

ISO 10813-1:2023-08 (E)

Vibration generating machines - Guidance for selection - Part 1: Equipment for environmental testing

| Contents | | Page |
|------------------------------|--|-------------|
| Foreword | | iv |
| Introduction | | v |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 1 |
| 4 | Vibration test requirements | 2 |
| 4.1 | Vibration test purposes | 2 |
| 4.2 | Test methods | 2 |
| 4.2.1 | General | 2 |
| 4.2.2 | Sinusoidal vibration | 2 |
| 4.2.3 | Wide-band random vibration | 3 |
| 4.2.4 | Time-history method | 3 |
| 4.2.5 | Sine-beat method | 3 |
| 5 | Types and characteristics of vibration generators | 4 |
| 5.1 | Main types of vibration generators | 4 |
| 5.1.1 | General | 4 |
| 5.1.2 | Electrodynamic vibration generators | 4 |
| 5.1.3 | Servo-hydraulic vibration generators | 4 |
| 5.1.4 | Mechanical vibration generators | 5 |
| 5.2 | Major parameters | 5 |
| 5.3 | Features | 5 |
| 5.3.1 | Electrodynamic vibration generators | 5 |
| 5.3.2 | Servo-hydraulic vibration generators | 8 |
| 5.3.3 | Mechanical vibration generators | 11 |
| 5.4 | Comparison between electrodynamic, servo-hydraulic and mechanical vibration generators | 13 |
| 6 | Recommendations for the selection of vibration generators | 14 |
| 6.1 | Selection of type | 14 |
| 6.2 | Selection of the model | 15 |
| 6.2.1 | General | 15 |
| 6.2.2 | Frequency range | 15 |
| 6.2.3 | Maximum acceleration | 16 |
| 6.2.4 | Force | 16 |
| 6.2.5 | Mass of the moving element | 16 |
| 6.2.6 | Size of the moving element | 17 |
| 6.2.7 | Rated travel | 17 |
| 6.2.8 | Maximum velocity | 18 |
| 6.3 | Selection of components | 19 |
| 6.3.1 | General | 19 |
| 6.3.2 | Selection of power amplifier | 19 |
| 6.3.3 | Selection of hydraulic power supply | 23 |
| 6.4 | Verification of adequate infrastructure | 25 |
| Annex A (informative) | Examples of selections | 27 |
| Bibliography | | 30 |