The 5 types · side-by-side

Distributor-facing reading. Each row gives best-for, key trade-off, capacity, price band, and how many of SPC's tier slots carry an option at that product type.

PRODUCT TYPE	BEST FOR	KEY TRADE-OFF	TYPICAL CAPACITY	PRICE BAND	BRANDS SPC CARRIES
Solenoid Valve ELECTRICAL DCV · 5/2, 5/3, 3/2 · 24 VDC STANDARD	**The directional control on every automated machine.** Every PLC-driven cylinder on a packaging line, assembly cell, robot, conveyor, or indexing stage. Pilot-operated for high flow from a small coil (~25 PSI minimum inlet); direct-acting for vacuum and low-pressure service. Function code follows the cylinder's power-loss behavior: 5/2 single for spring-return, 5/2 double for memory, 5/3 for hold-position or hand-moveable.	COIL VOLTAGE IS THE SPEC ERROR A 24 VDC coil on 110 VAC burns instantly; a 110 VAC coil on 24 VDC will not actuate at all. Pilot-operated valves silently fail to shift below ~25 PSI inlet. Seal life is contamination-driven: clean upstream FRL doubles or triples it.	1/8" – 1" NPT / G · Cv 0.2 – 15.0 pilot-operated · direct-acting	$ – $$$	4 / 5 · DEEP
ATEX Solenoid Valve HAZARDOUS-AREA UNIT-CERTIFIED · ZONE 1/2, CLASS I DIV 1/2	**Petrochem, oil & gas, grain dust, paint booths.** Any cylinder install inside a classified hazardous area where a standard solenoid is non-compliant. Replaces the older workaround of enclosing a standard valve in an explosion-proof box: one certified unit, one certificate, one install.	CERT SCOPE MUST MATCH EXACTLY · NARROW BENCH Zone 1 IIB T4 is not interchangeable with Zone 2 IIA T3: the marking on the valve body is the legal spec, not a near-match. Where the area allows it, an air-piloted (no-electrical) valve with a safe-area solenoid is the cheaper alternative.	2/2, 3/2, 5/2 · per series unit-certified · separately certified coil kit	$$$	1 / 5 · AIGNEP ONLY

Mechanical Valve HAND / FOOT / PALM / CAM-ROLLER ACTUATED	**Operator stations, press safety interlocks, sequential logic.** Foot pedals where the operator's hands hold the workpiece. Palm buttons on press and shear safety interlocks (OSHA-driven). Cam-roller end-of-stroke triggers on sequential pneumatic logic machines. Hand levers and push buttons on workbench clamp and eject stations. No coil, no voltage, no electrical failure mode.	NARROW REMAINING APPLICATION FOOTPRINT The category has been ceding ground to solenoid valves for decades: the remaining applications are the three above and they are not going anywhere. A standalone mechanical palm-button valve is NOT an OSHA-compliant press safety system; that needs a redundant pair with a safety-rated monitoring relay.	1/8" – 1/2" NPT / G · Cv 0.2 – 5.0 spring-return · detented	$ – $$	1 / 5 · SMC ONLY
Manifold / Sub-base Valve ISO 5599 / 15407 STANDARDIZED · 2-24+ STATIONS	**Any machine running more than 2-3 cylinders.** One supply line in, one or two shared exhausts out, individual cylinder ports per station, valves bolt to a common base. Mixed function codes on one base (5/2 single + 5/2 double + 5/3 side by side). Multi-pin or ribbon-cable wiring drops the install labor 80-90% vs. loose individual valves.	SUPPLY PORT MUST CLEAR TOTAL SIMULTANEOUS FLOW Undersized supply causes manifold pressure droop on simultaneous-firing events: every cylinder slows together. Size the supply and exhaust to the sum of per-station Cv that can fire at once, not to per-station flow.	2 – 24+ stations · mixed function codes fixed-length · modular stacking · ISO standard	$$ – $$$	2 / 5 · SMC + AIGNEP
Valve Replacement Parts SEAL KITS + SERVICE PARTS · BRAND/SERIES SPECIFIC	**The recurring revenue line on every valve sale.** Every solenoid valve in every plant is a future seal-kit candidate. Body, spool, coil have decade-long lives; elastomer seals have 3-7 year lives on continuous duty. A $30-80 rebuild restores the valve at 10% the cost of replacement. SMC and AIGNEP supply seals as individual parts catalogued per series.	RECURRING FAILURES = AIR-QUALITY PROBLEM Third seal kit on the same station in two years means upstream contamination is degrading seals faster than rebuild can keep up. Quote the FRL coalescing element with the seal kit; selling seals without fixing root cause is a short-term win, long-term trust loss. Cross-brand interchange does NOT work: SMC seals do not fit AIGNEP valves and vice versa.	Per valve brand / series / model NBR standard · FKM (Viton) for high-temp / chemical	$ – $$	2 / 5 · SMC + AIGNEP

Reading the brand bench column: the bar shows how many of SPC's tier slots (Industry Leader · Emerging · Economical · adjacent) carry an option at that product type. The bench is deepest on the standard solenoid valve (SMC + AIGNEP + STC + YPC across the tier ladder) and narrowest on the specialty rows (ATEX, mechanical) where the technical requirements match closely to one or two anchor brands. SMC is the integrator default across the directional-control rows that ship on a manifold: SY for the manifold, VQC for high-density. AIGNEP (Fluidity) is the value-tier drop-in on the same ISO sub-base.