Work Instructions: Vortex Generator Panel Inspection and Replacement

VG;MT - inspect, classify, replace and document VG panel defects

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Audience: Inspection technicians, blade repair teams

Scope: Vendor-neutral guidance for common VG panel damage and replacement workflow

Key outputs (what this manual enables)

- Severity-based action table for VG;MT
- Inspection checklist for missing teeth and edge lift
- Generic replacement workflow and QA checks

Document control

Revision	Date	Change summary
v1.0	2026-01-16	Initial synthetic release for academic RAG baseline
v1.1	2026-01-16	Expanded procedures, checklists and reporting templates

How to use this document

This manual is designed for fast field use: identify the defect, assign a severity level, execute the minimal viable corrective action, and produce a standardized report for downstream systems.

It is intentionally vendor-neutral. Whenever a step references torque, curing, material spec or acceptance values, treat these as placeholders and verify with OEM or site procedures.

Quick start

- Confirm access, weather, and stop/run status (safety gate).
- Capture evidence: overview photo, close-up, and scale reference.
- Classify defect using the provided taxonomy and severity rubric.
- Select action: monitor, protect, repair, or stop turbine.
- Create a report using the provided template and attach photos.

Scope

This manual targets VG;MT: vortex generator (VG) panel missing teeth or segments.

Background

VG elements are used to control boundary layer behavior. Missing or damaged teeth can cause local aerodynamic performance loss and may increase noise. VG problems are often not structurally critical but are important for performance and can be a marker for adhesive failure.

Procedure A - inspection

- Capture a continuous photo run along the VG line; ensure overlap.
- Identify missing teeth/segments, lifted edges, or cracked VG base.
- Check for adhesive squeeze-out or contamination.

Severity	Field cues (examples)	Action
S1	Single small chip or nick	Record
S2	Few missing teeth; no edge lift	Plan replacement at next service
S3	Segment missing or multiple areas; early edge lift	Replace within weeks
S4	Large section missing; widespread edge lift	Urgent replacement
S5	VG panel detaching and risk of debris	Stop/derate per site policy

Procedure B - replacement (generic)

- B1. Remove the damaged VG panel carefully; avoid damaging blade skin.
- B2. Remove residual adhesive mechanically; do not gouge laminate.
- B3. Clean and abrade bonding area per adhesive system.
- B4. Position new VG panel using alignment marks; verify orientation.
- B5. Apply adhesive; press/roll to ensure full contact; remove trapped air.
- B6. Seal edges if specified; cure per adhesive instructions.

Quality checks

- No edge lift; continuous bond line.
- Correct alignment relative to blade reference line.

- No adhesive voids; no protruding sharp edges.
- Document part ID and adhesive batch.