

VT Calib

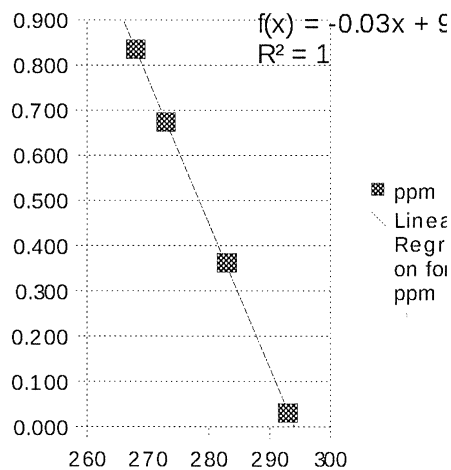
Kbr shift

$-0.0321 \text{ Shift} = -0.0321T + 9.42$

9.4200

5kHz

Temp (K)	ppm	Fit
293	0.031	0.0293
283	0.362	0.3499
273	0.673	0.6703
268	0.834	0.8306



Flow 800LPHTemp 273 Cooling #3

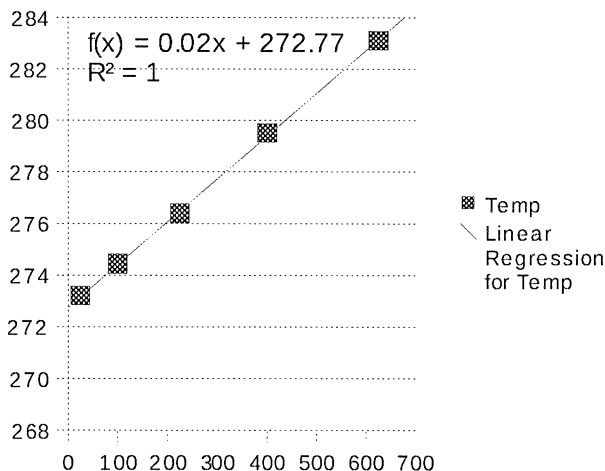
Temp	MAS	ppm	Temp
	5	0.66	273.2
	10	0.62	274.44
	15	0.56	276.39
	20	0.46	279.52
	25	0.35	283.11

(K)

Temp	deltaT
273.2	0.43
274.44	1.67
276.39	3.62
279.52	6.75
283.11	10.34

Shift = $-0.0321T + 9.42$

MAS^2	Temp	deltaT
25	273.2	0.43
100	274.44	1.67
225	276.39	3.62
400	279.52	6.75
625	283.11	10.34



Temp
MAS

MAS	Temp
5	273.2
10	274.44
15	276.39
20	279.52
25	283.11

1.9 mm Bruker MAS Pressure Table

08/05/16 (Installation)

Rotor H12832 (13.1 uL)

Sample: U-13C, 15N Ala/Ada 1:1 (10.1mg)

Note: Inline filter @ Bearing side (not bearing sense)

No VT Bearing (mbar)	Bearing Sense (mbar)	Drive (mbar)	MAS (Hz)	MAS stability	Note
511	484	33	5,000	+3	VT 200L
636	609	96	8,000	+5	
718	691	144	10,000	+2	
933	904	322	15,000	+5	
1,882	1,856	629	20,000	+5	VT 600L
1,884	1,856	642	20,000		VT 1200L
2,282	2,253	971	25,000	+3	VT 1200L
3,073	3,047	1,948	30,000	+5	
3,158	3,124	2,333	38,000		
3,158	3,127	2,587	40,000	+5	

Spinning unstable
with more VT air

Frame cooling ON

Changing X/Y frequency combination in triple resonance mode

The following exchangeable insert are included:

Insert		X-range	Y-range	Comment
HZ07717	$^{13}\text{C}/(^{15}\text{N}-^2\text{H})$	100,6 MHz	40,5-61,5 MHz	short circuit switch position "Low", Fig. 3 Insert mounted, Fig. 2

To change an X/Y-frequency combination:

1. Unscrew (but don't remove) 4 screws at the flange of the shielding tube and remove it.
2. Replace the installed exchangeable insert by the desired one: Remove the fixing slotted nut (Fig2) and the insert consisting of a capacitor and a solenoid coil.
Attention: Do not touch the coil! Install the new insert. Do not tighten the screws too much.
For positioning see photograph (Fig.2)
3. To operate in double resonance mode (^1H and X-channel only) remove the exchangeable insert. In case of operating double resonance experiments in the upper X-range ($^{13}\text{C}-^{31}\text{P}$) it is necessary to set the **short circuit switch** to the „High-range“ -position.
For this purpose lift the rod a bit, turn it clockwise 90° and lock it.
4. In the other case X/Y-inserts like $^{13}\text{C}/(^{15}\text{N}-^2\text{H})$ or double resonance experiments in lower X-range set this **short circuit switch** back to the „Low-range“-position (now turn the rod counterclockwise by a quarter turn).
Moreover the input of the third channel not used has to be terminated by a 50 Ohm impedance.
5. To operate ^{15}N in double resonance mode you have to shunt a capacitor of 47 pF (provided) to the X-Tuning-Capacitor (Fig.1). Additionally, set the short circuit clamp to "Low-range".
6. Slide on the shielding tube and lock it.
7. First tune and match ^1H , then X and at last Y-channel. Repeat this procedure for fine tuning.

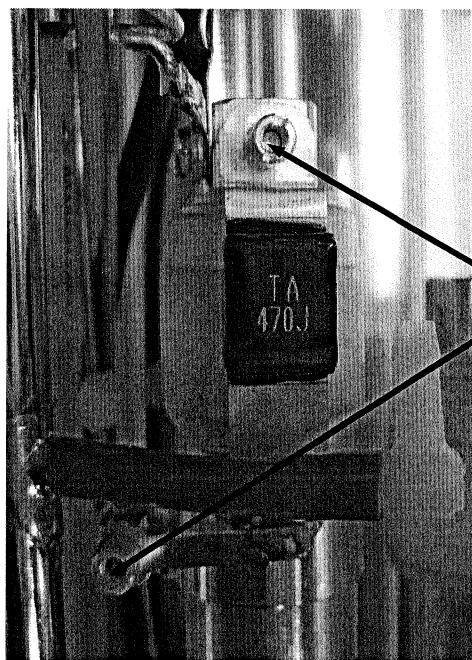


Fig. 1: shunt a capacitor (47pF)

Fixing
Slotted nut

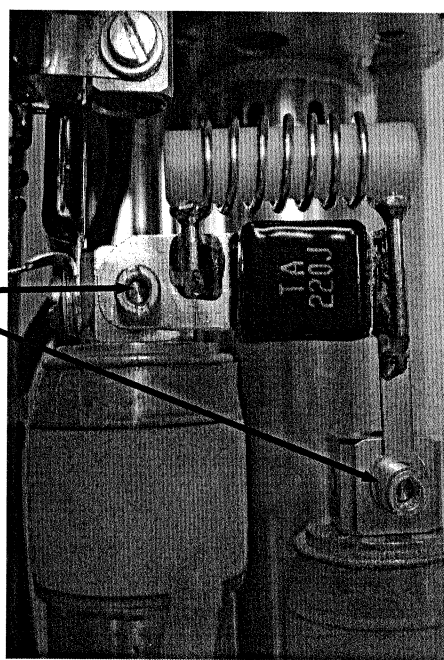


Fig. 2: Insert (HZ...)

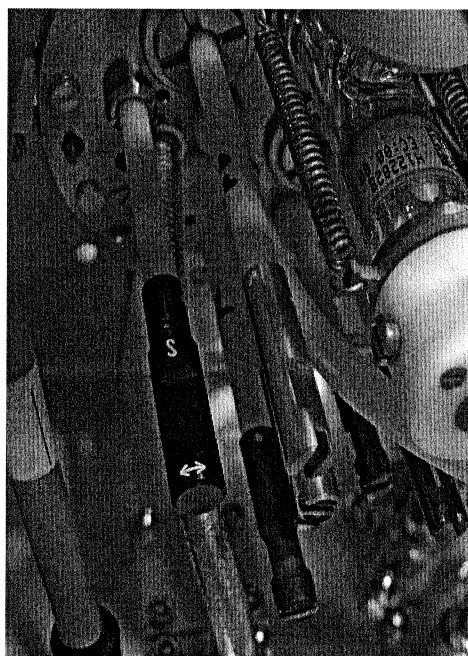


Fig. 3: *short circuit switch*

TEST REPORT

for MAS probes

(Filled from probe producer)

Part-/Serialnumber	H139079 / 0004
Probe Type	MASDVT 400W1 BL1.9 X/Y/H
Ordernumber/Customer	6054519 /10179427 / University of Illinois Chicago

Justage Magic angle	Test EJECT Rotor (20x In/Out)	Test spinning Rotor (Hz)	Test spinning Voltage	Memorize PICS Data	Test Solderings	Test Mechanics	
OK		46000	2,0V	OK	OK	OK	

Notes	
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Date (Probe ready for NMR test):

02.07.2015

Signature (Producer):

MIGA

NMR - Endtest

(Filled from NMR - Test person)

Nucleus	Rf-field (kHz)	90 dgr Pulse (usec)		Power at Probe (Watt)	Stability test	Sensitivity		CP-Power at probe (Watt)		LW.KBr (Hz)	
		Spec's	passed			Spec's	passed	plw12	spw0	optim.	diff
79Br	125		OK	110						OK	OK
1H	150,1	1,666	OK	36							
13C*	147,1	1,7	OK	160							
13C	100	2,941	OK	65	OK	140	OK	32	16,2		
15N*	100	2,5	OK	375							
15N	75	3,333	OK	205	OK	24	OK	32	16,2		
31P*	156,2	1,6	OK	72							
31P	125	2,631	OK	44	OK		OK	32	28		

13C Resolution (Hz)	7	OK		Decoupling	1,2kHz /250ms
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Notes	* - shortest pulses
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Probe Release

YES	X
NO	

Date

07.07.2015

Signature

ALSC



NMR Probe Department

KA Order No.	6054579
Ext. Order No.	10179427
Destination	
Customer	
tested by/date	MIG, A / 02.07.15
delivered/date	

PROBE SERIES : HP WB 73

PROBE : PH MASDVT 400WB BL1.9 X/Y/H

PROBE is identified by stamped in production no.:
Any inquiry should refer to this number.

HF channel: frequency/ MHz; nucleus

XF channel: low frequency/ MHz; nucleus

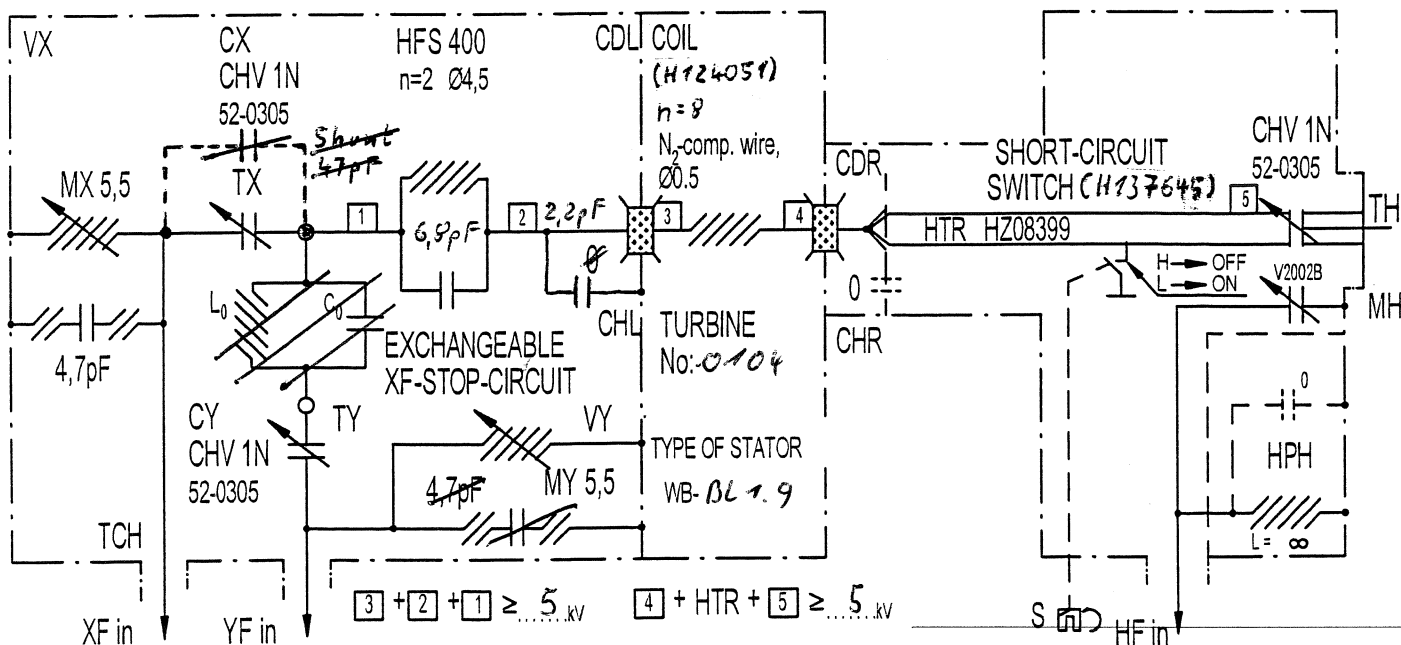
XF channel: high frequency/ MHz; nucleus

Exchangeable stop-circuit; nucleus /MHz/p.no.

H139079 / 0004 /		
400,134		¹ H
15A	40	X-range
31P	163	
XF		
YF		

Circuitry with detailed components:

~~Triple~~ Double resonance mode



channel	X	X
f ₁ /MHz		189,4
f ₂ /MHz		96,0
nucleus		13C 31P
Q _m		75 98
Δf _d /MHz		2,4 4,9
HX1, HY1 /dB		40 43
XY1 /dB		

Data of stop circuit:
C₀: pF
L₀: turns
di =

nucleus	¹ H
Transmission line	1/2
Q _m	289
Δf _d /MHz	3,5
f ₁ /MHz	436,0
f ₂ /MHz	381,0



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PROBE SERIES : HP WB 73

PROBE : PH MASDVT 400WB BL1.9 X/Y/H

PROBE is identified by stamped in production no.:
Any inquiry should refer to this number.

HF channel: frequency/ MHz; nucleus

XF channel: low frequency/ MHz; nucleus

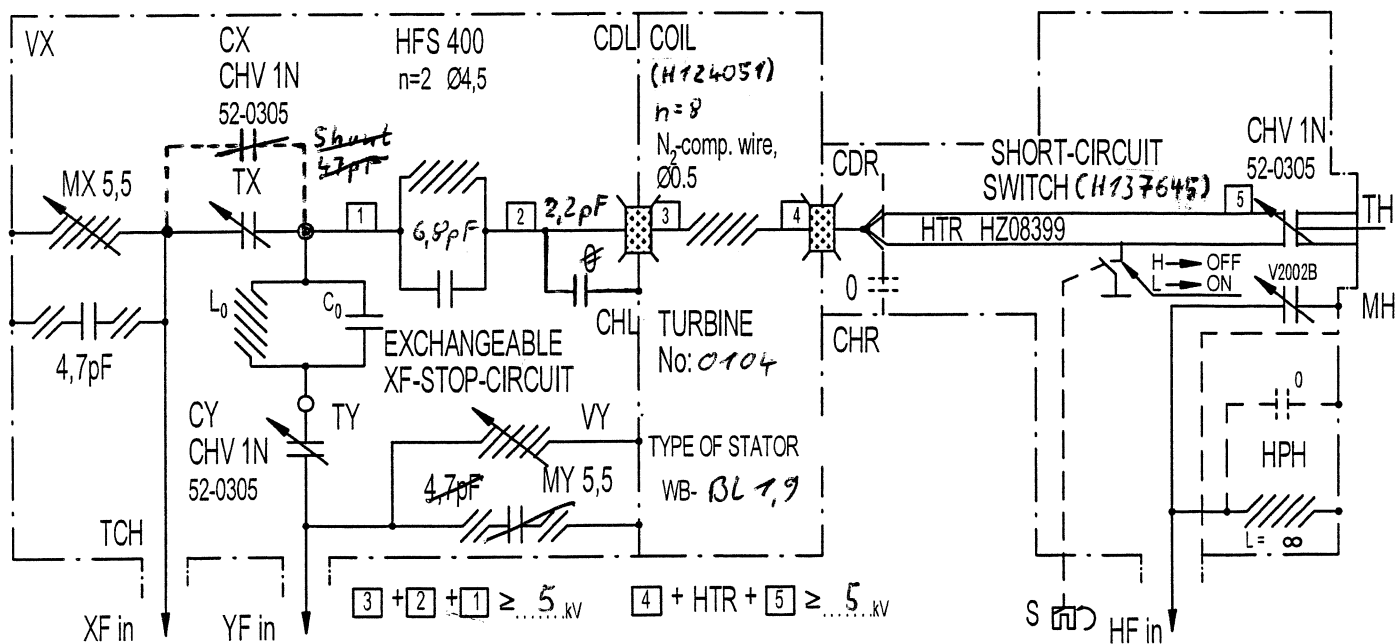
XF channel: high frequency/ MHz; nucleus

Exchangeable stop-circuit; nucleus /MHz/p.no.

H139079 / 0004 /	
400,134	¹ H
	X-range
	H207717
XF	13C 100.6
YF	15N-2H 400-615

Circuitry with detailed components:

Triple/Double resonance mode



channel	X	Y
f ₁ /MHz	110.0	81.0
f ₂ /MHz	79.0	36.0
nucleus	13C 15N	2H
Q _m	103 60	74
Δf _x /MHz	1.0 0.5	0.8
HX1, HY1 /dB	32 40	40
XY1 /dB	-	30 30

Data of stop circuit:
C₀: ...2.2... pF
L₀:7 turns
di =6

nucleus	¹ H
Transmission line	1 / 4
Q _m	274
Δf _x /MHz	3.9
f ₁ /MHz	
f ₂ /MHz	