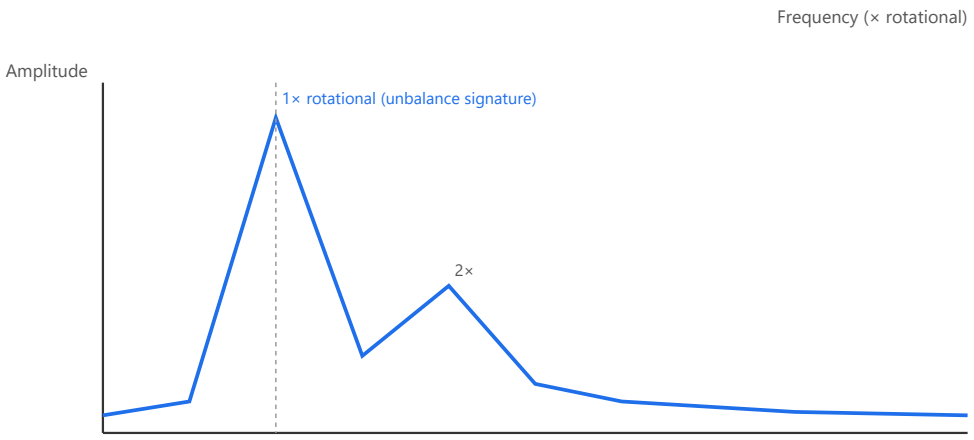
FM403 Loose Hold-Down Bolts → Vibration & Displacement

Chapter 4: Installation & Operation — Fault model & typical case

DOCUMENT	CHAPTER	RELATED Q&A	PUBLISHER
FM403	**Installation & Operation**	**4-50**	**Kunshan Best Machinery Equipment Co., Ltd.**

Fault model + typical case. Mechanism, causes, symptoms, diagnosis, corrective actions and prevention are all anchored to the relevant entries of the Fan Engineering Q&A (see front matter for question references).



FM403 Loose Hold-Down Bolts → Vibration & Displacement: looseness destroys the constraint of the set, so vibration rises randomly together with displacement; check bolt torque and fit anti-loosening measures.

Failure Mechanism

Loose hold-down bolts (4-50 relating to shim installation) destroy the constraint of the set, so it moves during operation and produces unstable vibration, which may even damage the coupling by rubbing.

Common Causes

- Insufficient torque
- No anti-loosening provision
- Loosening induced by vibration

Failure Symptoms

- Vibration increasing randomly, displacement

Diagnosis & Evaluation

- Check bolt torque and displacement

Corrective Actions

- Tighten to the specified torque and add anti-loosening measures

Preventive Measures

- Periodic torque checks

Typical Failure Case (Summary)

- The induced-draft fan C-1103 of the heating furnace in Unit2 of the coking plant of Guangzhou Petrochemical (with no standby) showed a bearing vibration value outside the process card range on 20 August 202X. Maintenance staff inferred a hold-down bolt problem from water traces remaining on the fixing screws of the coupling guard, and after comprehensive evaluation judged the hold-down bolts to be loose; after adjusting for half an hour the bearing vibration value fell into the normal range.
- The dedusting induced-draft fan of the raw material workshop of a cement plant (speed 1490r/min) vibrated abnormally: at point ④ the maximum vertical amplitude was 36.76mm/s and the horizontal 11.05mm/s, and the spectrum showed a comb pattern accompanied by 1/2 rotational frequency, indicating foundation / hold-down loosening; after tightening the hold-down bolts the maximum amplitude fell to 7.5mm/s, and after field dynamic balancing it fell to 2.6mm/s.

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