

JETVENT



Impulse **Ventilation**

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introduction

Ventilation in applications such as fully enclosed car parks, vehicle bays and metro stations provides an exchange process of air, bringing fresh air in, thoroughly mixing the air, then extracting harmful pollutants, in particular, carbon monoxide, nitrus oxides, fumes from vehicle fluids, oil and other fuels.

The need for ventilation is of equal importance to smoke dispersal in the event of a fire, safeguarding lives by providing smoke clearance for occupants to escape, and enabling access for fire fighters to control fire risk.

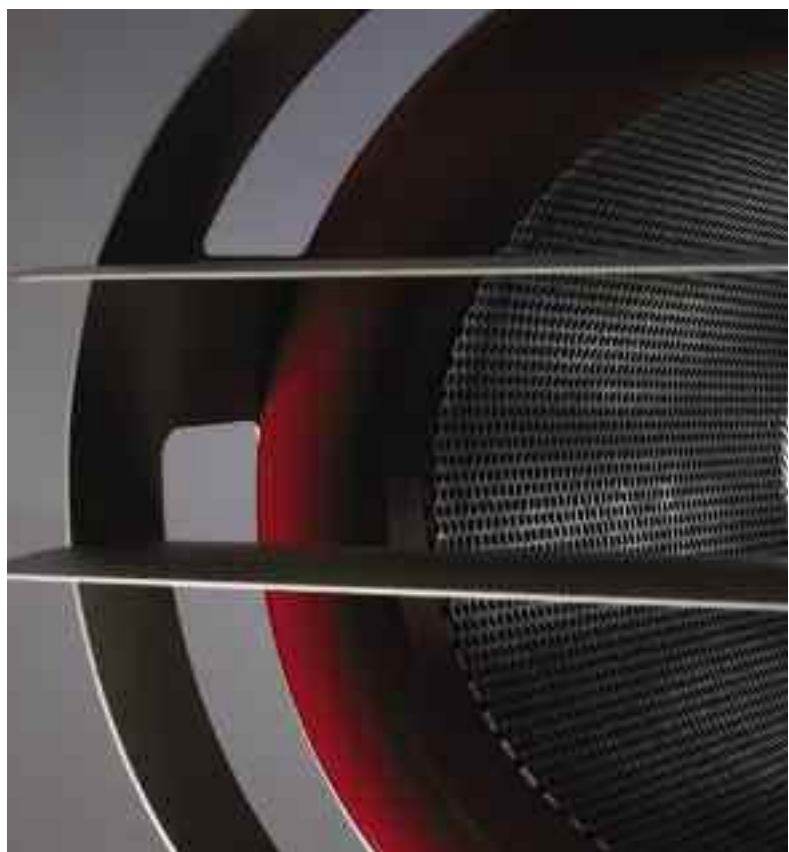
For us, the challenge is always to bring product beyond market expectations. That is why Elta measure our work not only in terms of technical performance, but also in fulfilling customer specific needs. It is this fine balance between unrivalled technology and customer application that the best of our solutions are to be found.

excellent performance and safety

The JetVent is no exception to these criteria, all designed around safeguarding occupants, while removing pollutants with the simplest of operation.

With two sizes, 315mm and 400mm diameter and 10 model variants, the JetVent satisfies the majority of customer requirements.

Using the principal of providing impetus to the airflow, thrusts air in the direction of designated extract positions, thereby ensuring smoke and other harmful pollutants do not gather and accumulate in dead areas by constant flow and air movement. A sequence of fans, mounted directly beneath the ceiling, enables air from the inlet opening to the extract fans, to remove smoke and fumes efficiently.





JetVent: the principle

The impulse ventilation system is based on a number of small, strategically located high velocity fans in place of the distribution ductwork traditionally used in car parks.

Impulse fans operate on well proven tunnel ventilation principles, producing a high velocity jet which thrusts against the air in front of the fan imparting momentum to all the surrounding air through entrainment as it diffuses. The volume of entrained air is significantly greater than that passing through the fan.

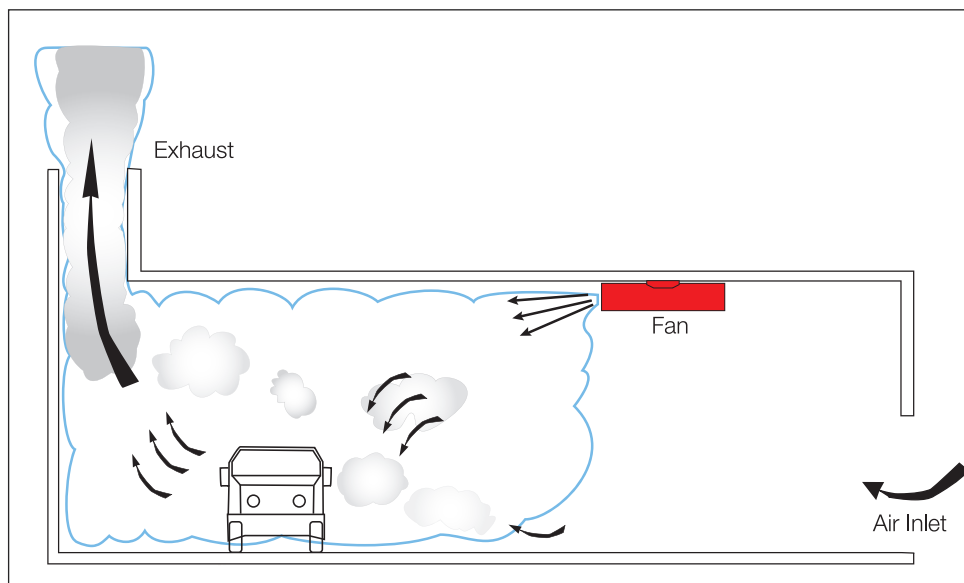
The impulse fans are carefully positioned to direct the airflow towards the main extract fan intake points. The main extract fans are sized to provide the required flow rates, however, given

the reduced need for, or complete elimination of ducting, the resulting reduction in system resistance means they are typically smaller and consume less energy.

Impulse fan performance is rated in terms of the thrust developed by the fan, which is the product of the mass flow rate times the change in velocity, i.e. volume flow rate times the air density times the fan outlet velocity, and is measured in Newtons.

Figure 1.0: Impulse Ventilation

Section View: Discharge angled to “drag” air efficiently



why impulse ventilation?

There are a number of differences between conventional mechanical and impulse ventilation systems, namely;

- The distribution ducting used in traditional systems (Figure 2.0) is replaced by a number of small JetVent impulse fans (Figure 3.0) to direct the airflow across the designated area.
- Without the distribution duct resistance, smaller exhaust and supply fans and / or motors can be used.

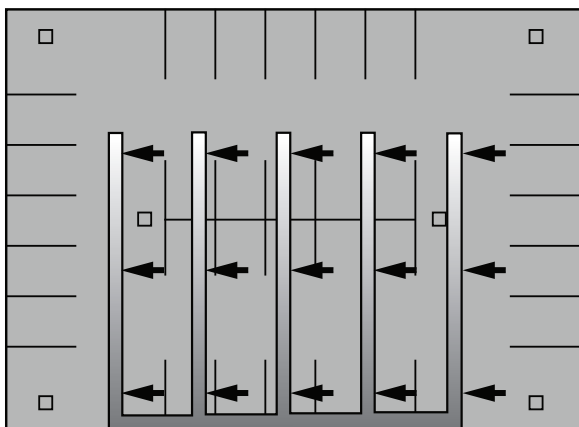


Figure 2.0 Conventional ducted system

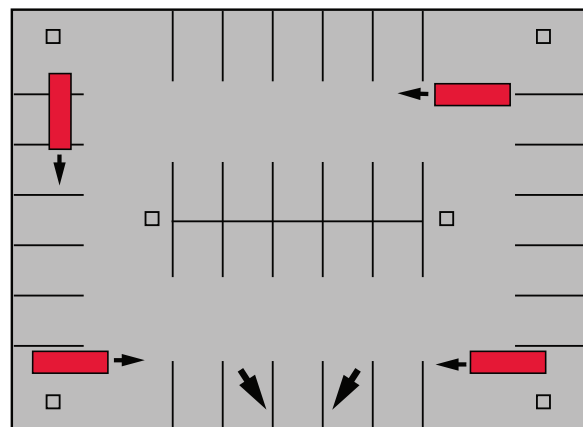


Figure 3.0 Equivalent impulse layout

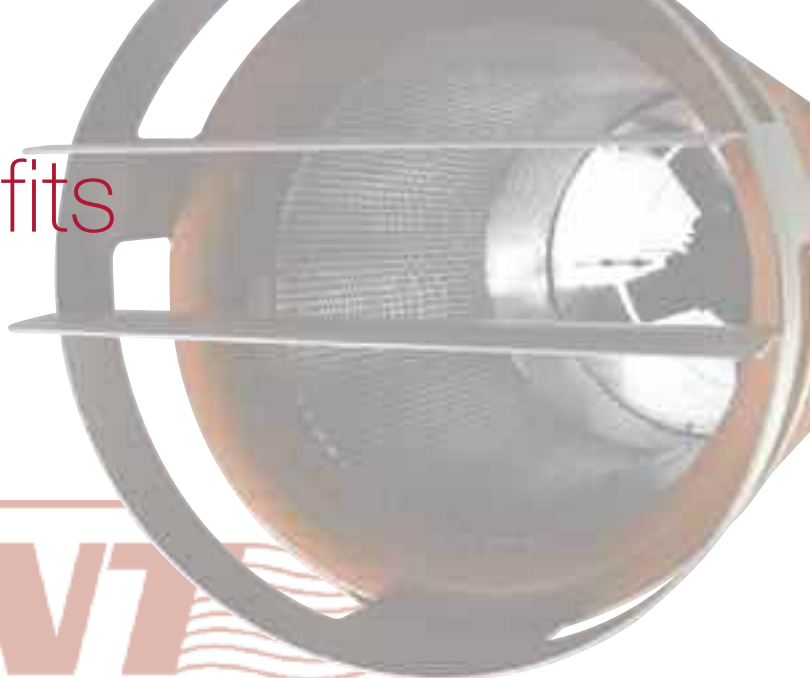


features & benefits

JetVent has two sizes, 315mm and 400mm diameter and 10 model variants, satisfying the majority of customer requirements.

By providing Uni-Directional or Truly reversible airflow, JetVent offers flexibility to specific customer requirements.

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no ductwork requirement

By adding momentum to the air, JetVent thrusts air towards desired extract points to ensure stagnant fumes and smoke do not settle. This principal eliminates the requirement for ductwork and ancillary equipment within applications, as the JetVent effectively transfers the polluted air. By eliminating ductwork from an enclosed car park, system resistance is greatly reduced, which means lower pressure drops required by the extract fans, lower power consumption and running cost savings.

Without the requirement for ducting, the main extract fans are more efficient, operating at slower running speeds, which reduce noise levels.

Potential space saving available by increasing head room area, and a safer, lighter environment without the need for ductwork.

lower maintenance

As it eliminates the need for ducting as a path for fire to pass through and reduce the chance of blockages, ducting damage and leakage on site.

cost effective

JetVent provides the scope for reduced installation and overall construction build costs compared with traditional ducted systems.

design appeal

With no flanging required for silencer fixing, this provides a streamlined design for Inlet and Outlet Silencers, aesthetically pleasing, easy to clean and improved air performance.

The integral bell mouth Inlet has a streamlined appearance for improved performance and sound.

better security

JetVent provides added security improvements, whereby the elimination of ducting ensures a safer, lighter environment and less CCTV obstruction.

robust design

Hot dipped Galvanised finish with a 4mm thick fan casing provide a robust construction, resistant to potential corrosion. The prevention of debris entering the fan causing potential damage is facilitated by the zinc plated guard, which is detachable for ease of maintenance. Within the unit, high quality perforated galvanised steel enhances corrosion resistance.

Stainless steel construction of the Deflector enables air to be guided, whilst combating corrosion at the same time. Since they are detachable, it also provides ease of maintenance and replacement if damaged.



impellers

Adjustable pitch aerofoil section impellers provide a long lasting robust construction for ambient and high temperature applications.



rigorous testing

As you would expect with Elta Fans products, JetVent is independently tested to meet the exacting standards of EN 12101 – 3:2002 providing a quality product that operates in fire / smoke conditions.

ingress protection

A minimum protection to IP55 on fan electrics improves reliability and ease of cleaning by means of pressure washing components.

An external pad lockable Isolator switch to IP65 standard is mounted to the outside of the casing.

design capabilities

Elta can pinpoint, analyse and make design changes and improvements without the expense of conventional prototyping.

By matching our research, development and technical capabilities with market requirements, Elta's collaboration with its customers provides the optimal product development solutions.



warranty

Each JetVent comes complete with a 12 month warranty.



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market applications

Elta Fans has a wealth of experience and knowledge, dedicated to understanding your particular needs. Whether your criteria is optimising space, specific performance characteristics, low noise levels or a high specification finish, the JetVent range continues to enhance Elta's reputation in the design and supply of specialist ventilation products.

Operating in typical applications such as fully enclosed or open sided car parks to assist in general ventilation and smoke extract, to Distribution warehouses, Vehicle Bays and Metro Stations, ensures the optimal solution to the application.



carbon monoxide, nitrous oxide
fumes



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specification

The JetVent car park extract range comprises 315mm and 400mm diameter sizes, Uni-directional or Truly Reversible airflow, two speed or single speed motors, with ambient or high temperature smoke conditions to European Standard EN12101 – 3:2002.

casing

The fan casing and integral mounting feet for mounting the unit to the car park ceiling provides a long lasting robust construction. All parts are manufactured from 4 mm heavy gauge mild steel sheet, roll formed and welded, then hot dipped galvanised to BS 729 after fabrication.

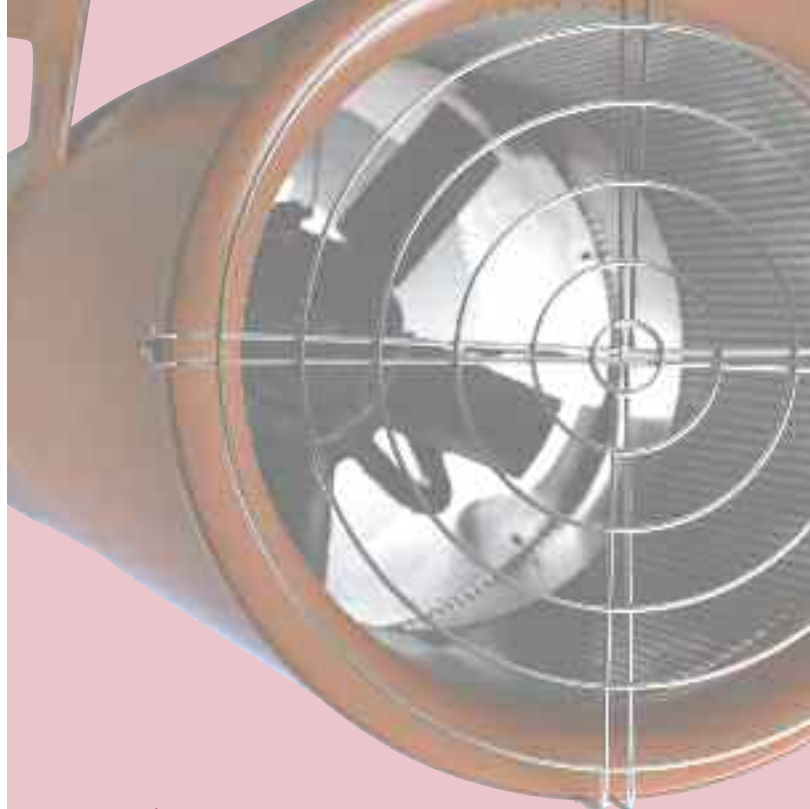
impeller

Adjustable pitch aerofoil impellers are provided with blades made from high quality pressure die cast aluminium alloy (LM6). Impellers are factory set at an angle to provide specific performance of thrust and volume flow rate.

Hubs are produced from die cast aluminium alloy (LM24).

High temperature impellers will have their blades positively locked by pinning, for added security, for operation in smoke mode.

Assembled impellers are to be dynamically balanced to Grade 6.3.



motors

Motors are totally enclosed, air stream cooled, metric frame to IP55 standard.

They have Class F or Class H insulation for normal continuous duty or smoke conditions, once only at 300°C for 2 hours.

Motors are either Single Speed or Two Speed. Two Speed motors have a Dahlander winding with direct starting at both speeds.

Motors have flying leads connected to an external padlockable Isolator switch to IP65 Standard.

silencers

An Inlet and Outlet silencer are mounted on either side of the fan housing, with integral bell mouth to provide reduced sound level and optimal performance. Silencers are constructed from 1.5mm pre-galvanised sheet steel, lapped and riveted, containing a pre-galvanised perforated sheet. Silencers sleeve onto the fan casing where they are secured, providing a low profile. The Inlet silencer has a zinc-plated guard attached, whilst the outlet silencer has a 316 stainless steel deflector, to guide air in the direction required.

finishing

All JetVent units are hot dipped galvanised as standard finish. Units can be powder coated in any standard RAL colour as required (at additional cost).

quality management

Units are designed and manufactured with procedures as defined in BS EN ISO 9001: 2000.

All JetVent units are tested at elevated temperatures in accordance with the requirements of the European standard EN12101 – 3:2002.

performance & sound data

JetVent - Uni Directional Ambient temperature +40°C

Product Code	Thrust Newtons	Volume Flow Rate m ³ /s	Velocity m/s	Sound Pressure dBA @ 1m*
JVU-CPA-315 2/4-3	20/5†	0.94/0.47	12.3/6.2	62/51
JVU-CPA-400 2-3	50	1.8	22.9	66

JetVent - Uni Directional High temperature 300°C for 2 hours

Product Code	Thrust Newtons	Volume Flow Rate m ³ /s	Velocity m/s	Sound Pressure dBA @ 1m*
JVU-CPA-315 2/4-3	20/5†	0.94/0.47	12.3/6.2	62/51
JVU-CPA-400 2/4-3	50 /15†	1.8/0.9	22.9/11.5	66/49
JVSU-CPA-400 2-3	50	1.8	22.9	66

JetVent - Truly Reversible Ambient temperature +40°C

Product Code	Thrust Newtons	Volume Flow Rate m ³ /s	Velocity m/s	Sound Pressure dBA @ 1m*
JVR-CPA-315 2/4-3	20/5†	0.94/0.47	12.4	64/53
JVR-CPA-400 2-3	50	1.8	23.3	66

JetVent - Truly Reversible High temperature 300°C for 2 hours

Product Code	Thrust Newtons	Volume Flow Rate m ³ /s	Velocity m/s	Sound Pressure dBA @ 1m*
JVSR-CPA-315 2/4-3	20/5†	0.94/0.47	12.4/6.2	64/53
JVSR-CPA-400 2/4-3	50 /15†	1.8/0.9	23.3/11.7	66/51
JVSR-CPA-400 2-3	50	1.8	23.3	66

† Denotes JetVent Two Speed Models *dBA figures are free field sound pressure levels at 45° to the inlet/outlet Air density 1.2 kg/m³ for all data

electrical data

JetVent - Uni Directional Ambient temperature +40°C

Product Code	Speed r/min	Motor Power kW	FLC Amps	SC Amps	Supply V/Ph/Hz
JVU-CPA-315 2/4-3	2880/1440**	0.55/0.11	1.42/0.36	7.1/1.4	400/3/50
JVU-CPA-400 2-3	2880	1.3	2.77	13.9	400/3/50

JetVent - Uni Directional High temperature 300°C for 2 hours

Product Code	Speed r/min	Motor Power kW	FLC Amps	SC Amps	Supply V/Ph/Hz
JVU-CPA-315 2/4-3	2880/1440**	0.75/0.17	2.12/0.63	14.6/2.7	400/3/50
JVU-CPA-400 2/4-3	2880/1440**	1.3/0.28	2.84/0.81	15.1/2.84	400/3/50
JVSU-CPA-400 2-3	2880	1.3	2.77	13.9	400/3/50

JetVent - Truly Reversible Ambient temperature +40°C

Product Code	Speed r/min	Motor Power kW	FLC Amps	SC Amps	Supply V/Ph/Hz
JVR-CPA-315 2/4-3	2880/1440**	0.55/0.11	1.42/0.36	7.1/1.4	400/3/50
JVR-CPA-400 2-3	2880	1.3	2.77	13.9	400/3/50

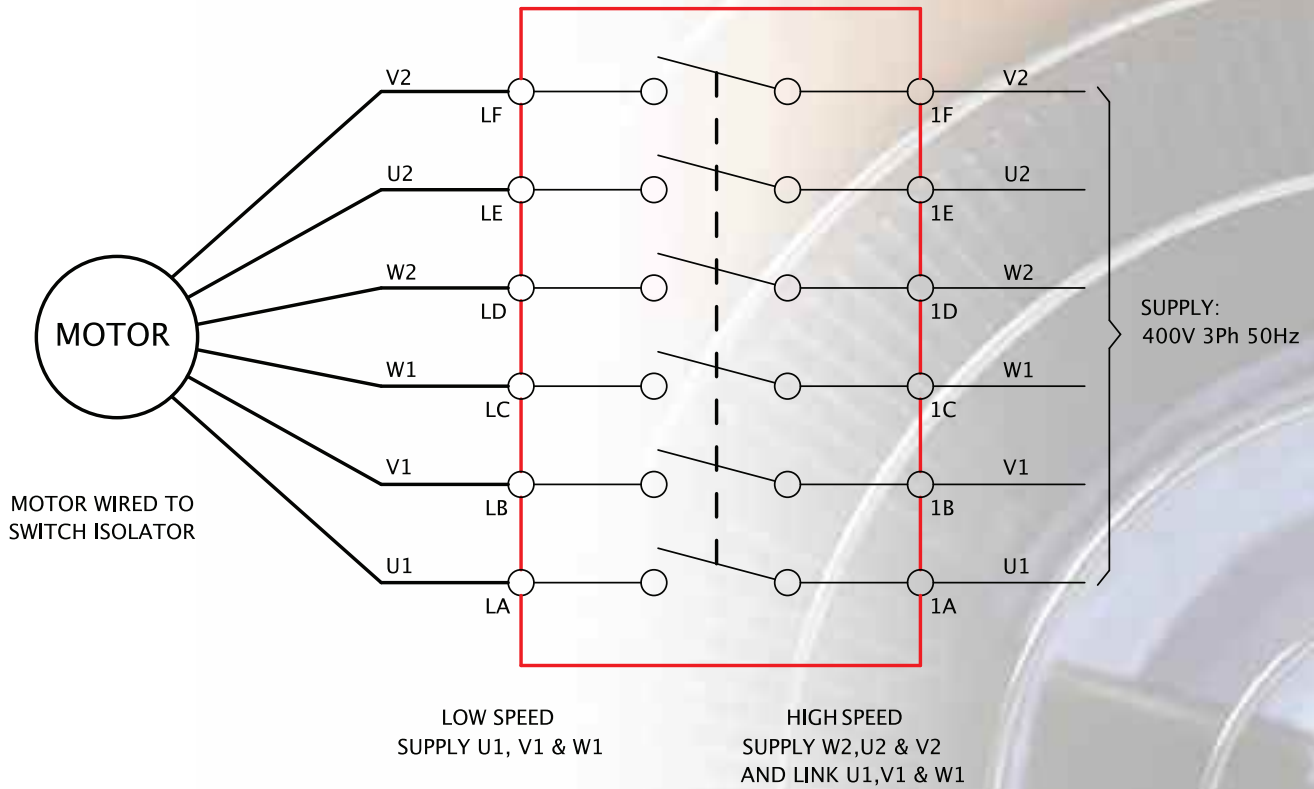
JetVent - Truly Reversible High temperature 300°C for 2 hours

Product Code	Speed r/min	Motor Power kW	FLC Amps	SC Amps	Supply V/Ph/Hz
JVSR-CPA-315 2/4-3	2880/1440**	0.75/0.17	2.12/0.63	14.6/2.7	400/3/50
JVSR-CPA-400 2/4-3	2880/1440**	1.3/0.28	2.84/0.81	15.1/2.84	400/3/50
JVSR-CPA-400 2-3	2880	1.3	2.77	13.9	400/3/50

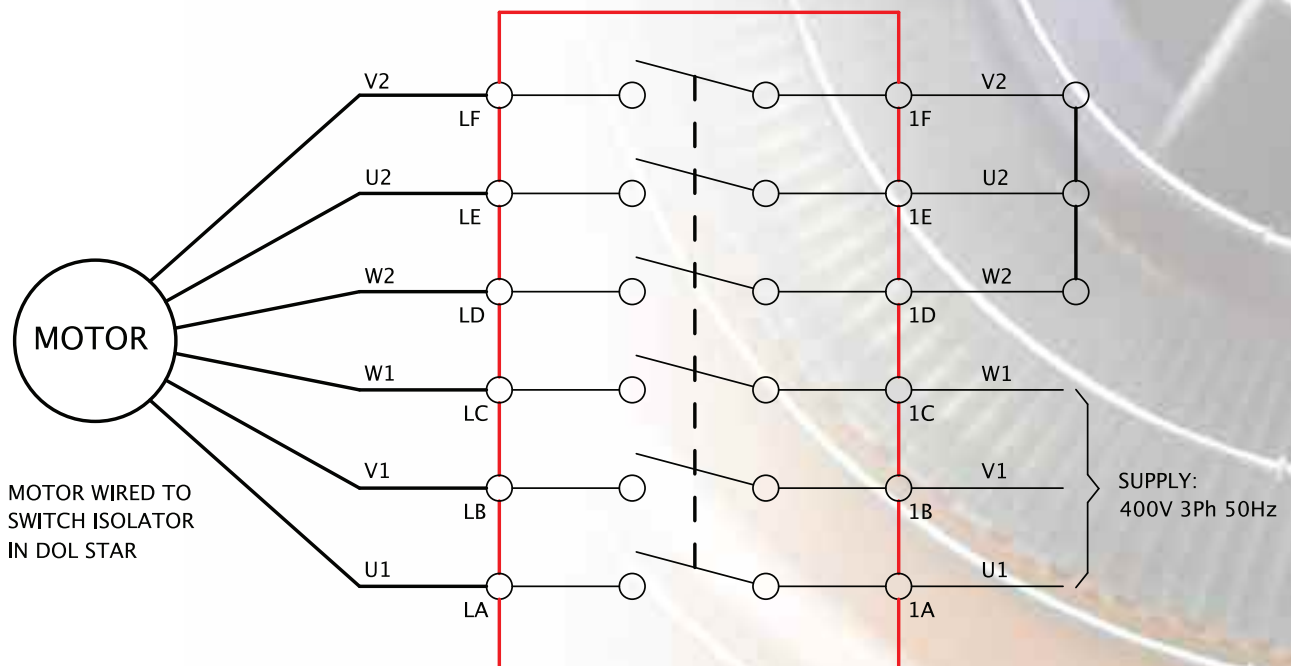
** Denotes Two Speed Tap Wound Motor All starting currents are quoted as Direct On-Line

wiring diagrams

WIRING DIAGRAM FOR TWO SPEED SINGLE WINDING MOTORS

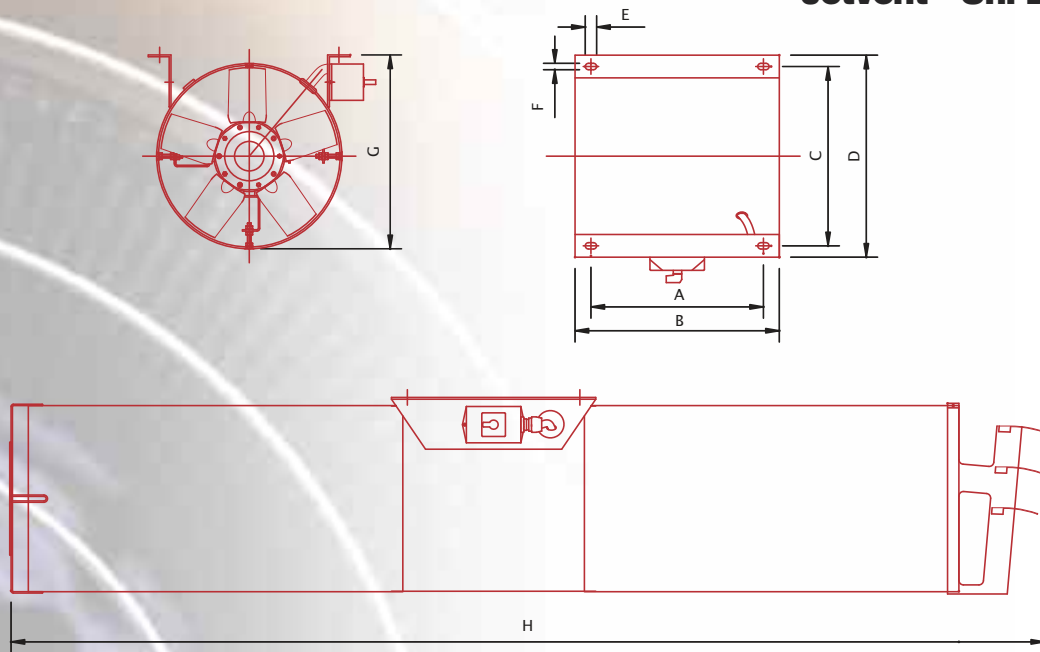


WIRING DIAGRAM FOR SINGLE SPEED DIRECT ON LINE STARTING (STAR)



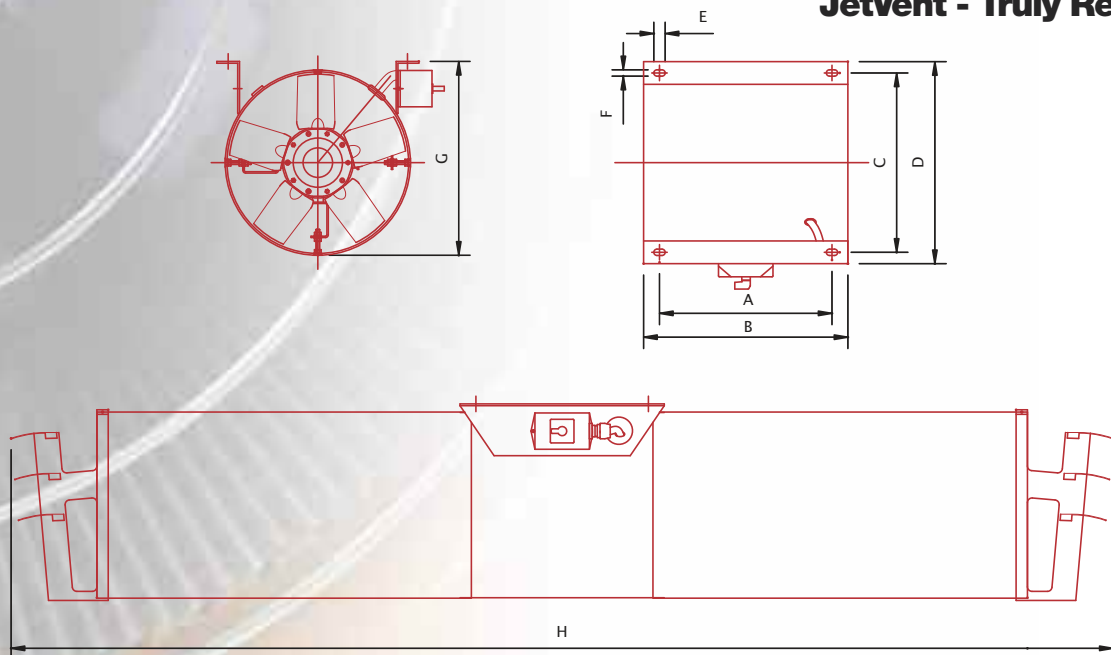
dimensional data

JetVent - Uni Directional

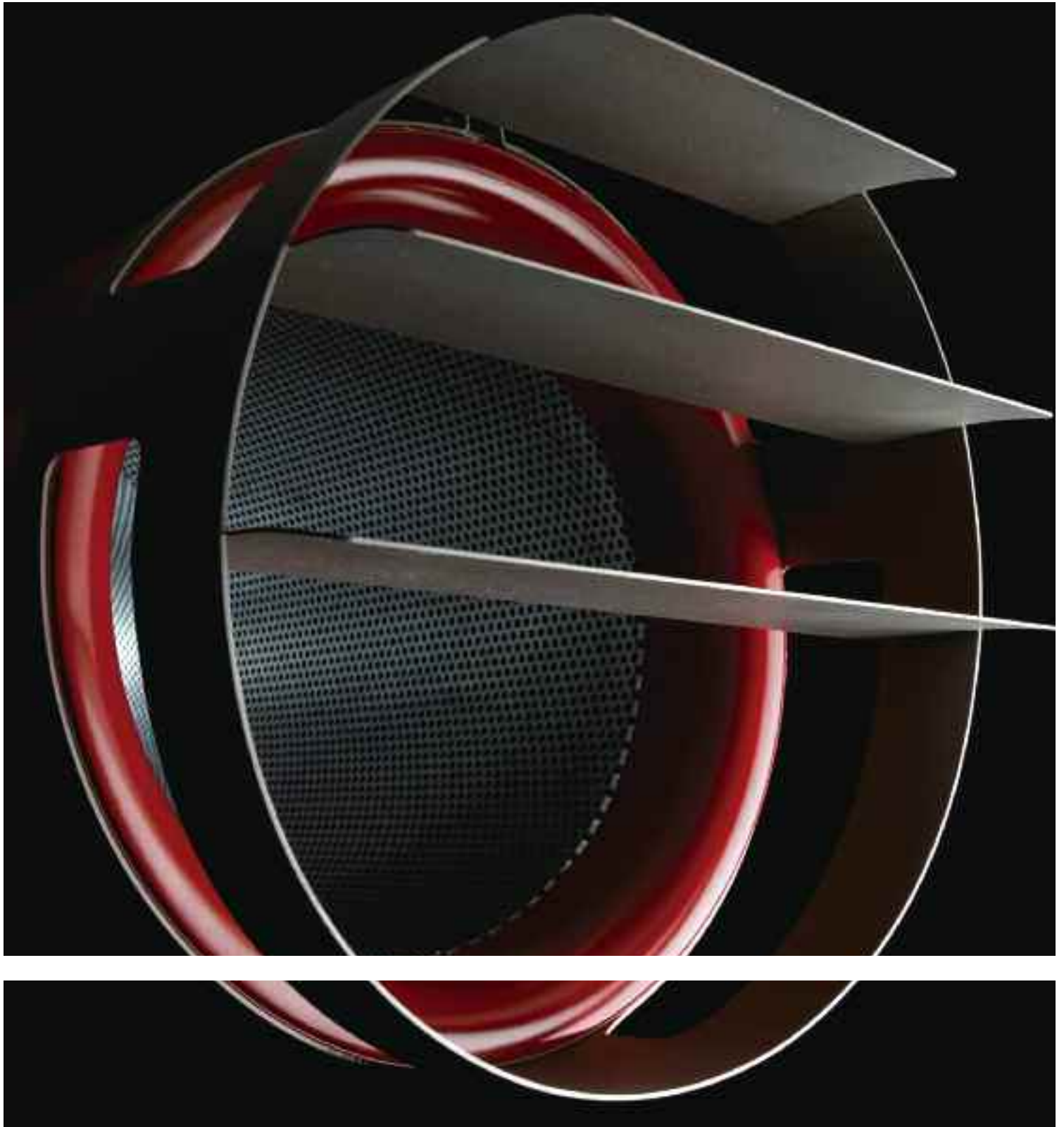


Product Code	A	B	C	D	E	F	G	H	Weight kg
JVU-CPA-315	380	450	350	400	25	14	335.5	1990(Max)	65
JVU-CPA-400	380	450	395	445	25	14	427	2880(Max)	75

JetVent - Truly Reversible



Product Code	A	B	C	D	E	F	G	H	Weight kg
JVR-CPA-315	380	450	350	400	25	14	335.5	2098(Max)	65
JVR-CPA-400	380	450	395	445	25	14	427	3030(Max)	75



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