

附属書B表1 代表的なゾーン境界値

| 振動速度のrms値 mm/s | クラス I | クラス II | クラス III | クラス IV |
|-------------------|-------|--------|---------|--------|
| 0.28 | | | | |
| 0.45 | A | | | |
| 0.71 | | A | | |
| 1.12 | B | A | | |
| 1.80 | | B | A | |
| 2.8 | C | B | B | |
| 4.5 | | C | B | |
| 7.1 | | | C | |
| 11.2 | D | | C | |
| 18 | | D | | |
| 28 | | | D | |
| 45 | | | | D |



Table B.1 — Range of typical values for the zone A/B, B/C and C/D boundaries

| Range of typical zone boundary values r.m.s. vibration velocity in mm/s | | | |
|--|--|--|------|
| 0.28 | | | 0.28 |
| 0.45 | | | 0.45 |
| 0.71 | | | 0.71 |
| 1.12 | | | 1.12 |
| 1.8 | | | 1.8 |
| 2.8 | | | 2.8 |
| 4.5 | | | 4.5 |
| 7.1 | | | 7.1 |
| 9.3 | | | 9.3 |
| 11.2 | | | 11.2 |
| 14.7 | | | 14.7 |
| 18 | | | 18 |
| 28 | | | 28 |
| 45 | | | 45 |

NOTE 1 Table B.1 only applies to machines for which specific parts of ISO 10816 have not been developed and for which there is no past satisfactory experience available.

NOTE 2 Acceptance criteria should be subject to agreement between suppliers and customers.

NOTE 3 The values selected should take into account the measurement position and the support flexibility/resilience.

NOTE 4 Small machines (e.g. electric motors with power up to 15 kW) will tend to lie at the lower end of the range and larger machines (e.g. prime movers with flexible supports in the direction of measurement) will tend to lie at the upper end of the range.

”〇と〇のゾーンの境界は Δ～Δmm/s RMSの間にあるべきである” と表現される。

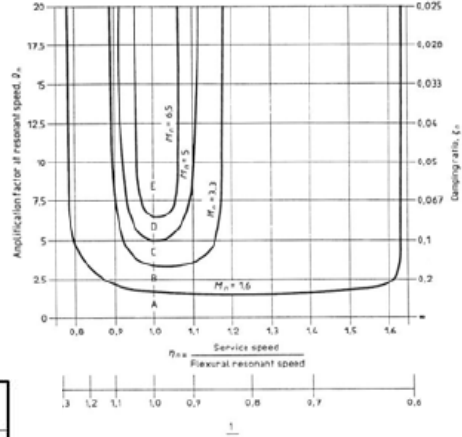
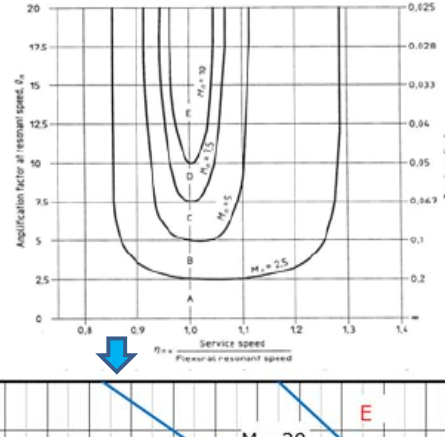
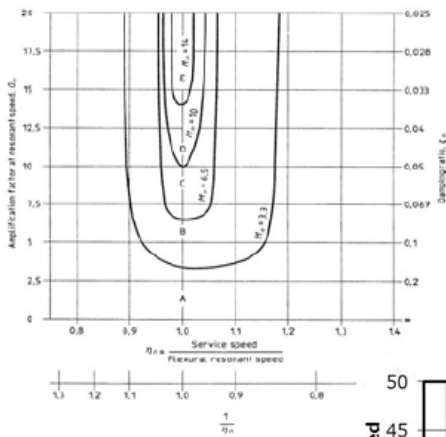
不つり合い振動感度 (ISO21940-31 (ISO10814廃版)) (2013年制定)

モーダル感度 $M_i = \frac{\eta_i^2}{\sqrt{(1-\eta_i^2)^2 + (2\zeta_i\eta_i)^2}}$ $\eta_i = \Omega / \omega_i$

| 分類 | 回転機械の種類 |
|-----------------------------------|--|
| Type I : Low Susceptibility | paper machine rolls, high-speed vacuum pumps |
| Type II : Moderate Susceptibility | pumps, electric armatures, gas and steam turbines, small turbo generators, turbo compressors |
| Type III : High Susceptibility | Centrifuges, fans, screw conveyors, hammer mills |

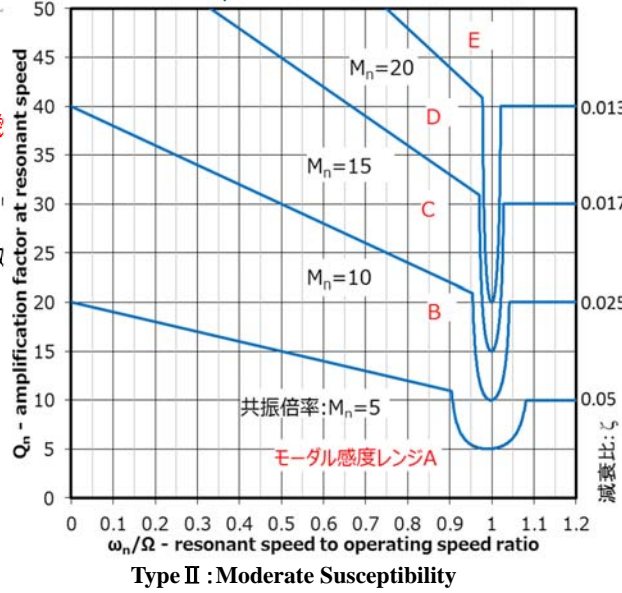
| Modal sensitivity range | 運転条件の予想 |
|--------------------------|---|
| A: Very low sensitivity | Very smooth resonant speed; difficult to detect |
| B: Low sensitivity | Smooth, low and stable vibrations |
| C: Moderate sensitivity | Acceptable, moderate and slightly unsteady vibrations |
| D: High sensitivity | Sensitive to unbalance; regular field balancing may be required |
| E: Very high sensitivity | Too sensitive to unbalance; to be avoided |

モーダル感度の感度分類



変更点

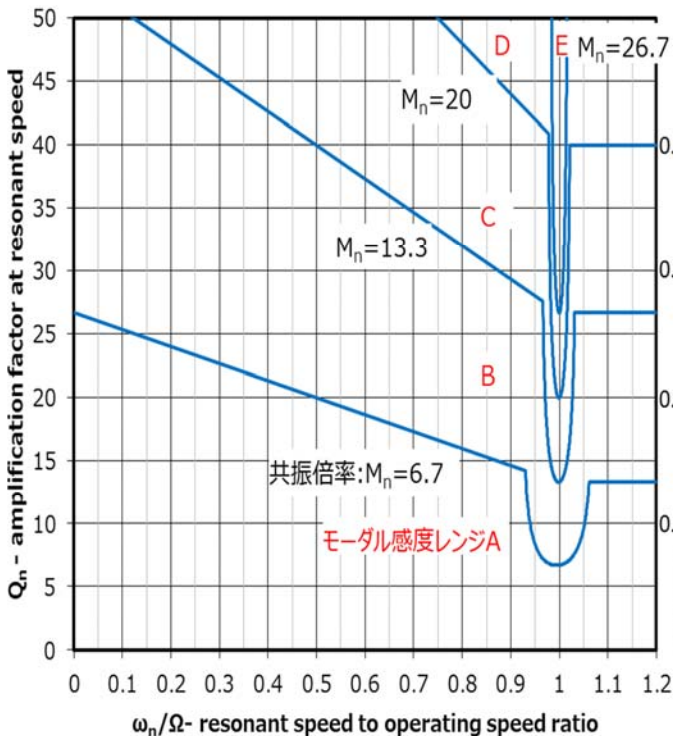
- モーダル感度分類を共振回転数近傍以外にも境界線を設定
- 境界線の値 $= -2M_n \times \omega_n / \Omega + 4M_n$
- 横軸が共振回転数/運転回転数
- 境界値が2倍に緩和



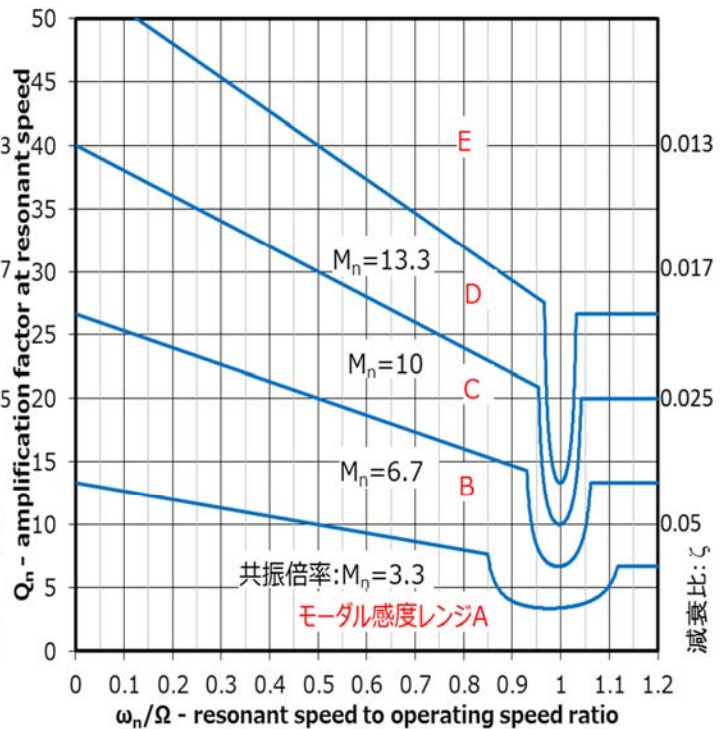
ISO10814(廃版)
モーダル感度の境界値

| Type | I | II | III |
|------|------|------|------|
| A/B | 6.7 | 5.0 | 3.3 |
| B/C | 13.3 | 10.0 | 6.7 |
| C/D | 20.0 | 15.0 | 10.0 |
| D/E | 26.7 | 20.0 | 13.3 |

ISO21940-31
(2013年制定)



Type I : Low Susceptibility



Type III : High Susceptibility