

February 2009

Part No.: INST-GENERAL

INSTALLATION & MAINTENANCE INSTRUCTIONS

&

ELECTRICAL WIRING DIAGRAMS



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INSTALLATION, MAINTENANCE & WIRING DIAGRAMS

Installation & Maintenance

M-2/4

Warranty

M-5

Wiring Diagrams

M-6/9

M

INSTALLATION & MAINTENANCE

GENERAL INSTRUCTIONS

OFF-LOADING

During off-loading inspect fans for damage. If the casings, cowls or impellers are damaged, notify your local Fantech distributor immediately.

Fantech cannot be held responsible for any loss or damage incurred to goods during transport, off-loading or on site.

SITE STORAGE

The fans must be stored in a clean, dry, protected and vibration-free area. The fan impellers should be rotated daily to prevent bearing damage. Failing to follow these instructions may void the warranty.

MAINTENANCE

Install fans and accessories to allow service access for maintenance and for the replacement of assemblies and component parts, without disturbance of other items of plant and building elements.

Most motors are fitted with sealed-for-life bearings which are maintenance-free. It is recommended that fans be inspected initially at 3-monthly intervals, to clean the blades and motor and to check for tightness of fastenings.

Where fans are used for kitchen exhaust or other applications where the air contains high amounts of dust, residue and other contaminants, fans should be cleaned and maintained at more frequent intervals appropriate for the application.

Motor overloads/contactors should also be inspected to ensure correct operation.

Should external lubricators be fitted, please refer to **LUBRICATION INSTRUCTIONS** in the 'Installation and Maintenance' instructions included with each fan.

If the fans are belt driven, check pulley alignment and belt tension before starting the fan. Belt tension must be checked 2 - 4 weeks after start-up.

MOTORS

All standard motors are suitable for operation in air temperatures between -20°C and +40°C. If higher temperatures are required, contact your local Fantech supplier.

Standard motors are **not** suitable for handling saturated air containing water droplets or for some corrosive fumes. For severe applications, special motors and finishes may be required. Customers are requested to discuss these applications with our sales engineers to ensure a fan suitable for the application is selected.

WARNING - Failure to do so could void warranty.

ELECTRICAL

SUPPLY

Read the fan data label to determine the number of phases and amperage drawn by the unit. Check that the available supply is suitable.

EARTHING

All fans must be earthed in accordance with AS/NZS3000:2007 and local supply regulations.

WIRING

Wiring must be in accordance with AS/NZS3000:2007 and local supply regulations. Wiring diagrams are provided with all fans. Wiring diagrams are shown on pages M-6/9.

PROTECTION

Fuses in the circuit should be regarded as protecting the wiring only against short circuit, they are not suitable for overload protection. Fuses must be able to carry starting loads and these can be taken as a minimum of six times the running current for 25 seconds.

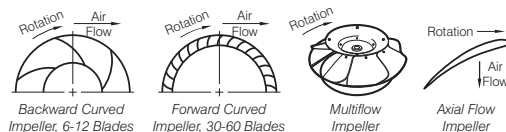
All three-phase motors must be provided with differential action, single-phasing protection and overload current protection. Failure to provide single-phasing protection will void warranty.

INSTALLATION & MAINTENANCE

Motors fitted with thermistor or thermostatic protection should have these wired into the starting contactors' control circuit to interrupt motor power supply on winding temperature rise.

Wires marked 'TK' are for internal thermal contacts which can be wired directly into the contactor controller circuit. Alternatively, thermal protection devices can be installed into the control circuit therefore negating the need to use the 'TK' contacts. Failure to connect thermal protection devices will void warranty.

DIRECTION OF ROTATION



The correct rotation and direction of air flow is shown on each individual fan. If backward-curved centrifugal fans rotate in the wrong direction, the motor may overload and the motor warranty will be void.

To change the direction of rotation on three-phase motors, interchange any two supply leads. All single-phase motors will rotate in the correct direction when correctly connected.

STARTING

All fans are suitable for direct-on-line starting by switch or automatically by contactor up to and including 5.5kW. The number of starts should be limited to no more than four per hour or, in the case of motors of less than 1kW, no more than eight starts per hour. This would be subject to local supply regulations.

Check List

- check power supply
- check fan is free to rotate
- check overloads are fitted
- ensure ductwork is free of debris
- check rotation of fan
- check the motor amperage draw does not exceed nameplate rating
- check capacitor for deterioration of capacitance regularly.

SAFETY

Rotating fan impellers can be a danger to personnel.

The following precautions must be taken:-

- electrically isolate the fan motor prior to undertaking any work.
- regularly check impeller fasteners for tightness.
- where fans are accessible to personnel or directly exposed to habitable areas, it is the responsibility of the installers to ensure that fans will have guards which comply with the latest Australian Standard AS4024.1 safeguarding of machinery.
- prior to fan start-up, ensure loose debris will not be sucked into the fan. All ductwork should be clean.

INSTALLATION INSTRUCTIONS

Important Notes:

With all horizontally mounted axial fans it is preferable that the fan is installed with the motor mounted on top of the motor plate. ie. not suspended under the motor plate.

For outside installations, IP66 rated conduit and fittings must be used.

To obtain rated performance, the following recommendations should be followed:-

Duct Mounted Fans - General

- inlet and outlet ductwork should be free from obstructions.
- duct transitions should be a maximum of 60° inlet/15° outlet.
- avoid sharp bends on inlet or outlet.
- do not use ductwork smaller in area than the fan.
- flexible duct connections should be taut.
- ductwork connections should be well aligned.
- inlet cones must be fitted to free inlet applications.
- ensure that the fan orientation is correct for the required air flow direction.

INSTALLATION & MAINTENANCE

Belt-Driven Product

- pulleys must be correctly aligned.
- belts must be correctly aligned and tensioned.
- tension must be checked 2-4 weeks after start-up.

Roof Ventilators

- ensure that upstands are flat and true.
- maximum angle of upstand or curb 30°
- fix a sealing strip of neoprene to the top of the upstand to prevent air leakage.
- fit an electrical compression gland to the roof cowl in an appropriate location and pass the electric cable through as the roof cowl is fitted.
- ensure the electric cable is not pinched prior to securing the cowl to the upstand.
- the roof cowl should be secured with roofing screws through the side skirt midway through the skirt.
- inlet ductwork should be free from obstructions.
- avoid sharp bends at the inlet.
- **vertical discharge axial roof units: ensure the damper flap hinge points down the slope of the roof.**

LUBRICATION INSTRUCTIONS

Most Fantech products are fitted with sealed-for-life pre-lubricated bearings which do not require maintenance for the life of the fan.

Should your fan be fitted with grease nipples, the following instructions should be followed:-

RECOMMENDED LUBRICATION INTERVALS

Motor Frame	Working Hours			
	48 rev/sec	24 rev/sec	16 rev/sec	12 rev/sec
160	4000	8000	12000	20000
180-200	3000	7000	12000	16000
225-250	2000	6000	10000	13000
280	1000	5000	8000	13000
315	1000	3500	8000	10000

Maximum interval 12 months.

These times are a guide only and will depend on the motor manufacturer and actual running conditions.

RECOMMENDED GREASES

Wherever possible the grease used should be identical to the original. When different greases are mixed, even if they are both suitable for the conditions, incompatibility can occur and result in rapid bearing failure.

In the absence of specific instructions supplied with the fan the following greases should be used. STANDARD FANS Shell Alvania R3 or compatible lithium-based grease suitable for 130°C continuous operation. SMOKE SPILL and high temp motors must use the grease stated on the motor to maintain the Smoke Spill approval.

PROCEDURE

M

If the grease lines are not extended to the outside of the case the fan must be electrically isolated for safety before work commences.

Clean the grease nipples with a clean cloth.

Introduce the new grease to all points while the fan is rotating until the old grease is purged from the grease relief port normally located at the bottom of the bearing housing. If it is required to manually rotate the impeller, the fan must be electrically isolated to prevent accidental startup.

WARNING

INCOMPATIBLE GREASE, EXCESSIVE GREASE OR INCORRECT GREASE RELIEF CAN CAUSE DAMAGE TO THE MOTOR.

WARRANTY

Fantech warrants products of its manufacture when not misused or neglected to be free of defects in workmanship and/or materials. Our obligation under this warranty is limited to repairing or exchanging F.O.B. factory, any part, assembly or portion found to be defective within one (1) year from the date of commissioning but not to exceed eighteen (18) months from date of shipment from our factory.

The Company assumes no responsibility for labour costs involved in the removal of defective parts, installation of new parts or related service charges.

The Company shall have the option of requiring the return of the defective part (transportation prepaid by the Buyer) to establish the claim.

Warranty will be void if installation is not carried out by qualified personnel in accordance with these instructions and good trade practice.

Fully detailed warranty conditions are contained in Fantech's Standard Conditions of Trading. (See pages *N-17/18* of the Fans by Fantech 2008 catalogue)

WIRING DIAGRAMS - STANDARD MOTORS

These diagrams apply to **STANDARD FRAME INDUCTION MOTORS** which are used in the following products:-

		Pgs**
• AD/E..D/V	Alpha/Beta Series Diags. DD 4, 5, 6, 9	D-4/6
• AD/E..S	Alpha Series Supply Diags. DD 4, 5, 6, 9	D-34/35
• *AL..	Centrifugal fans Diags. DD 1, 2, 3	E-14/19
• *AP/APV..	Axial Flow fans Diags. DD 1, 2, 3, 8, 9	B-29/31
• *APB..	Belt-driven axial fans Diags. DD 1, 2, 3, 7	B-29/31
• *APS..	Belt-driven axial fans Diags. DD 1, 2, 3, 7, 8	B-29/31
• BFA..	Bifurcated fans Diags. DD 1, 2, 3, 7, 8	B-29/31
• CGD/E..	GE Series Diags. DD 1, 2, 3, 7, 8	D-46/47
• *CHD/E..	Heritage Series Diags. DD 1, 2, 3, 7, 8	D-18/19
• *CHS..	Heritage Smoke-Spill Diags. DD 1, 2, 3	D-48/49
• CPD/E..	Compact 2000 Diags. DD 1, 4, 5, 6, 9	A-12/14
• *FAD..	FA Series Diags. DD 1, 2, 3, 7	D-20/25
• *FL..BD	FlexLine Series Diags. DD 1, 2, 3, 7	E-3, E-7/11
• *FL..DD	FlexLine Series Diags. DD 1, 2, 3, 7	E-3/6
• *HC..	High Capacity Series Diags. DD 1, 2, 3, 7, 8	D-26/27
• JV..	JetVent Axial Diags. DD 1, 3	F-12/13
• All other JetVents	See page M-9	
• *L..	Centrifugal fans Diags. DD 1, 2, 3	E-14/19
• *MMD/E..	Multiflow Series Diags. DD 1, 2, 3, 6, 8	B-20/24
• *PC..DD	PowerLine Series Diags. DD 1, 2, 3, 8, 9	B-16/18
• *RDE..	New Generation Series Diags. DD 1, 2, 3, 8	D-10/13
• *RDLE..	Alpha/Beta Industrial Diags. DD 1, 2, 3, 8	D-7/9
• *RDS..	New Generation Series Diags. DD 1, 2, 3, 8	D-10/13
• RSS..	New Generation Series Diags. DD 1, 2, 3	D-10/13
• *RVE..	New Generation Series Diags. DD 1, 2, 3, 8	D-10/13
• *RVLE..	Alpha/Beta Industrial Diags. DD 1, 2, 3, 8	D-7/9
• SCD/E...	Short Cased Series Diags. DD 4, 5, 6, 9	B-14/15
• *SQ..	SQ Series Diags. DD 1, 2, 3, 8	A-15/17
• SS..	Smoke-Spill Series Diags. DD 1, 2, 3	D-26/27

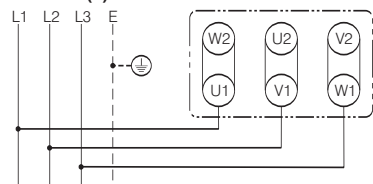
3Ø WIRING DIAGRAMS

Diagram DD1

SINGLE SPEED MOTORS

refer to the name plate data for correct connection

For delta (Δ) wired motors



For star (Y) wired motors

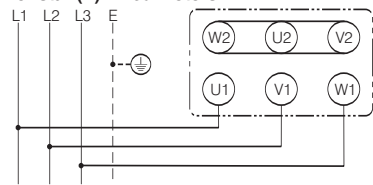
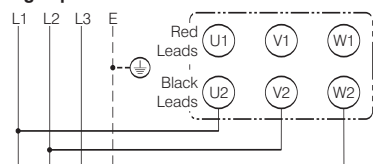


Diagram DD2

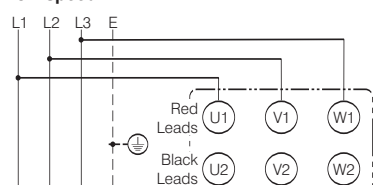
TWO-SPEED MOTORS

with 2 separate windings (dual winding)

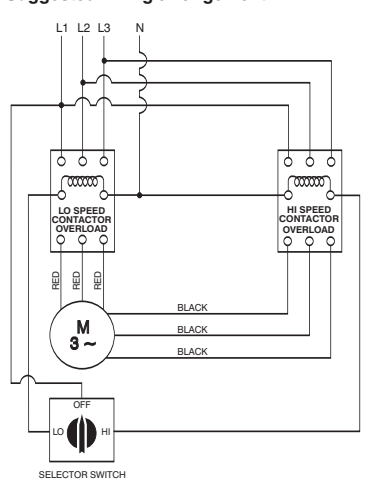
High speed



Low speed



Suggested wiring arrangement



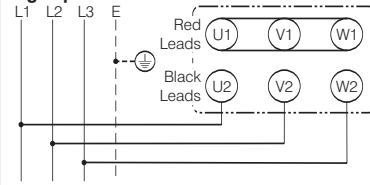
3Ø WIRING DIAGRAMS

Diagram DD3

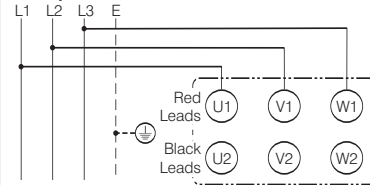
TWO-SPEED MOTORS

in Dahlander connection (tapped winding)

High speed



Low speed



Suggested wiring arrangement

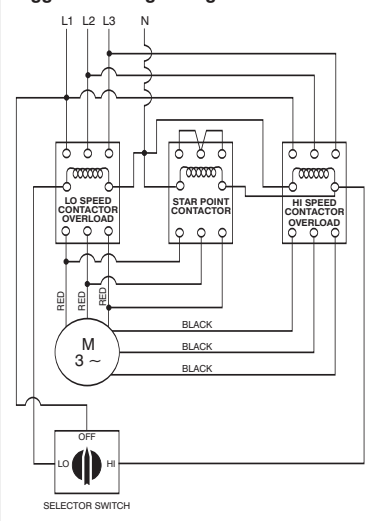
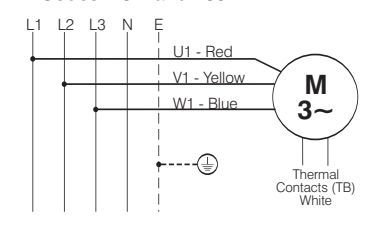


Diagram DD4

Single speed only

Codes: ..31. and ..35.



**Reference to Fans by Fantech 2008 catalogue.

***NOTE:** Refer to the motor manufacturer's data on the motor for wiring diagrams on standard frame Ex e, Ex d etc. motors.

These diagrams are current at the time of publication, check the wiring diagram supplied with the motor.

WIRING DIAGRAMS - STANDARD MOTORS

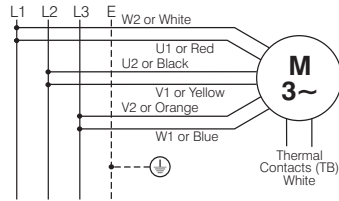
3Ø WIRING DIAGRAMS

Diagram DD5

TWO-SPEED MOTORS

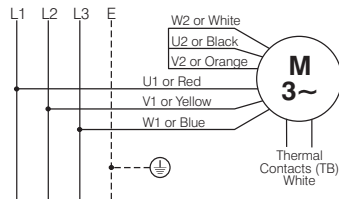
High speed delta (Δ) connection

Codes: ..40. to 63.



Low speed star (Y) connection

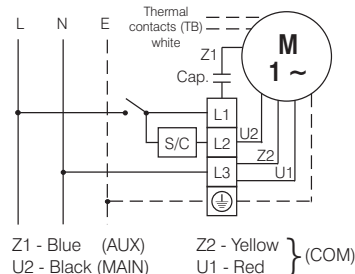
Codes: ..40. and upwards



1Ø WIRING DIAGRAMS

Diagram DD6

Anti-Clockwise



Bridge L1 and L2 if speed controller (S/C) is not required

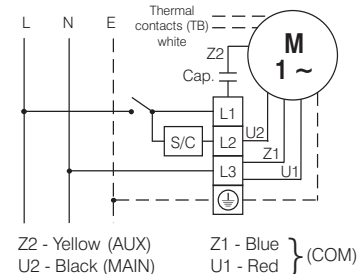
Note:

This diagram suits the VA2.0 and VA2.8 controls only. When using the AVA5.0, VA5.0 and VA8.0, use the AUX, MAIN and COM connections.

1Ø WIRING DIAGRAMS

Diagram DD9

Clockwise



Bridge L1 and L2 if speed controller (S/C) is not required

Note:

This diagram suits the VA2.0 and VA2.8 controls only. When using the AVA5.0, VA5.0 and VA8.0, use the AUX, MAIN and COM connections.

Diagram DD7

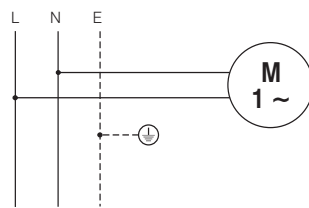
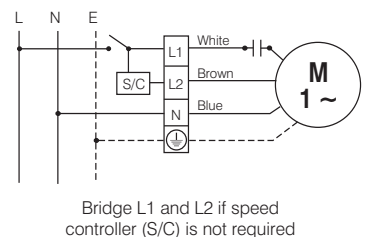


Diagram DD8



Bridge L1 and L2 if speed controller (S/C) is not required

For all other SINGLE-PHASE wiring diagrams refer to the manufacturers data on the motor.

These diagrams are current at the time of publication, check the wiring diagram supplied with the motor.

WIRING DIAGRAMS - EXTERNAL ROTOR MOTORS

These diagrams mainly apply to **EXTERNAL ROTOR MOTORS** but some standard frame induction motor diagrams have been included for ease of presentation.

Pgs**

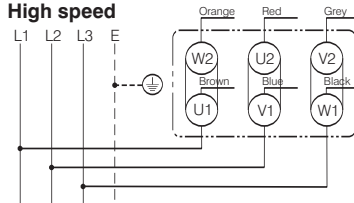
- CD/E..D/V Gamma Series D-14/17
Diags. ER 1, 2, 4, 5
- CD/E..VGL GL Gamma Series D-43/45
Diags. ER 1, 2, 4, 5
- CD/E..S Gamma Supply Series D-36/37
Diags. ER 1, 2, 4, 5
- CF.. Compact axial fans B-3
Single-phase motors
Diag. ER 6
- EDM.. EDM Series A-2
Diags. ER 6, 7
- EN.. EN Series A-3
Diag. ER 6
- FL..ER FlexLine Series E-3/6
Diags. ER 1, 2, 4, 5
- FP.. Compact F/Proof Series F-3/7
Diag. ER 6
- FSU.. Filtered Supply Unit A-25
Series 1; AC motors
Diag. ER 4
- FSU146 See M-9
- GRE.. Sigma Series E-2
Diag. ER 4
- HB.. Header Box A-24
Diag. ER 4
- HCM... HCM Series A-6
Diag. ER 4
- HV.. Stylvent Series A-8/9
Diags. ER 6, 8
- HXM.. HXM Series A-11
Diag. ER 6
- MT.. Minitube Series B-12/13
Diags. ER 4, 6
- MV.. Minivent Series D-2/3
Diags. ER 4, 6
- PC..ER PowerLine Series B-16/18
Diags. ER 1, 2, 3, 4, 5
- PF.. Profile Fan Series D-28/29
Diag. ER 4
- RP.. Ring Plate Series A-4/5
Diag. ER 4
- TILD/E.. Twin Neta Series B-26/27
Diags. ER 1, 2, 4, 5
- VM.. VentMajor Series B-4/5
Diag. ER 6
- VRP.. Ring Plate Series A-4/5
Diag. ER 4
- WCD/E.. Delta Series A-22/23
Diags. ER 1, 2, 4, 5
- TWCD/E.. Delta Series, Twin fan A-22/23
Diags. ER 1, 2, 4, 5

3Ø WIRING DIAGRAMS

Diagram ER1

TWO-SPEED MOTORS

High speed



Low speed

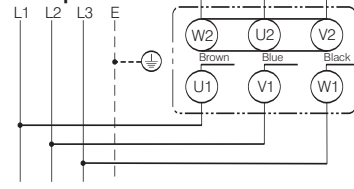
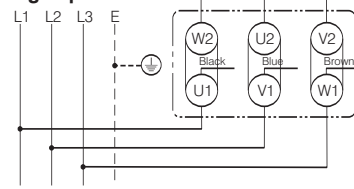


Diagram ER2

TWO-SPEED MOTORS

High speed



Low speed

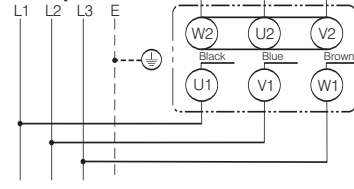
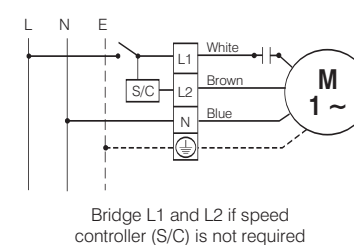


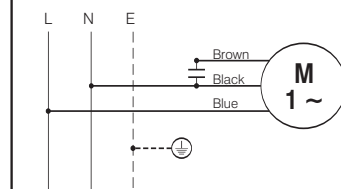
Diagram ER3



1Ø WIRING DIAGRAMS

Diagram ER4

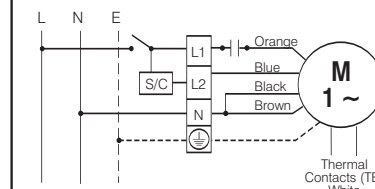
3 active wires plus auto-reset thermal contacts



Codes: CE19.. to CE40.. + other fans as shown

Diagram ER5

4 active wires plus manual-reset thermal contacts



Codes: CE45.. and over + other fans as shown

Diagram ER6

Codes: EDM..S & ..C; HV-150AE; MT132; MV112 & MV132

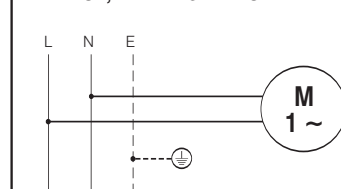


Diagram ER7

Codes: EDM..CT & ..CR

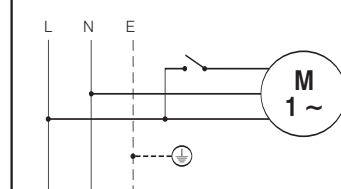
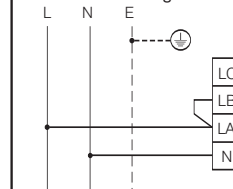


Diagram ER8

Codes: HV-230AE & HV-300AE

Exhaust air mode. For supply air mode bridge LC & LA



**Reference to Fans by Fantech 2008 catalogue.

These diagrams are current at the time of publication, check the wiring diagram supplied with the motor.

WIRING DIAGRAMS - ER & INTELLIGENT MOTORS

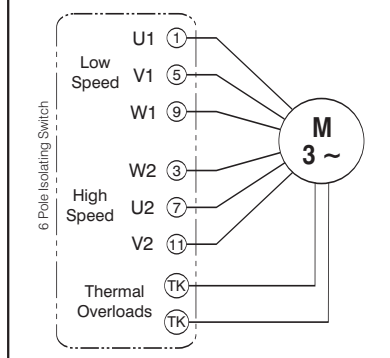
These diagrams apply to **EXTERNAL ROTOR MOTORS** that are fitted to the following products:-

		Pgs**
• EIE..	Ezifit In-Wall Diag. ER 11	A-18/19
• FSU146	Filtered Supply Units Series 3 Diag. ER 12	A-26
• Other FSU units		See page M-8
• JISU..	JetVent Centrifugal Diag. ER 9	F-15
• JIU..	JetVent Multiflow Diag. ER 9	F-14
• JV..	JetVent Axial Diag. ER 9	See page M-6
• JW..	JetVent Warehouse Diag. ER 9	G-5
• TD..	Mixvent Series Diag. ER 10	B-6/9
• WJ..	WhisperJet Fan Kit Diag. ER 10	B-32/33

3Ø WIRING DIAGRAMS

Diagram ER9

TWO SPEED STAR/DELTA MOTOR



1Ø WIRING DIAGRAMS

Diagram ER10

Codes: All Mixvent units

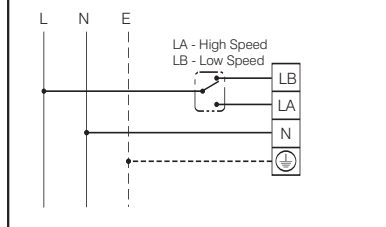


Diagram ER11

Codes: EIE150

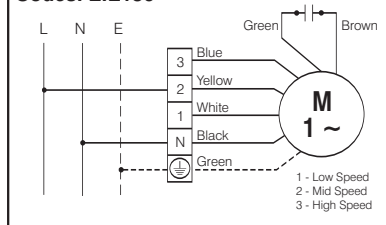
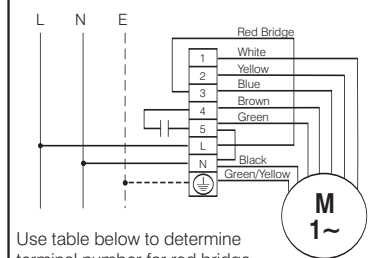


Diagram ER12

Codes: FSU146-4-A1



Use table below to determine terminal number for red bridge

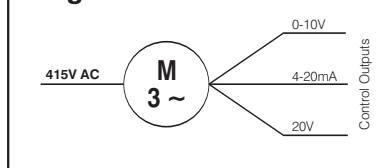
Air Flow, L/sec	109	166	199
Speed	Low	Med	High
Terminal	1	2	3

These diagrams apply to **INTELLIGENT CONTROL MOTORS** that are fitted to the following products:-

		Pgs**
• CD/EEC..	Gamma EC Diags. IC1, 2	D-50/51
• CD/EEC..VGLGL	Gamma EC Diags. IC1, 2	D-52/53
• ESAP	Eco-Speed Axial Diag. IC3	B-39/42
• ESPCE	Eco-Speed PowerLine Diag. IC3	B-36/38
• PCD/EEC	PowerLine EC Diags. IC1, 2	B-34/35

3Ø WIRING DIAGRAMS

Diagram IC1



1Ø WIRING DIAGRAMS

Diagram IC2

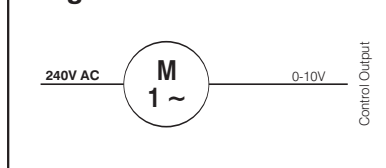
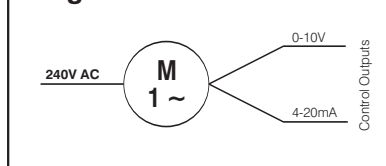


Diagram IC3



**Reference to Fans by Fantech 2008 catalogue.

These diagrams are current at the time of publication, check the wiring diagram supplied with the motor.

- IMPORTANT -

INSTALLATION & MAINTENANCE

INSTRUCTIONS

&

ELECTRICAL

WIRING DIAGRAMS

HEAD OFFICE AND EXPORT ENQUIRIES

Fantech Pty. Ltd.
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Email: info@fantech.com.au

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