

# RUGGED & DURABLE UNDERGROUND VENTILATION FANS

ABC Ventilation Systems and CFW teamed up to develop a purpose-built range of underground mining ventilation fans and products that are strong enough to withstand the most adverse, corrosive underground conditions. The Toughvent range was designed and developed to answer the need of the mining industry for a hardwearing, locally manufactured product. With a design based on the latest ventilation technology, the Toughvent range offers performance and efficiency with a robust, durable approach.

The Toughvent fan range has been designed for use with ABC Flexiline and Hardline ducting for best results. Toughvent fans have stable performance curves with predictable duty points due to the exact tolerances applied during the manufacturing process.

In highly corrosive, abrasive and demanding underground Mining Operation Environments, Toughvent fans are rugged, durable and long wearing enough to meet the challenge, offering you SA's toughest ventilation solution.

## THE TOUGHER ADVANTAGE

### TECHNOLOGY

Toughvent's aerodynamic performance is optimised using a proprietary computational fluid design (CFD) code developed specifically for fans by the University of Cape Town.

### EFFICIENCY

Toughvent's aerodynamically tested and optimised design provides a ventilation solution that delivers maximum air power at the highest energy efficiencies.

### SAFETY

The Toughvent range is designed according to accepted engineering industry practices and complies with all mining and legislative safety requirements. All Toughvent fans are equipped with heavy duty safety screens and luminous safety enhanced paint.

### PERFORMANCE

ABC Ventilation Systems and affiliates offer a turnkey solution to underground ventilation challenges. Rather than being just a seller of ducting and fans, we aim to combine numerous disciplines to provide a total system solution.

### MAINTENANCE

The Toughvent fan range is designed to be manufactured using an all-steel process in order to offer an extended mean time between service intervals.

### SERVICE

ABC Ventilation Systems carries stock of all critical components and will engage with approved service providers in remote regions to ensure that our products continue running to OEM specs.

## THE TOUGHVENT RANGE

The Toughvent range is suitable for use in auxiliary applications and includes booster fans and bulk air cooler fans for use in underground operations.

### Toughest components for reliable performance:

- Integral inlet guide vane and aerofoil impeller nose cone.
- Variable pitch full aerofoil section cast steel and aluminium blades.
- Fabricated steel hub assembly.
- Steel aerofoil section rotor nacelle assembly.
- Heavy duty rollover terminal box to IP65.

### Innovative design to meet the ventilation needs of underground mining operations:

- Upstream guide vane to pre swirl air onto impeller.
- CAD enhanced nose cone on the impeller for improved efficiency.
- Variable pitch steel impeller allowing for task-specific duty application.
- Steel rotor assembly fully welded to the inside of the casing and onto a motor mount nacelle adding structural strength.
- Modular impeller track providing double protection for the fan on this critical area.
- Motor is flange mounted at the drive end bearing, onto a machined surface on the nacelle and also has fabricated struts, supporting the back of the motor.
- An optional air straightener can be fitted down stream of the impeller to prevent air swirl onto flexible ducting.

### Maintenance & Warranties

The Toughvent range carries an 18 month mechanical warranty and 12 month electrical warranty excluding damage caused by mishandling or electrical reticulation faults from the incoming supply.

The Toughvent range is fully supported and backed up by ABC Ventilation Systems and global affiliates. We have a comprehensive repair facility carrying stock of all critical spares and components. All repairs on Toughvent products are done in accordance with OEM specifications giving the end user peace of mind that a repaired product will perform as well as a new one.



# FAN PERFORMANCE

## ToughVent Mine Axial

Fan Size		Max power	Fan performance @ density 1.204kg/m³					
Nominal			50Hz					
			9 Blades		12 Blades		16 Blades	
mm	in	kW, Poles	Peak Pr. (Pa)total	Max Flow (m³/s)	Peak Pr. (Pa)total	Max Flow (m³/s)	Peak Pr. (Pa)total	Max Flow (m³/s)
Ø762	Ø30"	22kW, 2Pole	2100	12	2300	11	3000	10
		45kW, 2Pole	2550	19	2800	18	3000	16.5
		75kW, 2Pole	2800	23	3200	22	3500	21
Ø813	Ø32"	45kW, 2Pole	2600	19	2900	17	3050	17
		75kW, 2Pole	3100	25	3500	25	3600	23
Ø915	Ø36"	45kW, 2Pole	3000	20	3800	17	N/A	N/A
		75kW, 2Pole	3400	27	3500	24	3800	22
		110kW, 2Pole	3800	37	4100	32	4400	28
Ø1016	Ø40"	75kW, 2Pole	3650	26	4400	25	N/A	N/A
		90kW, 2Pole	3750	29	4000	27	5100	24
		110kW, 2Pole	4000	34	4200	31	4500	27
		315kW, 2Pole	Special	Special	Special	Special	Special	Special
Ø1220	Ø48"	75kW, 4pole	N/A	N/A	N/A	N/A	N/A	N/A
		75kW, 4Pole	1800	42	2000	41	2100	40
		110kW, 4Pole	N/A	N/A	N/A	N/A	2400	50
		132kW, 4Pole	N/A	N/A	N/A	N/A	N/A	N/A
Ø1400	Ø55"	75kW, 4Pole	1850	45	2000	40	2200	36
		110kW, 4Pole	2250	56	2350	51	2500	48
		160kW, 4Pole	2350	67	2600	63	2800	61
		315kW, 4Pole	N/A	N/A	N/A	N/A	N/A	N/A
Ø1600	Ø63"	110kW, 4Pole	2300	58	2500	53	3400	48
		160kW, 4Pole	2600	71	2800	64	3000	62
		315kW, 4Pole	3100	110	3400	100	3700	92

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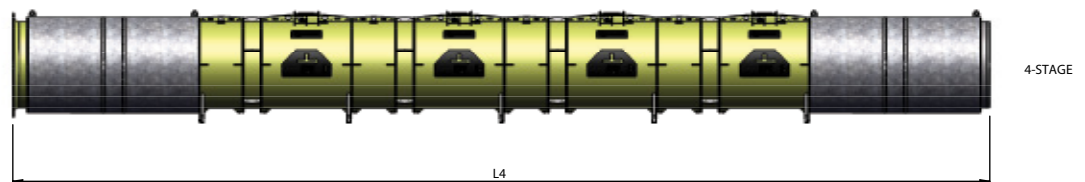
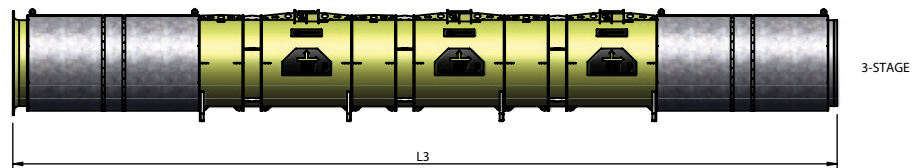
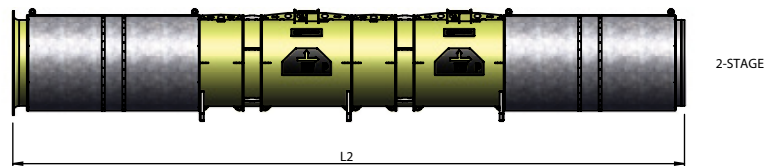
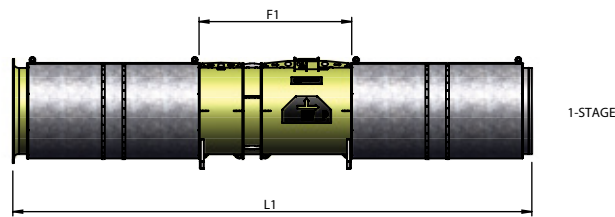
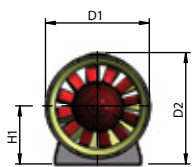
## ToughVent Mine Axial

Fan Size		Max Hp	Fan performance @ density 1.204kg/m³						
Nominal			60Hz						
			9 Blades		12 Blades		16 Blades		
mm	in	Hp, Rpm	Peak Pr. (Pa)total	Max Flow (m³/s)	Peak Pr. (Pa)total	Max Flow (m³/s)	Peak Pr. (Pa)total	Max Flow (m³/s)	
Ø762	Ø30"	30hp, 3600rpm	3400	10.5	N/A	N/A	N/A	N/A	
		60hp, 3600rpm	3300	16.5	3500	15	3800	13.5	
		100hp, 3600rpm	3800	22	4100	21	4400	17	
Ø813	Ø32"	60hp, 3600rpm	3500	17	4200	15	N/A	N/A	
		100hp, 3600rpm	3900	23	4100	22	4400	19	
Ø915	Ø36"	60hp, 3600rpm	4200	17	N/A	N/A	N/A	N/A	
		100hp, 3600rpm	4150	25	5200	21	N/A	N/A	
		150hp, 3600rpm	4500	29	5000	28	5100	27	
Ø1016	Ø40"	100hp, 3600rpm	N/A	N/A	N/A	N/A	N/A	N/A	
		120hp, 3600rpm	N/A	N/A	N/A	N/A	N/A	N/A	
		150hp, 3600rpm	6000	28	N/A	N/A	N/A	N/A	
		420hp, 3600rpm	Special	Special	Special	Special	Special	Special	
		100hp, 1770rpm	N/A	N/A	N/A	N/A	2400	33	
Ø1220	Ø48"	100hp, 1770rpm	2200	38	2350	36	2420	32	
		150hp, 1770rpm	2400	48	2700	45	2850	40	
		180hp, 1770rpm	2600	53	2800	50	3000	48	
Ø1400	Ø55"	100hp, 1770rpm	2500	40	3100	35	N/A	N/A	
		150hp, 1770rpm	2600	48	2800	45	3800	40	
		220hp, 1770rpm	3000	62	3200	58	3400	52	
		430hp, 1770rpm	3400	86	3850	82	4300	79	
Ø1600	Ø63"	150hp, 1770rpm	3600	50	N/A	N/A	N/A	N/A	
		220hp, 1770rpm	3300	65	4300	55	N/A	N/A	
		430hp, 1770rpm	3800	93	4000	85	4400	81	

# TECHNICAL DRAWING

## MAIN COMPONENTS

- Fan station
- Silencers
- Flexible ducting
- Starters
- Installation accessories



At ABC Ventilation systems we understand the pressure requirements of deep hard rock mining or long tunnel developments. We have designed our fans so that they are able to be multi-staged effectively and efficiently in order to give you the best air volume at your development end. As illustrated above we can customize our range to meet your system resistance demands. Contact us and we will provide you with a custom solution to your challenges.

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# WHAT WE PROVIDE

One Supplier. One Solution.

We don't just manufacture class leading fans and ventilation ducting - we assist you through the whole process, making sure you get the full benefit of ABC Ventilation's global experience and know-how from the start. Calculating your mine's or tunnel's exact air volume needs, and allowing for all conditions such as altitude, climate, and specific tunnel shapes, you can rest be assured that we will select the right product that will be fit for purpose providing reliability and performance for the entire life cycle of our product.

Because we are more than just a duct and fan supplier, ABC Ventilation addresses various elements in our approach to ensure a successful outcome to every project. These include intelligent product selection, design, customization, cost saving, communication, programming, and safety – as well as environmental issues. We are able to engage with you on-site or conduct an underground assessment followed by an in-depth consultation to advise you on the best course of action for challenging projects. Our team has hundreds of hours of on-site and underground experience that feed into your project to ensure its success.

# SUPERIOR SERVICES

Mine and tunnel workers depend on and trust our products, designs and integrated systems to efficiently and safely deliver clean air. We strive to deliver products and services that exceed client expectations and make a tangible difference to our clients' operations. We offer an extensive range of aftermarket services to ensure the longevity of our products in their operating environment.

We offer our customers the best in service and reliability which has placed us at the forefront of our industry. With a quality assurance program in place as well as experienced, qualified staff, we continue to bring you only top level expertise and experience in this field.

Following the installation of your ventilation system, ABC Ventilation offers service and maintenance to ensure the operational reliability of your Toughvent fan at all times. The modular design of Toughvent fans makes on-site maintenance both safe and simple.

The modular sections give the product unparalleled structural rigidity. This also allows us to replace damaged components without having to discard the entire fan, keeping operating cost down.



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