330	0.60	1.38
CFD/160/STD/1000-3	1000	0.37	1370	1.18	3.89
CFD/160/STD/1200-3	1200	0.75	1410	2.20	9.68
CFD/160/STD/1400-3	1400	1.10	1385	2.80	12.32
CFD/160/STD/1600-3	1600	1.50	1400	3.60	20.52
CFD/160/STD/1800-3	1800	3.00	1425	6.80	31.28
CFD/160/STD/2000-3	2000	3.00	1425	6.80	31.28
CFD/180/STD/800-3	800	0.37	1370	1.18	3.89
CFD/180/STD/900-3	900	0.55	1400	1.60	5.76
CFD/180/STD/1000-3	1000	0.75	1410	2.20	9.68
CFD/180/STD/1100-3	1100	1.10	1385	2.80	12.32
CFD/180/STD/1200-3	1200	1.10	1385	2.80	12.32
CFD/180/STD/1300-3	1300	1.50	1400	3.60	20.52
CFD/180/STD/1400-3	1400	2.20	1400	5.30	25.44
CFD/180/STD/1500-3	1500	3.00	1425	6.80	31.28
CFD/180/STD/1600-3	1600	3.00	1425	6.80	31.28
CFD/180/HP/1100-3	1100	0.55	1400	1.60	5.76
CFD/180/HP/1300-3	1300	1.10	1385	2.80	12.32
CFD/180/HP/1500-3	1500	1.50	1400	3.60	20.52
CFD/180/HP/1700-3	1700	2.20	1400	5.30	25.44
CFD/180/HP/1900-3	1900	3.00	1425	6.80	31.28
CFD/200/STD/750-3	750	0.55	1400	1.60	5.76
CFD/200/STD/850-3	850	0.75	1410	2.20	9.68
CFD/200/STD/950-3	950	1.10	1385	2.80	12.32
CFD/200/STD/1050-3	1050	1.50	1400	3.60	20.52
CFD/200/STD/1150-3	1150	2.20	1400	5.30	25.44
CFD/200/STD/1250-3	1250	2.20	1400	5.30	25.44
CFD/200/STD/1350-3	1350	3.00	1425	6.80	31.28

3 Phase Motor Details					
Model	Fan RPM	Motor size (kW)	Motor RPM	FLC**	SC*
CFD/200/HP/900-3	900	0.55	1400	1.60	5.76
CFD/200/HP/1000-3	1000	0.75	1410	2.20	9.68
CFD/200/HP/1100-3	1100	1.10	1385	2.80	12.32
CFD/200/HP/1200-3	1200	1.50	1400	3.60	20.52
CFD/200/HP/1300-3	1300	1.50	1400	3.60	20.52
CFD/200/HP/1400-3	1400	2.20	1400	5.30	25.44
CFD/200/HP/1500-3	1500	2.20	1400	5.30	25.44
CFD/200/HP/1600-3	1600	3.00	1425	6.80	31.28
CFD/240/STD/600-3	600	0.55	1400	1.60	5.76
CFD/240/STD/700-3	700	1.10	1385	2.80	12.32
CFD/240/STD/800-3	800	1.50	1400	3.60	20.52
CFD/240/STD/900-3	900	2.20	1400	5.30	25.44
CFD/240/STD/1000-3	1000	3.00	1425	6.80	31.28
CFD/240/STD/1100-3	1100	4.00	1400	9.20	55.20
CFD/240/STD/1200-3	1200	5.50	1430	11.40	74.10
CFD/240/HP/875-3	875	1.10	1385	2.80	12.32
CFD/240/HP/975-3	975	1.50	1400	3.60	20.52
CFD/240/HP/1075-3	1075	2.20	1400	5.30	25.44
CFD/240/HP/1175-3	1175	3.00	1425	6.80	31.28
CFD/240/HP/1275-3	1275	4.00	1400	9.20	55.20
CFD/240/HP/1375-3	1375	5.50	1430	11.40	74.10
CFD/240/HP/1475-3	1475	5.50	1430	11.40	74.10
CFD/240/HP/1575-3	1575	7.50	1445	14.80	96.20
CFD/300/STD/550-3	550	2.20	1400	5.30	25.44
CFD/300/STD/650-3	650	2.20	1400	5.30	25.44
CFD/300/STD/750-3	750	4.00	1400	9.20	55.20
CFD/300/STD/850-3	850	5.50	1430	11.40	74.10
CFD/300/STD/950-3	950	7.50	1445	14.80	96.20
CFD/300/HP/650-3	650	1.50	1400	3.60	20.52
CFD/300/HP/750-3	750	2.20	1400	5.30	25.44
CFD/300/HP/850-3	850	3.00	1425	6.80	31.28
CFD/300/HP/950-3	950	4.00	1400	9.20	55.20
CFD/300/HP/1050-3	1050	5.50	1430	11.40	74.10
CFD/300/HP/1150-3	1150	7.50	1445	14.80	96.20
CFD/360/STD/400-3	400	1.50	1400	3.60	20.52
CFD/360/STD/500-3	500	2.20	1400	5.30	25.44
CFD/360/STD/600-3	600	4.00	1400	9.20	55.20
CFD/360/STD/700-3	700	7.50	1445	14.80	96.20
CFD/360/STD/800-3	800	9.20	1440	18.50	118.40
CFD/360/HP/600-3	600	2.20	1400	5.30	25.44
CFD/360/HP/700-3	700	3.00	1425	6.80	31.28
CFD/360/HP/800-3	800	5.50	1430	11.40	74.10
CFD/360/HP/900-3	900	7.50	1445	14.80	96.20
CFD/360/HP/1000-3	1000	9.20	1440	18.50	118.40

\* SC - Nominal starting current (A)  
 \*\* FLC - Full load starting current (A)



# Centrifume - CFD Units

## Installation, Operation and Maintenance Manual

### 5 Wiring Continued

Fig.9 Standard electrical details • Single Phase 230V 50Hz

1 Phase Motor Details					
Model	Fan RPM	Motor size (kW)	Motor RPM	FLC**	SC*
CFD/080/STD/1100-1	1100	0.18	1290	2.0	3.60
CFD/080/STD/1400-1	1400	0.18	1290	2.0	3.60
CFD/080/STD/1700-1	1700	0.25	1340	2.3	5.06
CFD/080/STD/2000-1	2000	0.37	1370	3.0	8.10
CFD/080/STD/2300-1	2300	0.55	1390	4.0	12.80
CFD/80/STD/2600-1	2600	0.75	1445	4.9	26.64
CFD/100/STD/1300-1	1300	0.18	1290	2.0	3.60
CFD/100/STD/1550-1	1550	0.25	1340	2.3	5.06
CFD/100/STD/1800-1	1800	0.37	1370	3.0	8.10
CFD/100/STD/2050-1	2050	0.55	1390	4.0	12.80
CFD/100/STD/2300-1	2300	0.75	1445	4.9	26.64
CFD/100/STD/2500-1	2500	1.10	1415	7.4	26.64
CFD/140/STD/900-1	900	0.18	1290	2.0	3.60
CFD/140/STD/1100-1	1100	0.25	1340	2.3	5.06
CFD/140/STD/1300-1	1300	0.55	1390	4.0	12.80
CFD/140/STD/1500-1	1500	0.75	1445	4.9	26.64
CFD/140/STD/1700-1	1700	1.10	1415	7.4	26.64
CFD/140/STD/1900-1	2900	1.50	1430	9.0	42.30
CFD/140/STD/2100-1	2100	2.20	1450	12.5	57.50
CFD/160/STD/800-1	800	0.18	1290	2.0	3.60
CFD/160/STD/1000-1	1000	0.37	1370	3.0	8.10
CFD/160/STD/1200-1	1200	0.75	1445	4.9	26.64
CFD/160/STD/1400-1	1400	1.10	1415	7.4	26.64
CFD/160/STD/1600-1	1600	1.50	1430	9.0	42.30
CFD/180/STD/800-1	800	0.37	1370	3.0	8.10
CFD/180/STD/900-1	900	0.55	1390	4.0	12.80
CFD/180/STD/1000-1	1000	0.75	1445	4.9	26.64
CFD/180/STD/1100-1	1100	1.10	1415	7.4	26.64
CFD/180/STD/1200-1	1200	1.10	1415	7.4	26.64
CFD/180/STD/1300-1	1300	1.50	1430	9.0	42.30
CFD/180/STD/1400-1	1400	2.20	1450	12.5	57.50

1 Phase Motor Details					
Model	Fan RPM	Motor size (kW)	Motor RPM	FLC**	SC*
CFD/180/HP/1100-1	1100	0.55	1390	4.0	12.80
CFD/180/HP/1300-1	1300	1.10	1415	7.4	26.64
CFD/180/HP/1500-1	1500	1.50	1430	9.0	42.30
CFD/180/HP/1700-1	1700	2.20	1450	12.5	57.50
CFD/200/STD/750-1	750	0.55	1390	4.0	12.80
CFD/200/STD/850-1	850	0.75	1445	4.9	26.64
CFD/200/STD/950-1	950	1.10	1415	7.4	26.64
CFD/200/STD/1050-1	1050	1.50	1430	9.0	42.30
CFD/200/STD/1150-1	1150	2.20	1450	12.5	57.50
CFD/200/STD/1250-1	1250	2.20	1450	12.5	57.50
CFD/200/HP/900-1	900	0.55	1390	4.0	12.80
CFD/200/HP/1000-1	1000	0.75	1445	4.9	26.64
CFD/200/HP/1100-1	1100	1.10	1415	7.4	26.64
CFD/200/HP/1200-1	1200	1.50	1430	9.0	42.30
CFD/200/HP/1300-1	1300	1.50	1430	9.0	42.30
CFD/200/HP/1400-1	1400	2.20	1450	12.5	57.50
CFD/200/HP/1500-1	1500	2.20	1450	12.5	57.50
CFD/240/STD/600-1	600	0.55	1390	4.0	12.80
CFD/240/STD/700-1	700	1.10	1415	7.4	26.64
CFD/240/STD/800-1	800	1.50	1430	9.0	42.30
CFD/240/STD/900-1	900	2.20	1450	12.5	57.50
CFD/240/HP/875-1	875	1.10	1415	7.4	26.64
CFD/240/HP/975-1	975	1.50	1430	9.0	42.30
CFD/240/HP/1075-1	1075	2.20	1450	12.5	57.50
CFD/300/STD/550-1	550	2.20	1450	12.5	57.50
CFD/300/STD/650-1	650	2.20	1450	12.5	57.50
CFD/300/HP/650-1	650	1.50	1430	9.0	42.30
CFD/300/HP/750-1	750	2.20	1450	12.5	57.50
CFD/360/STD/400-1	400	1.50	1430	9.0	42.30
CFD/360/STD/500-1	500	2.20	1450	12.5	57.50
CFD/360/HP/600-1	600	2.20	1450	12.5	57.50

\* SC - Nominal starting current (A)  
 \*\* FLC - Full load starting current (A)

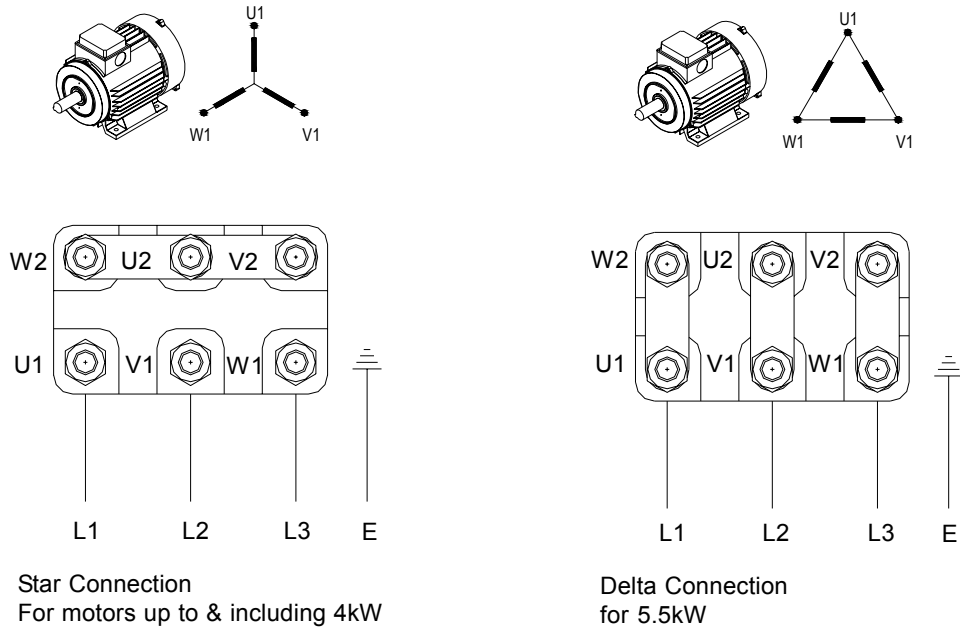
# Centrifume - CFD Units

## Installation, Operation and Maintenance Manual

### 5 Wiring continued

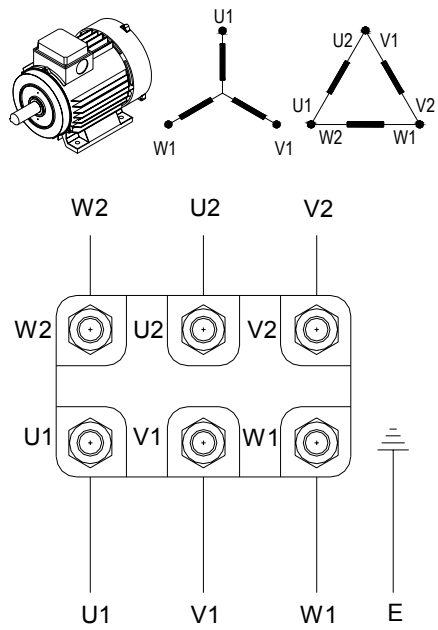
#### Standard motor wiring arrangement

Fig.10 400V 3Ph 50Hz



#### Standard motor wiring arrangement

Fig.11 400V 3Ph 50Hz



**Note:** A trial connection of the three phase (3Ph) supply should be made to check that the fan rotates in the correct direction as indicated on the fan. If the rotation is incorrect, interchange any two phases of the incoming supply at the terminal block. Where the above motors are used in conjunction with inverters, please refer to the appropriate inverter wiring diagram.

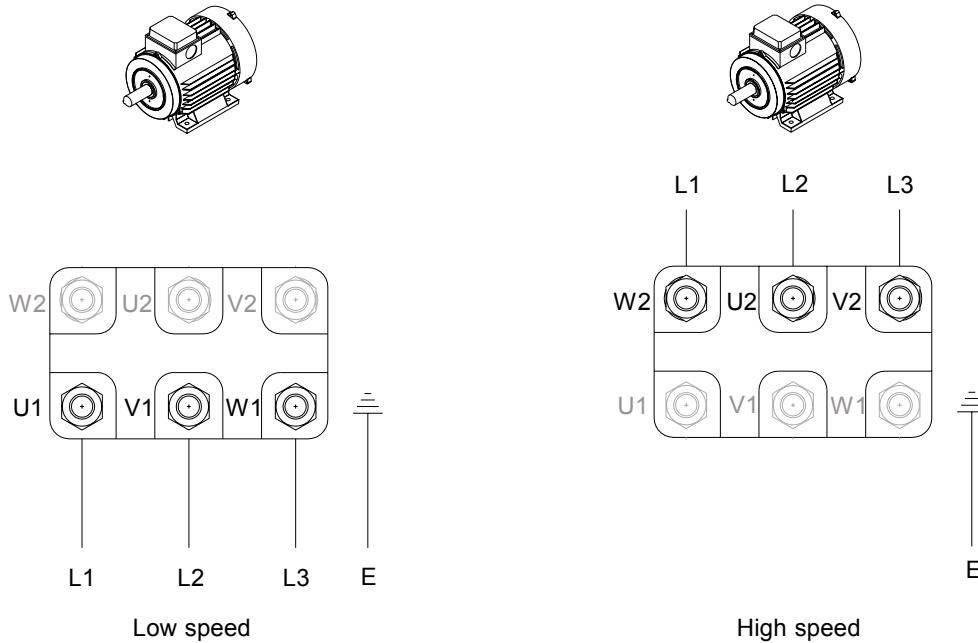
# Centrifume - CFD Units

Installation, Operation and Maintenance Manual

## 5 Wiring continued

### Standard motor wiring arrangement

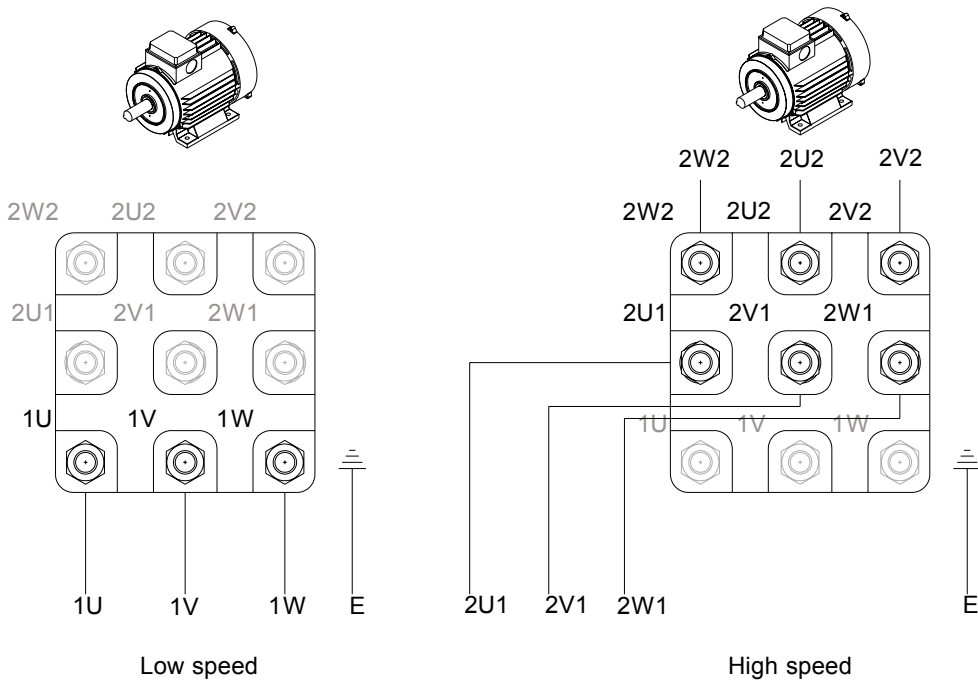
Fig.12 2 Speed dual wound motor, 400V 3Ph 50Hz



### Standard motor wiring arrangement

Fig.13 2 Speed dual wound motor, 400V 3Ph 50Hz

Star (Low speed)  
 Star/Delta connection (High speed)



**Note:** A trial connection of the three phase (3Ph) supply should be made to check that the fan rotates in the correct direction as indicated on the fan. If the rotation is incorrect, interchange any two phases of the incoming supply at the terminal block.

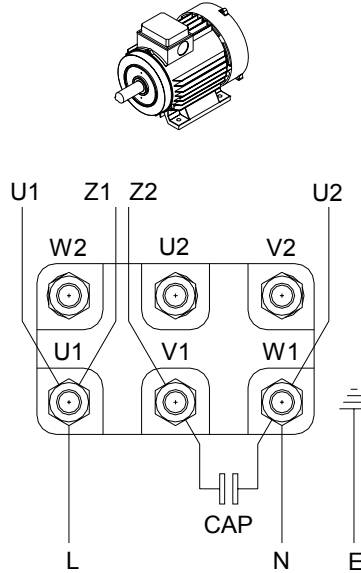
# Centrifume - CFD Units

## Installation, Operation and Maintenance Manual

### 5 Wiring continued

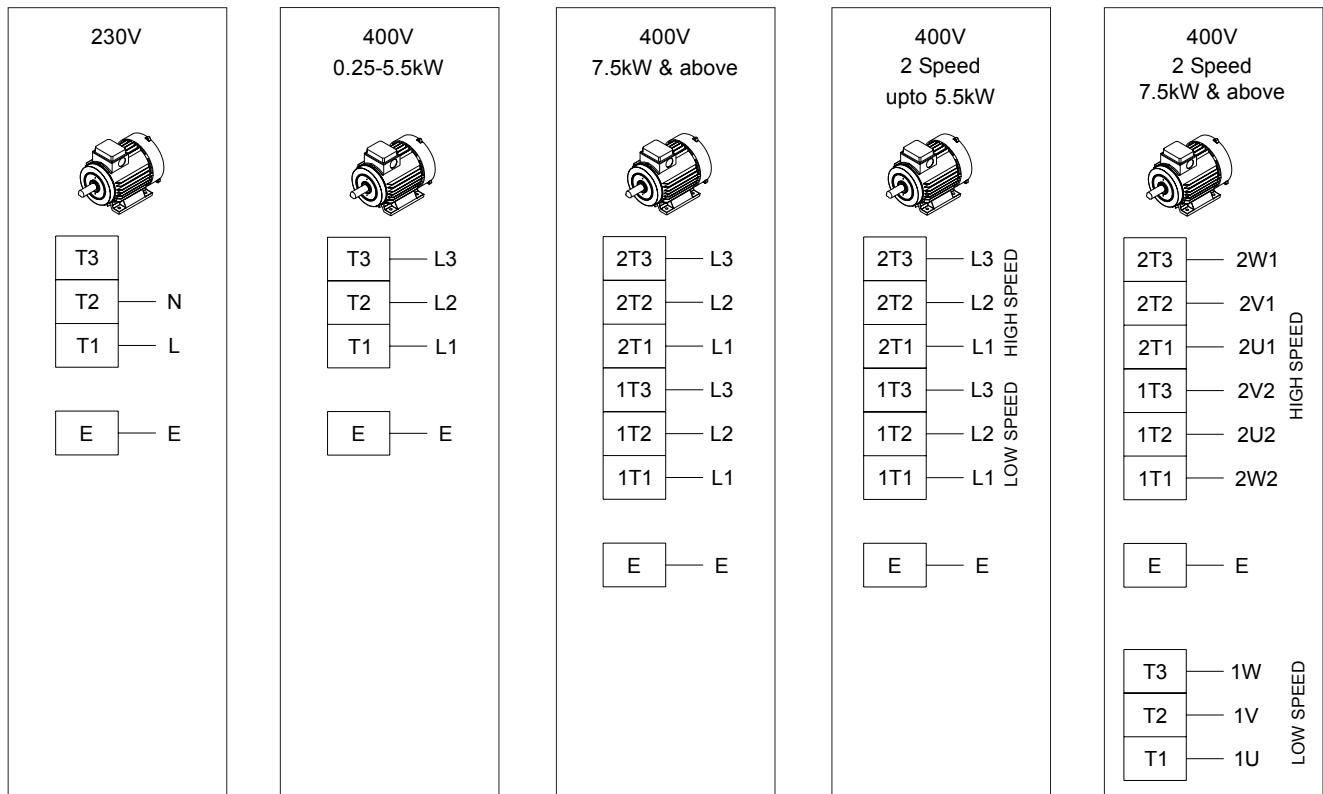
#### Standard motor wiring arrangement

Fig.14 230V 1Ph 50Hz



#### Standard motor wiring arrangement

Fig.15 Standard wiring arrangement to local isolator



For pre-wired run & standby configuration please refer to VES Technical Department for further details.



# Centrifume - CFD Units

Installation, Operation and Maintenance Manual

## 6 Maintenance

### IMPORTANT !

Before attempting to carry out any maintenance work, investigative or repair work on our units, the unit **MUST BE COMPLETELY ISOLATED** from its electrical supply. Ensure a minimum of two minutes after electrical disconnection before removing access panels. This will allow any moving parts to come to a rest

The fan and motor bearings are sealed for life and supplied fully greased and lubricated. The bearings have a life of 10,000 hours, after which they need to be changed. Please contact VES Customer Services for replacement parts.  
Tel: **08702 404340**

### IMPORTANT !

Before attempting to carry out any work on our units, all accompanying documentation including warning labels on the unit must be referenced

### WARNING !

When used in conjunction with an inverter for speed control, a minimum of 5 minutes should be given to allow for the capacitors to discharge before starting work after disconnection from the power source

### Recommended checks

This range of units will require regular maintenance if located in greasy air systems. In order to keep the unit in good running order, the following maintenance routine is recommended:

### Three Monthly Check

The belt drive should be thoroughly checked. Belts are subject to fatigue and will stretch over a period of time. Within normal operating conditions, belts tend to stretch in the first few days of running. Inspection of belts at this early stage is advised. After this initial period, regular 3 monthly checks should be made. If belts are found to be loose or worn, retighten by moving the position of the motor plate, slacken bolts and slide the motor plate down, retighten the bolts. Refer to *fig.5* for the recommended tension. Replace belts if necessary.

Excessive wear on both sides of the belts usually indicates a misalignment of the pulleys and this should be rectified at once see *fig.4*. New and used belts should not be run together in the same set. Belts of different types and brands should not be mixed. Always fit ALL NEW matched belts in the same set.

A check for excessive noise or vibration should be carried out. This will help to identify fan or motor defects before they get worse. The cause of excessive noise or vibration could be due to: loose connections, mis-aligned fan belts, unbalanced fans or worn bearings.

### WARNING !

Debris from kitchen environments can sometimes be found stuck to the fan impeller. This debris will cause the fan to become unbalanced, reduce its airflow, become noisy and eventually lead to bearing failure. The impeller should be regularly checked if this is a possibility.

### Six Monthly Check

Check for contaminants in the system, especially around the drain pan (if fitted), impeller and inlet eye. Remove any residue if necessary and empty the drain pan.

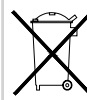
### Annual Check

It is recommended that the unit's casework and fixings are checked for signs of deterioration, particularly where adverse environmental conditions prevail. Repair or replace components if necessary.

### IMPORTANT !

It is critical that after any maintenance work has been conducted that all components removed/replaced be refitted correctly by a competent engineer

### WEEE Directive



At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with normal household waste. Do not burn.

When enquiring after or ordering spares contact VES Spares Department, quoting the sales order (SO) number and unit type as found on the unit nameplate.

**Telephone**

**08702 40 43 40**

**Fax**

**08702 40 45 50**



**PLEASE ENSURE THAT THIS DOCUMENT IS PASSED ON TO THE END USER.**

We reserve the right to alter the specification without notice

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# Centrifume - CFD Units

Installation, Operation and Maintenance Manual

## 7 Warranty

### **Extended Warranties**

All VES Andover Products come with a one year guarantee from date of dispatch, which covers parts and labour. You can now extend this with the following options:

#### Option 1.      **FREE extended Warranty**

We can offer you a maintenance agreement that keeps this equipment in tip-top condition. If you take out this agreement, we will extend the warranty **free of charge for up to 5 years**, providing the regular maintenance agreement remains in place.

#### Option 2.      **12-24 Month Extended Warranty**

12-24 months from the date of dispatch. This can be covered at a cost of just 3% of order value. (minimum charge £50.00).

#### Option 3.      **12-36 Month Extended Warranty**

12-36 months from date of dispatch. For this cover, the charge is 6% of order value (Minimum charge £80)

Please State which option you require when you place your order. A transferable certificate will then be issued to you. *Please note, this offer excludes condensing units. We would be happy to quote you for these separately.*

**Register for separate spares reminders and get a 10% discount**

Register for this free service and we will automatically send you a regular reminder detailing the consumable spares for this unit, together with their current list prices.

**You will then be entitled to a 10% discount off any spares.**

To arrange any of these options.

or      **Phone:            023 8046 1150**  
**Email:            spares@ves.co.uk**

Stating the sales order and reference number from the unit.



# Centrifume - CFD Units

Installation, Operation and Maintenance Manual



## ***Declaration of Conformity***

Date: 20th June 2005  
Product: Centrifume  
Type: CFD units  
Manufacturer: VES Andover Limited

The product above is produced in accordance with EC Council Directives:

98/37/EC (Machinery Directive)  
89/336/EEC and amendment 92/31/EEC (Electromagnetic Compatibility Directive)  
73/223/EEC and amendment 93/68/EEC (Low Voltage Directive)

The European Harmonised Standards applied are:

BS EN ISO 12100, EN 294, EN61000, EN 60204-1

The National Standards applied in particular are :

BS 848 Part 1

Basis of Self attestation:

Quality Assurance to ISO 9001-2000, BSI Reg. Firm Cert. No. Q5375

Signature of Manufacturer:

Position of Signatory:

Technical Director