Uptime® Elements

Vibration Fault Periodic Table

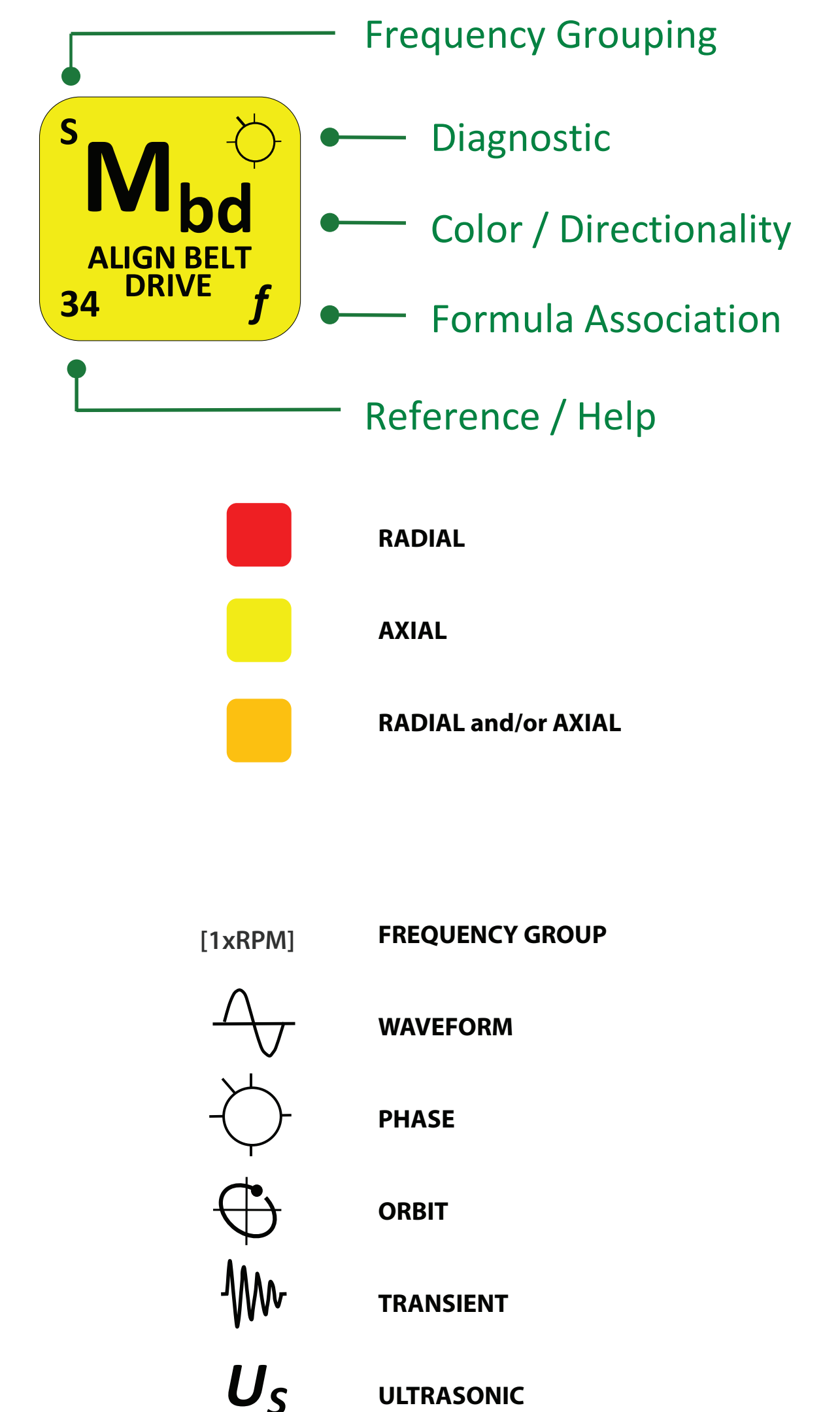**Vib** — vibration analysis
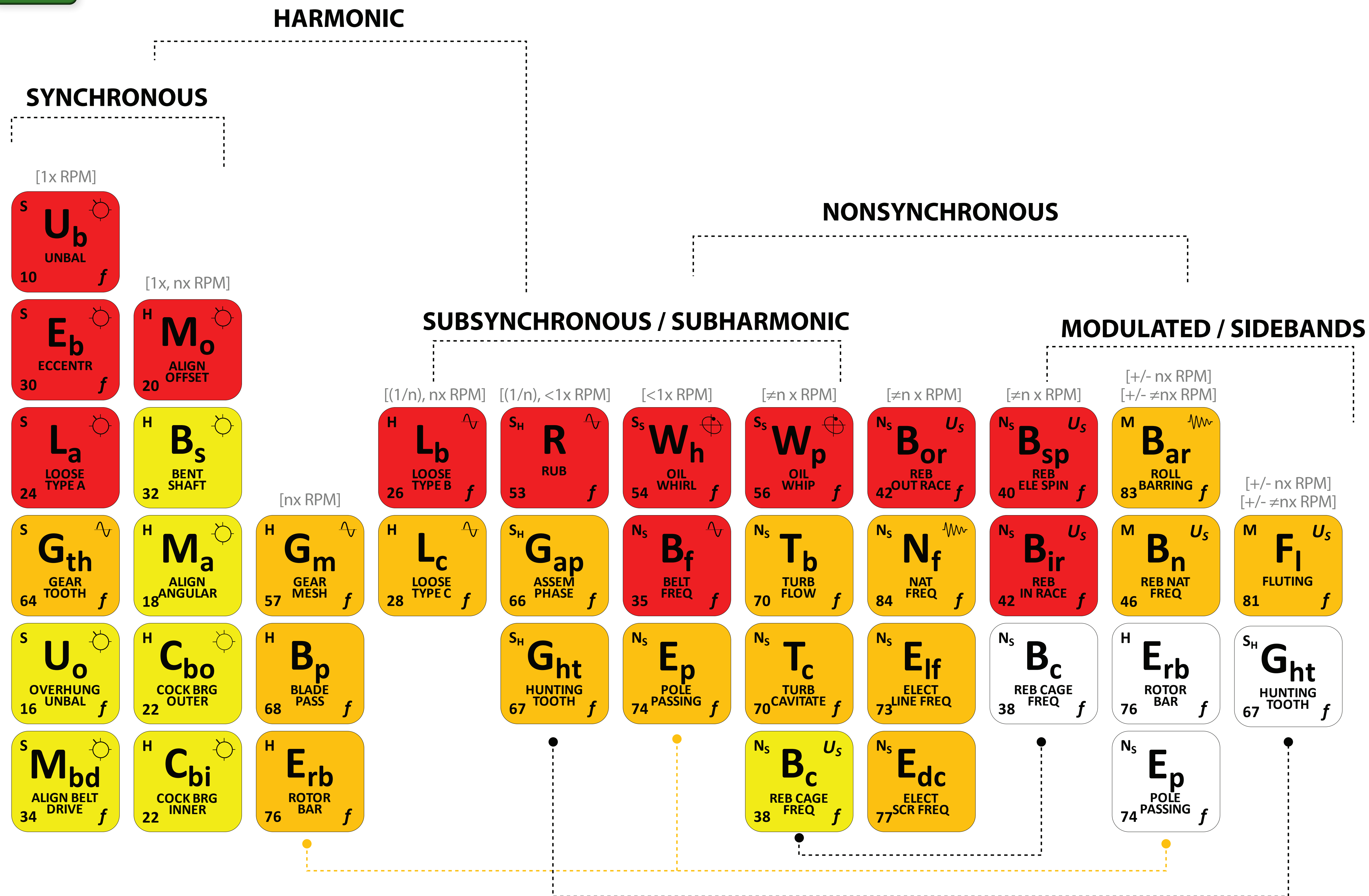
A logical visual mapping system to understand vibration analysis as "systems thinking."

1. Define the frequency grouping
2. Define the "dominant" directional response
3. Perform the recommended diagnostic test
4. Quickly narrow down the potential faults

HARMONIC

SYNCHRONOUS

NONSYNCHRONOUS

SUBSYNCHRONOUS / SUBHARMONIC

MODULATED / SIDEBANDS

[1x RPM]

| S U_b UNBAL 10 f |

[1x, nx RPM]

| S E_b ECCENTR 30 f | H M_o ALIGN OFFSET 20 f |

| S L_a LOOSE TYPE A 24 f | H B_s BENT SHAFT 32 f |

[nx RPM]

| S G_{th} GEAR TOOTH 64 f | H M_a ALIGN ANGULAR 18 f | H G_m GEAR MESH 57 f |

| S U_o OVERHUNG UNBAL 16 f | H C_{bo} COCK BRG OUTER 22 f | H B_p BLADE PASS 68 f |

| S M_{bd} ALIGN BELT DRIVE 34 f | H C_{bi} COCK BRG INNER 22 f | H E_{rb} ROTOR BAR 76 f |

[(1/n), nx RPM]   [(1/n), <1x RPM]

| H L_b LOOSE TYPE B 26 f | S_H R RUB 53 f |

[<1x RPM]

| S_S W_h OIL WHIRL 54 f | S_S W_p OIL WHIP 56 f |

[≠n x RPM]

| N_S U_S B_{or} REB OUT RACE 42 f |

[≠n x RPM]

| N_S U_S B_{sp} REB ELE SPIN 40 f |

[+/- nx RPM] [+/- ≠nx RPM]

| M B_{ar} ROLL BARRING 83 f |

| H L_c LOOSE TYPE C 28 f | S_H G_{ap} ASSEM PHASE 66 f | N_S B_f BELT FREQ 35 f | N_S T_b TURB FLOW 70 f | N_S N_f NAT FREQ 84 f | N_S U_S B_{ir} REB IN RACE 42 f | M U_S B_n REB NAT FREQ 46 f | M U_S F_l FLUTING 81 f |

[+/- nx RPM] [+/- ≠nx RPM]

| S_H G_{ht} HUNTING TOOTH 67 f | N_S E_p POLE PASSING 74 f | N_S T_c TURB CAVITATE 70 f | N_S E_{lf} ELECT LINE FREQ 73 f | N_S B_c REB CAGE FREQ 38 f | H E_{rb} ROTOR BAR 76 f | S_H G_{ht} HUNTING TOOTH 67 f |

| N_S U_S B_c REB CAGE FREQ 38 f | N_S E_{dc} ELECT SCR FREQ 77 f | N_S E_p POLE PASSING 74 f |

Legend

Frequency Grouping
Diagnostic
Color / Directionality
Formula Association
Reference / Help

| S M_{bd} ALIGN BELT DRIVE 34 f |

- RADIAL (red)
- AXIAL (yellow)
- RADIAL and/or AXIAL (orange)

[1xRPM] — FREQUENCY GROUP
⌇ — WAVEFORM
⊙ — PHASE
⊕ — ORBIT
⋎ — TRANSIENT
U_S — ULTRASONIC

Vibration Diagnostics Framework

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