INSTALLATION & MAINTENANCE INSTRUCTIONS

&

ELECTRICAL WIRING DIAGRAMS

FANTECH
Intelligent Ventilation

Installation & Maintenance N-2/4

Warranty N-5

Wiring Diagrams N-6/9

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. Fantech will not be held liable where a motor is install and used outside of their rated specification or intended use."
WARNING - Failure to do so could void warranty.

ELECTRICAL

WIRING WITH VARIABLE SPEED DRIVES

Fans to be connected to Variable Speed Drives (VSD) or equivalent electronically controlled power supply, must be wired according to the VSD wiring instructions. This is to ensure conformance to legislated EMC requirements as well as protection against premature product failure. The wiring will typically require EMC shielded cable between the VSD and motor, terminated so that there is good 360° contact between the sheath and both the EMC motor gland at one end and at the VSD at the other end.

Motors supplied by Fantech are typically not supplied with an EMC gland, and these glands should be purchased at the same time as the supply lead to ensure the grommet fits the cable correctly.

Not all products supplied by Fantech are suitable for VSD drives. Clarification of what products are suitable can be found in our online catalogue at www.fantech.com.au. The list below covers some of the products that are not suitable.

- EC motor products.
- Single phase products.
- External rotor motor products that require "ALL POLE" sinusoidal filters.
- EXE motors.

(Also refer to hazardous locations)

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 and local supply regulations.

WIRING

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

PROTECTION

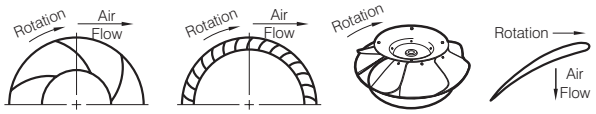
Fuses in the circuit should be regarded as protecting the wiring only against short circuit, they are not suitable for overload protection. Fuses must be able to carry starting loads and these can be taken as a minimum of six times the running current for 25 seconds.

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.

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. If a VSD is installed, the two leads must be interchanged on the output side of the VSD. All single-phase motors will rotate in the correct direction when correctly connected.

STARTING

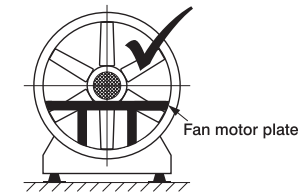
All fans are suitable for direct-on-line starting by switch or automatically by contactor up to and including 5.5kW. The number of starts should be limited to no more than four per hour or, in the case of motors of less than 1kW, no more than eight starts per hour. This would be subject to local supply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

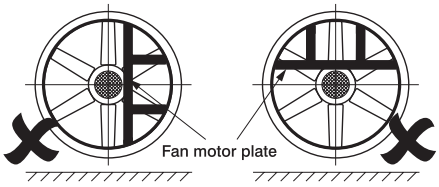
Check List
- check power supply
- check fan is free to rotate
- check overloads are fitted
- ensure ductwork is free of debris
- check rotation of fan
- check the motor amperage draw does not exceed nameplate rating

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.

Vertical Mounting - Consideration is needed for PowerLine and Axial Duct or Square Plate Fans where the motor is to be vertically mounted.

Motors which are to be mounted with the shaft vertically down and the impeller at the base of the Fan, the motor must be air stream rated or be provided with a suitable cover (available on request) to ensure foreign bodies are prevented from entering the motor.

Special care is needed when fitting protective covers to motors to ensure air flow is not impeded.

To maintain IP rating, special additional measures may be required to protect the motor against the ingress of water or foreign bodies, eg rain covers.

Please contact Fantech or motor manufacturer for further information.

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 15°.
- 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.

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.
- when installing down flow roof mounted fans and cowls in high wind or cyclonic regions, Fantech recommends fitting cyclone ties and using suitable wire rope to fix back to the roof or other suitable structure.

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.

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

	Working Hours			
Motor Frame	**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. Refer to motor manufacturers grease recommendations.

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

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.

INSTALLATION INSTRUCTIONS FOR HAZARDOUS ENVIRONMENT

- The equipment must be installed and maintained to AS/NZS 60079.14 - Electrical Equipment for Explosive Atmospheres, and AS/NZS 3000 - Wiring Rules.
- Where fans are accessible to personnel or directly exposed to habitable areas, it is the responsibility of the installer to ensure that fans will have guards which comply with the current Australian Standard AS 4024.1 - Safety of Machinery.
- Every hazardous fan is supplied with a copy of the Certificate of Approval of the motor and its serial number.
- Motors must be regularly cleaned to remove dust from between the cooling fins. A build-up of dust may create a hazardous situation as a result of spontaneous combustion. When cleaning the surface of the motor, a damp cloth should be used to minimise the risk of electrostatic discharge.
- If a motor is controlled by a VSD, the controller MUST be installed outside the hazardous area, and the motor thermistors connected to the VSD.
- As Fantech is un-aware whether the conditions outside the fan are hazardous, no external junction box is fitted.
  It is the responsibility of the installer to ensure a suitable junction box is fitted.
- Motor ventilation fan cowl must not be obstructed as doing so may cause motor to overheat.
- Where a fan or motor is to be altered or repaired, this can only be performed by suitably qualified workshop and personnel with the appropriate and current accreditation. Failure to do so will void all classifications and responsibilities.

Scan the above QR code or visit
www.fantech.com.au/warranty
to view WARRANTY
information online

WIRING DIAGRAMS - STANDARD MOTORS

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

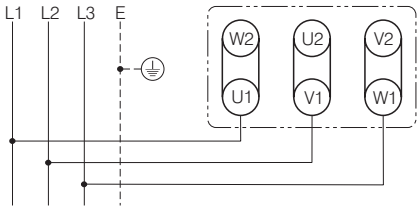
		Sections
• AD/E..D/V	Alpha/Beta Series Diags. DD 4, 5, 6, 7, 10	D
• AD/E..S	Alpha Series Supply Diags. DD 4, 5, 6, 7, 10	D
• *AL..	Centrifugal fans Diags. DD 1, 2, 3	E
• *AP/APV..	Axial Flow fans Diags. DD 1, 2, 3, 6, 7, 9, 10	B
• *APB..	Belt-driven axial fans Diags. DD 1, 2, 3, 6, 7, 9, 10	B
• *APS..	Belt-driven axial fans Diags. DD 1, 2, 3, 6, 7, 9	B
• BFA..	Bifurcated fans Diags. DD 1, 2, 3, 6, 7, 9, 10	B
• CGD/E..	GE Series Diags. DD 1, 2, 3, 8, 9, 10	D
• *CHD/E..	Heritage Series Diags. DD 1, 2, 3, 8, 9, 10	D
• CPD/E..	Compact 2000 Diags. DD 1, 4, 5, 6, 7, 10	A
• *FL..DD	FlexLine Series Diags. DD 1, 2, 3, 10	E
• FP..	Compact F/Proof Series Diag. DD 8	A
• *HC..	High Capacity Series Diags. DD 1, 2, 3, 10	D
• HUD..	Heritage Ultra Series Diags. DD 1, 2, 3	D
• KUD/E..	Commercial Kitchen Exhaust Fan Diags. DD 1, 9	D
• *MMD/E..	Multiflow Series Diags. DD 1, 2, 3, 5, 6, 9, 10	B
• *PCD/E..	PowerLine Series Diags. DD 1, 2, 3, 7, 9, 10	B
• PUD/E..	PowerLine Ultra Series Diags. DD 1, 2, 3, 7	B
• *RDE..	New Generation Series Diags. DD 1, 2, 3, 9, 10	D
• *RDLE..	Alpha/Beta Industrial Diags. DD 1, 2, 3, 9, 10	D
• *RDS..	New Generation Series Diags. DD 1, 2, 3, 9, 10	D
• RSS..	New Generation Series Diags. DD 1, 2, 3, 9	D
• *RVE..	New Generation Series Diags. DD 1, 2, 3, 9, 10	D
• *RVLE..	Alpha/Beta Industrial Diags. DD 1, 2, 3, 9, 10	D
• SCD/E...	Short Cased Series Diags. DD 4, 5, 6, 7	B
• *SQ..	SQ Series Diags. DD 1, 2, 3, 9, 10	A
• SS..	Smoke-Spill Series Diags. DD 1, 2, 3	D

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

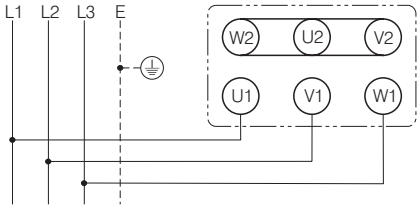
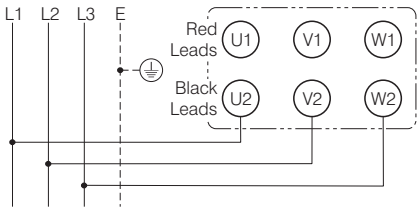


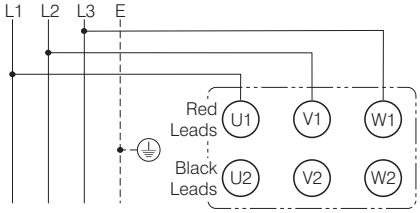
Diagram DD2

TWO-SPEED MOTORS
with 2 separate windings (dual winding)

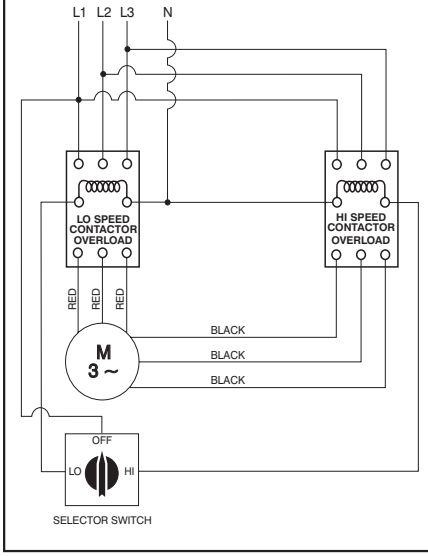
High speed



Low speed



Suggested wiring arrangement

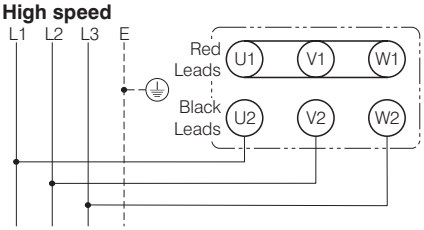


3Ø WIRING DIAGRAMS

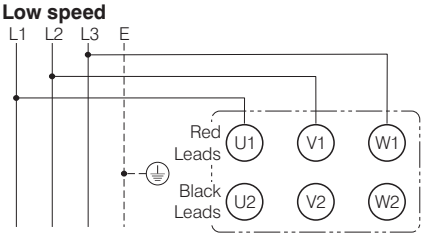
Diagram DD3

TWO-SPEED MOTORS
in Dahlander connection (tapped winding)

High speed



Low speed



Suggested wiring arrangement

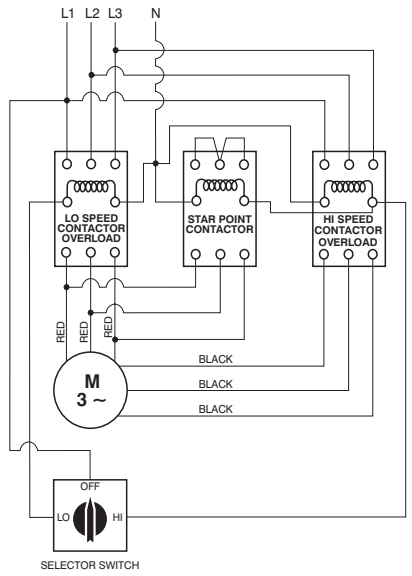
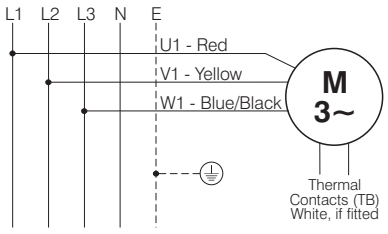


Diagram DD4

Single speed only

Codes: ..31. and ..35.



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

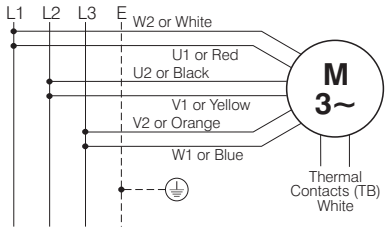
These diagrams are current at the time of publication, check the wiring diagram supplied with the motor.

3Ø WIRING DIAGRAMS

Diagram DD5

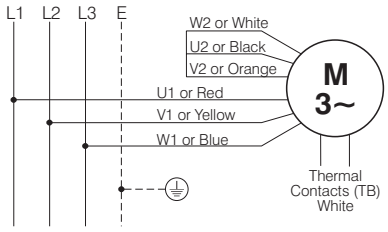
TWO-SPEED MOTORS
High speed delta (Δ) connection

Codes: ..40. to 63.



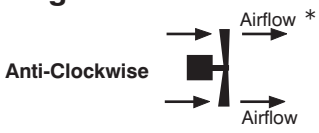
Low speed star (Y) connection

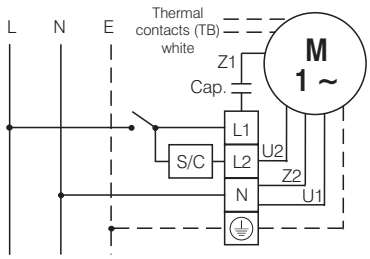
Codes: ..40. and upwards



1Ø WIRING DIAGRAMS (Form A)

Diagram DD6





Z1 - Blue (AUX)
U2 - Black (MAIN)
Z2 - Yellow
U1 - Red
(COM)

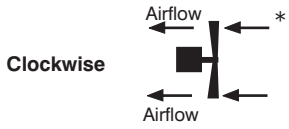
Bridge L1 and L2 if speed controller (S/C) is not required

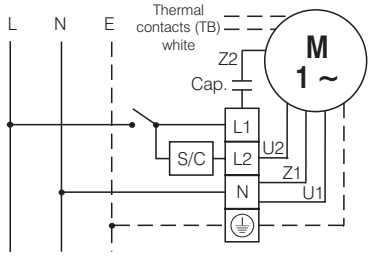
Note:
This diagram suits speed controllers, VA2.0 and VA2.8 only. When using the AVA5.0, VA5.0 and VA8.0 speed controllers, use the AUX, MAIN and COM connections.

* Airflow direction base on left-hand blade installation.

(Form B)

Diagram DD7





Z2 - Yellow (AUX)
U2 - Black (MAIN)
Z1 - Blue
U1 - Red
(COM)

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

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

* Airflow direction base on left-hand blade installation.

1Ø WIRING DIAGRAMS

Diagram DD8

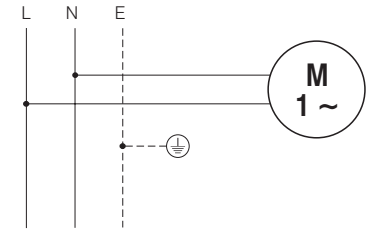
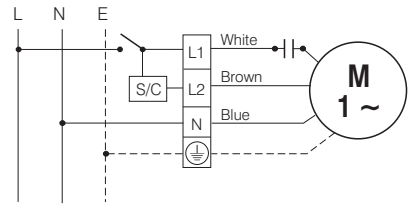


Diagram DD9

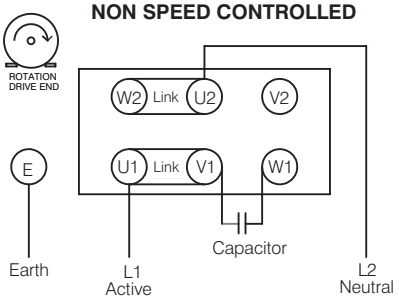


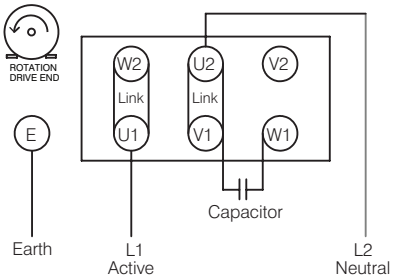
Bridge L1 and L2 if speed controller (S/C) is not required

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

Diagram DD10

NON SPEED CONTROLLED





NOTE: W1 and W2 is used for EMT and FASCO motors, replace with Z1 and Z2 for CMG and Tech Top motors.

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.

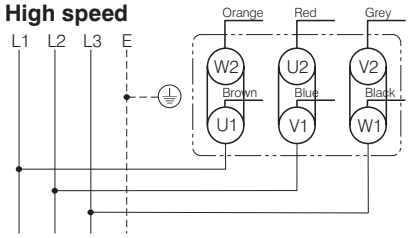
		Sections
• CD/E..D/V	Gamma Series Diags. ER 1, 2, 4, 5	D
• CD/E..VGL	GL Gamma Series Diags. ER 1, 2, 4, 5	D
• CD/E..S	Gamma Supply Series Diags. ER 1, 2, 4, 5	D
• CF..	Compact axial fans Single-phase motors Diag. ER 6	B
• EDM..	EDM Series Diags. ER 6, 7	A
• FSU144..	FSU Series Diag. ER 11	A
• GRE..	Sigma Series Diag. ER 4	E
• GUD/E..D/V	Gamma Ultra Series Diag. ER 1, 4, 5	D
• GUD/E..S	Gamma Supply Ultra Series Diag. ER 1, 4, 5	D
• HCM...	HCM Series Diag. ER 4	A
• HV..	Stylvent Series Diags. ER 6, 8	A
• HXM..	HXM Series Diag. ER 6	A
• MT..	Minitube Series Diags. ER 4, 6	B
• MV..E	Minivent Exhaust Series Diags. ER 4, 6	D
• MV..S	Minivent Supply Series Diags. ER 4, 6	D
• PC..ER	PowerLine Series Diags. ER 1, 2, 3, 4, 5	B
• RP..	Ring Plate Series Diag. ER 4	A
• VM..	VentMajor Series Diag. ER 6	B
• SILDES	Silent Design Series Diag. ER 6	A
• EWE	Ezifit Thru Wall Diag. ER 4	A

3Ø WIRING DIAGRAMS

Diagram ER1

TWO-SPEED MOTORS

High speed



Low speed

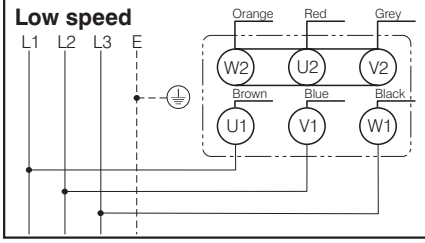
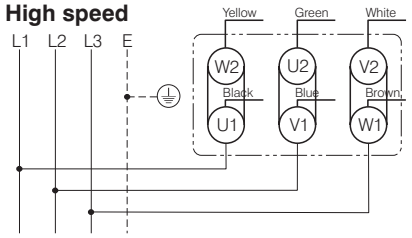


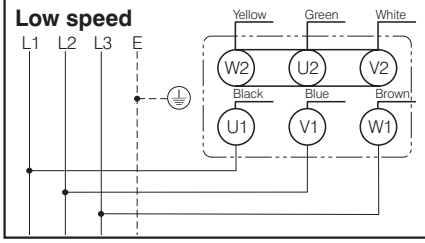
Diagram ER2

TWO-SPEED MOTORS

High speed

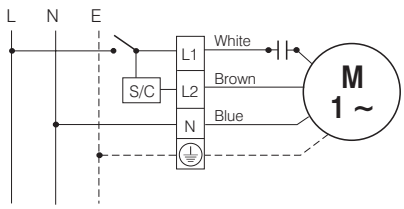


Low speed



1Ø WIRING DIAGRAM

Diagram ER3

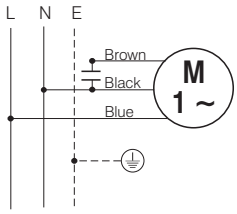


Bridge L1 and L2 if speed controller (S/C) is not required

1Ø WIRING DIAGRAMS

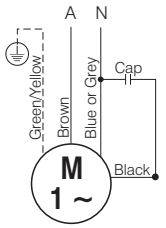
Diagram ER4

3 active wires plus auto-reset thermal contacts



Codes: CE19.. to CE28.. + other fans as shown

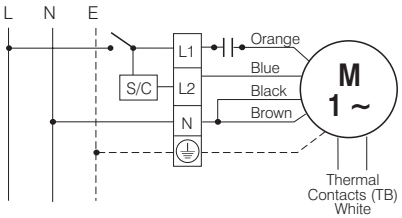
Single phase AC motor with capacitor



CE31 only

Diagram ER5

4 active wires plus manual-reset thermal contacts



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

Codes: CE35.. and over + other fans as shown

Diagram ER6

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

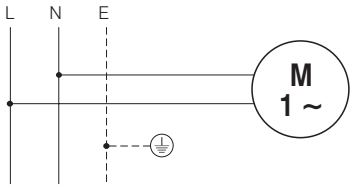


Diagram ER7

Codes: EDM..CT & ..CR

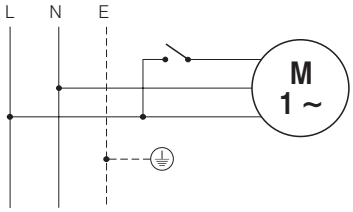
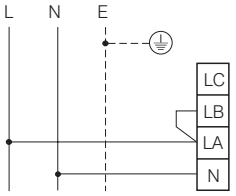


Diagram ER8

Codes: HV-230AE & HV-300AE

Exhaust air mode. For supply air mode bridge LA & LC do not bridge LA & LB.



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

WIRING DIAGRAMS - EXTERNAL ROTOR MOTORS

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

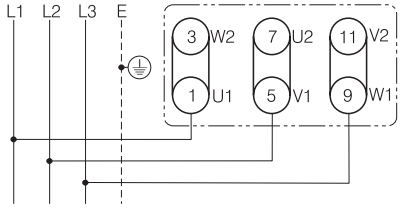
		Sections
• EIE..	Ezifit In-Wall Diag. ER 10	**A**
• JVW..	JetVent Warehouse Diag. ER 9	**G**

3Ø WIRING DIAGRAMS

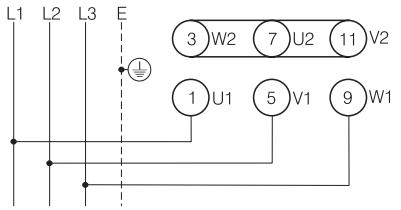
Diagram ER9

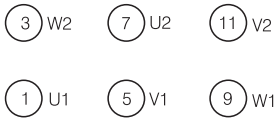
2 speed Star/Delta motor with 6 pole isolator

High speed Delta (△)



Low speed star (Y)





1Ø WIRING DIAGRAMS

Diagram ER10

Codes: EIE150

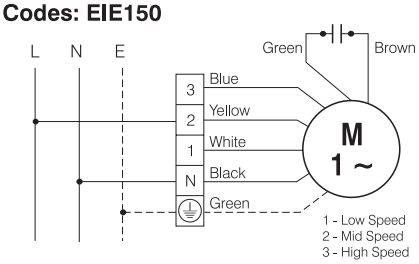
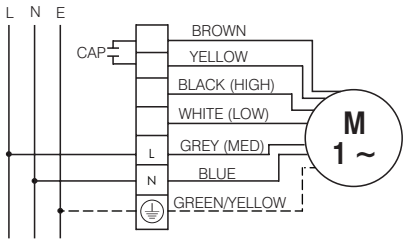


Diagram ER11

Codes: FSU144



Note: wire in the active to the desired speed (high/med/low)

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

- IMPORTANT -

INSTALLATION & MAINTENANCE INSTRUCTIONS & ELECTRICAL WIRING DIAGRAMS

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