

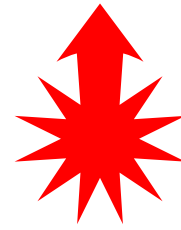


NANOBAUME™

HIGH PRESSURE PACKING FOR CAPILLARY COLUMNS

PACK YOUR OWN CAPILLARIES FOR HPLC AND MASS SPEC





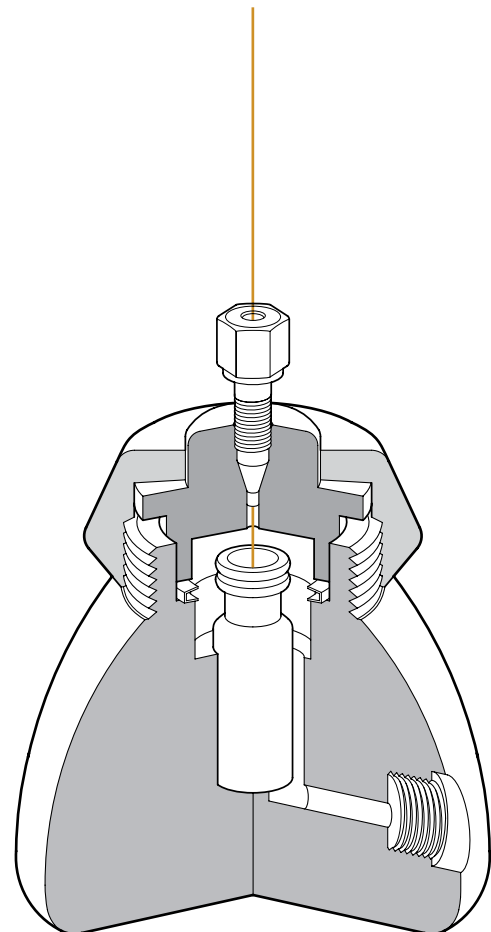
NANOBAUME™

CAPILLARY COLUMN PACKER

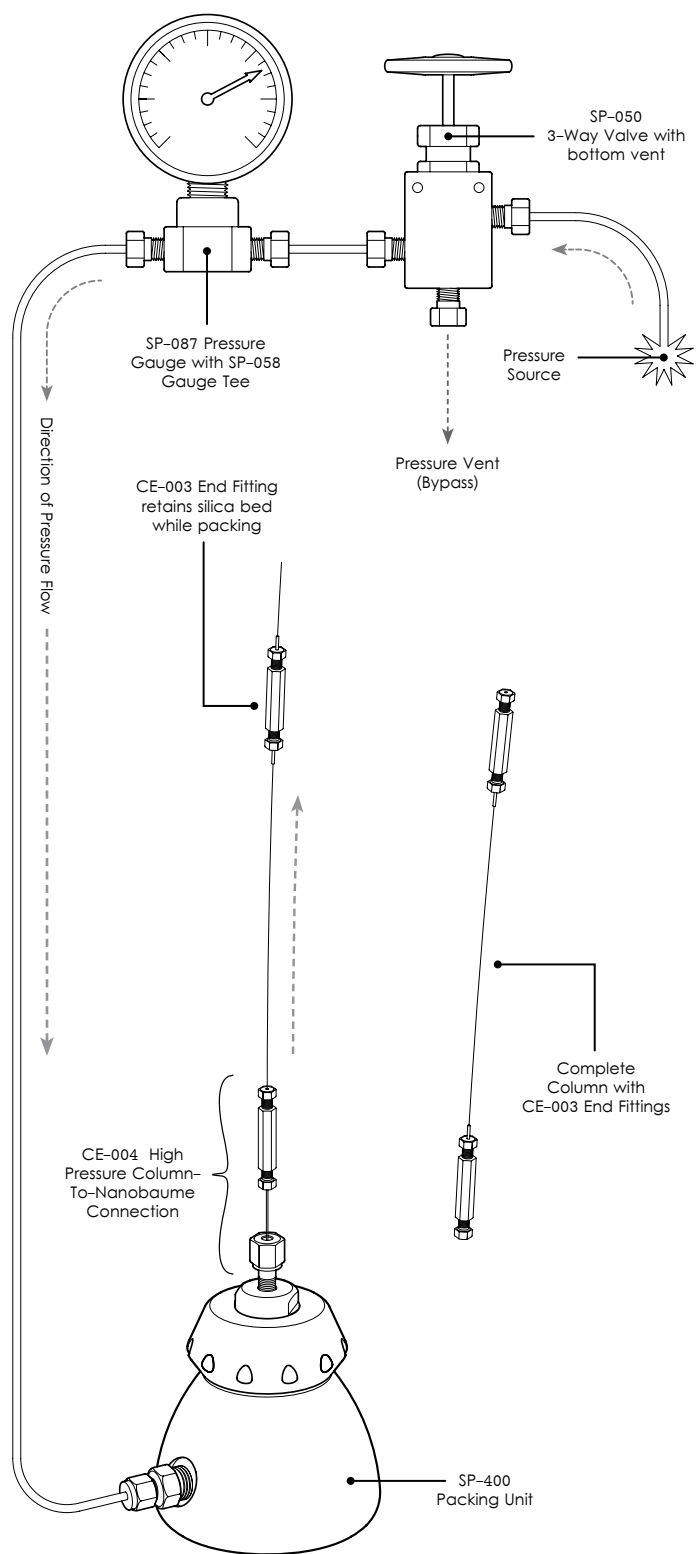
- Pack micro-columns of various length and diameter
- Compact design will not tip on the work surface
- Seals safely at pressures up to 9000 psi *
- Assembles simply, without tools
- Priced economically

Save time, money, and gain control by packing your own capillary columns. Designed to accommodate empty fused silica or PEEKsil™ columns of less than 1/32" in outer diameter, the Nanobaume™ is a compact 316 stainless steel unit built to pack tubing with a silica bed at high pressure. The Nanobaume™ may be used for packing at up to 9000 psig with liquid media (3000 psig for gas pressure) occupies a small footprint on the benchtop (at 2.5" in diameter, 2.5" tall), and assembles easily in a few simple steps. The ETFE O-ring seals at high pressure by hand-tightening only. A magnetic stir bar keeps the silica slurry suspended over a stir-plate during column packing. Not for use under SFC conditions.

* Packing limit of the pressure vessel is 9000psi with liquid media; fittings supplied in SP-400 to connect a column to the Nanobaume will hold pressure to 6000 psi; SP-403K includes high-pressure (9000psi liquid media) CE-005 column connection kit.



COMPONENTS AND ASSEMBLY



SP-403K PARTS ASSEMBLY DIAGRAM

Cap Lock

10-32 Nut

Ferrule

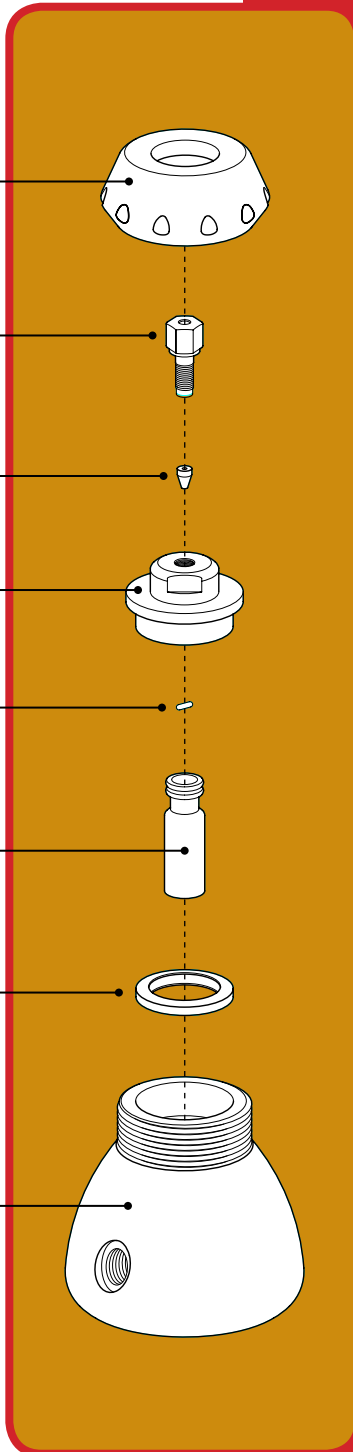
Cap Seal

Stir Bar

Glass Vial

O-Ring

Packer Body



SP-400 PARTS ASSEMBLY





SP-400 Nanobaume™ Assembly

SP-400 NANOBAUME™ ASSEMBLY

- Our base unit – all the components for a functional packer
- Includes connections for 360µm and 1/32" OD columns

Order the SP-400 assembly when all you need is a packer to get started. Includes a pressure source connection for 1/16" OD tubing, two column connections each for 1/32" and 360 µm OD, glass vial, ETFE O-ring, Teflon® micro stir bar, and SS316 hardware (body, cap lock and cap seal). Note that the SP-400 assembly does not include column end fittings, which are used to retain the silica bed while packing. Although the pressure limit of the packing vessel is 9000 psig with liquid media, the column connections will hold to 6000 psig; for higher pressure packing, the CE-005 Adapter Kit is required. These and other items may be purchased separately or as part of the SP-403K Kit. The following items are included in the SP-400:

PART #	QUANTITY	DESCRIPTION
SP-013	2	FERRULE, PEEK, FOR 1/32" OD COLUMNS
SP-014	1	STAINLESS STEEL NUT, 10-32
SP-015	2	FERRULE, KEL-F®, FOR 360 MICRON OD
SP-300-03	1	STATIC O-RING, ETFE WITH INCONEL® SPRING
SP-098	1	STATIC O-RING, LOW-PRESSURE, VITON
SP-085	1	PTFE STIR BAR, 5MM X 2MM
SP-400-01	1	CAP LOCK, SS316 WITH TITANIUM NITRIDE COATING
SP-400-02	1	CAP SEAL, SS316
SP-400-05	1	PACKER BODY, SS316
SP-051	1	PORT ADAPTER, FOR 1/16" OD TUBING, SS316
VL-002	1	GLASS VIAL, 2ML, 12X32MM, BOROSILICATE

NANOBAUME™ CAPILLARY PACKING UNIT

SP-400 Nanobaume™ High Pressure Capillary Packing Assembly



SP-403K Nanobaume™ Startup Kit

SP-403K STARTUP KIT

- The ideal choice when starting from scratch – includes the SP-400 Assembly and the most commonly used accessories
- High Pressure End Fittings and accessories included
- Rated to 9000 psig with liquid media

The SP-403K Startup Kit includes the most common accessories used in capillary column packing. At the heart of the system is the SP-400 Nanobaume Packing unit, with packing accessories to connect to a pressure source and monitor the system pressure. Also included is the CE-005 High Pressure Packing Adapter Kit, which includes end fittings and column connections capable of 9000 psig packing pressure with liquid media (3000 psig recommended with gas). Below are the items included in the SP-403K:

PART #	QUANTITY	DESCRIPTION
SP-400	1	NANOBAUME™ PACKING UNIT
SP-087	1	PRESSURE GAUGE, 0-10000 PSI, SS316
SP-046	2	TUBING, 0.020" ID X 1/16" OD X 10CM, SS316
SP-050	1	SHUTOFF VALVE, 3-WAY WITH BOTTOM VENT
SP-055	1	TUBING, 0.020" ID X 1/16" OD X 5 FEET, SS316
SP-058	1	PRESSURE GAUGE TEE FOR 1/16" OD TUBING
VL-002X	1	GLASS VIAL, 2ML, 12X32, PACK OF 10
CE-005	1	HIGH PRESSURE PACKING ADAPTER KIT

NANOBAUME™ STARTUP KIT

SP-403K Nanobaume™ High Pressure Capillary Packing Startup Kit



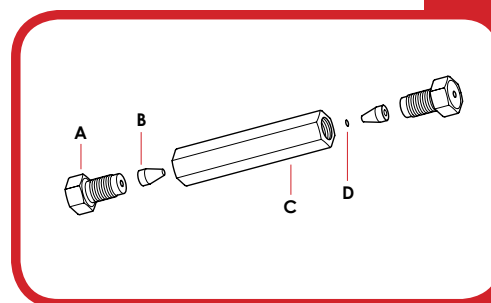
CE-003 COLUMN END FITTINGS

- 27nL void volume with 0.5µm Stainless Steel screen
- For fused silica and 1/32" OD PEEKsil™ columns
- Rated to 9000 psig with liquid media

To successfully pack a capillary column, a fritted end is required to retain the silica bed while packing. The CE-003 is a stainless steel end fitting made for direct-connection to 1/32" OD columns. Connection to columns and transfer tubing of smaller OD may be achieved by use of the appropriate column adapter sleeve, such as included in the TS-015 Adapter Kit. Use the CE-003 at system pressures up to 9000 psig with liquid media (3000 psig recommended with gas pressure). Please note that when the Nanobaume is in use with CE-003 end fittings, the CE-004 High Pressure Column-To-Nanobaume Connection is required at pressure above 6000 psig.

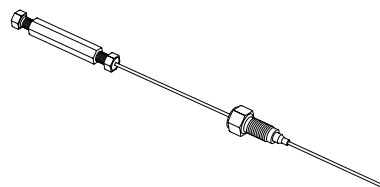
COLUMN END FITTINGS, COMPONENTS, AND ADAPTERS

CE-003	High Pressure Column End Fitting, SS316, with (1) SP-088 0.5µm frit
CE-004	High Pressure Column-To-Nanobaume connection, with (1) SP-094 plug
SP-088	Frit, 0.5 stainless steel
SP-089	Micro Union, SS316, for 1/32" OD columns, 150µm bore, with 6-40 ports
SP-092	Ferrule, for 1/32" OD columns, SS316
SP-094	Pressure testing plug, SS316, 6-40 threads
TS-015	Column adapter kit, includes two 1/32" OD PEEK adapters each in five ranges: 125-165µm, 150-190µm, 225-265µm, 325-365µm, 455-495µm



CE-003 COLUMN END FITTING

- A Stainless Nut
- B SP-092 Ferrule
- C SP-089 Union
- D SP-088 Frit



CE-004 COLUMN-TO-NANOBAUME HIGH PRESSURE CONNECTION

CE-005 COLUMN ADAPTER KIT

- A 9000 psig conversion kit for the SP-400 base unit
- Includes sample columns, end fittings, and adapters
- For fused silica and 1/32" OD PEEKsil™ columns

For those customers who purchased the SP-400 base unit and later require higher packing pressure, the CE-005 High Pressure Column Adapter Kit will convert the 6000 psig capability of the column connections to 9000 psig with liquid media. Includes two CE-003 end fittings with spare SP-092 ferrules and SP-088 frits, sample SP-044 PEEKsil and SP-010 fused silica columns, and TS-015 Adapter Kit for columns with OD smaller than 1/32". A CE-004 High Pressure Column-To-Nanobaume Connection and SP-094 pressure-testing plug are also included.

HIGH PRESSURE ADAPTER KIT

CE-005	High Pressure Column Packing Adapter Kit
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CE-005 HIGH PRESSURE ADAPTER KIT

SILICA BULK MATERIAL

- Pack columns with the phase of your choice
- Other packings available – please inquire

A number of small particle silicas are available below and on the following page. Select a phase to suit your needs and order by the gram. Other packings are available; please contact your distributor for a broader selection or allow our technical staff to suggest a material tailored to your requirements.

SILICA BULK MATERIAL

SP-008	Strong Cation Exchange, PolySULFOETHYL A, 5µm, 300Å
SP-004	Weak Cation Exchange, PolyCAT A, 5µm, 1000Å



SILICA BULK MATERIAL, CONTINUED

SP-005	Hydrophilic Interaction, PolyHYDROXYETHYL A, 5µm, 100Å
SP-007	Hydrophilic Interaction, PolyPROPYL A, 5µm, 300Å
SP-006	C-18, 5µm, 300Å
SP-002	C-18, 5µm, 100Å Hydrophilic Endcap
SP-003	C-8, 5µm, 100Å
SP-001	C-18, 5µm, 100Å



FUSED SILICA

- Methyl-Deactivated and Undeactivated options
- Polyimide coated for strength

Fused silica tubing may be used as column bodies or as transfer tubing to connect a PEEKsil column to your system. May be cut to length by the user. Although referred to as "360 micron OD" by the industry, typical tolerances are $\pm 10\mu\text{m}$ on the OD, $\pm 3\text{--}4\mu\text{m}$ on the ID. Note that Deactivated fused silica has been coated on the ID to reduce active sites, while Un-Deactivated is standard uncoated fused silica. Priced per meter.

DEACTIVATED FUSED SILICA TUBING

SP-009	50µm ID x 363µm OD, Deactivated fused silica
SP-010	100µm ID x 365µm OD, Deactivated fused silica
SP-011	250µm ID x 350µm OD, Deactivated fused silica

UN-DEACTIVATED FUSED SILICA TUBING

SP-059	5µm ID x 363µm OD, Un-Deactivated fused silica
SP-060	10µm ID x 363µm OD, Un-Deactivated fused silica
SP-061	20µm ID x 363µm OD, Un-Deactivated fused silica
SP-062	50µm ID x 363µm OD, Un-Deactivated fused silica
SP-063	75µm ID x 363µm OD, Un-Deactivated fused silica
SP-064	100µm ID x 363µm OD, Un-Deactivated fused silica
SP-065	200µm ID x 363µm OD, Un-Deactivated fused silica
SP-066	250µm ID x 363µm OD, Un-Deactivated fused silica

FUSED SILICA TUBING CUTTER

SP-019	Precision fused silica tubing cutter
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PEEKsil™ EMPTY COLUMNS

- Fused silica lined PEEK tubing, Undeactivated
- Available in pre-cut lengths only

PEEKsil™ is fused silica tubing covered by a PEEK polymer sheath, supplied here in 1/32" OD. Mechanically stronger than fused silica tubing alone, it is readily adaptable to typical stainless or PEEK™ tubing connections. PEEKsil™ must be factory-cut to length.

PEEKSiL™ EMPTY COLUMNS

SP-031	25µm ID x 1/32" OD, 50mm long, pack of 2	Orange
SP-032	25µm ID x 1/32" OD, 100mm long, pack of 2	Orange
SP-033	25µm ID x 1/32" OD, 150mm long, pack of 2	Orange
SP-034	50µm ID x 1/32" OD, 50mm long, pack of 2	Beige
SP-035	50µm ID x 1/32" OD, 100mm long, pack of 2	Beige
SP-036	50µm ID x 1/32" OD, 150mm long, pack of 2	Beige
SP-037	75µm ID x 1/32" OD, 50mm long, pack of 2	Black
SP-038	75µm ID x 1/32" OD, 100mm long, pack of 2	Black
SP-039	75µm ID x 1/32" OD, 150mm long, pack of 2	Black

PEEKSiL™ EMPTY COLUMNS, CONTINUED

SP-040	100µm ID x 1/32" OD, 50mm long, pack of 2	Red
SP-041	100µm ID x 1/32" OD, 100mm long, pack of 2	Red
SP-042	100µm ID x 1/32" OD, 150mm long, pack of 2	Red
SP-043	150µm ID x 1/32" OD, 50mm long, pack of 2	Purple
SP-044	150µm ID x 1/32" OD, 100mm long, pack of 2	Purple
SP-045	150µm ID x 1/32" OD, 150mm long, pack of 2	Purple

PARTS AND ACCESSORIES

- Replacement parts
- High-pressure tubing and connections
- Gauges, valves, and flow control accessories

Connection of the Nanobaume™ to a pressure supply source requires an adapter and several lengths of high-pressure tubing. Inserting an SP-029 pressure gauge into the fluid stream (using the SP-058 gauge tee) will allow monitoring of the packing pressure. A 3-way valve (SP-050) is an efficient way to connect to or remove the unit from the pressure source.



SP-052 THREADED INTO SP-400 BODY

NANOBAUME™ PARTS AND ACCESSORIES

SP-013	Ferrule for 1/32" OD columns (use with SP-014 Nut), PEEK
SP-014	Nut, 10-32, SS316
SP-015	Ferrule for 360um OD columns (use with SP-014 Nut), Kel-F
SP-026	Pressure-Testing Plug, 10-32 threads
SP-030	Tubing, PEEK, green, 1/16" OD x 0.030" ID, priced per foot
SP-046	Tubing, 316 stainless steel, 1/16" OD x 0.020" ID x 10cm long
SP-050	Three-Way Valve with bottom vent, SS316
SP-051	Port Adapter, 1/16" OD tube x 1/8" NPT, straight, SS316
SP-052	Port Adapter, 1/16" OD tube x 1/8" NPT, 90° angle, SS316
SP-055	Tubing, 316 stainless steel, 1/16" OD x 0.020" ID x 5' long
SP-056	Port Adapter Replacement Ferrule, for 1/16" OD tube, SS316
SP-057	Port Adapter Replacement Female Nut, SS316
SP-058	Pressure Gauge Tee, with two 10-32 fittings for 1/16" OD tubing, SS316
SP-085	Nanobaume Stir Bar, 5mm x 2mm, PTFE
SP-087	Pressure Gauge, 0-10,000 PSIG, stainless steel, non liquid-filled
SP-098	Nanobaume low-pressure Static O-ring, Viton (< 1000 psi)
SP-300-03	Nanobaume high-pressure Static O-Ring, ETFE with Inconel spring
SP-400-02	Nanobaume Cap Seal
VL-002X	Glass Vial, 2mL, 12x32mm, pack of 10

WARNING: PACKING AT HIGH PRESSURE CAN BE HAZARDOUS. DO NOT USE AT PRESSURE ABOVE RECOMMENDED LEVELS (9000 PSIG LIQUID, 3000 PSIG GAS). NOT FOR SFC (SUPERCRITICAL FLUID CHROMATOGRAPHY) USE. PURGE AIR FROM LINES BEFORE PACKING WITH LIQUID MEDIA.

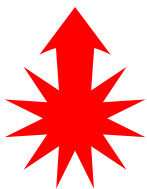
NOTE: WE OFFER NO GUARANTEE REGARDING COLUMN-TO-COLUMN PACKING REPRODUCIBILITY, COLUMN EFFICIENCY (THEORETICAL PLATES ACHIEVED), OR COLUMN SELECTIVITY OR TAILING FACTORS. CAPILLARY COLUMN PACKING IS, AT THIS STAGE, A HIGHLY EXPERIMENTAL TECHNIQUE.

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AUGUST 2007



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