The 8 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
ISO 15552 Standard EUROPEAN DIMENSIONAL STANDARD · INTERCHANGEABLE ACROSS MAKERS	**The default on new builds.** OEM machine builders, European-spec equipment, any new install where dimensional interchangeability across brands is a future-proofing requirement. AIGNEP is the value-tier ISO bench; SMC C95 is the spec-tier option.	NOT A DROP-IN FOR NFPA LEGACY Different bolt pattern, different rod-end dimensions, different mounting-foot footprint than NFPA tie-rod. Don't quote ISO 15552 as a replacement for an existing Parker or Bimba tie-rod cylinder: the mounting won't line up.	Bores 32–320 mm · strokes to 2,000+ mm ISO 15552 dimensional standard	$ – $$	3 / 5 · AIGNEP VALUE + SMC SPEC + YPC
NFPA Tie-Rod NORTH AMERICAN DIMENSIONAL STANDARD · DROP-IN FOR PARKER / BIMBA / NUMATICS	**Replacement on existing North American machines.** Retrofit on legacy installs where the machine was built around Parker 2A/2H, Bimba, or Numatics tie-rod cylinders. NFPA tie-rod dimensional standard means the new SMC drops into the existing mounting without bracket changes.	HEAVIER AND LONGER THAN ISO 15552 Tie-rod construction adds footprint and weight versus the ISO profile-extruded body. On new builds with no legacy constraint, ISO is the lighter and shorter spec; NFPA wins only when drop-in interchangeability is the binding requirement.	Bores 1.5"–8" · strokes to 60"+ NFPA dimensional standard	$$ – $$$	1 / 5 · SMC ONLY
Compact SHORT BODY · SAME BORE · FOR TIGHT-ENVELOPE WORK	**When the machine has no room for a full-length cylinder.** Pick-and-place stations, indexing tables, end-of-arm tooling, any jig where the cylinder has to fit in less envelope than a standard body allows. SMC CQ2 is the most-spec'd compact in the SMC catalog; YPC is the value option for high-volume OEM builds.	LIMITED STROKE · LIMITED SIDE-LOAD Trades stroke length and rod stiffness for envelope. If the application needs more than ~100 mm of stroke or any meaningful side-load on the rod, step up to ISO 15552 or heavy-duty cast: the compact body won't carry it.	Bores 12–100 mm · strokes typically < 100 mm ISO-compatible mounting available	$ – $$	2 / 5 · SMC + YPC

Rodless LONG STROKE · SHORT ENVELOPE · PISTON-INTERNAL DESIGN	**Long stroke where envelope is the constraint.** Material-handling slides, gantry pick-and-place, transfer lines, anything that needs 500 mm+ of travel without doubling the cylinder's installed length. SMC MY is the workhorse rodless platform.	HIGHER PRECISION SPEC · NARROWER BENCH Magnetic-coupled and cable-style rodless designs need tighter alignment than rod-style cylinders and don't tolerate side-load as well. Premium pricing per stroke-inch versus a long ISO cylinder; only quote rodless when the envelope is genuinely the binding constraint.	Bores 16–80 mm · strokes 100–2,500 mm magnetic-coupled · mechanical-coupled	$$ – $$$	1 / 5 · SMC ONLY
Heavy-Duty Cast CAST BODY · HIGH SIDE-LOAD TOLERANCE · LONG-CYCLE DUTY	**Press work, clamping, anywhere the rod takes side-load.** Stamping presses, large clamps, hold-down jigs, any application where the rod-end load isn't purely axial. SMC CA2 is the platform: heavier body resists bending the rod under off-axis load that would destroy a tie-rod or compact cylinder.	WEIGHT + COST Cast iron and ductile-iron bodies are heavier than tie-rod or ISO extruded designs and price 20-40% above an equivalent-bore ISO cylinder. Don't quote heavy-duty when an ISO 15552 will carry the load: the customer pays for capability they don't need.	Bores 40–200 mm · strokes to 1,500 mm foot · flange · clevis mount	$$ – $$$	1 / 5 · SMC ONLY
Non-Rotating INDEXED ROD · TWIN-BORE OR SQUARE-ROD DESIGN	**When the load can't be allowed to spin on the rod.** Tool holders, fixture mounts, end effectors that need to maintain angular orientation through the stroke. SMC MB is the twin-bore platform that delivers ±0.05° of rotational tolerance through full stroke: what you spec when a standard round-rod cylinder would let the tool rotate under load.	WIDER FOOTPRINT · SINGLE-SUPPLIER Twin-bore design takes more lateral envelope than a round-rod cylinder of the same bore. SMC is effectively the only bench at SPC for this configuration, and the design is rarely a drop-in for any other maker's non-rotating standard.	Bores 16–63 mm · strokes to 300 mm twin-bore · square-rod	$$	1 / 5 · SMC ONLY
Rebuild Kit SEALS + WEAR BANDS + ROD SCRAPER · OEM CROSS-REFERENCE	**The right answer 80% of the time a cylinder "fails."** Any cylinder leaking past the piston seal, weeping at the rod gland, or losing stroke speed: almost always a seal-pack problem, not a cylinder problem. SMC and AIGNEP kits cross to the original cylinder part number; 15-25% of new-cylinder cost gets another five years out of the install.	LABOR + DOWNTIME TO REBUILD Rebuilding takes 30-90 minutes of millwright time and pulls the cylinder out of the machine. If the cylinder body or rod is scored, a rebuild kit won't fix it: quote the new cylinder. Always confirm bore size and rod diameter before quoting the kit; wrong-size seals destroy the cylinder on the first stroke.	Matched to OEM cylinder model NBR · FKM · food-grade	$	2 / 5 · AIGNEP + SMC

Position Sensor REED SWITCH · SOLID-STATE · GROOVE-MOUNT	**Closes the position-feedback loop to the PLC.** Any cylinder feeding a PLC-controlled cycle that needs end-of-stroke confirmation, mid-stroke position, or interlock with downstream motion. SMC sensors mount in the cylinder groove and signal piston position via the magnetic ring built into every SMC cylinder body.	BRAND-MATCHED TO THE CYLINDER The sensor groove profile differs across makers: SMC sensors snap into SMC cylinders, not into AIGNEP or YPC. Match the sensor to the cylinder brand at spec time. Reed switches are cheaper but wear out on high-cycle duty, solid-state is the right spec above ~2 Hz cycling.	PNP / NPN / NO / NC variants 2-wire · 3-wire	$	1 / 5 · SMC ONLY

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. A deep bench means a price-driven and a spec-driven option both close cleanly; a narrow bench means the available brands map closely to the technical requirements and the comparison stops being a tier choice.