TELEDYNE ISCO
Everywhereyoulook™

REAXUS

PUMP SELECTION GUIDE

REAXUS RECIPROCATING PUMPS

PISTON CONFIGURATION

Single-Piston pumps offer are an economical option for metering, dispensing, and general fluid-transfer applications. Single-piston pumps have a 'rapid-refill' feature drawing liquid into the pumping chamber quickly regardless of the metered dispensing rate. This helps minimize flow pulsation. Often, these pumps are configured with a secondary pulse dampener to further smooth fluid flow.

Pump Classes: M1, MX, LS

Dual-Piston pumps have two pistons operating in parallel, fully out-of-phase with each other, to produce naturally-smooth fluid flow. This is critical many analytical chromatography applications. Dual pistons are also preferred for higher flow pumps (typically above 100 mL/min).

Pump Classes: LD, PR

DRIVE TYPE

Teledyne SSI pumps can be further categorized by the mechanics translating rotation of the pump motor into the reciprocating (back-and-forth) motion of the piston(s).

Direct-Drive mechanisms produce linear piston motion by use of a bearing mounted eccentrically to a rotating motor shaft. This simple arrangement is cost effective, but has limited pressure capabilities.

Pump Classes: M1, MX

Belt-Drive mechanisms produce linear piston motion through a cam mounted on a shaft. A belt-and-pulley configuration connects the pump motor to this cam shaft. The provided mechanical advantage allows for higher pressure capabilities.

Pump Classes: LD, LS, PR

FLOW/PRESSURE CONTROL ALGORITHMS

Reciprocating piston pumps have the ability to produce consistent volumetric fluid flow under very high pressure conditions. However, they do not produce pressure. System pressure results from flowing liquid through a resistive circuit (column, tubing, reactor vessel, etc.).

Teledyne ISCO pump firmware either contains constant-flow or constant-pressure control algorithms. Construction is similar between pumps with flow or pressure control, but component options (e.g. pulse dampeners) are limited when a constant-pressure algorithm is required.

Constant-Flow pumps produce precise and predictable fluid flow dependent on system resistive pressure and the fluid being pumped. Flow accuracy is specified for typical application parameters. Improved accuracy across a larger range of conditions is achieved for pumps with pressure monitoring capabilities by integrated automatic pressure compensation and solvent selection features.

Pump Classes: LD, LS, M1, MX, PR

Constant-Pressure pumps monitor system pressure and use an internal PID feedback loop to modulate fluid flow in order to maintain constant pressure. Default PID parameters are suitable for many applications, but may be set by the user to optimize pump response for unique system conditions.

Pump Class: LS, LD

WETTED MATERIALS

ReaXus pumps are available in a variety of wetted materials. In addition to the primary fluid path material, other wetted materials may include: synthetic ruby, synthetic sapphire, fluoropolymers, and UHMWPE.

Stainless Steel fluid paths are most common with broad acceptance in HPLC, processing, and metering applications. Corrosion resistance, high-pressure capability, and general ruggedness make stainless steel the primary choice of materials.

Hastelloy pumps are used for highly-corrosive applications where stainless steel is not chemically compatible. Hastelloy pumps are more expensive than equivalent stainless steel or PEEK pumps.

Other materials available on request

PEEK fluid paths are well-suited for applications involving biological materials or when an iron-free fluid path is required. PEEK pumps are limited to 5,000 psi pressure ratings due to fitting and tubing limitations.

Titanium is recommended when system pressures exceed capabilities of PEEK pump. Titanium pumps are more expensive than equivalent stainless steel or PEEK pumps.

"Jacketed" pumps are available in stainless steel, titanium, or Hastelloy. The pump head is machined with a secondary fluid cavity in close thermal proximity to the main pumping chamber. An external circulating bath can be connected to this secondary cavity to heat or cool the pump head. Heating the head allows for pumping of fluids normally too viscous for operation at room temperature. Cooling the head allows for readily pumping liquid CO2 in chromatography and extraction applications.

REAXUS PUMP SELECTION GUIDE

SINGLE HEAD

M1 CLASS

3 MODELS

Small package for simple metering, dispensing, and general laboratory applications.

MX CLASS

3 MODELS

Pressure capabilities up to 5,000 psi with pressure monitoring and leak detection.

LS CLASS

20 MODELS

Low pulsation and pressures to 6,000 psi for analytical HPLC applications.

DUAL HEAD

LD CLASS

24 MODELS

Dual linear cams and automatic pressure compensation for pulse-free precise operation.

PR CLASS

2 MODELS

High flow rates (300 mL/min) with accuracy for preparative chromatography and SMB applications.

	MATERIAL OPTIONS	FLOW RANGE (ML/MIN)	FLOW ACCURACY	PRESSURE LIMIT (PSI)
M1 CLASS	Stainless Steel	0.0–10.0 0.0–40.0 0.0–100.0	2% 5% 5%	2,000 500 250
MX CLASS	Stainless Steel	0.0–10.0 0.0–40.0 0.0–200.0	2% 5% 5%	5,000 900 200
LS CLASS	Stainless Steel Hastelloy	0.0–10.0 0.0–40.0 0.0–100.0 0.0–10.0 0.0–40.0	2% 2% 4% 2% 2%	6,000 1,600 600 6,000 1,600
LD CLASS	Stainless Steel Hastelloy	0.0–12.0 0.0–36.0 0.0–100.0	2% 2% 2%	10,000 6,000 1,000
PR CLASS	Stainless Steel	0.0–100.0 0.0–300.0	3% 4%	4,000 1,000

STROKE VOLUME (UL)	WITH TEMP JACKET	CONSTANT FLOW/PRESSURE	PRESSURE MONITORING	RS232 CONTROL	REMOTE RUN/STOP	ANALOG INPUT (0-10V; 4-20MA)	DRIP TRAY AND SENSOR	DIMENSIONS/ WEIGHT
25.1 100.5 226.2	No No No	Flow Flow Flow	No	Yes	Yes	No	No	5.5"H x 3"W x 10.5"D (14 x 7.6 x 14.7 cm) 3.5 lbs. (1.6 kg)"
25.1 100.5 339.4	No No No	Flow Flow Flow	Yes	Yes	Yes	Yes	Yes	6.5"H x 7"W x 16"D 16.5 x 17.8 x 40.6 cm) 15.3 lbs. (6.9 kg)
50.3 201.1 452.5 50.3 201.1	No No No Yes Yes	Flow/Pressure Flow/Pressure Flow/Pressure Flow/Pressure Flow/Pressure	Yes	Yes	Yes	Yes	Yes	6.5"H x 7"W x 16"D (16.5 x 17.8 x 40.6 cm) 15.3 lbs. (6.9 kg)
30.0 62.7 251.0	Yes/No Yes/No Yes/No	Flow/Pressure Flow/Pressure Flow/Pressure	Yes	Yes	Yes	Yes	Yes	6.3"H x 10"W x 17"D (16 x 25.4 x 43.2 cm) 30.0 lbs. (13.6 kg)
251.0 564.7	Yes Yes	Flow Flow	Yes	Yes	Yes	Yes	Yes	6.3"H x 10"W x 17"D (16 x 25.4 x 43.2 cm) 30.0 lbs. (13.6 kg)

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