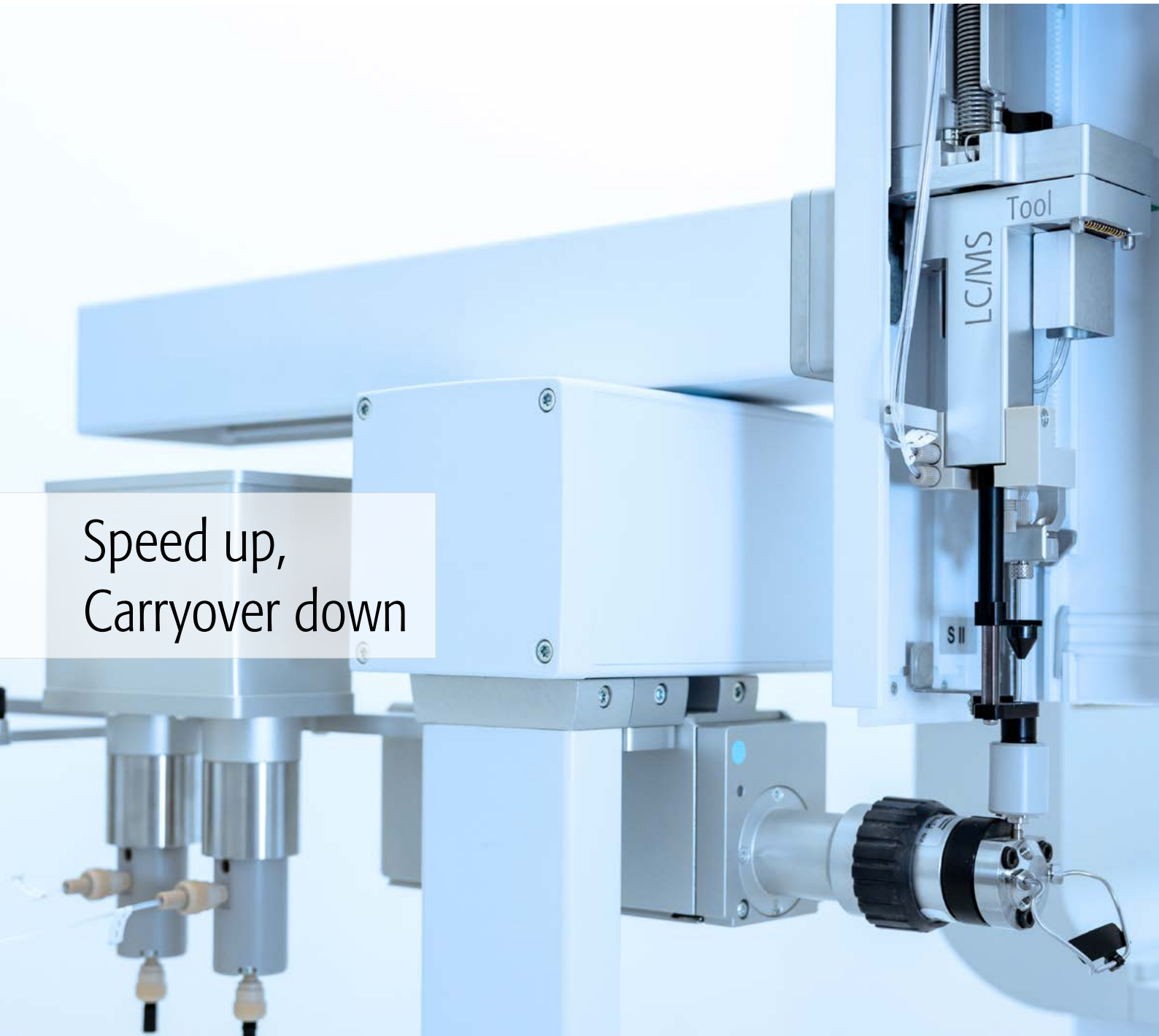
PAL SYSTEM
Ingenious sample handling

New Volumetric Pump Enhances LC/MS Injection Efficiency



Speed up, Carryover down

Made for LC/MS: The PAL3 Volumetric Pump

Applications

- Wash pump for LC/MS tools
- Online SPE
- Syringe pump

Features

- Delivers solvents accurately
- Guarantees consistent wash performance and low carryover

LC/MS script	Carryover [ppm]*	Cycle time [s]
High-Throughput	26	48
High-Throughput DHR*	26	24

*Carryover determined with high concentration of 600 ppm Cl-hexidine

**DHR dual head system with 2 injection ports

- Low cost per sample: Low cost per sample: Operating cost is a key criterion for commercial labs. The reliable PAL System offers low maintenance because of the robust design . With a service interval of 280'000 samples the service cost/sample can be as low as 0.05 US $.

Specifications

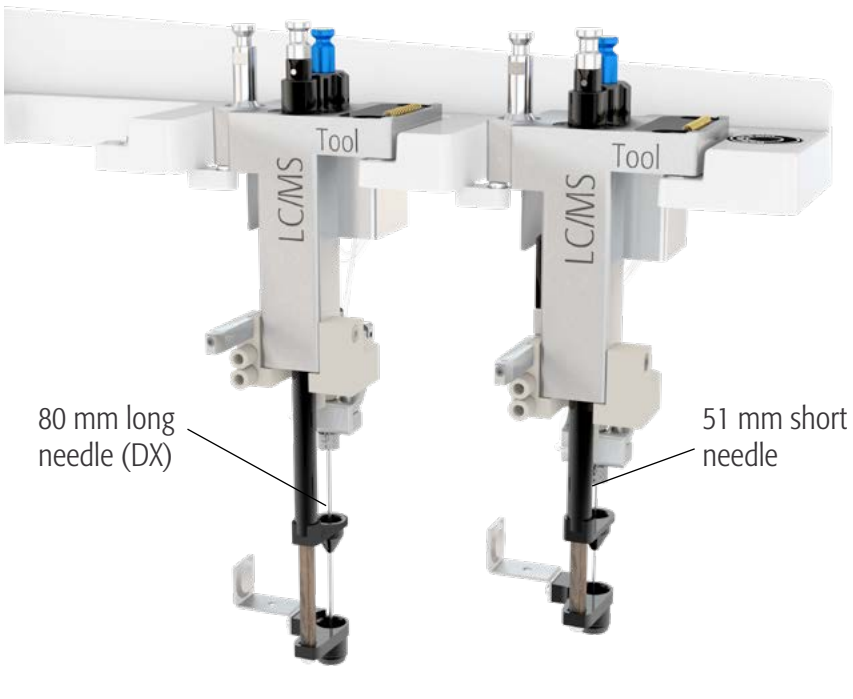
- Pressure rating: max. 50 bar (725 PSI)
- Flow range: 0.1-250 µL/sec 2-channel pump
  0.1-107 µL/sec 1-channel pump
- Requires firmware 4.12 or higher

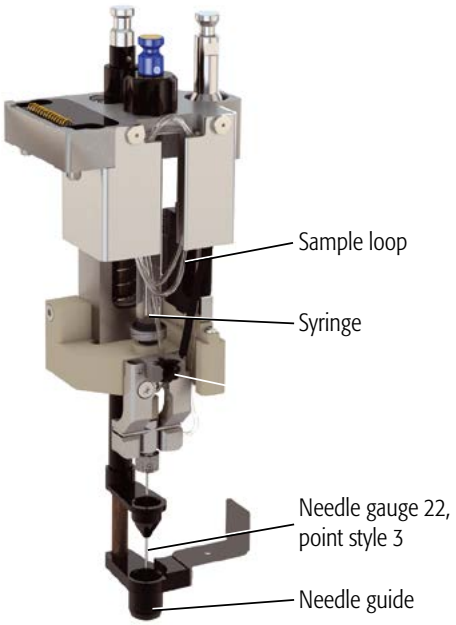
High-Throughput, Low Carryover Injection with LC/MS Tool

The LC/MS tools are offered with a 100 µL or 250 µL syringe. Two needle lengths are available. The standard 51 mm needle is suitable for most applications. With this needle length vials can be penetrated with a maximum depth of 42 mm.

In applications requiring higher penetration depths or strong septa caps, e.g. when dealing with blood tubes (e.g. Vacutainer™) or deep vials, the tools equipped with an 80 mm long, reinforced needle are recommended, allowing a maximum penetration depth of 70 mm.

In combination with the PAL3 volumetric pump and wash cup, injection cycle gets down to only 48 seconds with single-head PAL and 26 seconds with dual-head PAL (DHR).





Features:	Benefits:
▪ Two wash solvents	▪ Lowest carryover
▪ Bubble sensor	▪ Injection verification, process safety
▪ Smart Syringe	▪ Monitoring of tool status, process safety
▪ Variable needle lengths and penetration depths	▪ Access to longer containers (e.g. Vacutainer)
▪ 250 µL max injection volume	▪ Expanded working range
▪ Reinforced 80 mm needle	▪ Pierces even thick septa

High-Efficiency Post-Injection Cleaning with Wash Cup

The wash cup setup streamlines the injection process by allowing for injection, cleaning of the injection valve, and cleaning of the injection needle from both inside and outside at a single location. This results in a faster washing process compared to LC/MS wash module.

The wash cup also enables direct injection through µSPE cartridge into LC/MS.

Conventional LCMS Injection

Direct µSPE Injection

Ordering Information

Part number	Description
PAL3-TH-SLCMS-AWC-100	LC/MS tool 100 µL with Smart Syringe with 51 mm needle, 2-channel volumetric pump, wash cup setup
PAL3-TH-SLCMS-AWC-100DX	LC/MS tool 100 µL with Smart Syringe with 80 mm needle, 2-channel volumetric pump, wash cup setup
PAL3-TH-SLCMS-AWC-250	LC/MS tool 100 µL with Smart Syringe with 51 mm needle, 2-channel volumetric pump, wash cup setup
PAL3-TH-SLCMS-AWC-250DX	LC/MS tool 100 µL with Smart Syringe with 80 mm needle, 2-channel volumetric pump, wash cup setup
PAL3-ActWashCup-2ChV	Wash cup set up, including 2-channel volumetric pump
PAL3-LCMS100VP-PFCFr-S	PFAS-free upgrade kit for LCMS tool with volumetric pump and 100 µL loop, for up to 850 mm systems
PAL3-LCMS100VP-PFCFr-X	PFAS-free upgrade kit for LCMS tool with volumetric pump and 100 µL loop, for up to 1200 mm systems

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Contact the experts for sample preparation:

Or find your nearest value added reseller.

For more information on the PAL System visit:

www.palsystem.com