



APPLICATION

Mine auxiliary ventilation

An auxiliary fan is what puts air on a dead-end heading. It pushes or pulls ventilation through hundreds of metres of ducting to a development face or working place the main airway does not reach — and it has to hold that duty point as the duct is extended, joints leak and the resistance climbs.

Capability envelope

auxiliary ventilation service

PARAMETER	STANDARD RANGE	ON APPLICATION
Volume flow	up to 2,25,000 CMH	higher on enquiry
Static pressure	up to 2,000 mmWC	series-boosted for very long ducted headings
Air handled	mine air, rock dust, diesel and blasting fume	methane / coal-dust classified atmosphere
Construction (ignition)	standard non-classified for fresh-air headings	ATEX Zone 2/22 (Cat 3) self-declared + flameproof Ex d drive for gassy strata
Static efficiency	high static efficiency	higher on high-efficiency builds
Drive power	up to 425 HP	our largest drive delivered to date
Speed	600–1,800 RPM typical	per duty + sound limits
Balance quality	ISO 21940 G6.3	G2.5 / G1.0 on application

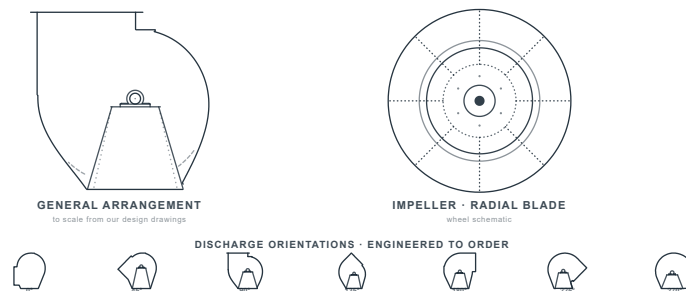


FIG. 1 Representative arrangement — a Jitmitra Radial fan, the family most often applied to this duty. The exact family and wheel are engineered to your operating point.

Construction & materials

documented on your GA

- **Curve shape for the long duct** — Backward-curved or backward-inclined wheel selected for a steep, stable pressure characteristic; duty point set 5–15% right of the peak with headroom for the planned duct extension, so face quantity holds as resistance climbs from 250 toward 2,000 mmWC on a deep heading.
- **Flameproof-ready construction** — For gassy strata: **ATEX Zone 2/22** self-declared (Category 3), non-sparking impeller, non-ferrous rub ring, bonded earthing and anti-static surfaces; flameproof **Ex d** motor and starter specified to the mine's statutory electrical regime and area classification.
- **Robust underground build** — Heavy-plate casing and stiffened base for repeated re-siting; regreasable or sealed bearings with labyrinth + lip seals against mine water and rock dust; epoxy or hot-dip galvanised finish; integral guards, transition pieces and duct-coupling flanges sized to your flexible or rigid ducting.
- **Control — VFD as default** — Face air demand changes as the heading advances and the duct extends. VFD speed control holds the target face quantity across that range and trims power on shorter runs — more efficient than throttling because it avoids the throttling loss at part-load — and is our default; a discharge damper remains available for simple fixed-duty installations.

How a Jitmitra Mine auxiliary ventilation fan is specified

AMCA conventions

SPECIFICATION FIELD	OPTIONS
Arrangement (AMCA 99)	Arr. 1 (overhung, fan bearings) / Arr. 4 (direct, motor on base) / Arr. 8 (overhung on common base) / Arr. 9 (overhung, motor side) / Arr. 10 (overhung, motor inside base) — selected by drive, access and underground handling.
Width / inlet	SWSI (single width, single inlet) default for auxiliary duty; DWDI (double width, double inlet) for high flow at moderate pressure on a large intake heading.
Wheel type	Backward-curved or backward-inclined (default, steep stable curve for the long duct) / radial-tipped where the exhausted air carries heavier rock dust and build-up.

SPECIFICATION FIELD	OPTIONS
Spark-resistant construction (AMCA 99)	Type A (all non-ferrous parts in the airstream) / Type B (non-ferrous rub ring and non-ferrous parts across the shaft opening) / Type C (aligned construction preventing ferrous rotating-to-stationary contact) — selected to the gassy-ground ignition risk; Type B is the auxiliary-fan default.
Class (by pressure / outlet velocity)	Class I / II / III selected from the duty point on the pressure-vs-outlet-velocity limits; a long deep heading pushes the selection to a higher class and heavier construction for higher pressure and tip speed.
Materials of construction	MS with epoxy or hot-dip galvanised finish for the wet airway (standard) / 304 / 316L SS where the mine water is aggressive / aluminium or bronze non-sparking parts for the flow path on gassy strata.
ATEX & flameproof scope	Zone 2/22 self-declared (Cat 3) per 2014/34/EU for methane / coal-dust ground — non-sparking impeller, non-ferrous rub ring, bonded earthing, anti-static surfaces, T-class bearing control — with a flameproof Ex d motor and starter to the mine's statutory electrical regime.
Drive	Direct-coupled / V-belt / VFD (default for advancing-heading duty). Drive up to 425 HP across the envelope; speed typically 600-1,800 RPM.
Accessories & handling scope	Duct-coupling flanges and transition pieces to your flexible or rigid ducting; discharge or isolation damper; inlet and outlet silencers with acoustic-lagged casing where the fan sits near crews (down to <75 dB(A)); labyrinth + lip bearing seals against water and rock dust; lifting lugs and skid points for underground re-siting; drain and inspection doors.

Where the Mine auxiliary ventilation runs

MINING & MINERALS Development-heading and dead-end drive ventilation, decline and shaft-sinking auxiliary air, working-face fume and dust exhaust.	COAL & GASSY GROUND Flameproof-ready auxiliary fans for methane strata — ATEX Zone 2/22 self-declared with Ex d drive to the statutory electrical regime.
TUNNELLING & UNDERGROUND INFRASTRUCTURE Ducted ventilation to TBM and drill-and-blast headings, cross-passages and dead-end excavations.	METALS & HARD-ROCK MINES Diesel-fume and blasting-fume clearance on development ends, ore-pass and re-mucking bay ventilation.
UNDERGROUND STORAGE & CAVERNS Auxiliary air to sealed and dead-end excavations for strategic storage and cavern works.	DEFENCE & NUCLEAR Ventilation of underground works, magazines and protected excavations where robust, sealed construction is required.
CEMENT & QUARRY (UNDERGROUND) Auxiliary ventilation for underground limestone and mineral workings feeding the plant.	YOUR DUTY POINT Send us flow, static pressure and the air / gas condition — we size the wheel to it and quote in 3 to 5 working days — 5 to 7 working days for ATEX and special projects.

Standards & conformity

PERFORMANCE Tested to the IS 4894 / ISO 5801 / AMCA 210 method, in-house on our 200 HP VFD rig. Tested-to-method — not AMCA-certified.	QUALITY SYSTEM ISO 9001:2015 — third-party certified (our only third-party certification).
CE CONFORMITY Self-declared per 2006/42/EC + 2014/35/EU . Not a notified-body certificate.	ATEX CONFORMITY Self-declared, spark-resistant (SR), Zone 2/22 Cat 3 per 2014/34/EU , where area classification requires.
BALANCE & VIBRATION Balance ISO 21940 (G6.3 std, G2.5 on request); fan vibration acceptance ISO 14694 , measurement ISO 14695 .	WELDING & HEAVY DUTY ASME Sec IX welders + WPS; API 673 available as project-specific scope for oil & gas.

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Figures indicate family capability; every fan is engineered to the customer's duty point and confirmed on the approved GA drawing.