8 inputs determine the right compressor.

A distributor-facing pre-quote checklist. If the customer answers most of these at the first call, the second call is the quote.

01 **What's the duty cycle — across an average hour, how many minutes is the compressor actually loaded?**

The single most important question on every compressor quote. **Under ~40 min/hr = intermittent (recip or portable). Over ~40 min/hr = continuous (rotary screw).** Customers who under-report duty cycle get a recip that overheats in 18-24 months; customers who over-report get a rotary screw that short-cycles and burns electricity. Pull run-hour records on replacement quotes, not just the customer's estimate.

02 **What's the peak CFM at working pressure, and how steady is demand across the day?**

Size to peak demand + 25% safety factor. Rule of thumb: ~4 CFM per HP at 100 PSI (rotary screw and oil-free), ~3.5 CFM/HP for reciprocating. Demand steady within ~30% of rated = fixed-speed wins; demand swings wider = VFD recovers 25-50% on the electric bill. Most customers underestimate peak by 20-30% because they don't account for simultaneous tool use.

03 **Does compressed air touch product, package, process gas, or breathing-air supply directly?**

The oil-free qualification, full stop. Food packaging blowoff, pharma fill, semiconductor wafer handling, dental drill drive air, automotive paint supply, breathing-air filling stations — all are direct-contact and require **ISO 8573-1 Class 0 oil**. Downstream filtration alone does NOT reach Class 0 from an oil-lubricated source; oil-free is architectural, not a filtration upgrade.

04 **What's the available electrical service — single-phase or three-phase, what voltage?**

Limits the model before any other conversation. Most recips above ~7.5 HP need three-phase; almost all rotary screw and oil-free above ~10 HP are three-phase. **Single-phase shops asking for 10+ HP need either a service upgrade or a duplex of smaller pumps**, not a phase converter on the motor. Verify panel capacity for the motor's inrush, not just steady-state.

05 **Indoor or outdoor, and what's the compressor-room ambient temperature in summer?**

Rotary-screw airends derate above 100°F inlet; VFD drive cabinets derate above 104°F ambient and fault around 122°F. **The #1 warm-weather complaint on VFD installs is preventable** with cabinet AC or drive relocation. Reciprocating compressors throw more heat into the room than rotary screw — ventilation matters more on recip rooms than customers expect.

06 **What happens at this facility when the compressor goes down for a day?**

The redundancy qualification. Job shop with two days of buffer inventory might accept the outage. **Continuous-process plants, hospitals, paint lines, JIT-contract suppliers** almost always have downtime cost that dwarfs the duplex premium — but they don't know it until the first outage. Quantify lost shift × labor + scrap + customer-penalty exposure honestly.

07 **For portable / contractor work — what power source is available on the job site?**

Single-phase 120V caps around 1.5-2 HP. Single-phase 240V handles 3-7.5 HP. Generator-fed needs the generator sized at ~2× motor kW for inrush. **No power at all routes to the off-grid stack: portable compressor + deliquescent dryer** (passive desiccant vessel, no electricity required). Most distributors miss the dryer pairing and the customer can't run paint or finish work.

08

What downstream treatment, distribution, and condensate handling is in place — or part of this quote?

Quote the system, not the box. **Every compressor needs receiver (4-6 gal/CFM), dryer (refrigerated for indoor general, desiccant for pharma / outdoor / sub-38°F dewpoint), pre/post filtration, electronic- timer condensate drain on every drain point, and an oil-water separator on the OWS discharge.** Don't let the customer "install the dryer later" — it never happens later, and the system rusts. Discharging oily condensate to sanitary sewer is a regulatory violation in most jurisdictions ($10K+ fines).