

1 BEFORE YOU INSTALL

delivery · identify · lift · store

WHEN THE FAN ARRIVES

before you sign the delivery note

- Check for transit damage BEFORE you sign. Photograph all sides before opening. Look at the casing, inlet cone, shaft, motor and every flange. If damaged, do NOT sign a clean receipt.
- If anything is damaged: photograph every side, note it on the delivery note, and tell us IN WRITING within 48 hours. After that the warranty does not cover transit damage.
- Check everything on the packing list is there — fan, motor, accessories, loose items.

KEEP THESE DOCUMENTS WITH THE FAN

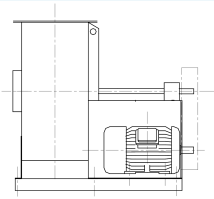
- GA drawing — dimensions, clearances, bolt torques and the impeller axial position
- Test certificate and performance data
- Motor manual and motor wiring diagram
- Coupling or belt-drive datasheet
- This card, and the full manual JEE-MAN-001

WHICH FAN DO YOU HAVE?

some instructions apply to one drive type only — look for the tag

BELT DRIVE

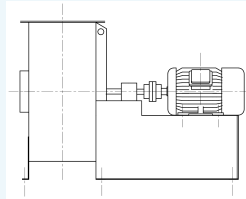
Arr. 1 / 9



Motor sits on the base or a pedestal and drives the fan shaft through pulleys and V-belts.

COUPLED DRIVE

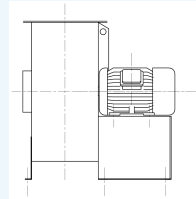
Arr. 8



Motor and fan shafts joined by a flexible coupling on one common base frame.

DIRECT DRIVE

Arr. 4



Impeller mounted straight onto the motor shaft. No belts, no coupling.

READ THE NAMEPLATE FIRST

FAN DATA

copy from the fan

FAN MODEL	_____	J
JOB No.	_____	
FLOW	_____	CMH
PRESSURE	_____	Pa
SPEED	_____	RPM
MOTOR	_____	kW
FULL-LOAD CURRENT	_____	A

Never remove, paint over or cover the nameplate.

- Fan model and serial number
- Air flow (CMH) and pressure (Pa / mmWc)
- Speed (RPM)
- Motor kW / HP and full-load current
- Rotation direction

Quote the J-number on every call you make to us.

LIFTING

✓ DO

- Lift by the fan base frame, or by the lifting lugs marked on the fan.
- Use certified slings rated above 2× the total fan weight.
- Keep the load level. Steady it with a tag line.

✗ DO NOT

- ✗ Never lift by the motor eyebolt — it holds the motor only.
- ✗ Never lift by the shaft, the impeller or the inlet cone.
- ✗ Never lift by the duct flanges.

STORAGE BEFORE INSTALLATION

UP TO 45 DAYS

- Keep the fan covered and shaded. Protect it from rain.
- Put a rain cover over every plummer block.
- Wrap each plummer block in plastic to keep moisture off the bearing.
- Turn the impeller one full turn by hand every week — this stops the bearing races denting and stops rust forming.
- Leave the anti-brinelling device fitted.

MORE THAN 45 DAYS

- Everything in the left column, plus:
- Pack the bearing housings completely full with grease.
- Before the first start: open the caps, remove ALL the old grease, refill fresh to the 1/3 rule.
- Check the shaft turns freely by hand before you switch on.

DO NOT START a fan stored more than 45 days until the bearings have been opened, cleaned and re-greased. Hardened grease or a rusted bearing destroys itself within minutes.

GREASE — THE 1/3 RULE

before first start, and at every re-lubrication

USE NLGI Grade 2 lithium-complex grease on mineral oil ISO VG 100 — for example Shell Gadus S2 V100 2, or equivalent. Above 100 °C bearing temperature, use the high-temperature equivalent.

NEVER EP (extreme-pressure) greases. Moly / MoS₂ greases. These additives are not compatible with fan bearings.

HOW Push the grease in by hand with your fingers — not with a grease gun. Feed from one side; the old grease comes out the other side.

HOW MUCH About 1/3 of the free space around the bearing. If you can feel grease on the bearing and still find open space, that is correct. Packed solid means churning, and churning means overheating.

IF RUSTY Clean with thinner or rust remover, take the rust off, then re-grease.


Cap off, old grease out, fresh grease in — before the first start after long storage.

HOW MUCH GREASE GOES IN


**1/3 FULL
CORRECT**

**PACKED SOLID
WRONG**

2

INSTALL IT RIGHT

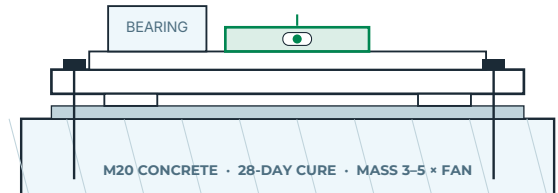
foundation · ducting · drive · electrical

ALMOST EVERY COMMISSIONING FAILURE IS ONE OF THESE THREE THINGS
WRONG ROTATION · BAD FOUNDATION · RIGID DUCTS

FOUNDATION & MOUNTING

- Concrete: M20 grade minimum, cured 28 days. Never grout onto green concrete.
- Foundation mass: 3 to 5 × the weight of the complete fan assembly.
- Top surface flat within 1 mm per 1000 mm, checked in every direction.
- **LEVEL THE FAN BEFORE YOU BOLT IT DOWN.** Put the spirit level on the pedestal plate under the bearings and under the motor — not on the casing.
- Pack with full-width shims. Never a single shim, never a weld bead.
- Tighten hold-down bolts in a cross pattern to the torque on the GA drawing. Re-check the level afterwards.
- Grout, cure 48 hours minimum (7 days before commissioning), then re-torque every bolt.
- ✗ Never weld the base instead of bolting it. Welds crack under vibration.
- ✗ Never fit AVMs and also bolt the fan down rigidly — they cancel each other out. AVMs on an elevated steel structure, or rigid bolts on concrete. One or the other.

SPIRIT LEVEL ON THE PEDESTAL PLATE — NOT THE CASING

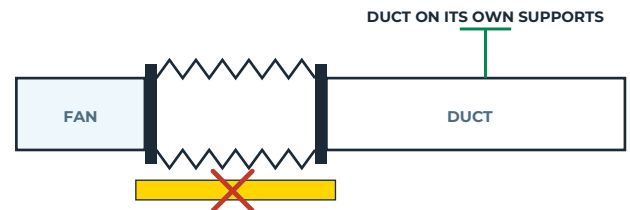


hold-down bolts, cross-pattern torque · grout · full-width shims · base channel

DUCTING

- Fit a flexible bellow at BOTH the fan inlet and the fan outlet.
- **REMOVE THE YELLOW TRANSPORT BRACKETS** from every bellow before starting. Left on, they carry vibration straight into the ductwork.
- Hang and support the ducting on its own supports. The fan casing is not built to carry duct weight.
- Avoid a bend right at the fan inlet. If you cannot avoid it, fit turning vanes inside that bend.
- ✗ Never bolt ductwork rigidly and directly to the fan flanges.

FLEXIBLE BELLOW AT INLET AND OUTLET



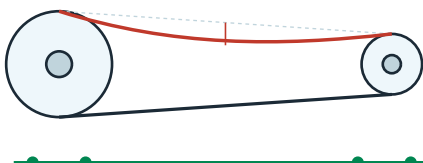
REMOVE THE YELLOW TRANSPORT BRACKETS BEFORE STARTING

THE DRIVE

read only the column that matches your fan

BELT DRIVE

TENSION AND ALIGNMENT
DEFLECT 16 mm PER 1 m OF SPAN

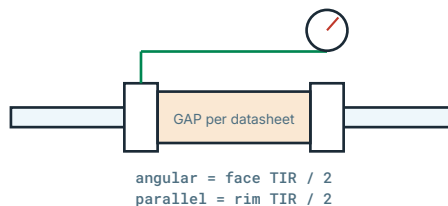


STRAIGHT-EDGE TOUCHES ALL 4 POINTS

- Set both pulleys per the GA drawing, then lay a long straight-edge across both pulley faces. It must touch at all four points.
- Tension with a spring balance at the centre of the span. Correct deflection = 16 mm for every 1 metre of span.
- Force by belt section: SPA 25–45 N · SPB 45–85 N · SPC 85–150 N. Use the lower figure for the smaller pulley diameter.
- No oil and no grease on taper-lock surfaces.
- Belt guard fitted and secured before any start.
- Replace the whole belt set — never a single belt.

COUPLED DRIVE

DIAL-INDICATOR ALIGNMENT



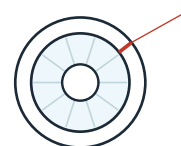
angular = face TIR / 2
parallel = rim TIR / 2

SHIM THE MOTOR — NEVER THE FAN

- Fit the hubs per the coupling datasheet and set the face-to-face gap it specifies.
- Align with a dial indicator. Read face and rim TIR, turning both hubs together through 360°.
- Angular offset = face TIR ÷ 2. Parallel offset = rim TIR ÷ 2.
- Correct by shimming the MOTOR — never the fan.
- Both readings must fall inside the coupling maker's tolerance on your datasheet.

DIRECT DRIVE

INLET CONE RADIAL CLEARANCE



0.5 – 1.5% OF IMPELLER DIA.
Equal all round. Exact value from the GA drawing.

- Taper-lock surfaces must be clean and DRY. No oil, no grease, ever.
- Tighten the locking screws a little at a time, alternating between them — never one screw straight to full torque.
- Set the impeller axial position from the GA drawing, then re-check it after final tightening.
- Turn the impeller by hand while setting the cone. The lip must not touch at any point.
- Too little clearance causes rubbing at startup. Too much loses performance to recirculation.
- ATEX fans: clearances must meet EN 14986 — never reduce them below the certified value.

ELECTRICAL CONNECTION

- Use a phase rotation meter on the supply before you connect the motor. This is not optional.
- Wire to the motor's own diagram. A 415 V supply on a 415 V Δ / 240 V Y motor means DELTA.
- Star-delta starter for 5 HP and above. Soft starter or VFD on larger motors.
- Set the overload relay to the motor's rated full-load current — not higher.
- Earth the fan and the motor properly. Check every terminal for looseness.
- On high-pressure fans, close the inlet damper before starting and open it once full speed is reached.

3 FIRST START & COMMISSIONING

do these in order — do not skip a step

BEFORE YOU SWITCH ON — TICK ALL TEN

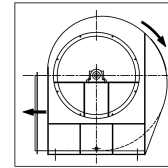
- | | |
|--|---|
| ☐ GA drawing on site and read | ☐ Yellow bellow transport brackets removed |
| ☐ Anti-brinelling device removed | ☐ All foundation bolts torqued, fan level |
| ☐ Bearings freshly greased (if stored over 45 days) | ☐ Belt guard / coupling guard fitted |
| ☐ Shaft turns freely by hand | ☐ Nothing loose inside the casing or ducting |
| ☐ Impeller clear of casing and inlet cone | ☐ Phase sequence checked with a meter |

STEP 1 BUMP START — CHECK THE ROTATION

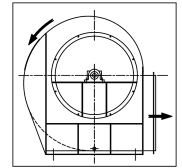
the single most common commissioning fault

- Start the motor for a moment, then switch off. Watch the impeller as it slows down.
- The impeller must turn the same way as the arrow on the fan casing.
- If it turns the wrong way: STOP. Isolate and lock out. Swap any two of the three supply leads. Check again.

WHY IT MATTERS A fan running backwards still moves some air, so it looks like it is working. It delivers a fraction of the rated flow, draws high current, and loads the impeller hub in a direction it was never designed for.



CLOCKWISE



ANTI-CLOCKWISE

MUST MATCH THE ARROW ON THE FAN CASING

Viewed from the drive side. The arrow is stamped or painted on the casing and printed on the nameplate.

STEP 2 RUN FIVE MINUTES

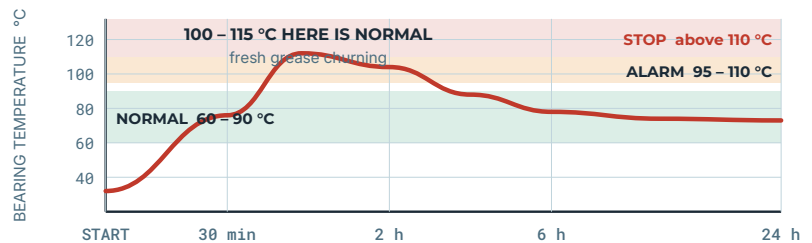
Listen. Any rubbing, knocking or squeal means stop and find it before you go any further. Check that nothing has shifted, and that the belts or the coupling run true.

STEP 3 RUN EIGHT HOURS — WATCH THE BEARING TEMPERATURE

- Check both bearings every 15 minutes for the first 2 hours, then once an hour.
- A NEW FAN RUNS HOT AT FIRST AND THIS IS NORMAL. Fresh grease churns before it settles. 100–115 °C between 30 minutes and 2 hours is expected — the temperature should then start falling.
- Record the final steady temperature at both bearings at the end of the run.

CALL US IF the temperature is still climbing after 3 hours, has not settled by 24 hours, or goes above 115 °C at any time.

BEARING TEMPERATURE ON THE FIRST RUN



This curve is the FIRST run only. From 24 hours on, the limits on page 4 apply.

STEP 4 RECORD THE BASELINE

- Measure vibration in mm/s r.m.s. on the machined face of each plunger block, as close to the bearing as you can get. Record both readings.
- A new fan must be at or below the START-UP row — RIGIDLY MOUNTED on a concrete foundation, FLEXIBLY MOUNTED on AVMs or springs.
- This number is the baseline for every future diagnosis. A move from 1.8 to 3.5 mm/s is telling you something, even while still inside the limit.
- Also record the steady bearing temperature, the current on all three phases, and the date.

VIBRATION — ACCEPTANCE LIMITS in situ, ISO 14694 BV-3

Condition	Fan-application category	Rigidly mounted mm/s		Flexibly mounted mm/s	
		Peak	r.m.s.	Peak	r.m.s.
START-UP	BV-3	6.4	4.5	8.8	6.3
ALARM	BV-3	10.2	7.1	16.5	11.8
SHUTDOWN	BV-3	12.7	9.0	17.8	12.5

ISO 14694:2003 Table 5, fan-application category BV-3 — filter-out, at the bearing housings. r.m.s. is the preferred value; peak is North-American practice. Write the actual number down.

COMMISSIONING RECORD — FILL IN AND KEEP WITH THE FAN

photograph it and send us a copy

Job No. _____ J Fan model _____ Site _____ Date _____ Bearing temp DE _____ °C NDE _____ °C

Vibration DE _____ mm/s NDE _____ mm/s Current L1 _____ A L2 _____ A L3 _____ A Belt deflection _____ mm

Commissioned by _____ Signature _____

BELT DRIVE

Re-check the belt tension after 15 days of running and re-set it to the same gauge figure. Do not simply tighten it harder — over-tensioned belts wreck the bearings.

4 RUN, MAINTAIN, PUT IT RIGHT

limits · schedule · troubleshooting

LIMITS AT A GLANCE

normal running, after the first 24 hours

BEARING TEMPERATURE

■ 60–90 °C normal
 ■ 95 °C alarm — investigate
 ■ 110 °C **STOP THE FAN**

VIBRATION mm/s r.m.s.

ISO 14694 BV-3 · rigidly mounted

■ ≤ 7.1 normal
 ■ 7.1 – 9.0 alarm — investigate now
 ■ > 9.0 **STOP THE FAN**

MOTOR CURRENT

■ ≤ nameplate FLA normal
 ■ > nameplate FLA investigate — over-duty or fault

BELT DEFLECTION

■ 16 mm per 1 m of span correct tension

Vibration limits are ISO 14694:2003 Table 5, in situ, category BV-3. Flexibly mounted (AVMs or springs): alarm 11.8 · shutdown 12.5 mm/s r.m.s. Fans above 300 kW: evaluate to ISO 20816-3.

ROUTINE MAINTENANCE

re-grease by RUNNING HOURS, not by the calendar

DAILY Operator

Listen for any change in noise or vibration · look at the bearing housings for signs of overheating · confirm the damper is where it should be.

WEEKLY Technician

Measure bearing temperature with a contact thermometer · check belt condition · check the grease nipples are clean · operate the IGV through its full travel if one is fitted.

MONTHLY Technician

Measure vibration at both bearings · measure motor current on all three phases · check and adjust belt tension · check coupling condition · lubricate the damper pivots.

QUARTERLY Technician

Clean the impeller (see the interval table) · inspect it for wear, cracks and missing balance weights · check every fastener.

RE-LUBRICATION INTERVAL — HOURS OF RUNNING

Spherical roller bearings. Columns are fan speed in RPM.

Shaft dia.	1000	1500	2000	2500	3000	3500	Grease
24 – 40 mm	240	240	240	160	160	160	~10 g
42 – 65 mm	240	240	160	160	160	160	~20 g
70 – 90 mm	240	160	160	120	120	120	~50 g
100 – 115 mm	120	120	80	–	–	–	~110 g
130 – 150 mm	120	80	–	–	–	–	~200 g

After storage of more than 45 days, remove ALL the old grease and refill fresh before the first start — see page 1. Re-grease intervals start from commissioning.

IMPELLER CLEANING — HOW OFTEN

Clean sooner if vibration rises above your baseline.

What the fan is handling	Interval
Clean air / HVAC — no dust	12 months
Light dust — general ventilation	6 months
Moderate dust — woodworking, light material handling	3 months
Abrasive — sand, fly ash, coal dust	3 months
Oil mist or wet gas	3 months
Fibrous — cotton, fibreglass, textile	4 – 6 weeks
Heavy dust — cement, grain, heavy industry	6 weeks
Sticky or hygroscopic — food, chemicals	Monthly

IF SOMETHING IS WRONG

SYMPTOM	USUAL CAUSE	WHAT TO DO
Vibration rising slowly over weeks	Dust building up unevenly on the impeller	Clean the impeller completely, then re-measure.
Vibration jumped suddenly	A lump of deposit has come off the impeller	Stop. Lock out. Inspect the impeller. Re-balance before restart.
Vibration at every speed	Foundation or hold-down bolts loose	Re-torque all bolts in a cross pattern. Check the grout.
Low-frequency knock	Impeller loose on the shaft — taper lock slipping	Stop. Lock out. Refit the taper lock correctly.
Little or no airflow	Wrong rotation direction	Check against the casing arrow. Swap any two supply leads.
Airflow below the rating	Damper shut, filter clogged, or a bend too close to the inlet	Check the damper, clean the filter, fit turning vanes.
Bearing running hot	Too much grease, wrong grease, or belts over-tensioned	Reduce to the 1/3 fill. Confirm the grease type. Re-check belt tension.
Rubbing noise at startup	Inlet cone radial clearance too small	Loosen the cone, reset the clearance, re-tighten.
Low “whumping” pulsation	Fan running below its surge point — system too restricted	Open the damper or reduce system resistance. Call us if it persists.
Motor trips on overload	Damper open too far at start, or the relay set wrong	Start with the damper closed. Set the relay to nameplate FLA.
Motor will not start	Supply fault, wrong star-delta timer, or the impeller is jammed	Check supply on all three phases. Turn the impeller by hand.

STOP THE FAN NOW IF

- ✗ Vibration jumps suddenly
- ✗ You hear metallic knocking
- ✗ There is smoke or a burning smell
- ✗ A bearing goes above 110 °C

Isolate and lock out before anyone opens a guard.

NEED HELP? SEND US THIS

- Your job number J-_____
- Photos of the nameplate AND the installation
- What the symptom is, in your words
- Bearing temperature and vibration readings

Help Desk +91 83291 72325

call or WhatsApp · sales@jitamitrablowners.com


 FULL TROUBLESHOOTING
GUIDES ONLINE