

Narrow Bore High Performance Solids at 700 MHz, 800 MHz and 900 MHz

Data Sheet



Introduction

Narrow bore magnets fit liquids needs, but have been marginal for solids. This is because as much space in the bore as possible has been needed to fit large capacitors for each channel near the sample. These large capacitors have been necessary to handle the power requirements for short pulse widths. The challenge is even greater at ultra high fields, where bore space is at a premium.

By replacing the tune and match capacitors with tuning tubes, bore size is not a problem. High performance double and triple resonance probes can be supplied for probe sizes as narrow as 40 mm. Agilent can supply narrow bore solids probes for systems ranging from 400/54 to as high as 900/54.



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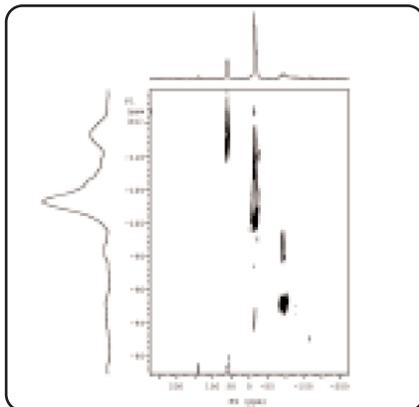
Features

The narrow bore probes are either HX double resonance or HXY triple resonance, Balun designs, with rotor diameters from 2.5 to 6 mm. They have performance comparable to wide bore probes with the exception of a reduced VT range (in order to protect the magnet bore). Narrow bore probes at these frequencies provide the ultimate in performance for both quadrupoles and for Bio-Solids. Decoupling field strengths in excess of 125 kHz and spinning rates of 30 kHz are routine.

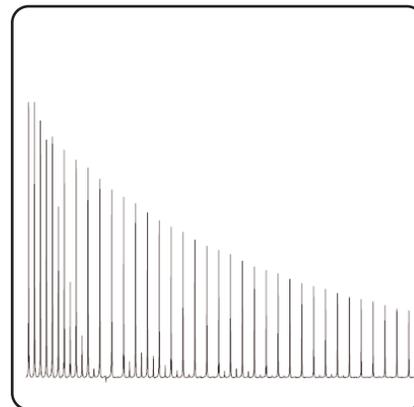
These probes are all 3.2 mm spinning module size. Other sizes (2.5, 4, 5, or 6 mm) are available on request. Pulse widths quoted here are for systems equipped with a nominal 700W ^1H amplifier and the appropriate number of 1000W broadband amplifiers.

Upgrades

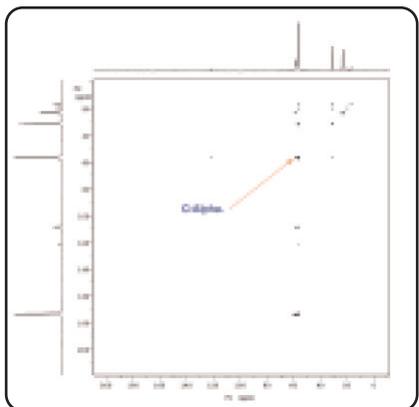
Agilent offers an upgrade kit for *Unityplus* and *Inova* spectrometers. This includes ^1H amplifier upgrade (if needed), VT unit upgrade, upper stack and spinning controller.



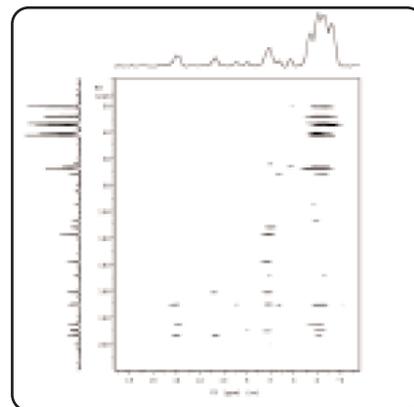
Rb MQMAS at 800 MHz



REDOR at 900 MHz



900 MHz NCA



HETCOR at 800 MHz

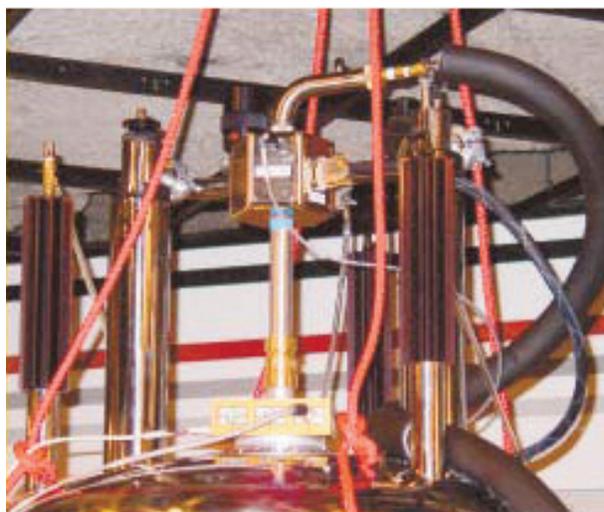
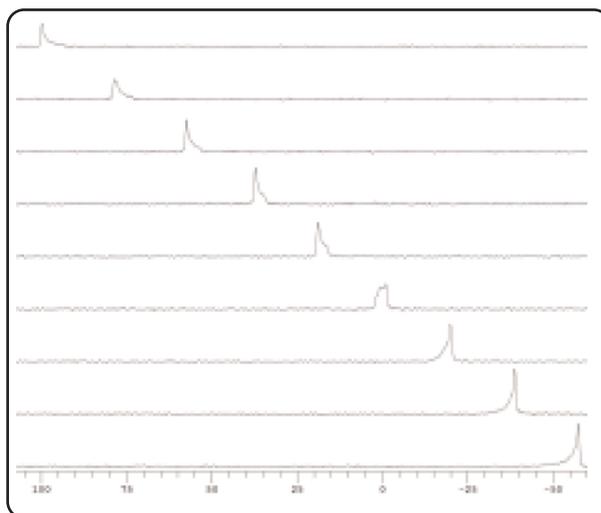
Components

As most narrow bore systems are used for liquids NMR, Agilent has designed the solids accessory and probes to be as compatible as possible with a mixed use environment. Power amplifiers are the same as those used for liquids, the VT controller is compatible with liquids probes, and the preamps are higher power versions of the standard ones. The solids VT upper stack is inserted through the middle of the liquids upper barrel, obviating the need to move the latter. The upper stack is heavily interlocked to guard against any chance of thermally stressing the magnet bore. VT gas flow is controlled through an intelligent gas panel, which senses whether liquids or solids VT gas is available. The spinning controller is the same as used for wide bore probes.

The result, as can be judged from the $\text{Pb}(\text{NO}_3)_2$ spectra on the left, is a well controlled sample temperature over the entire temperature range.

Currently Available Configurations

700 HX	800 HX	900 HX	800 HCN	
Tuning range	$^1\text{H}, ^{23}\text{Na} - ^{15}\text{N}$	$^1\text{H}, ^{23}\text{Na} - ^{15}\text{N}$	$^1\text{H}, ^{23}\text{Na} - ^{15}\text{N}$	$^1\text{H}, ^{13}\text{C}, -^{15}\text{N}$
^1H pw90	2.3 μ	2.3 μ	2.3 μ	2.3 μ
^{13}C pw90	3.5 μ	3.5 μ	3.5 μ	3.5 μ
VT range	-75 °C to + 100 °C	-75 °C to + 100 °C	-75 °C to + 100 °C	-75 °C to + 100 °C
S/N	210:1	270:1	320:1	200:1



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Product specifications and descriptions in this document are subject to change without notice.

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