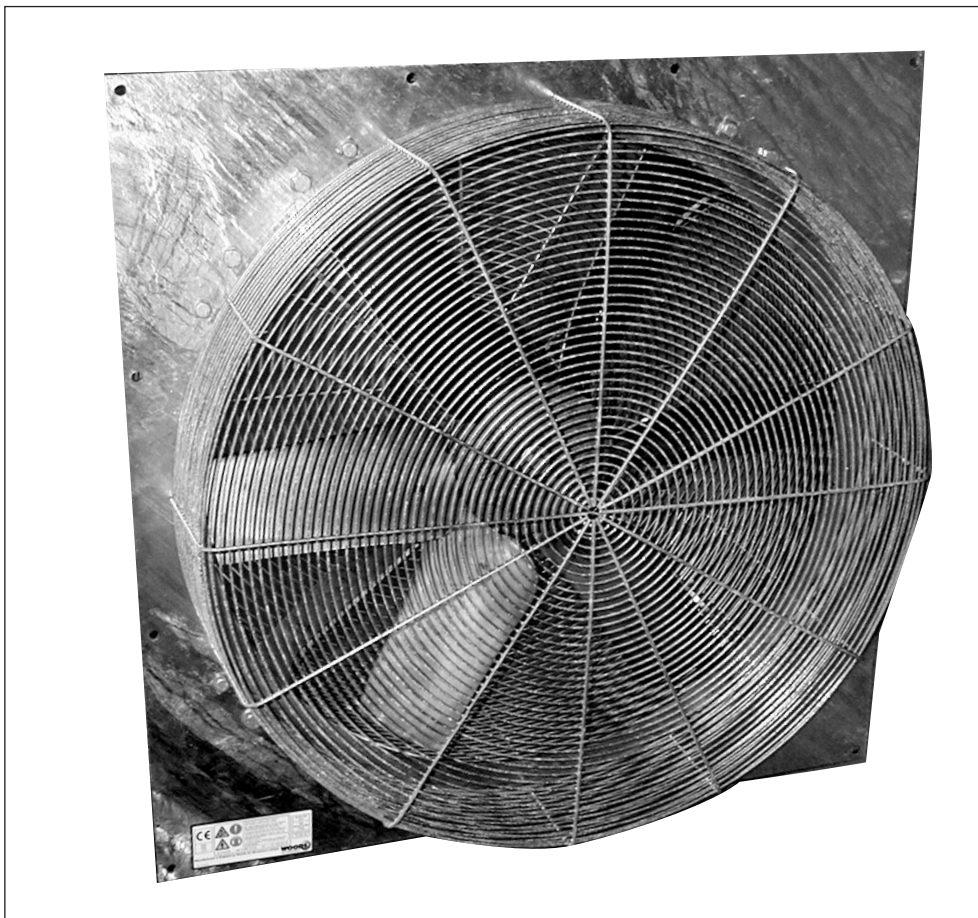




## **JM GP Plate Mounted Axial Fans**



### **Safety, Installation, Operation, Inspection and Maintenance Instructions**

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## **SAFETY**

**WARNING:** ONLY APPROVED PERSONNEL FAMILIAR WITH THE ASSESSMENT OF HAZARDS AND RISKS ASSOCIATED WITH FANS SHOULD INSTALL, OPERATE AND INSPECT THE PRODUCT.

IF THE INSTALLER OR USER IS UNABLE TO UNDERSTAND THE INFORMATION IN THIS MANUAL, OR HAS ANY DOUBT THAT A SAFE AND RELIABLE INSTALLATION, OPERATION AND INSPECTION OF THE FAN CAN BE ASSURED, WOODS AIR MOVEMENT OR THEIR REPRESENTATIVE SHOULD BE CONTACTED FOR ADVICE.

WARNINGS AND SAFETY INFORMATION RELEVANT TO SPECIFIC OPERATIONS ARE CONTAINED AT THE START OF THE SECTIONS TO WHICH THEY APPLY.

## **1 INTRODUCTION AND PURPOSE**

### **1.1 General**

**1.1.1** The JM GP Axial fan is a reliable low maintenance fan assembly designed to move air, over equipment or, in or out of buildings. The motor is fully integrated with the impeller and is rated for operation between  $-40^{\circ}\text{C}$  ( $-20^{\circ}\text{C}$  on starting) and  $+50^{\circ}\text{C}$ .

**1.1.2** Each fan has been manufactured specifically to fulfill a particular requirement. No deviation from the original requirement should be implemented without referring to Woods Air Movement Head Office. If the extracted air is liable to contain flammable/explosive gases or large amounts of dust, fumes, or fatty materials Woods Air Movement or their representative should be consulted for advice. Any queries regarding safety or operating problems should be referred to Woods Air Movement, or their representative, together with full fan/motor nameplate details. Should a fan failure occur whilst the product is under warranty, the Woods Air Movement Service Centre should be contacted before any repair work is undertaken.

### **1.2 Speed control**

**1.2.1** The amount of extracted air can be varied by using a Woods Air Movement electronic or transformer speed controller. If an inverter type speed controller is to be used then please refer to Woods Air Movement Head Office. Where applicable, the motor Delta/Star reconnect winding can be used to achieve two set individual speeds. Note: - high speed when Delta connected.

## 1.3 Storage and handling

**1.3.1** If the fan is to be stored; check immediately on receipt that it is as ordered and as required, and that it has not been damaged in transit. The fan packaging should be considered as a protective device only. The package, fan guard spiral or impeller must not be used as a lifting aid, and the fan should be moved with care. The package must not have equipment stored on top of it, nor should it be stacked on other equipment. All fans should be stored in a safe, clean, dry, vibration-free, location. A regular monthly rapid rotation of the impeller is recommended to prevent grease deterioration and possible brinelling of the bearing; the impeller should not be in the same angular position after rotation.

**1.3.2** When unpacking the fan care should be taken to avoid injury from sharp edges, nails, staples, splinters, etc.

**1.3.3** If the fan is to be stored for 12 months or more, an inspection by Woods Air Movement Service Centre before commissioning is advised.

## 2. MECHANICAL INSTALLATION

**WARNING:** THE FAN CONTAINS ROTATING PARTS AND ELECTRICAL CONNECTIONS WHICH CAN BE A DANGER AND CAUSE INJURY. IF THERE IS ANY DOUBT THAT A SAFE AND RELIABLE INSTALLATION OF THE FAN CAN BE ASSURED; WOODS AIR MOVEMENT HEAD OFFICE OR THEIR REPRESENTATIVE SHOULD BE CONTACTED FOR ADVICE.

A SAFETY GUARD FORMS PART OF THE FAN AND IT MUST ALWAYS BE IN PLACE. ADVICE ON SAFETY IS AVAILABLE FROM WOODS AIR MOVEMENT.

ALL LIFTING AIDS USED DURING INSTALLATION, AND ALL LIFTING POINTS UTILISED SHOULD BE ADEQUATELY CERTIFIED TO CARRY THE WEIGHT OF THE EQUIPMENT BEING LIFTED. WHERE THE EQUIPMENT IS DELIVERED PACKED, THE PACKING MUST BE CONSIDERED AS PROTECTION ONLY AND MUST NOT BE USED AS A LIFTING AID.

BEFORE INSTALLING THE FAN ENSURE THAT THE SURROUNDING STRUCTURE IS STRONG ENOUGH TO TAKE ITS WEIGHT.

ALWAYS WEAR APPROPRIATE PROTECTIVE CLOTHING/SAFETY HARNESSSES WHEN WORKING IN THE VICINITY OF THE FAN.

**NOTE 1:** *Before installing the fan, check that it has not been damaged in transit, that the impeller rotates freely, that all fixings are tight and that the fan motor nameplate data complies with the requirement of its use.*

**NOTE 2:** *Care must be taken to ensure that during extremes of wet and windy weather any ingress of water through the fan will not reach sensitive or hazardous areas within the building.*

## 2.1 Positioning

2.1.1 Fans can be heavy and are sometimes unwieldy. Proper precautions must be taken, and certified lifting aids used, to ensure the assembly is well supported and stable before lifting into position. Adequate space should be left round the fan for routine inspection. The fan must be fully aligned with its surround before being bolted into position so no undue stress is placed on the assembly. Figure 1 shows fixing points to assist in the installation of the fan.

## 3. ELECTRICAL INSTALLATION AND OPERATION

**WARNING:** THE FAN CONTAINS ROTATING PARTS AND ELECTRICAL CONNECTIONS WHICH CAN BE A DANGER AND CAUSE INJURY. IF THERE IS ANY DOUBT THAT A SAFE AND RELIABLE INSTALLATION OF THE FAN CAN BE ASSURED; WOODS AIR MOVEMENT HEAD OFFICE OR THEIR REPRESENTATIVE SHOULD BE CONTACTED FOR ADVICE.

ALWAYS WEAR APPROPRIATE PROTECTIVE CLOTHING/SAFETY HARNESSES WHEN WORKING IN THE VICINITY OF THE FAN.

### 3.1 Electrical connections

3.1.1 All wiring to the fan terminal box must be in accordance with local regulations, and should be made by a competent person. Incoming cabling suitable for ambient temperature up to 50°C should be used. The terminals inside the box comprise of six motor lead terminations. Delta wound motors can be configured in delta for high speed operation and star for low speed operation, additionally there is an earth connection. The connection requirements are detailed on a diagram located inside the motor terminal cover (see also Table 1 and Figures 2 to 6). The mains electrical supply must be connected to the fan via a 'local' lockable isolator switch. The supply should be fed to the isolator switch from an 'external', clearly marked and accessible ON/OFF switch. The two switches allow safe control of the operation of the fan and provide a means of safely isolating the fan during inspection. A suitable earth should be connected to the earth connection on the terminal strip inside the terminal box. The final installation should be checked by a competent person to ensure compliance with local regulations before switch-on.

# TABLE 1

## JM GP Connection Diagram Schedule For Standard Fans

Unit Size (mm)	Speed (rpm)	Phase	DOL	Electronic Regulator (ME3._)	Transformer Regulator (MT3._)
800	560	3	1559	2311	1510
800	700	3	1559	2311	-
800	920	3	1344	2310	-
800	560	1	1349	2249	1511
800	700	1	1349	2249	1511
800	920	1	1349	-	-
1000	470	3	1344 or 51	2310	-
1000	570	3	1344 or 51	2310	-
1000	710	3	1344 or 51	2310	-
1250	360	3	1344 or 51	-	-
1250	470	3	1344 or 51	-	-
1250	570	3	1344 or 51	-	-

**NOTE :** '1344' is Woods Air Movement connection diagram, '51' is the similar motor manufacturers connection diagram.

## **3.2 Circuit Positioning**

**3.2.1** Fuses in the fan electrical control circuit must be sufficiently rated to carry the starting current as indicated on the motor nameplate. The fuses should be regarded as protecting the wiring against the effects of short circuits or earth faults only. The fuses are not suitable for overload protection. To provide full protection for the motor, a starter panel with overload protection must be used. Overloads should be selected rated 15% above the full load current, indicated on the fan rating label. For low temperatures down to  $-40^{\circ}\text{C}$ , due to the density of air, the motor current can exceed the nameplate value without harmful effect. In these cases overloads should be increased to take this into account. If there is any doubt then please refer to Woods Air Movement Head Office.

## **3.3 Overheat protection**

**3.3.1** If thermostat overheat protection is fitted the thermostat leads should be connected via the motor terminal box to the coil circuit of the motor start contactor. If the motor overheats the thermostat will open and disconnect the supply to the coil circuit. When the motor cools the thermostat will reset, the motor however must not be able to start until the motor start contactor is manually reset. If the overheat situation re-occurs Woods Air Movement should be contacted for advice.

**3.3.2** If thermistor overheat protection is fitted a suitable relay, operated by the resistive change of the thermistor during temperature changes, should be connected to control the operation of the motor start contactor as detailed in Paragraph 3.3.1.

## **3.4 Switch on**

**3.4.1** Before switching on, confirm that the electrical supply is fully compliant with the requirement of the motor as detailed on the motor rating label, that the fan is correctly installed, all component parts and fixings are secure, the safety guard is in place, and no loose articles are present in the vicinity. Immediately on switch-on check the fan for smooth, low-vibration running, and check that the motor current consumption is within the full load current specified on the nameplate. If the phase sequence of the supply is unknown a trial connection of the three-phase supply should be made to check that the fan rotates in the required direction as indicated by the arrows on the impeller blades. If the three phase rotation is incorrect interchange any two phases of the incoming supply at the motor terminal block. For single phase, interchange motor winding leads U1 and U2.

## 4. FAN INSPECTION

**WARNING:** NO INSPECTION WORK SHOULD BE ATTEMPTED BEFORE SWITCHING OFF AND COMPLETELY ISOLATING THE FAN AND ITS CONTROLS FROM THE ELECTRICAL SUPPLY AND ALLOWING THE ROTATING PARTS OF THE FAN TO COME TO REST.

IF THE FAN IS RUNNING IN HIGH AMBIENTS IT SHOULD BE LEFT TO COOL BEFORE ANY MAINTENANCE WORK IS CARRIED OUT.

BEFORE ENTERING THE AREA OF THE FAN ENSURE THAT ALL FUMES, DUST, TOXIC EMISSION, HEAT ETC., HAVE DISPERSED FROM THE LOCAL ENVIRONMENT.

ALL LIFTING AIDS USED DURING INSPECTION, AND ALL LIFTING POINTS UTILISED, SHOULD BE ADEQUATELY CERTIFIED TO CARRY THE WEIGHT OF THE EQUIPMENT BEING LIFTED.

ALWAYS WEAR APPROPRIATE PROTECTIVE CLOTHING/SAFETY HARNESES WHEN WORKING IN THE VICINITY OF THE FAN ASSEMBLY.

**NOTE:** *The following information is designed to keep the fan assembly safe, operational and fault-free.*

### 4.1 General

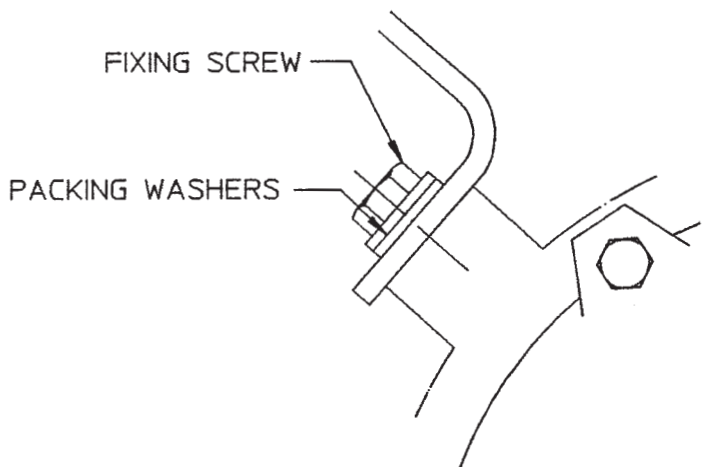
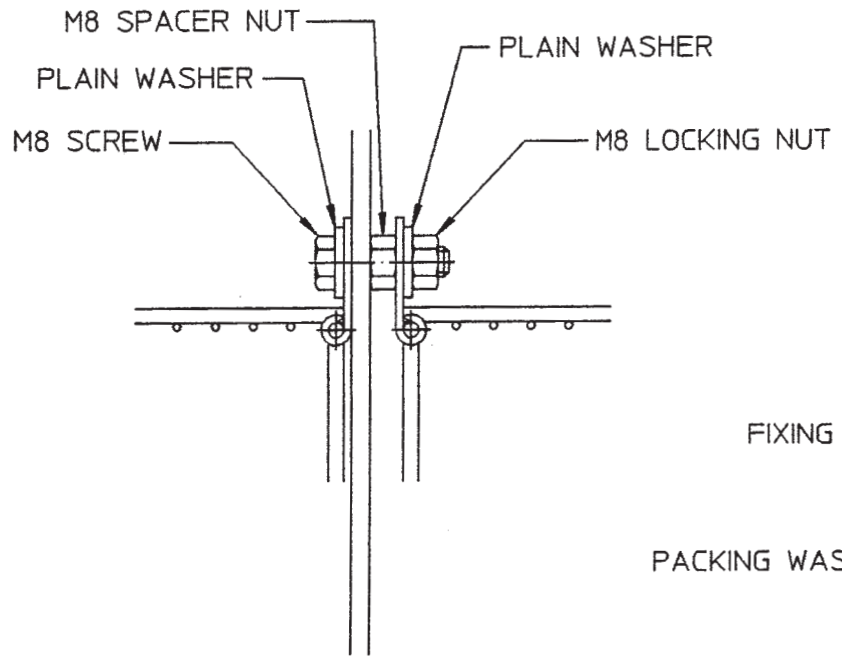
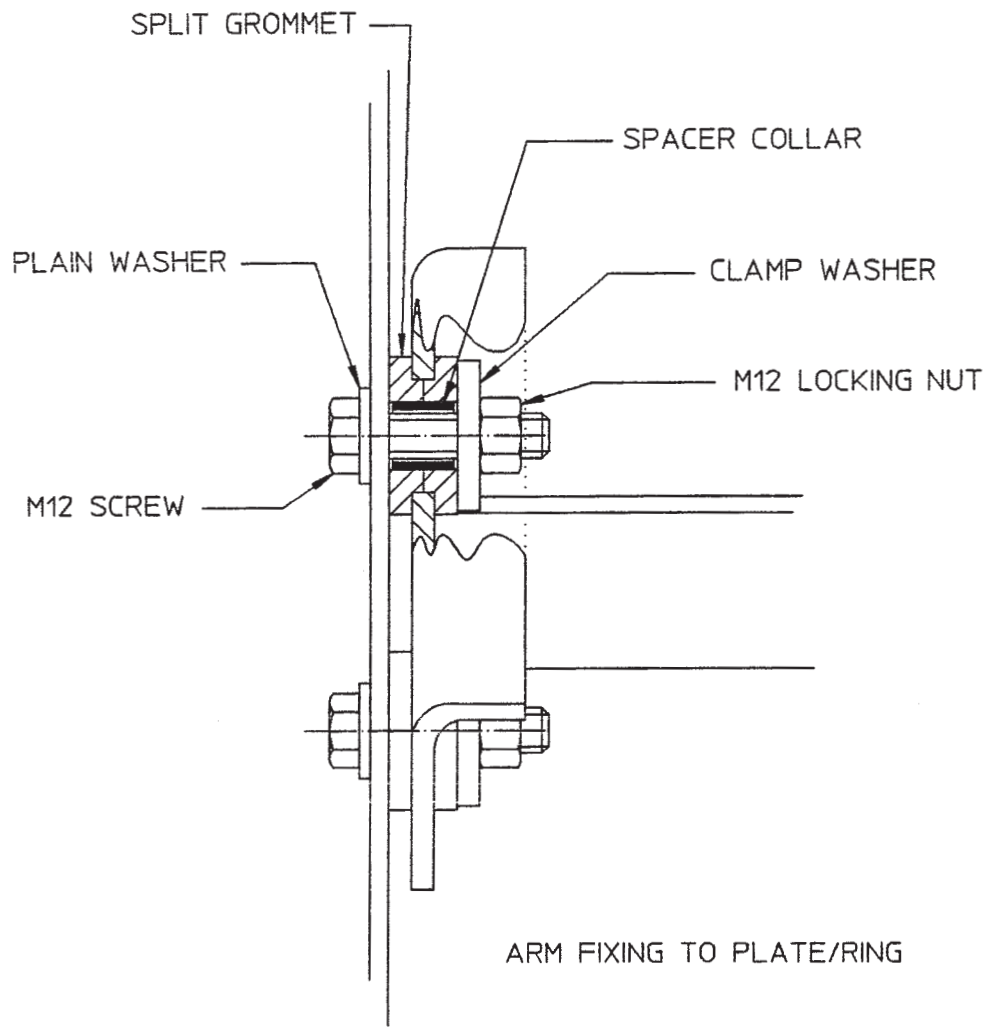
**4.1.1** A regular routine six-monthly inspection should be established, and a record kept. Inspection must be carried out by a competent person with appropriate skills. Inspection should comprise an examination of the assembly for any dirt build up and a check to ensure that all motor/fan fixings are secure, and that the assembly is securely in position. Where the environment is particularly dirty, hazardous or open to weather extremes a reduction in inspection intervals may be necessary as experience dictates.

**4.1.2** When examining and checking the security of fixings during routine inspection, those fixings that have locking devices fitted or are painted over need not be disturbed if they can be seen to be secure. Any locking devices that are disturbed during inspection must be discarded and replaced with identical devices. If in doubt about the tightness of any fixings contact Woods Air Movement for advice.

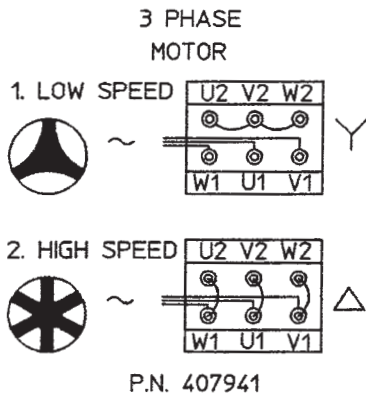
## 5. DISPOSAL

On disposal of the fan after its life cycle, the metal components should be segregated and separately recycled. The following items should be safely disposed of in accordance with local health and safety regulations:

- bearing lubricant,
- paintwork,
- plastic parts,
- packing materials.



**FIGURE 1: DIAGRAM SHOWING FIXING DETAILS**



Connect as Diagram 2 for High Speed or 1 for Low Speed.

HH - Anti Condensation Heaters

KK - Overheat Cutouts (Max Amps 2.5)

SS - Thermistor (Operating Resistance 3kΩ)

} Other Circuits  
if Fitted

Anklemmen Wie Schaltbild 2 für Hohe Drehzahl oder Schaltbild 1 für Niedrige Drehzahl Andere Schaltungen Falls Vorhanden:

HH - Stillstandsheizung

KK - Überhitzungsabschaltung (Max 2.5A)

SS - Thermistor (Arbeitswiderstand 3kΩ)

**CD 1559**

Conectar Segun Diagram Dos para Velocidad alto O Segun Uno para Velocidad Bajo.

HH - Calefactores Anti-Humdad

KK - Cortes De Sobrecarga (Max 2.5A)

SS - Thermistor Resistencia En Funciona (Miento De 3kΩ)

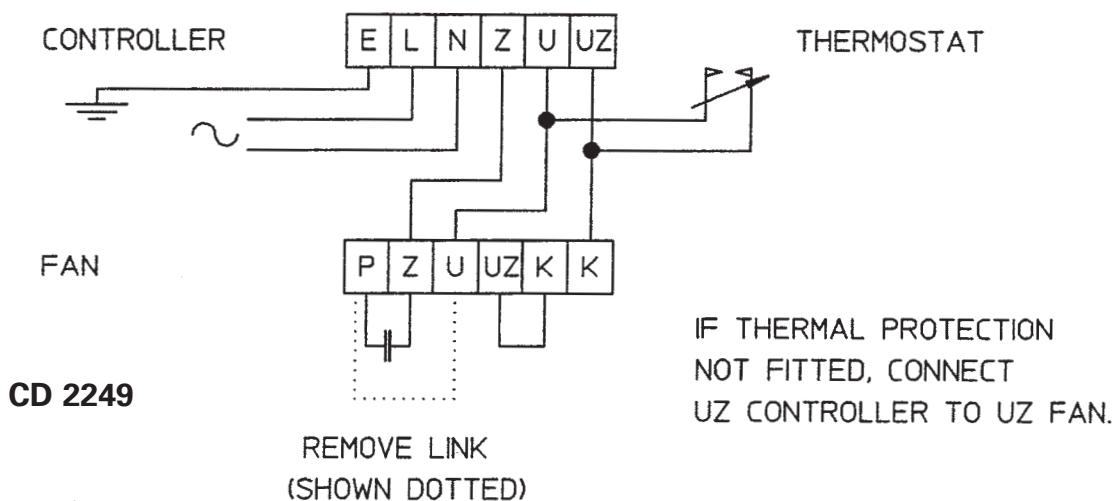
Grande Vitesse Branchement Suivant Dia 2  
Petite Vitesse Banchement Suivant Dia 1  
Autres Branchements S1.

HH - Resistance Anti-Condensation

KK - Ipsothermes (Max 2.5A)

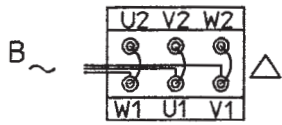
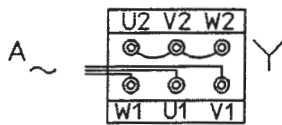
SS - Thermistors (Resistance 3kΩ)

**CIRCUIT DIAGRAM FOR ME 1.3/1.6 FAN SPEED CONTROLLER**



**CONNECTION DIAGRAM CD1559, CD2249: FIGURE 2**

3 PHASE  
MOTOR



P.N. 83772

**CD 1344/1/2**

Connect as Diagram 'A' for Voltages above 340 or 'B' for voltages up to 250.

- HH - Anti Condensation Heaters
  - KK - Overheat Cutouts (Max Amps 2.5)
  - SS - Thermistor (Operating Resistance 3kΩ)
- } Other Circuits  
if Fitted

Les Connexions Doivent Entre Faites Gelon Le Diagramme 'A' Pour Des Tensions Superieures A 340 Volts Et Selon Le Schema 'B' Pours Des Tensions Jusqu' A 250 Volts.

- HH - Resistance De Chauffage Anti-Condensation
  - KK - Coupe-Circuits Thermiques (Intensite Maximale 2.5 A)
  - SS - Thermistance (Seuil De'Clenchement 3kΩ)
- } Autres Circuits  
Eventuels

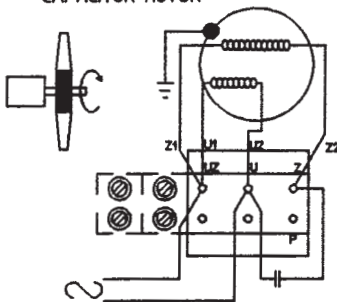
Fur Spannungen Uber 340 Volt Anschliessen Wie Im Schaubild 'A' Beschrieben. Fur Spannungen Bis 250 Volt Anschliessen Wie Im Schaubild 'B' Beschrieben.

- HH - Stillstandsheizung
  - KK - Uberhitzungsabschaltung (Max 2.5A)
  - SS - Thermistor (Arbeitswiderstand 3kΩ)
- } Andere Schaltungen  
Wenn Vorhanden

Conectar Segun Diagram 'A' para Voltajes Superiores A 340 O Segun 'B' para Voltajes De Hasta 250.

- HH - Calefactores Anti-Humedad
  - KK - Cortes De Sobrecarga (Max 2.5 Amp)
  - SS - Thermistor (Resistencia En Funcionamiento 3kΩ)
- } Otros Circui Tos Si  
Van Acoplados

1 PHASE  
CAPACITOR MOTOR



P.N. 70892

**CD 1349/1/2**

WARNING! When used with a Speed Controller change capacitor lead from U to terminal P. Connections required are as shown below. To reverse fan interchange U1 and U2.

- HH - Anti Condensation Heaters
  - SS - Thermistor (Operating Resistance 3kΩ)
- } Other Circuits  
if Fitted

Attention: Dans Le Cas D'Une Utilisation Avec Regulateur De Vitesse, Le Condensateur Doit Etre, Raccorde Dessous. Pour Inverser Le Fonctionnement Du Ventilateur Permuter U1 et U2.

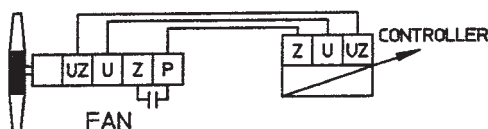
- HH - Resistance De Chauffage Anti-Condensation
  - SS - Thermistance (Seuil De Declenchement 3kΩ)
- } Autres Circuits  
Eventuels

Achtung: Bei Verwendung Eines Drehzahlreglers Tauschen Sie Das Kondensatorkabel Von U Nach P. Anklemmen Wie Unten Beschrieben. Bei Drehrichtungs - Anderung des Ventilators Vertauschen Sie Die Anschlusse U1 and U2.

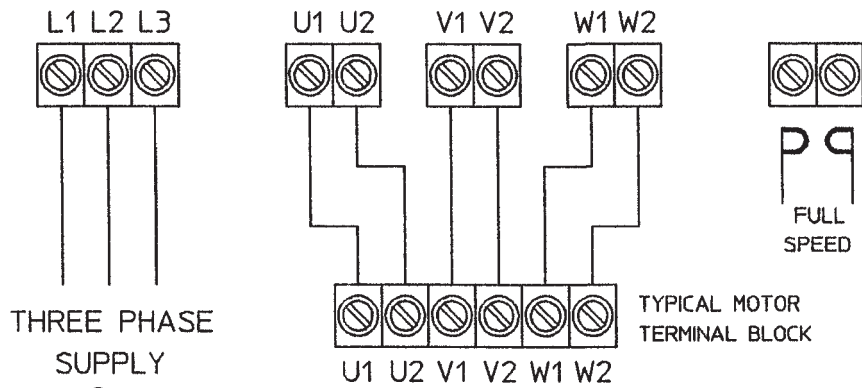
- HH - Stillstandsheizung
  - SS - Thermistor (Arbeitswiderstand 3kΩ)
- } Andere Schaltungen  
Wenn Vorhanden

Aviso: Cuando Se Usa Un Controlador De Velocidad Cambiar El Cable Del Capacidor De La Terminal U A La Terminal P. Las Conexiones Necesarias Son Las Indicadas Abajo. Para Variar El Sentido De Giro Intercambiar U1 V U2.

- HH - Calefactores Anti-Humedad
  - SS - Thermistor (Resistencia De Funcionamiento 3kΩ)
- } Otros Circuitos Si  
Van Acoplados



**FIGURE 3: CONNECTION DIAGRAM CD1344/1/2, CD1349/1/2**



**CD 2311**

NOTE: On completion of installation the fan unit should be checked for correct direction of rotation.

To reverse interchange any two SUPPLY leads.

WARNING: This unit should be isolated before opening.

SUPPLY: 380-480V 50/60Hz 3 Phase.

ENCLOSURE RATING: IP43.

ME3.2D: 2 Amp Rated.

## INSTALLATION

1. Check that the number, size and speed of the fans can safely be controlled by this ME controller.
2. Install in a dry, sheltered position. Leave an air-space of not less than 15cm (6") around the controller to allow cooling air to flow freely. DO NOT install in close proximity to other heat sources. The maximum ambient temperature for the controller must not exceed 50 DEG C (122 DEG F).
3. **Mounting.**
  - a) Open the main controller hinged cover exposing the centre key hole slot and locate the unit in the appropriate position. The main cover can now be replaced
  - b) Remove the lower controller cover and secure with the use of two screws in the fixing holes provided.
4. An external thermostat or switch may be fitted to enable the fan to run at a pre-set speed adjusted by the controller, and maximum speed set by the temperature of the thermostat or operation of the switch. A volt free contact closure is necessary to achieve a full speed override. The thermostat or switch should be connected between the terminals marked 'FULL SPEED' on the diagram.
5. These units give no overload protection, and must be protected using a D.O.L starter unit. They should be installed following current Health and Safety at Work Guidelines and IEE Wiring Regulations.
6. All cable entries provided should be used. Any left unused should be blanked and left in a safe condition. If the standard cable entries provided are not used and cable entry modifications are made, or if the PCB is removed, causing damage to the controller printed circuit board, the Woods warranty will become null and void

## OPERATION

7. The controllers have separate ON/OFF switches. Rotating the control knob clockwise will increase the speed of the fans from 30% to full speed with infinitely variable control.
8. Replacement fuses should be, or similar to:-32mm x 6mm ceramic 5 Amp/415V

## INTERFERENCE SUPPRESSION

All units are suppressed to within the limits imposed by.

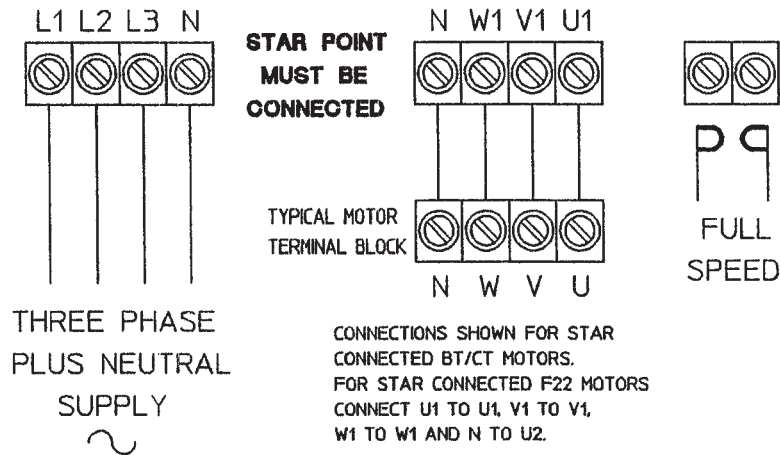
89/336/EEC

Ammendment 92/31/EEC

EN-50081-1

EN-50082-1

# CONNECTION DIAGRAM CD2311: FIGURE 4



WARNING: This unit should be isolated before opening.  
 SUPPLY: 380-480V 50/60Hz 3 Phase plus neutral.  
 ENCLOSURE RATING: IP43.  
 ME3.5s: 5 Amp Rated.  
 ME3.10s: 10 Amp Rated.

## INSTALLATION

1. Check that the number, size and speed of the fans can safely be controlled by this ME controller,
2. Install in a dry, sheltered position. Leave an air-space of not less than 15cm (6") around the controller to allow cooling air to flow freely. DO NOT install in close proximity to other heat sources. The maximum ambient temperature for the controller must not exceed 50 DEG C (122 DEG F).
3. **Mounting**
  - a) Open the main controller hinged cover exposing the centre key hole slot and locate the unit in the appropriate position. The main cover can now be replaced
  - b) Remove the lower controller cover and secure with the use of two screws in the fixing holes provided.
4. An external thermostat or switch may be fitted to enable the fan to run at a pre-set speed adjusted by the controller, and maximum speed set by the temperature of the thermostat or operation of the switch. A volt free contact closure is necessary to achieve a full speed override. The thermostat or switch should be connected between the terminals marked 'FULL SPEED' on the diagram.
5. These units give no overload protection, and must be protected using a D.O.L starter unit. They should be installed following current Health and Safety at Work Guidelines and IEE Wiring Regulations.
6. All cable entries provided should be used. Any left unused should be blanked and left in a safe condition. If the standard cable entries provided are not used and cable entry modifications are made, or if the PCB is removed, causing damage to the controller printed circuit board, the Woods warranty will become null and void

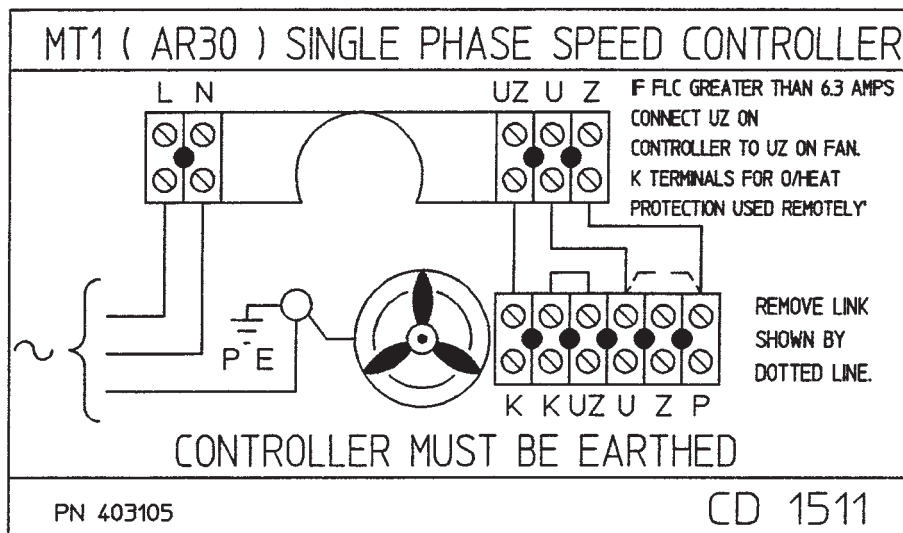
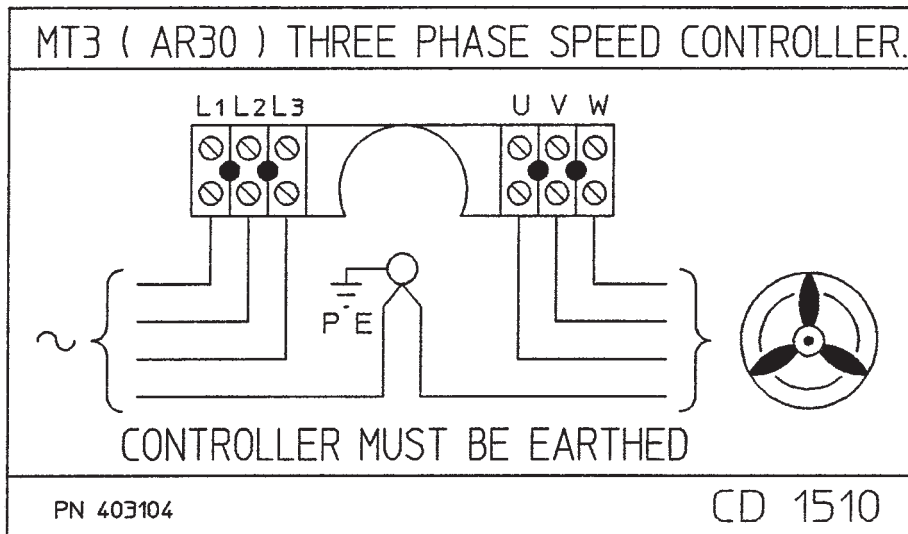
## OPERATION

7. The controllers have separate ON/OFF switches. Rotating the control knob clockwise will increase the speed of the fans from 30% to full speed with infinitely variable control.
8. Replacement fuses should be, or similar to:-32mm x 6mm ceramic 10 Amp/415V for ME3.5s and 32mm x 6mm ceramic 16 Amp/415V for ME3.10s

## INTERFERENCE SUPPRESSION

All units are suppressed to within the limits imposed by:  
 89/336/EEC  
 Amendment 92/31/EEC  
 EN-50081-1  
 EN-50082-1

**FIGURE 5: CONNECTION DIAGRAM CD2310**



CONNECTION DIAGRAM CD1510, CD1511: FIGURE 6



**Woods Air Movement Limited is represented in over 70 countries world-wide.  
See our website for details – [www.woods-fans.com](http://www.woods-fans.com)**

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