IEC Motor Frame Sizes — Shaft and Mounting Dimensions 63 to 315

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The IEC frame number decoded (it is the shaft height in millimetres), the standard shaft diameter and key per frame, B3 foot, B5 flange and B14 face mounting explained, typical 4-pole power per frame for sanity checks, and the replacement checklist that keeps a motor swap to one shutdown.

The frame number is a dimension

An IEC frame designation like 132M states the shaft centre height above the feet in millimetres — the one dimension everything else hangs on. Letter suffixes (S/M/L) vary foot spacing within the height. Standard shaft and typical 4-pole ratings line up like this:

Frame | Shaft Ø × length (mm) | Typical 4-pole kW |

63 | 11 × 23 | 0.12–0.18 |

71 | 14 × 30 | 0.25–0.37 |

80 | 19 × 40 | 0.55–0.75 — the stocked 0.75 kW B5 motor is the textbook 80-frame |

90 | 24 × 50 | 1.1–1.5 |

100 | 28 × 60 | 2.2–3 |

112 | 28 × 60 | 4 |

132 | 38 × 80 | 5.5–7.5 |

160 | 42 × 110 | 11–15 |

180 | 48 × 110 | 18.5–22 |

200 | 55 × 110 | 30 |

225 | 60 × 140 (4-pole) | 37–45 |

250 | 65 × 140 | 55 |

280 | 75 × 140 | 75–90 |

315 | 80 × 170 | 110–160 |

Keys follow DIN 6885 per shaft size; 2-pole motors from frame 225 up may carry a reduced shaft. The kW column is a sanity check, not a law — manufacturers shift ratings between adjacent frames with efficiency class (IE guide: IE3/IE4 motors sometimes grew a frame against old IE1 equivalents).

Mounting letters

B3 — foot-mounted: match frame height and foot hole pattern.

B5 — large flange with through-holes, carried on the flange: match flange PCD and spigot.

B14 — smaller face with tapped holes for gear units and pump heads.

Combination forms (B35 = feet + B5 flange) are common on stock motors — e.g. the stocked 3 kW IE3 IP55 and 11 kW units in the ventilation line.

Replacement checklist

Frame + suffix and mounting letter off the old plate; shaft Ø/length confirmed with a caliper (reduced-shaft 2-pole traps live here).

kW, poles/rpm, voltage/frequency and duty class (S1–S10 guide); efficiency class per the regulation in force at the installation.

IP rating and insulation/ambient; drive end fit — coupling hub bore (coupling guide) or pulley taper bush.

VFD duty noted when applicable — see the VLT guide for the drive side.

Over 3,000 motor line items are quotable; the plate photo plus shaft measurement is the complete enquiry, answered within 24 hours.

Frequently asked questions
What does frame 132 mean on a motor?The shaft centreline sits 132 mm above the mounting feet — the IEC frame number is that height in millimetres, with S/M/L varying the foot spacing. A 132 frame carries a 38 mm shaft as standard.Are IEC and NEMA frames interchangeable?No — NEMA numbers encode shaft height in quarter-inches with different foot and shaft tables. Converting an installation across systems means adapter plates or machining; matching within IEC is the clean path, and the chart above is IEC only.Can a B5 motor replace a B3?Only with a mounting change — B5 hangs on its flange, B3 stands on feet. B35 (feet plus flange) motors cover both and are the stock-keeping trick; specify the combination form when either could recur.Why is the new IE3 motor bigger than the old motor it replaces?Higher efficiency classes carry more active material; some ratings moved up a frame size against old IE0/IE1 designs. Check frame and shaft before assuming like-for-like on 20-year-old installations.Which dimensions must match for a drop-in motor swap?Frame height and foot/flange pattern, shaft diameter and length, and the terminal-box orientation you can live with — plus the electrical data. Everything

else (make, series) is negotiable; those dimensions are not.

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