

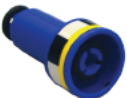


5.4.1 Available Spinners and Shuttles

| 5 mm Spinner | P/N & Spinner Type | Sample Temperature Range | Remarks |
|---|---|--------------------------|---|
| <p>NOTICE! (*) A-Type available with black marking inside is recommended for high quality spinning applications (use of precision NMR tubes is mandatory). For use with standard/economy sample tubes and non-spinning applications the variant without A is sufficient.</p> | | | |
|  | <p>H00177 (*) Spinner SB PLA (PCTFE) 5+2,5, called Kel-F Spinner</p> | -40 ... +120 °C | Standard spinner for 5 mm probes. |
|  | <p>Z179024 Spinner SB PLA (PCTFE) 5+2,5, called Kel-F Spinner with titan sticks</p> | -40 ... +120 °C | Modified standard spinner for 5 mm probes for ultra-high frequency (UHF) measurements, mandatory for fields > 1 GHz. |
|  | <p>Z169633 Spinner SB CERAMICS / PEEK 5 mm</p> | -150 ... +150 °C | NOTICE! Available since 2018. Advantage of better handling. |
|  | <p>H00804 (*) Spinner SB CERAMICS 5 mm</p> | -150 ... +180 °C | CAUTION! For HT RT probes this ceramic spinner needs to be used. This spinner is optimized for Wilmad sample, other samples can have larger tolerances requiring more force when inserted into the spinner which can lead to glass breakage. |
|  | <p>Z42516 (*) Spinner SB PLA (POM) 5+2,5</p> | 0 ... +80 °C | Not optimal for CryoProbes as the max possible flow is below the recommended one which leads to higher temperature gradients. Can be used for CryoProbes up to 80 °C with these restrictions. |

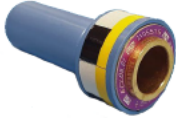
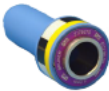
| 5 mm Spinner | P/N & Spinner Type | Sample Temperature Range | Remarks |
|---|--|--------------------------|---|
|  | Z105515 Spinner with violet label for clamping the tube 5 mm | -80 ... +150 °C | This spinner is a 5 mm shuttle for tubes used in the SampleJet. The sample will be introduced during operation. The insertion depth is 11 ... 20 mm. |
|  | Z179270 | -80 ... +150 °C | This spinner is a 5 mm shuttle for tubes used in the SampleJet. The sample will be introduced during operation. The insertion depth is 11 ... 20 mm. NOTICE! Mandatory for field ≥ 800 MHz. |

Table 5.4: 5 mm Spinner for RT, CP and CPP Probes



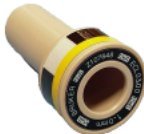

| 1 -1.7 mm Shuttle | P/N & Shuttle Type | Sample Temperature Range | Remarks |
|---|---|--------------------------|---------|
|  | Z106492 Shuttle POM to hold sample tube 1 – 1.7 mm | 0 ... +80 °C | |
|  | Z106558 1.7 mm plastic shuttle for SampleJet robot | -40 ... +150 °C | |
|  | Z107648 1 mm plastic shuttle 1 mm for SampleJet robot | -40 ... +150 °C | |

Table 5.5: 1 - 1.7 mm Shuttle for RT, CP and CPP

| 3 mm Spinner | P/N & Spinner Type | Sample Temperature Range | Remarks |
|---|--|--------------------------|---|
|  | Z45666 Spinner SB PLA (PTFE) 3 mm, called Kel-F Spinner | -40 ... +120 °C | Also used in 5 mm inverse CryoProbes when working with high salt concentrations |



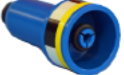
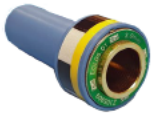
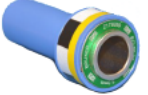
| 3 mm Spinner | P/N & Spinner Type | Sample Temperature Range | Remarks |
|---|--|--------------------------|---|
|  | Z179026 Spinner SB PLA (PCTFE) 3 mm, called Kel-F Spinner with titan sticks | -40 ... +120 °C | Modified standard spinner for 3 mm probes for ultra-high frequency (UHF) measurements, mandatory for fields > 1 GHz |
|  | Z49727 Spinner SB Ceramics 3 mm | -150 ... +150 °C | |
|  | Z45665 Spinner POM 3 mm | 0 ... +80 °C | Max. possible flow rate for CryoProbes is below the recommended one |
|  | Z105909 Spinner 3 mm green label for clamping the tube 3 mm | -80 ... +150 °C | This spinner is a 3 mm shuttle for tubes used in the SampleJet. The sample will be introduced during operation. The insertion depth is 11 ... 20 mm. |
|  | Z179269 | -80 ... +150 °C | This spinner is a 3 mm shuttle for tubes used in the SampleJet. The sample will be introduced during operation. The insertion depth is 11 ... 20 mm. NOTICE! Mandatory for field ≥ 800 MHz. |

Table 5.6: 3 mm Spinner for RT, CP and CPP



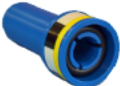
| 10 mm Spinner | P/N & Spinner Type | Sample Temperature Range | Remarks |
|---|--|--------------------------|---------|
|  | H00306 Spinner SB PLA (PCTFE) 10 mm, | -40 ... +120 °C | |
|  | H00805 Spinner SB Ceramics 10 mm | -150 ... +150 °C | |
|  | Z5293 Spinner SB PLA POM 10 mm | 0 ... +80 °C | |

Table 5.7: 10 mm Spinner for RT, CP and CPP


| 4 mm Shuttle | P/N & Shuttle Type | Sample Temperature Range | Remarks |
|---|---|--------------------------|--|
|  | Z175710 MAS-SHUTTLE 4 mm CPL. | -50 ... +80 °C | For automated exchange of MAS rotors with HRMAS and CPMAS iProbes. |

Table 5.8: 4 mm MAS Shuttle for HRMAS and CPMAS iProbes