

Technical Clarification on Non-Requirement of Anti-Vibration Pads / Cushi Foot for Stationary Fire Protection Pump Installations

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This document clarifies why anti-vibration pads or Cushi Foot mounts are not suitable for stationary Fire Protection Pump Installations, with specific focus on alignment tolerances and OEM requirements.

OEM Warranty and Installation Standards

Leading fire pump and Engine/Motor OEMs require that pump sets be installed on rigid, non-flexible foundations. The use of anti-vibration pads or Cushi Foot mounts is explicitly discouraged or prohibited because:

- It compromises alignment stability,
- Violates OEM guidelines, voiding warranty,
- Introduces structural deflection that leads to premature failure of components.

Alignment Stability – Critical to Performance and Warranty

In fire pump assemblies, the shaft alignment between pump and driver (engine/motor) is critical for:

- Reducing vibration,
- Avoiding premature wear on bearings, seals, and couplings,
- Ensuring operational efficiency and reliability.

Even minor shifts due to flexible supports can disturb alignment beyond acceptable limits, especially during thermal expansion, vibration, or load cycling.

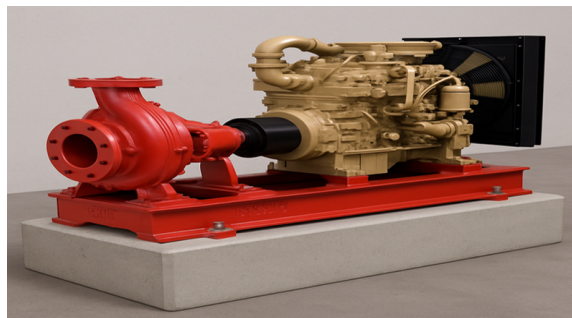
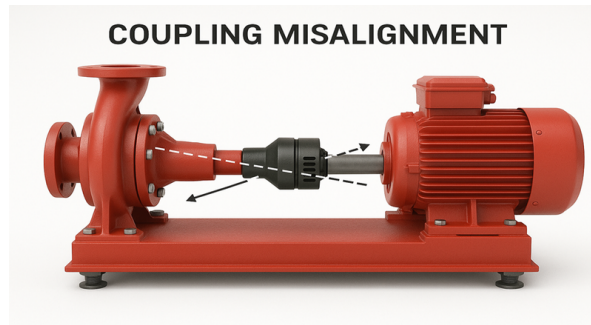
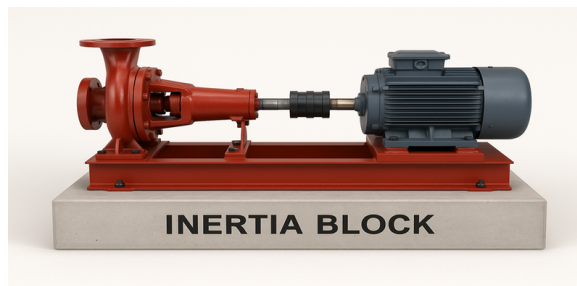
Acceptable Alignment Tolerances

The standard alignment tolerances typically accepted by OEMs (unless otherwise specified in manufacturer documentation) are:

- Axial (End-to-End or Parallel Misalignment):
 ≤ 0.05 mm (0.002 inches) total indicator reading (TIR)
- Radial (Offset or Angular Misalignment / Circumferential):
 ≤ 0.127 mm (0.005 inches) TIR over a coupling face diameter of ~150 mm (6 inches)
(This may scale with size — some OEMs recommend ≤ 0.05 mm per 100 mm of coupling diameter.)

These values are measured using dial indicators or laser alignment tools across the coupling halves, with base grouted and final positioning locked.

Any non-rigid mounting system such as anti-vibration pads may allow movement that exceeds these tight tolerances, especially over time.



Compliance with NFPA 20 and Engineering Best Practice

- NFPA 20, Section 6.4 and 6.5, requires that fire pumps be mounted on solid foundations.
- Alignment must be performed after grouting, and verified again before commissioning.
- Use of flexible supports contradicts both alignment requirements and the objective of long-term reliability under emergency duty.

Conclusion

Based on the above:

- Anti-vibration pads / Cushy Foot mounts are not to be used for fixed fire protection pump installations.
- Fire pump sets shall be:
 - Installed on concrete inertia blocks or plinths,
 - Fully grouted, and
 - Aligned within OEM-specified tolerances to preserve mechanical integrity and warranty.

This ensures compliance with OEM standards, fire protection codes, and mechanical best practices for critical emergency systems.

THANK YOU!