



APPLICATION

Tunnel / metro jet & supply

Tunnel and metro fans move large volumes of air through road tunnels, rail bores and underground metro stations — moving air to your specified longitudinal airflow and dilution target in daily service, and extracting hot smoke at the temperature-time duty and hold time your smoke-control strategy specifies on fire mode. The same machine may have to run forward, run in reverse, and survive a hot-smoke emergency, all at low noise beside the public.

Capability envelope

tunnel / metro service

PARAMETER	STANDARD RANGE	ON APPLICATION
Volume flow	up to 2,25,000 CMH	higher on enquiry
Static pressure	up to 2,000 mmWC	typically 200–1,200 mmWC on tunnel / shaft duty
Smoke-mode temperature class	250 °C / 2 h or 400 °C / 2 h (built and tested to the class)	other class + hold time on application
Operation	forward duty; reversible on application	symmetric / bifurcated for equal both-way flow
Sound level	predicted <85 dB(A) @ 1 m; scope selected to your stated site limit	<75 dB(A) with acoustic enclosure / attenuators
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

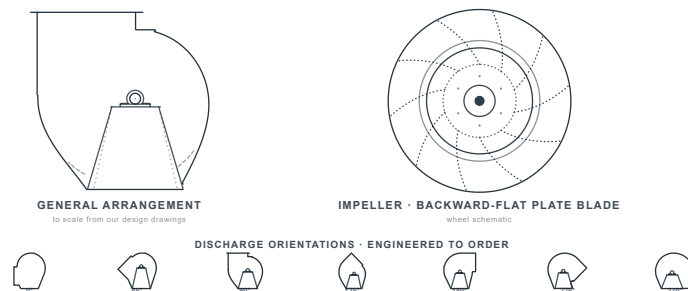


FIG. 1 Representative arrangement — a Jitamitra Backward-Flat Plate fan, the family most often applied to this duty. The exact family and wheel are engineered to your operating point.

Construction & materials

documented on your GA

- **High-temperature emergency build** — Built and in-house tested to the temperature-and-time class your fire strategy specifies — commonly 250 °C / 2 h or 400 °C / 2 h; Casing in IS 2062 or SA 516 Gr 70, high-temperature bearing grease and shaft seals, heat-slinger / cooling disc where the class needs it, and bearings selected for sustained hot-mode housing temperature. Construction is engineered to the class; certification is stated honestly as tested-to-standard, not third-party certified.
- **Reversible operation** — Where the scheme needs both-way flow, the wheel and volute are selected for the required forward-and-reverse performance and the reverse curve is stated on the datasheet — not assumed. Symmetric or bifurcated configurations offered where equal both-way duty is specified, rather than a rotation swap that quietly halves reverse flow.
- **Control — VFD as default** — Daily ventilation demand tracks traffic and congestion, so the fan spends most of its life well below the emergency point. VFD speed control is our default — it holds the daily air-change target at low power and low noise, then commands full duty on fire mode; inlet dampers remain available for legacy retrofit.
- **Materials & environment** — Mild steel with epoxy coating as standard; stainless or upgraded coating for damp tunnel and coastal-portal environments; spark-resistant construction where the classified area or fuel-carrying traffic calls for it. Every wetted and structural part sized for continuous unattended service in a location that is hard to reach for maintenance.

How a Jitamitra Tunnel / metro jet & supply 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 smoke-class heat protection.

SPECIFICATION FIELD	OPTIONS
Width / inlet	SWSI (single width, single inlet) default; DWDI (double width, double inlet) for the high flow at moderate pressure typical of station and shaft duty.
Wheel type	Backward-inclined or airfoil-bladed (default, best efficiency and lowest tone on clean ventilation air) / backward-curved plate for the heavier smoke-class and reversible builds.
Operation & reversibility	Forward-only default; reversible on application with the reverse curve computed and stated; symmetric or bifurcated configuration where equal both-way flow is specified rather than a rotation swap.
Smoke-mode temperature class	Built and in-house tested to the temperature-and-time class your fire strategy specifies — commonly 250 °C / 2 h or 400 °C / 2 h — with high-temperature bearings, grease, shaft seals and a heat-slinger / cooling disc where the class requires.
Materials of construction	Mild steel + epoxy coating (standard) / stainless or upgraded coating for damp tunnel and coastal-portal air / IS 2062 or SA 516 Gr 70 casing for the smoke-class build / spark-resistant construction where the classified area calls for it.
Drive	Direct-coupled / V-belt / VFD (default for daily-demand turndown and fire-mode command). Drive up to 425 HP across the envelope; speed typically 600–1,800 RPM.
Discharge & rotation (AMCA orientation)	Rotation CW or CCW (viewed from drive side) with discharge angle per AMCA — e.g. TH/BH/UB/DB — set to match the shaft, plenum or portal take-off and the installed footprint.
Accessories & acoustic scope	Inlet and discharge silencers (cylindrical or splitter-type) and casing-wall acoustic lagging; acoustic enclosure for <75 dB(A); isolation / shut-off dampers for smoke-zone control; flexible connections / expansion joints for thermal growth on the smoke-class build; VFD package; drain and inspection doors.

Where the Tunnel / metro jet & supply runs

TUNNEL & METRO INFRASTRUCTURE Road-tunnel supply and extract, rail-bore ventilation, metro-station and platform ventilation with smoke-control emergency mode.	AIRPORTS & LARGE INFRASTRUCTURE Terminal, apron-tunnel and baggage-tunnel ventilation, and smoke-control extract for large enclosed spaces.
HVAC & COMMERCIAL BUILDINGS Basement, service-tunnel and enclosed-podium ventilation with dual daily / smoke-mode duty.	CAR-PARK & BASEMENT VENTILATION Enclosed car-park CO/NO ₂ dilution paired with high-temperature smoke extraction on fire mode.
DEFENCE & NUCLEAR Underground facility, shelter and bunker ventilation with sealed, robust, unattended-service construction.	MINING & UNDERGROUND Portal, adit and access-tunnel ventilation where robust, reversible airflow is required.
UTILITIES & CABLE TUNNELS Cable-tunnel, service-culvert and utility-corridor ventilation with fire-mode extract capability.	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.

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