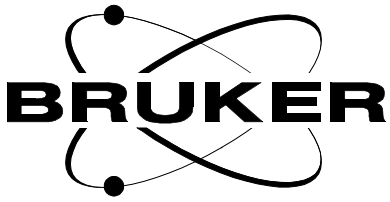

AVANCE Wiring

AVANCE 2 Bay Console
User Manual

Version 005

BRUKER

The information in this manual may be altered without notice.

This manual was written by

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Desktop Published by

Stephane Kreiss

Rheinstetten, Germany

P/N: Z31228
DWG-Nr: 899005

Contents

Contents

Safety Considerations 1

CE Safety Information 1.1

The Spectrometers that are referred to in the Declaration's of Conformity consist of the following components:

Two Bay Console (refer to figure 4.1 for inside components)

HPPR (preamplifier)

BSMS Keyboard

Shim System and Probehead

These Declaration's of Conformity do ***not*** refer to the following components:

Magnet

NMR Station (Silicon Graphics) with their peripherals.

If present: Temperature Unit (when in it's own case)

GREAT Unit (when in it's own case)

MAS Unit

Sample Changer

Power Requirements 1.2

The console can be used with a single phase or triple phase mains supply.

Please refer to the Site Planning Manual for further information.

Details of the wiring for the mains supply can be found in figures 4.2 and 6.1 of this manual.

➪ ***THE CONNECTION OF THE TWO BAY CONSOLE TO THE MAINS POWER SUPPLY MUST BE CARRIED OUT BY SPECIALLY TRAINED TECHNICIANS!!!***

Important Safety Considerations *1.3*

ONLY <u>TRAINED PERSONNEL</u> SHOULD POWER AND OPERATE THE INSTRUMENT!!!

Standard Operation

For standard operation of the console, the console doors and the rear panel must be closed to prevent Electromagnetic Interference.

Removing the Rear Panel

To remove the rear panel, loosen the two quick-release screws.

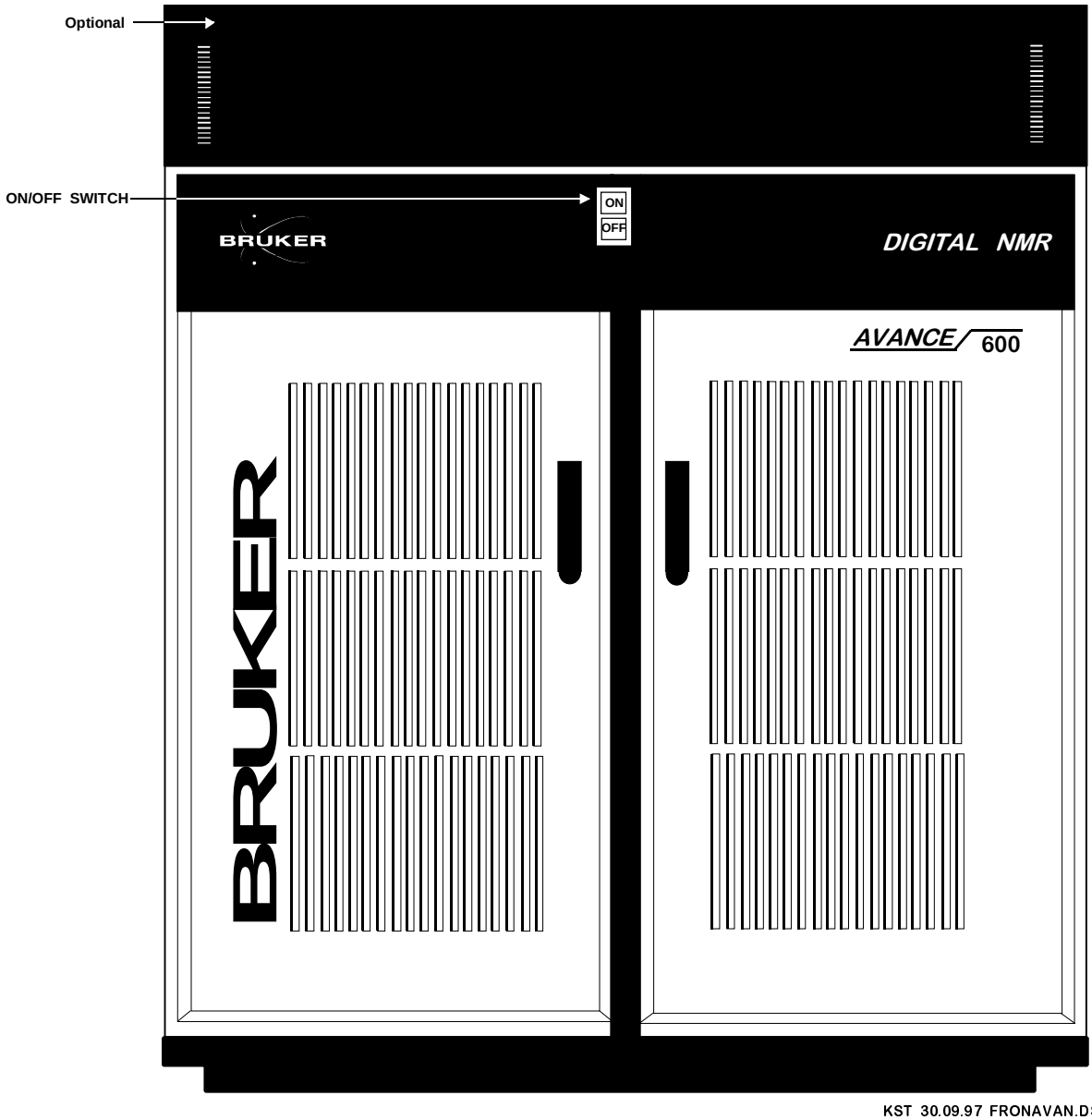
Disconnect the cable to the fan (inside).

Caution: Beware - the fan in the rear panel is still running!!!

Caution: Hold onto the rear panel tightly to prevent it from falling over, or on your feet!!!

Switching the Console ON/OFF 1.4

Figure 1.1. Location of the ON/OFF Switch for the Console



Location of the Console Type Shield 1.5

The shield showing the console type, is located inside the console on the top right front corner as you look into the console with the doors open (see the figure below).

Figure 1.2. Location of Console Type Shield

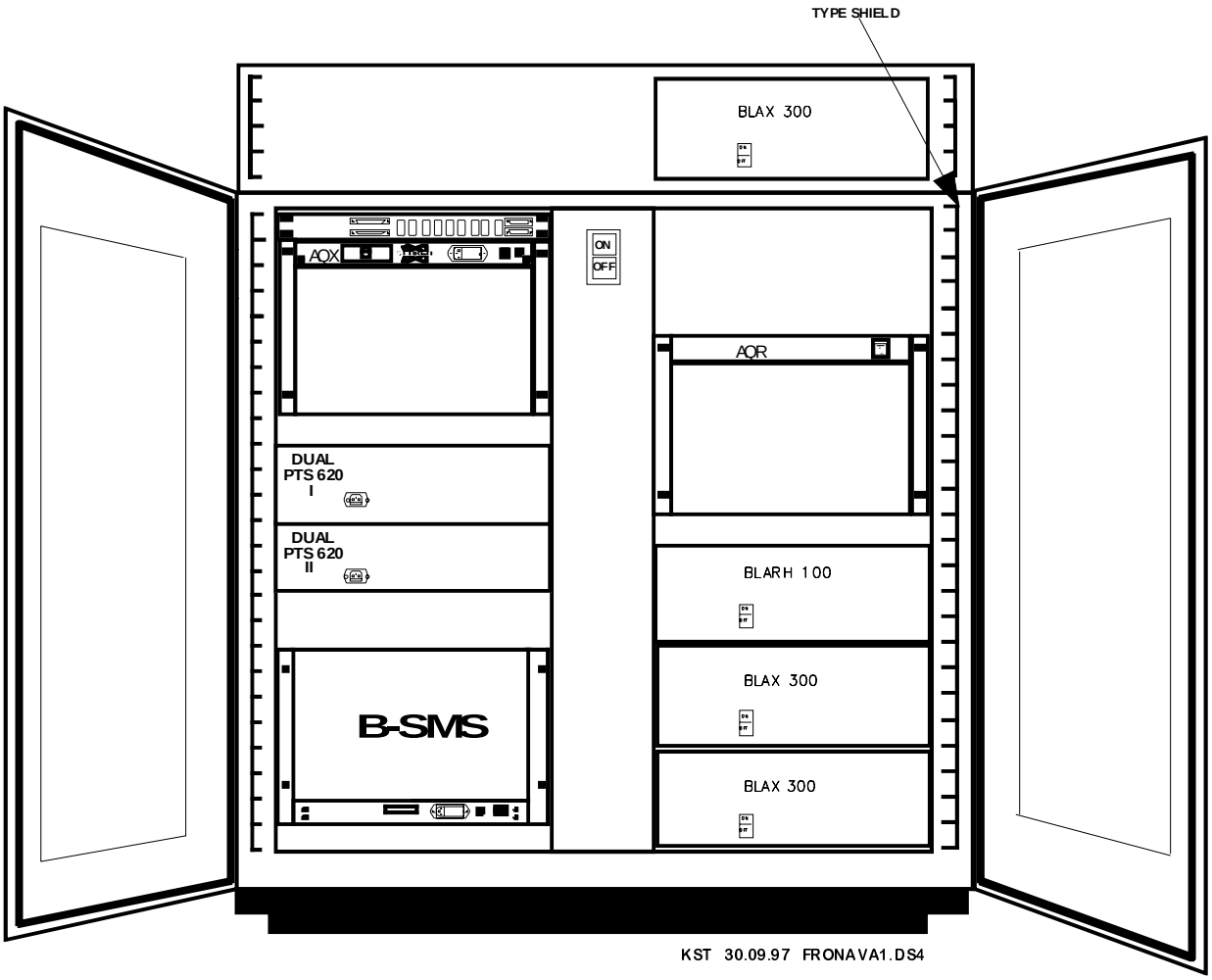
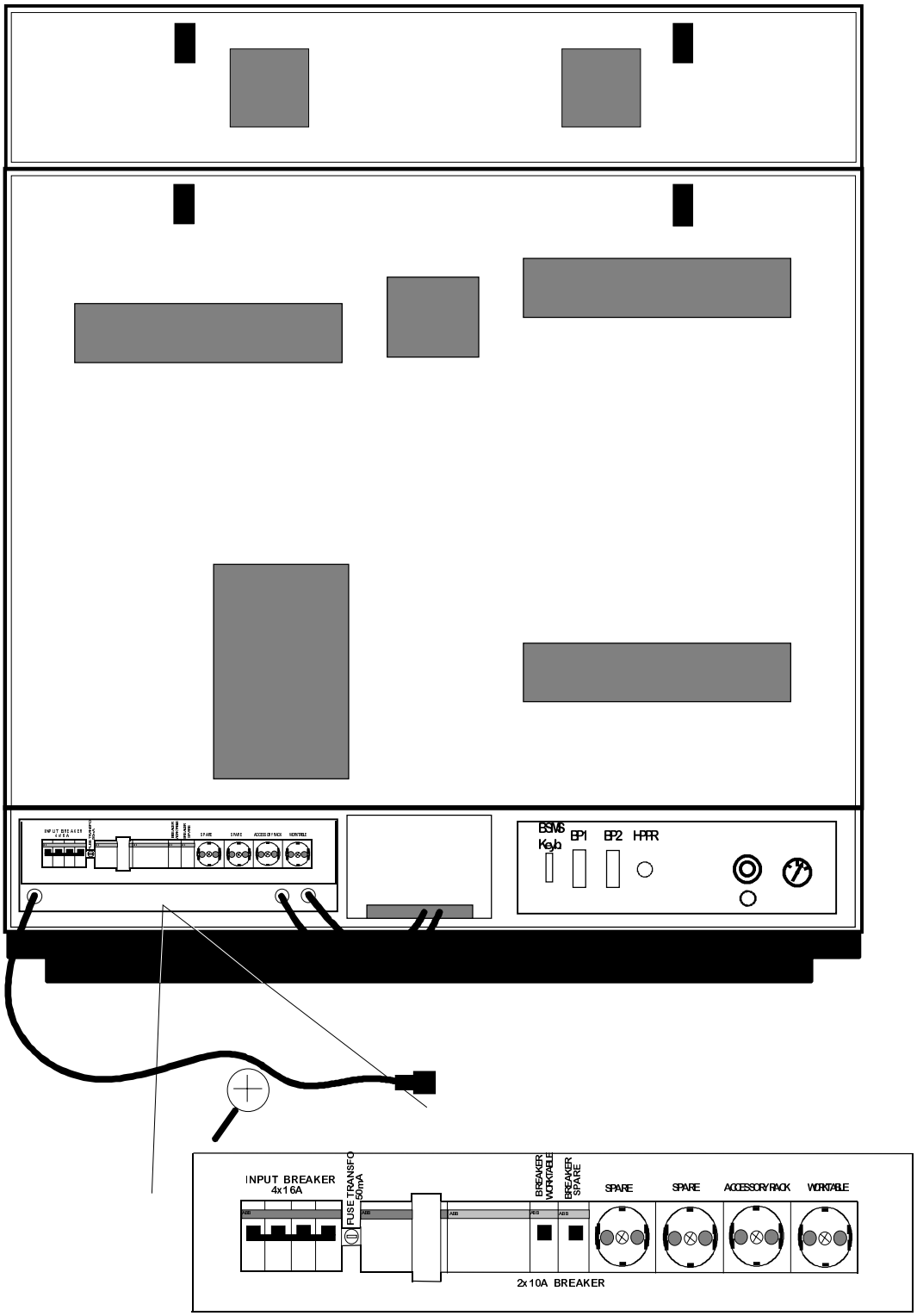


Figure 1.3. Location of the Fuses in the Console



BLOC PROTECTION 230V

KST 30.09.97 REARAVAN.DS4

Bruker Contact *1.6*

IF YOU SHOULD EXPERIENCE ANY PROBLEMS WITH THE CONSOLE, YOU MUST CALL YOUR NEAREST BRUKER SERVICE REPRESENTIVE. DO NOT TRY TO FIX THE PROBLEM YOURSELF!!!

Declaration of Conformity

2

CE

DECLARATION OF CONFORMITY

The undermentioned product

NMR Spectrometer AVANCE 2 Bay Console
H05130 & H04129

conforms to the main requirements
set by the commission for the
Harmonization of Regulations of the EU Member States
with regards to electromagnetic compatibility
(EMI 89/336/EWG) and safety (Low Voltage Electrical
Equipment: 72/23/EWG) regulations.

For the assessment the following norms were applied:

EMI: EN 55 011; EN 50 082-1

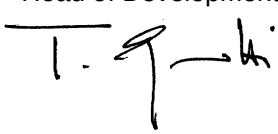
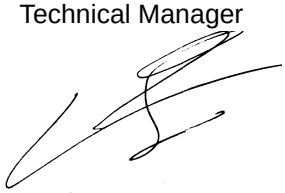
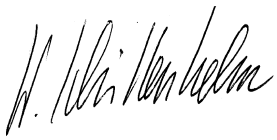
Safety: EN 61 010-1

Test report UNI KA 9445 & 9419
Documentation:Z35081 Docu Standard: AVANCE

Manufacturer's Name: Bruker Elektronik D-76287 Rheinstetten
SADIS F-67166 Wissembourg
SAG CH-8117 Fällanden

Declaration approved by:

Dr. Tonio Gianotti	Victor Ringeisen	Werner Schittenhelm
Head of Development	Technical Manager	Direction

September 1, 1997

Electrical Power Requirements 3

Introduction 3.1

The power supply for the 750 MHz system is controlled exclusively by the BMPC (Bruker Magnet Pump Control) unit. This unit is described separately in the manual entitled “Introduction to site planning for a 750MHz system“.

Table 3.1 lists the power requirements and power consumption of various AVANCE systems The power consumption quoted, includes the NMR station and graphics monitor and was measured using 2 amplifiers operating at maximum output in cw mode while using the printer plotter. This represents effectively the maximum power consumption possible for a standard AVANCE system. For systems fitted with additional amplifiers allow 300W for each additional amplifier.

A fuse or circuit breaker, 16A slow-blow must be installed on the mains supply (230V/50/60Hz single phase).

When planning the electrical power requirements of your site make provision for extra equipment which you may install e.g. Personal Computers, work stations air conditioning systems, etc.

.

Table 3.1. Power Requirements of Basic System (2 Channels)

System and Amplifiers	Mains Supply	Power Consumption (kW)	No. of Spare Electrical Outlets	Length of Mains Cable
Avance 2 bay with SE451 BLARH100 + BLAX300	230V 50/60 Hz / 16 A single phase or 230V/400V 50/60 Hz / 10 A triple phase	2.6	2	5,5m
Avance 2 bay with solide acc. BLAX1000 + BLAH1000	230V 50/60 / 16A triple phase	5,0	2	5,5 m
Avance 2 bay BLAXH50/100	230V 50/60 Hz / 16 A single phase	2.2	2	5.5 m
Imaging Cabinet	230 V / 50/60 Hz / 16 A single phase Power from AVANCE supply	2.1		

Each AVANCE cabinet comes supplied with four electrical outlets (230V/10A) which can be used to power standard ancillary equipment. Two outlets are designed for the work table (i.e NMR Station) and (optional) accessory cabinet. The other two outlets are then free. Table 3.2 lists the standard equipment and corresponding power source.

The NMR Station and accessory cabinet units should be powered directly from the AVANCE cabinet as this minimises grounding problems which might otherwise lead to artifacts. “Optional “means that the unit may be powered either from the AVANCE cabinet or from a separate supply.Table 3.3 lists the power requirements of other equipment which, because of their large power consumption, require power sources separate to that of the AVANCE cabinet.

Table 3.2. Console Powered Units

Unit	Power Source
NMR Station/Graphics Monitor	AVANCE Cabinet
Micro Imaging Cabinet	AVANCE Cabinet
Printer Plotter	Optional
Automatic Sample Changer	Optional

Table 3.3. Units That Require Separate Power Units

Unit	Mains Supply	Maximum Power Consumption
BCU 05	230V / 50/60 Hz / 16 A single phase	0.45 KW

CP MAS *3.1.1*

The power requirements of this unit will depend on the amplifiers that are used.The control unit itself will not use more than 100W.

Voltage stabilisers *3.2*

If line voltage fluctuations exceed -10% to +5% a voltage stabiliser must be used. Even if the fluctuations are well within these limits, the purchase of a line conditioner may prove to be a good investment. The lifetime of the various electrical components in the spectrometer will be lengthened when the supply is stabilised. When deciding on a stabiliser you should take note of the following:

1. Power Requirement: The stabiliser must be capable of delivering the total power requirements of the various units you wish to protect. A surplus capacity of at least 10% is recommended.
2. Remember to take consideration of future equipment that you may decide to install.

3. The stabiliser must of course be compatible with the input voltage, number of phases and A.C. frequency. Typically the stabilisers can cope with input fluctuations of 20%.
4. Output: The NMR units described in this manual normally use 230V/50-60Hz/ single phase with the exception of the High Power Cabinet which uses 400V/ 50-60Hz/triple phase.
5. The regulation accuracy of the output need be no greater than 1% for single phase and 2% for three phase.
6. Single phase stabilisers use saturated transformers to regulate the voltage and should have fast response times, typically 10-20 msec. Three phase stabilisers however use motors and have slower response times.A regulation speed of 15V/s is usually sufficient to overcome mains fluctuations in most countries.
7. Other considerations are lifetime, size, noise output and maintenance requirements.

Contact your local Bruker/Spectrospin office for advice on a voltage stabiliser suited to your particular system.

If ordering a stabiliser you should specify:

Input voltages.

Number of phases.

Special requirements e.g. output connectors, meters, housing etc.

Details of units and accessories that require protection.

UPS *3.3*

Where total interruption of supply occurs frequently, then the customer should consider installing a UPS (Uninterruptable Power Supply) linked to an automatic cut-in generator. This is particularly advisable when long-time experiments are to be run. While a total loss of power will not damage the spectrometer hardware, NMR data acquired immediately prior to a power cut and which has not been stored on the computer hard disk may be lost. The difference between UPS systems and a voltage stabiliser is that the UPS system contains a battery back-up pack which will maintain the power supply to the spectrometer for a limited period after a total loss of mains supply. Typically the battery back-up will last for up to 10 minutes at the rated power. This gives time for a generator to replace the mains power or for the spectrometer computer to be shut down according to the correct procedures. Additional battery packs which extend the back-up period to 30 minutes at the rated power are also available. As well as maintaining supply, the UPS system also serves as a line conditioner. Typical output voltages stability are 2% static and dynamic with frequency stability of 1%.

The current requirements of the UPS when recharging batteries (e.g. after a supply failure) is greater the normal. Typically a 7KWA UPS needs 45A during recharge and the supply must be able to cope with this size of current.

Contact your local Bruker/Spectrospin office for advice on a UPS system suited to your particular system.

NOTE:

1. The power supply to the spectrometer should be "clean" i.e. it should not share with air conditioners etc.
2. All mains earths in the lab should be connected together to avoid differences in earth potential. This will avoid problems when, for example, a P.C. powered externally is connected to the spectrometer via a RS232 link.
3. Some customers fit RCCB (residual current circuit breakers) to the spectrometer supply.These are designed to switch off the supply if there is an imbalance in the current in the live and neutral lines. If these are fitted to an AVANCE series spectrometer then they should be rated at 100mA. The lower value of 30mA commonly used is to sensitive for these spectrometers.

Console Configuration

4

Figure 4.1. Avance 2 bay console Front View

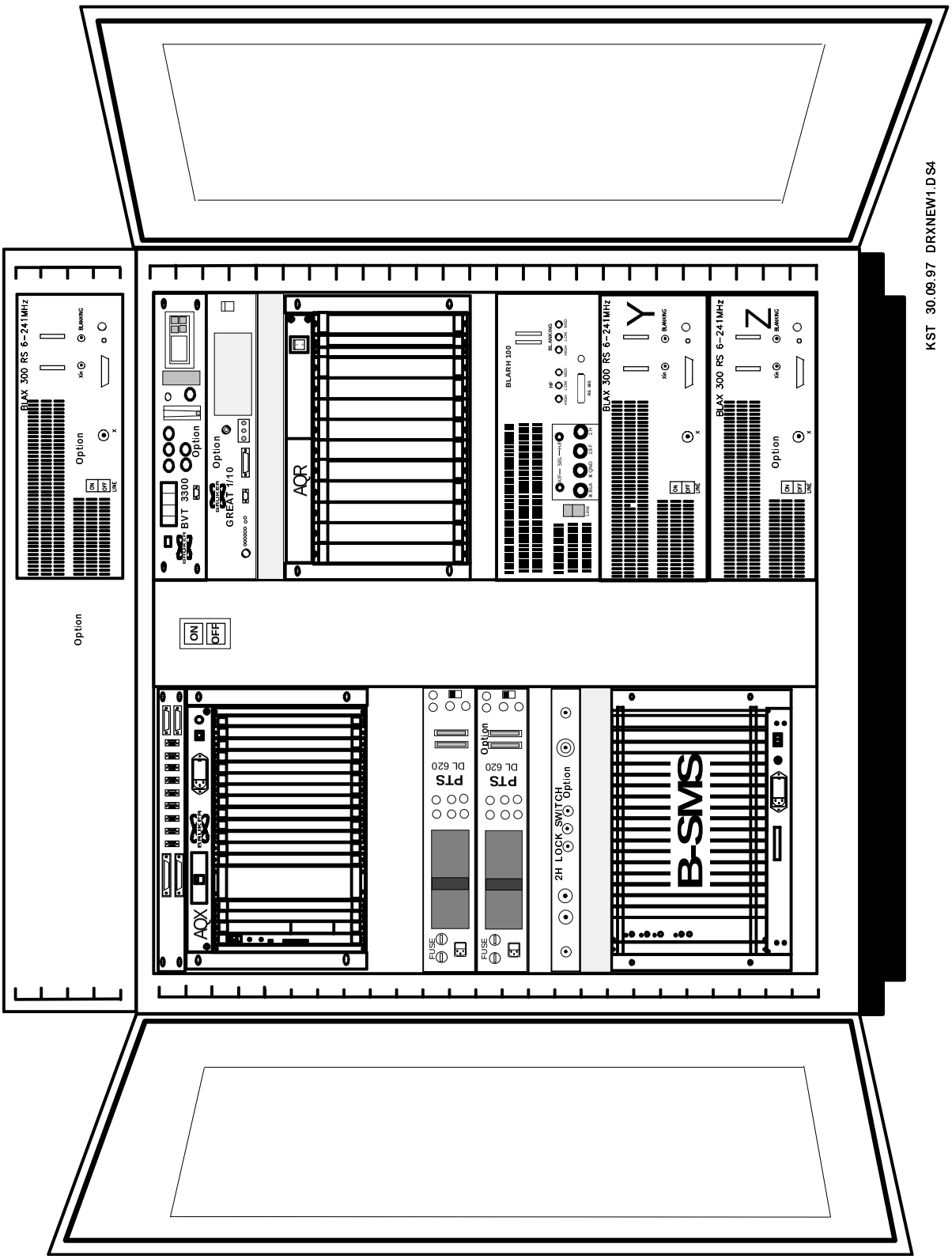
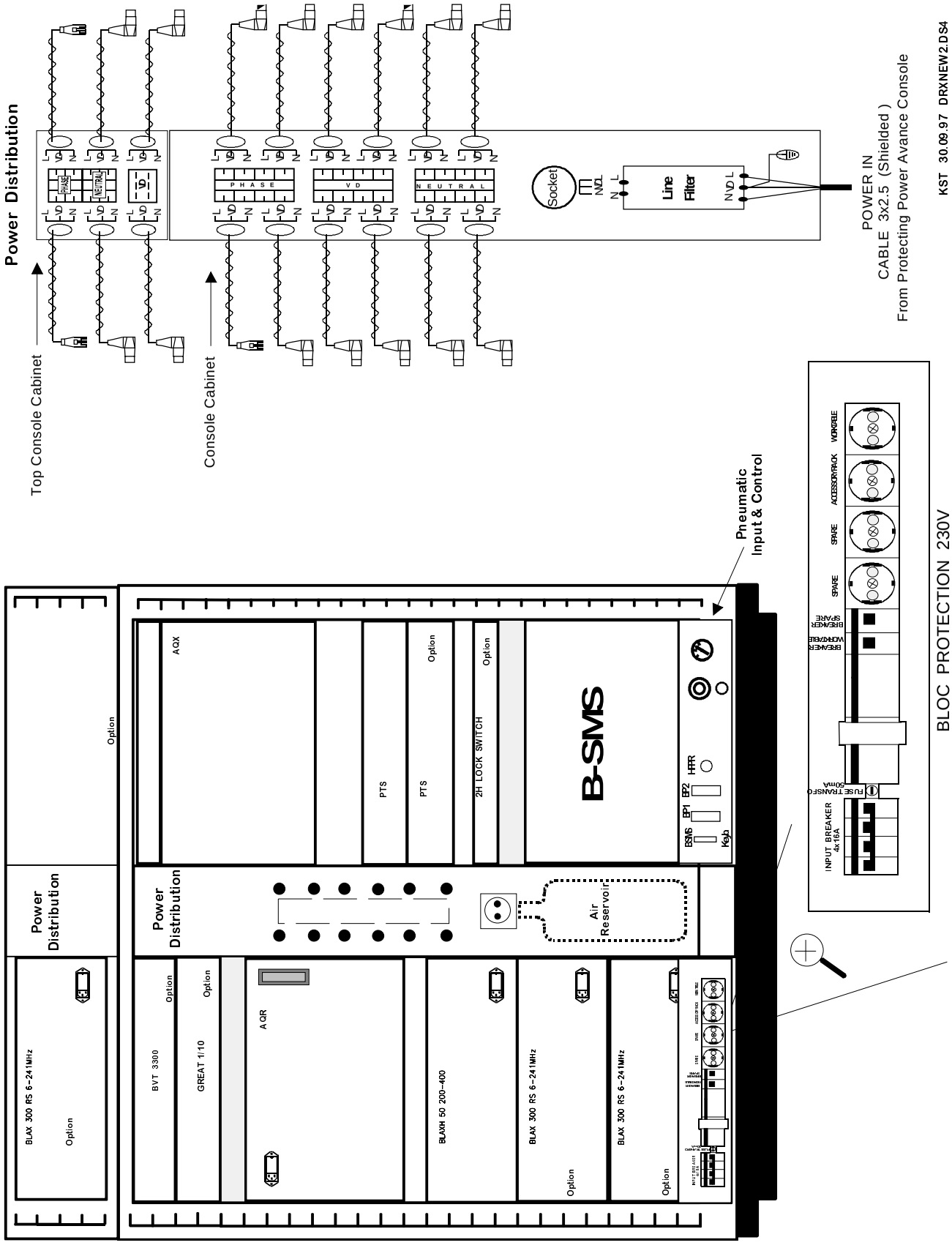
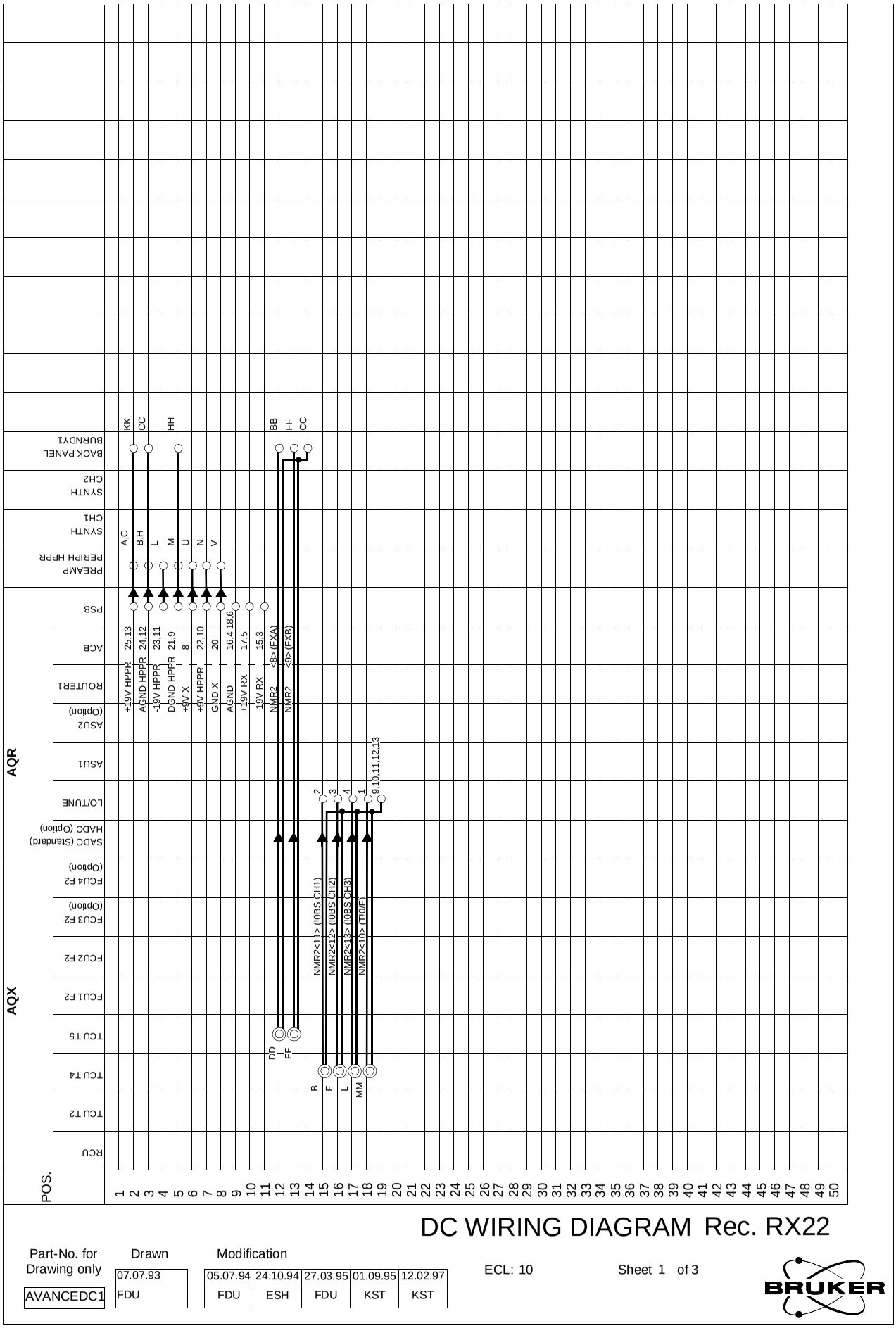


Figure 4.2. Avance 2 bay console Rear View



Internal Wiring 5

Figure 5.1. Avance 2 bay RX22 DC Wiring Diagram Page 1



DC WIRING DIAGRAM Rec. RX22

Part-No. for Drawing only	Drawn	Modification				
	07.07.93	05.07.94	24.10.94	27.03.95	01.09.95	12.02.97
AVANCEDC1	FDU	FDU	ESH	FDU	KST	KST

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Figure 5.2. Avance 2 bay RX22 DC Wiring Diagram Page 2

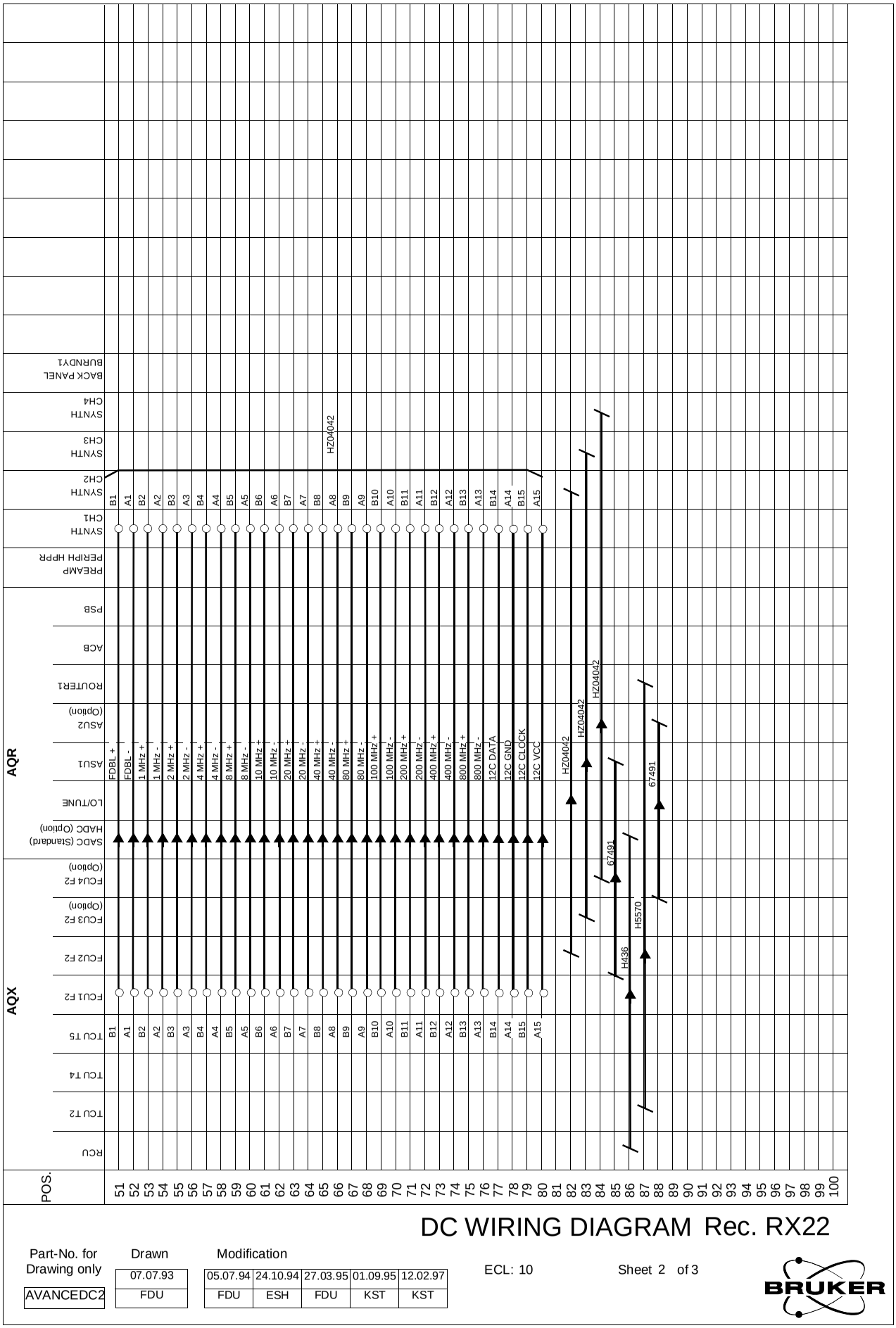


Figure 5.3. Avance 2 bay RX22 DC Wiring Diagram Page 3

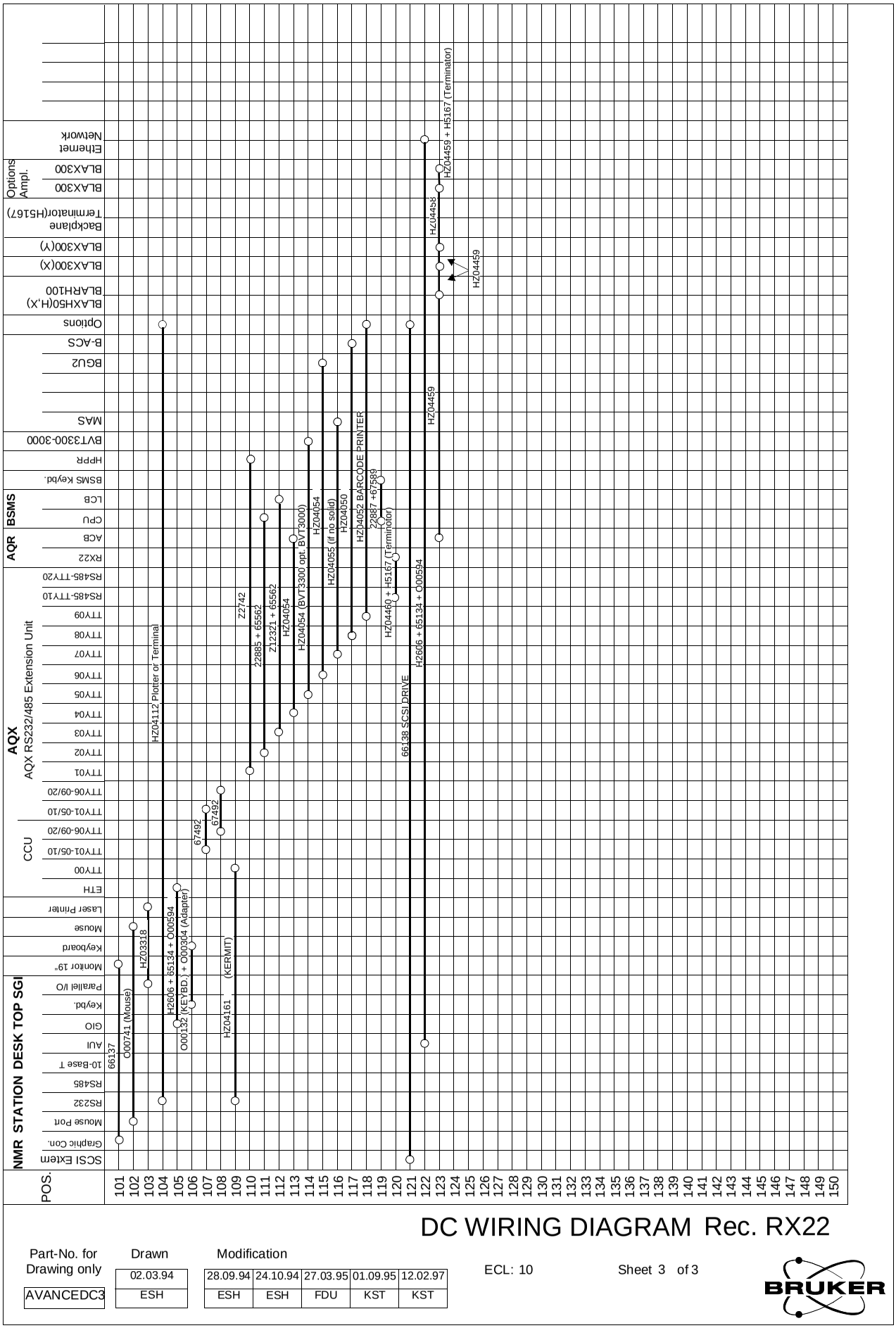


Figure 5.4. Avance 2 bay RX22 HF Wiring Diagram Page 1

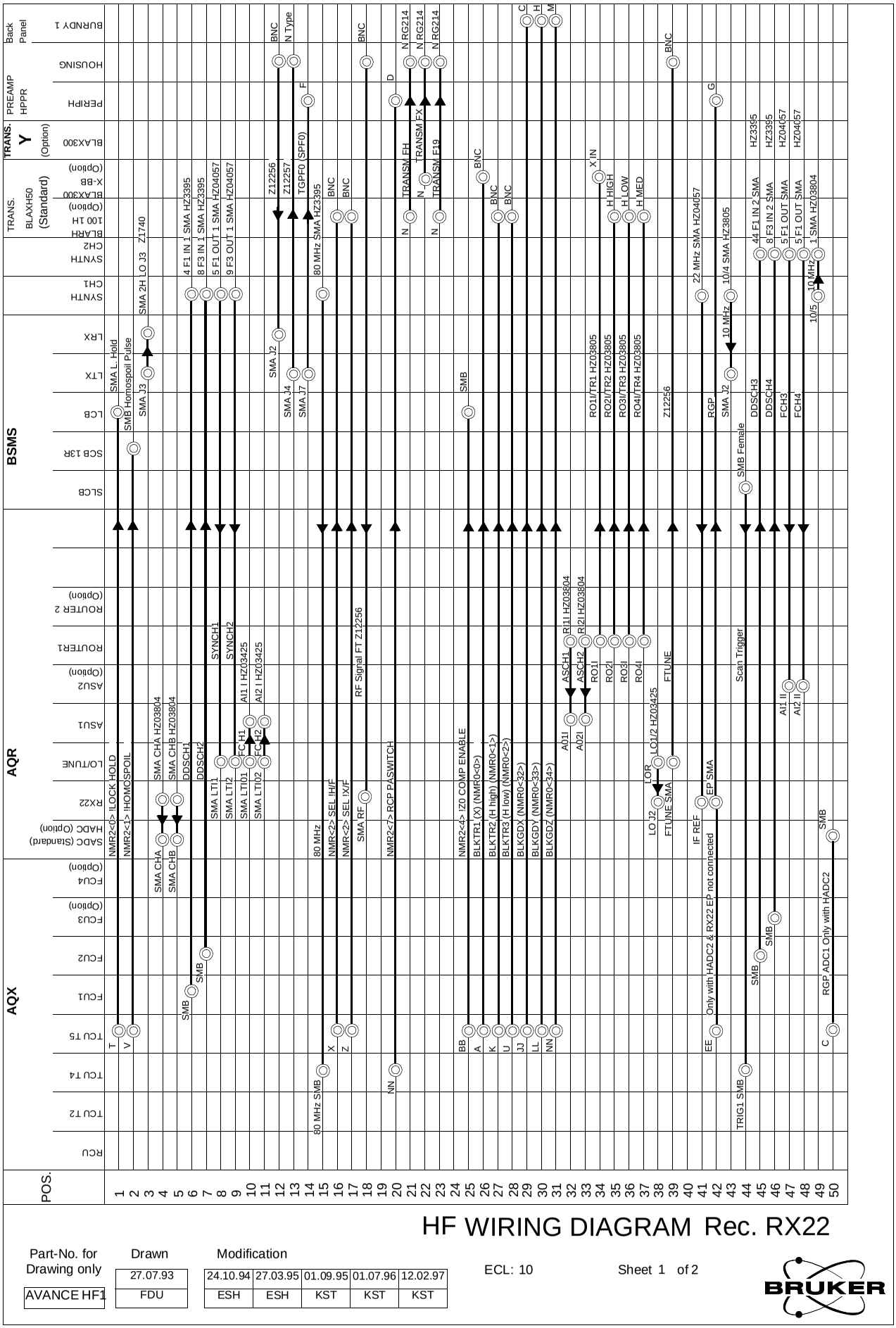


Figure 5.5. Avance 2 bay RX22 HF Wiring Diagram Page 2

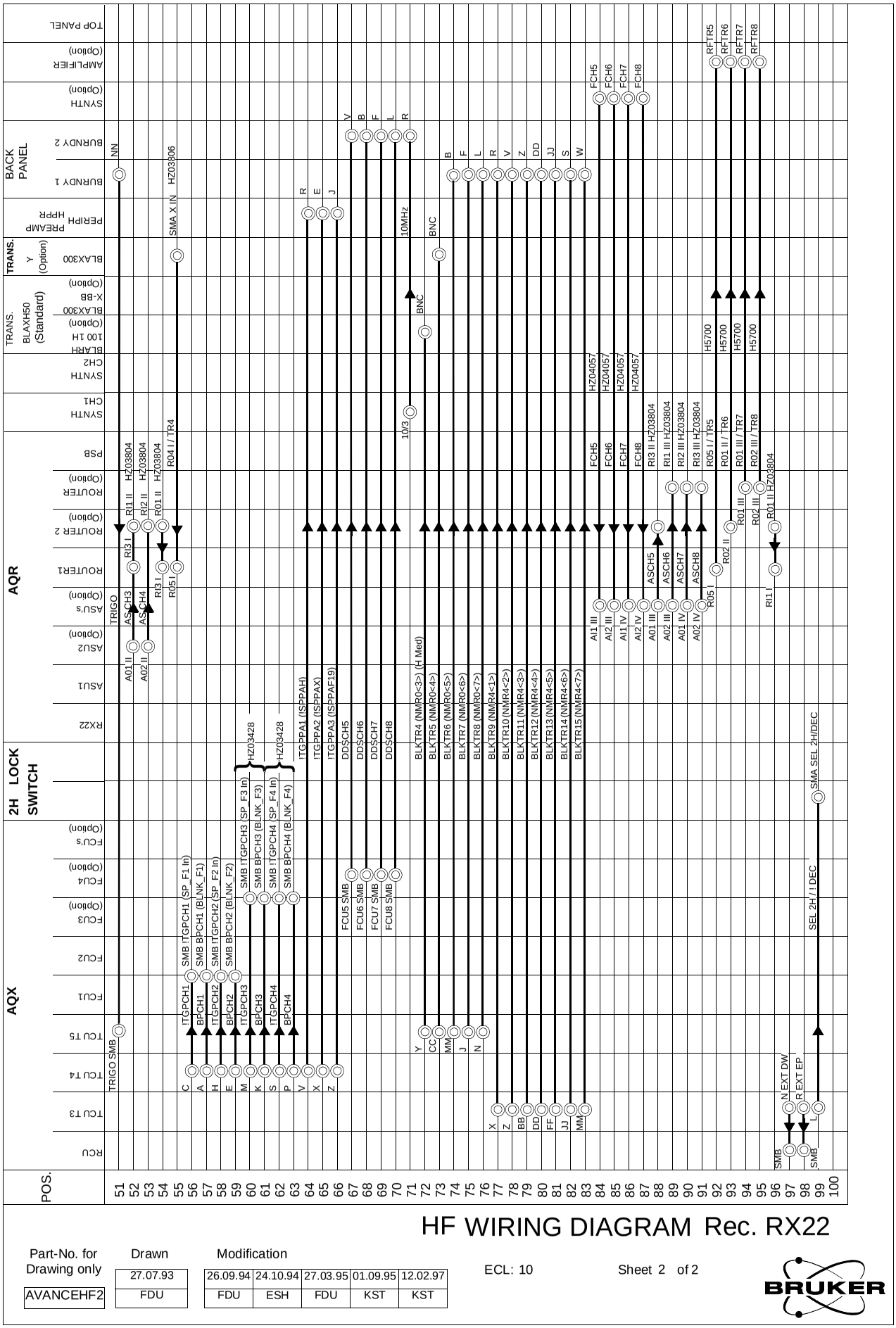


Figure 5.6. Backpanel Burndy1 & Burndy2 (RX22)

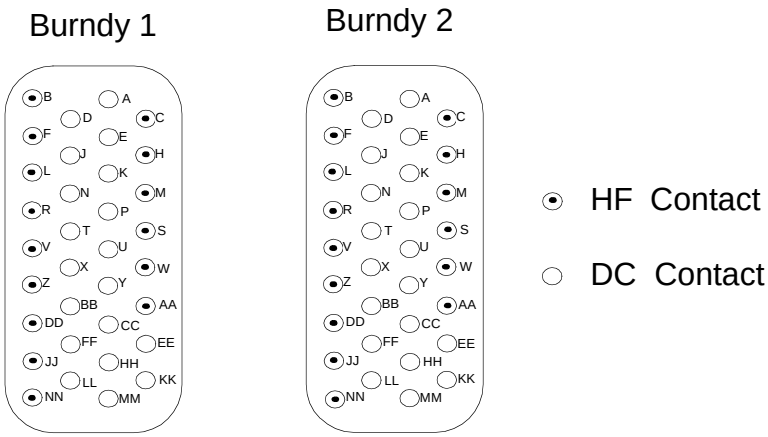
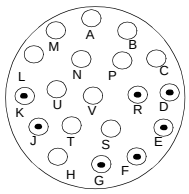


Table 5.1. Signal Name Burndy1 & Burndy2 (RX22)

	COAX CONNECTIONS	
PIN	BURNDY 1	BURNDY 2
B	BLKTR6(NMR0<5>)	DDSCH6
F	BLKTR7(NMR0<6>)	DDSCH7
L	BLKTR8(NMR0<7>)	DDSCH8
R	BLKTR9(NMR4<1>)	10MHz
V	BLKTR10(NMR4<2>)	DDSCH5
Z	BLKTR11(NMR4<3>)	
DD	BLKTR12(NMR4<4>)	
JJ	BLKTR13(NMR4<5>)	
NN	TRIG0	
C	BLKGDX(MNR0<32>)	
H	BLKGDY(NMR0<33>)	
M	BLKGDZ(NMR0<34>)	
S	BLKTR14(NMR4<6>)	
W	BLKTR15(NMR4<7>)	
AA	MIXCC(option)	

	DC CONNECTIONS	
PIN	BURNDY 1	BURNDY 2
D		
J		
N		
T		
X		
BB	NMR2<8>(FXA)	
FF	NMR2<9>(FXB)	
LL		
A		
E		
K		
P		
U		
Y		
CC	AGND HPPR	
HH	DGND HPPR	
MM		
EE		
KK	+19V HPPR	

Figure 5.7. Backpanel Periph. HPPR (RX22)



HF Contact

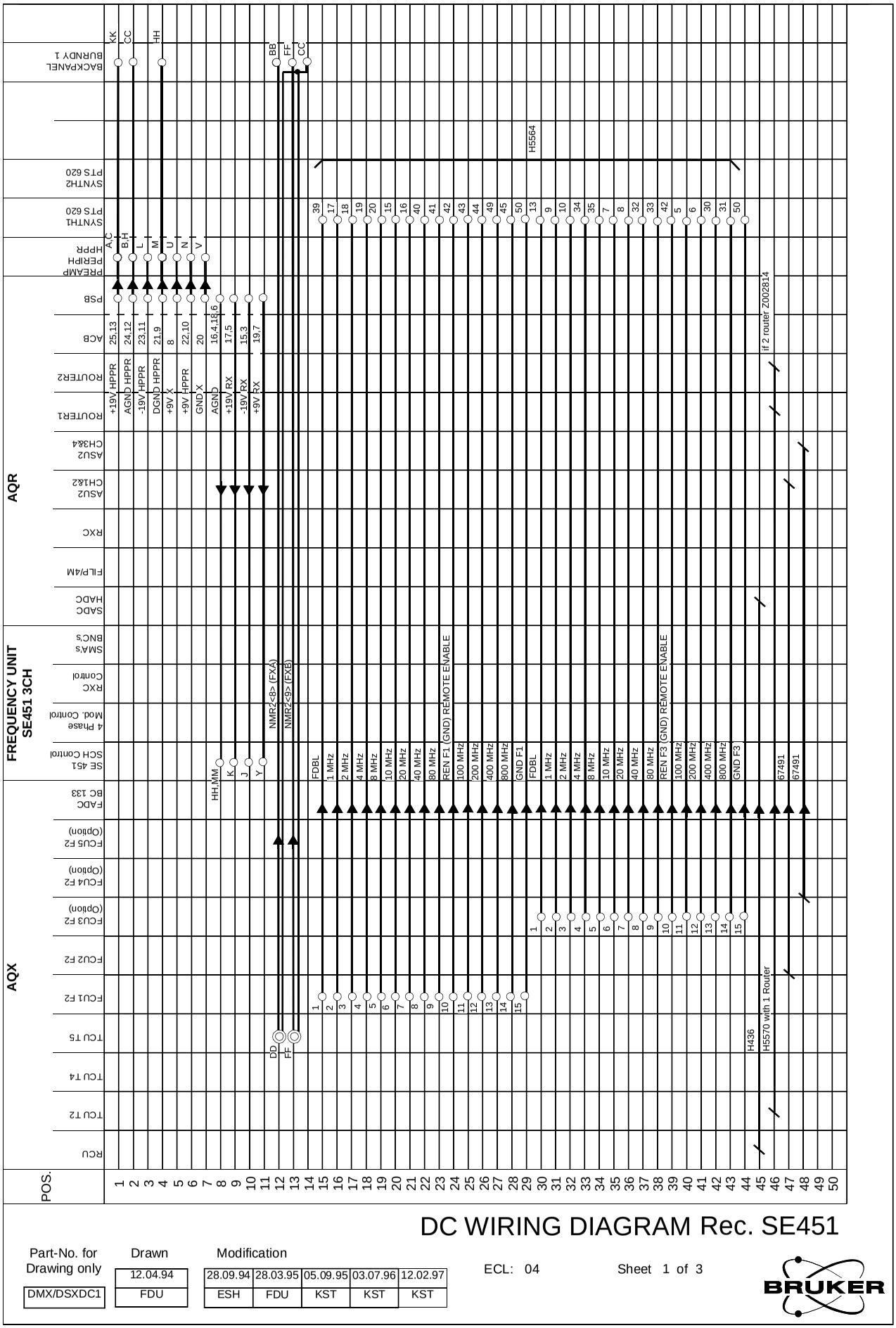
DC Contact

Table 5.2. Signal Name Periph. HPPR (RX22)

PIN	COAX Connections
D	NMR2<7> RCP Paswitch
E	TGPPA2 (SPPAX)
F	TGPF0 (SPFO)
G	RGP
J	TGPPA3(SPPAF19)
R	TGPA1(SPPAH)

PIN	DC Connections
A	+19V HPPR
B	AGND HPPR
C	+19V HPPR
H	AGND HPPR
K	
L	-19V HPPR
M	DGND HPPR
N	+9V HPPR
U	+9V X
V	GND X

Figure 4.3. AVANCE 2 bay SE451 DC Wiring Diagram Page 1



DC WIRING DIAGRAM Rec. SE451

Part-No. for Drawing only	Drawn	Modification				
	12.04.94	28.09.94	28.03.95	05.09.95	03.07.96	12.02.97
DMX/DSXDC1	FDU	ESH	FDU	KST	KST	KST

ECL: 04 Sheet 1 of 3

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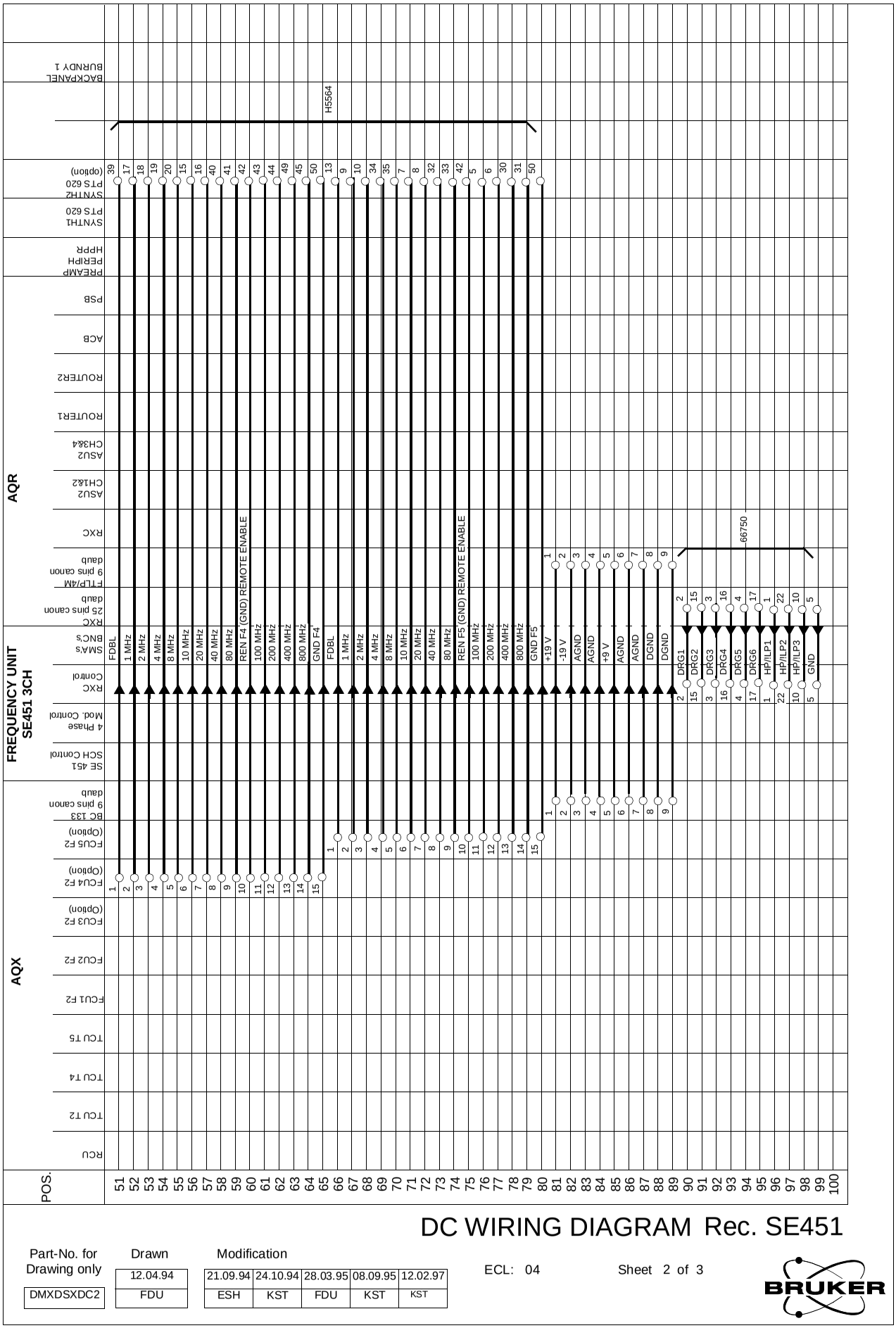
Figure 4.3. AVANCE 2 bay SE451 DC Wiring Diagram Page 2



DC WIRING DIAGRAM Rec. SE451

Part-No. for Drawing only	Drawn	Modification				
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	FDU	ESH	KST	FDU	KST	KST

ECL: 04 Sheet 2 of 3

BRUKER

Figure 4.3. AVANCE 2 bay SE451 DC Wiring Diagram Page 3

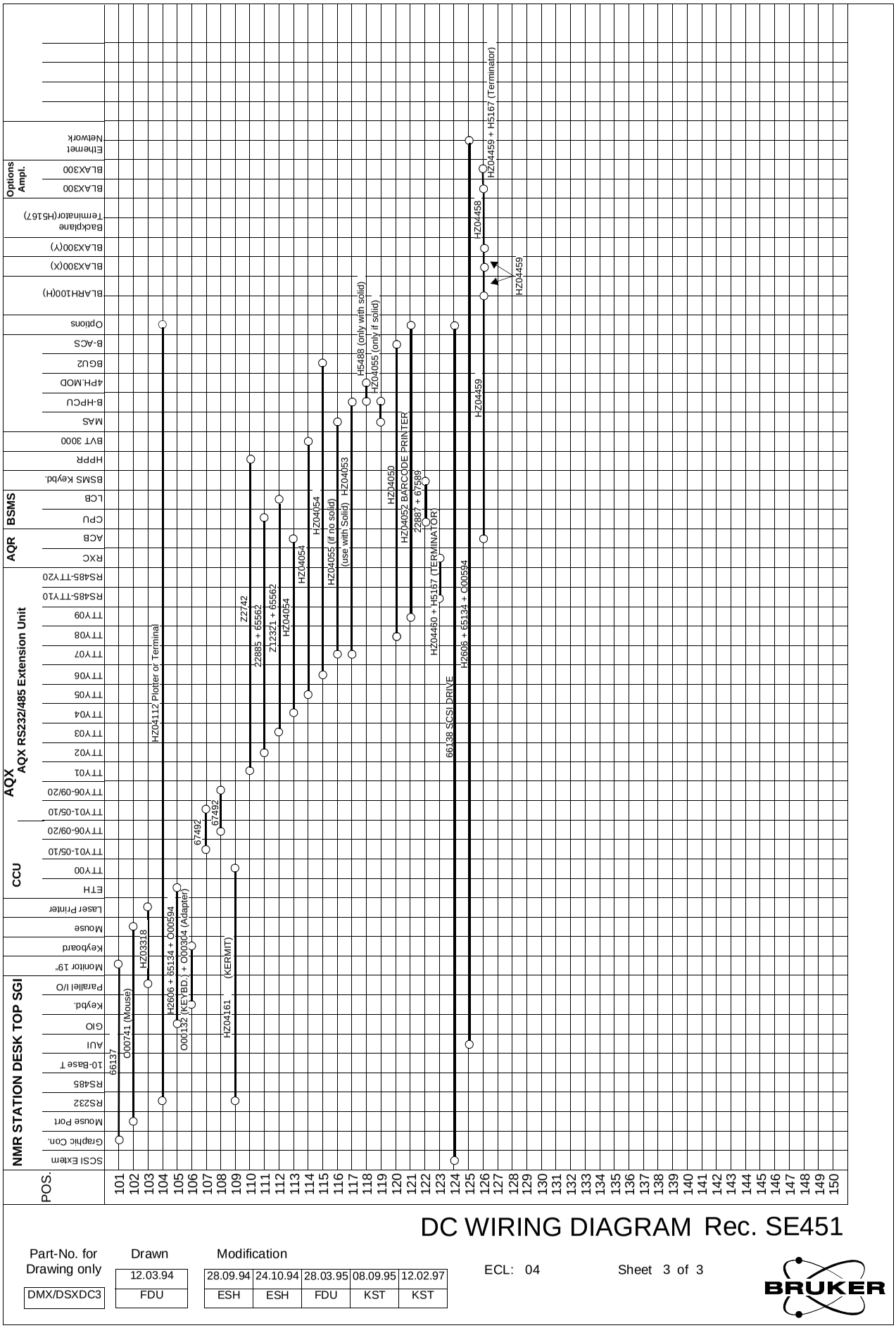


Figure 4.3. AVANCE 2 bay SE451 HF Wiring Diagram Page 1

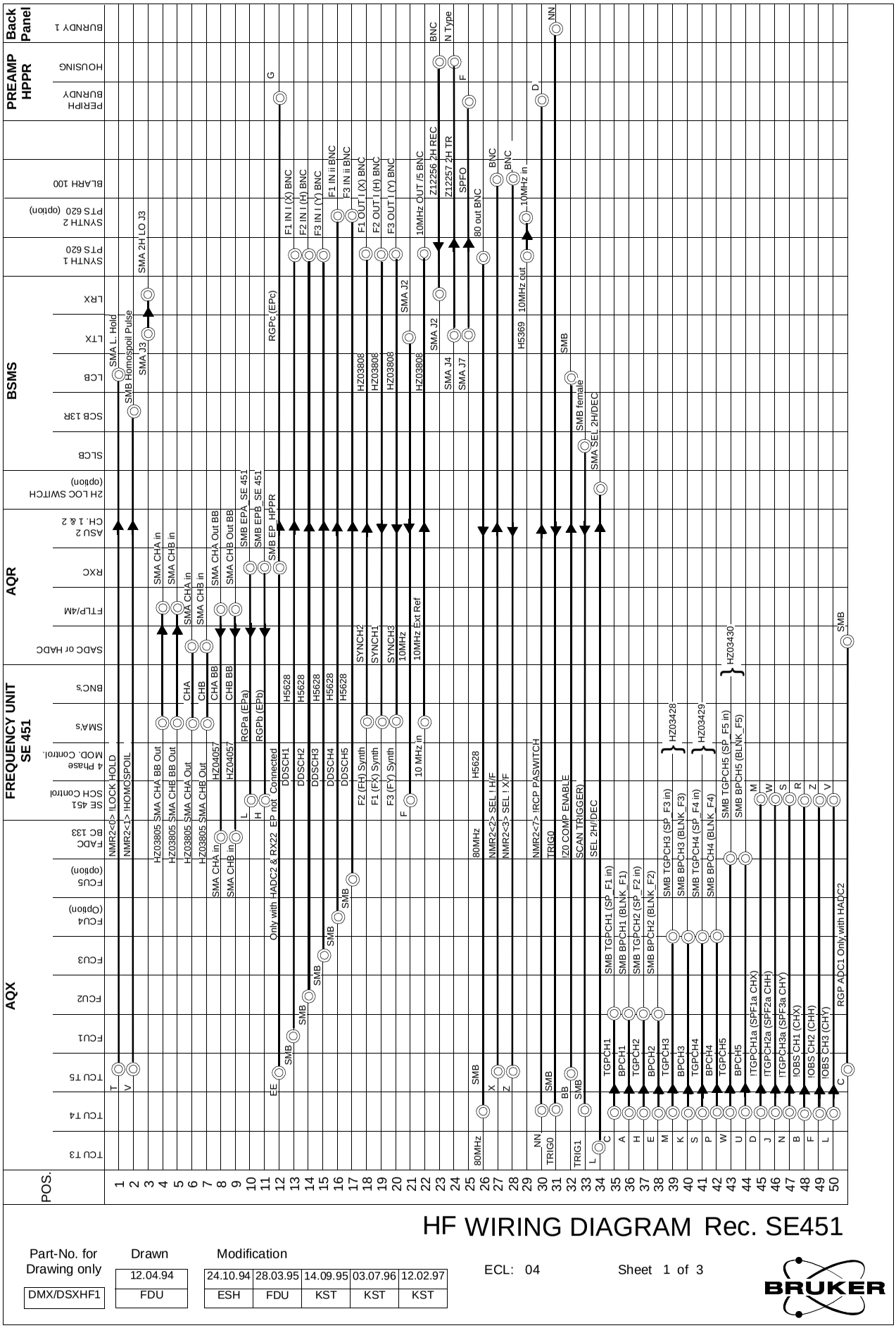


Figure 4.3. AVANCE 2 bay SE451 HF Wiring Diagram Page 2

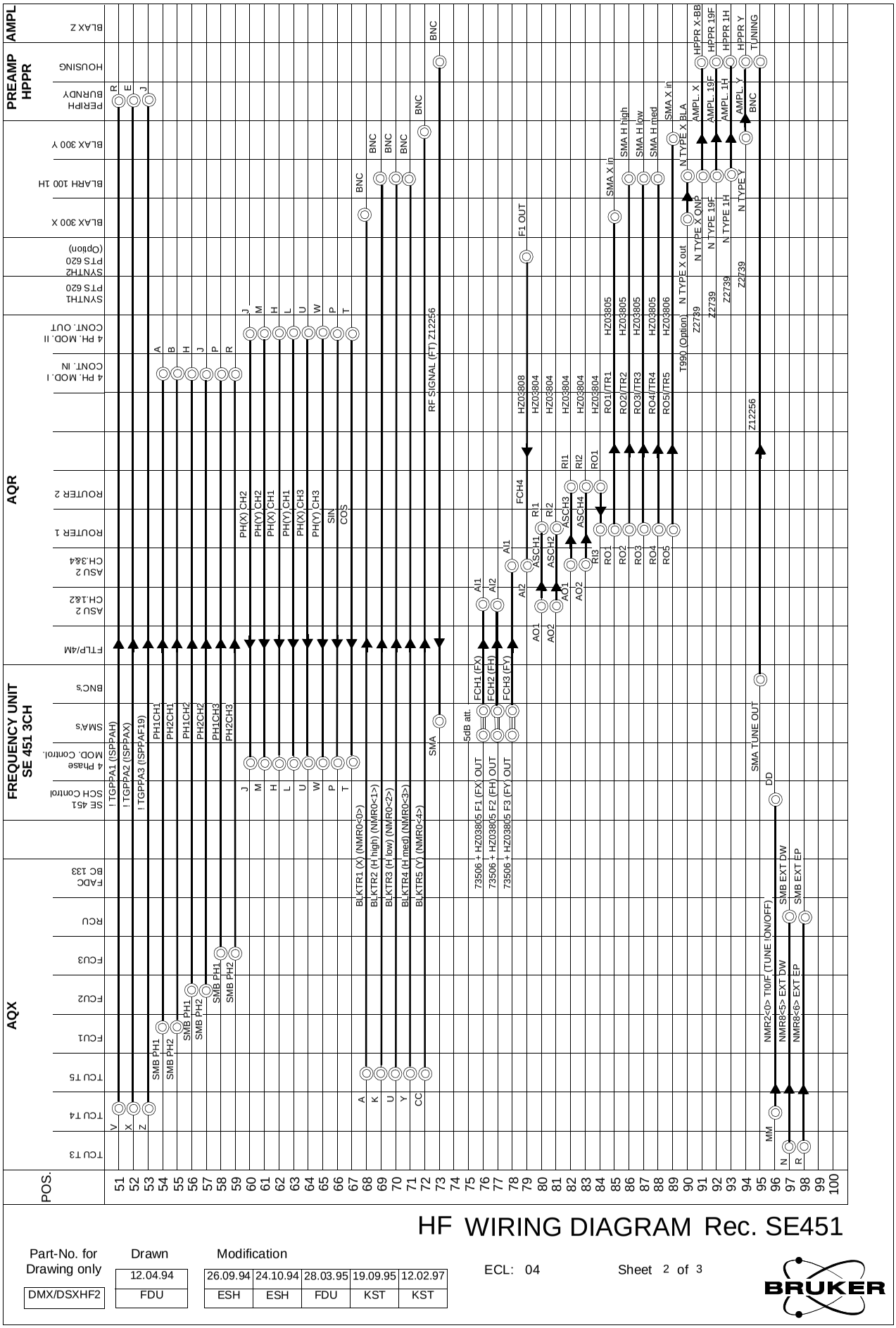


Figure 4.3. AVANCE 2 bay SE451 HF Wiring Diagram Page 3

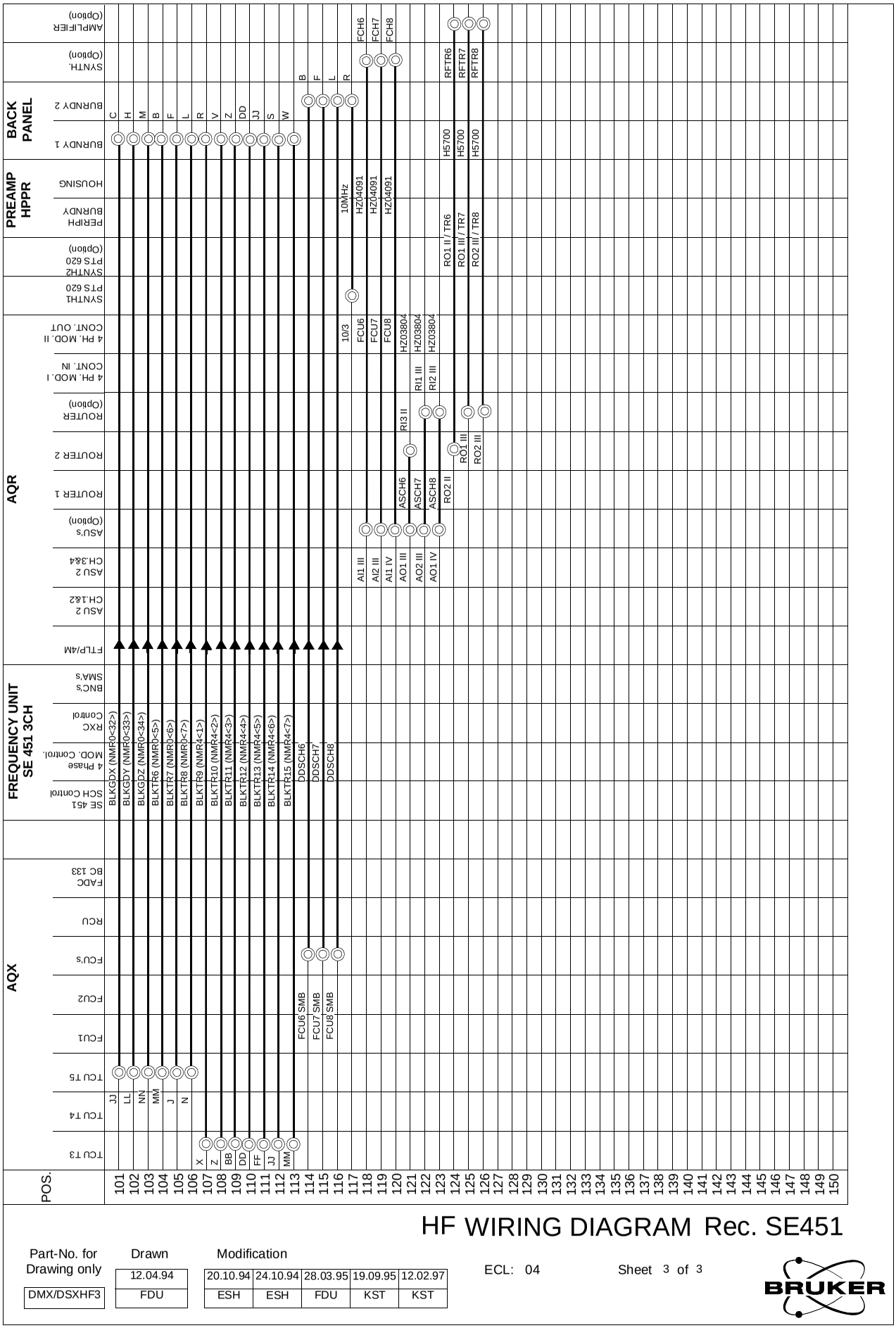


Figure 4.3. Backpanel Burndy1 & Burndy2 (SE451)

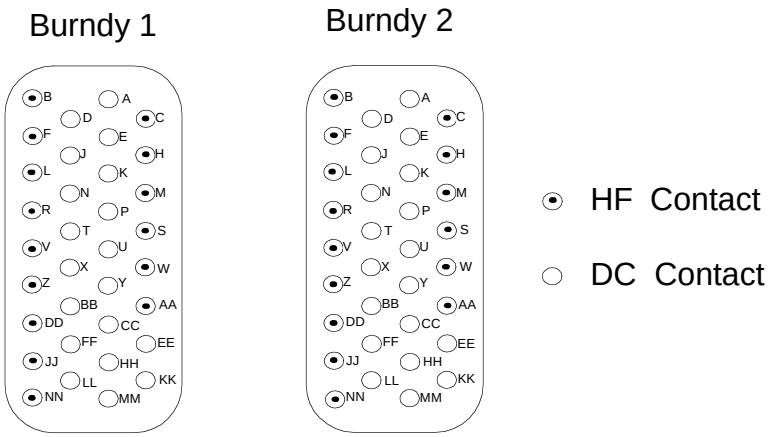


Table 4.1. Signal Name Burndy1 & Burndy2 (SE451)

	COAX CONNECTIONS	
PIN	BURNDY 1	BURNDY 2
B	BLKTR6(NMR0<5<)	DDSCH6
F	BLKTR7(NMR0<6>)	DDSCH7
L	BLKTR8(NMR0<7>)	DDSCH8
R	BLKTR9(NMR4<1>)	10MHz
V	BLKTR10(NMR4<2>)	
Z	BLKTR11(NMR4<3>)	
DD	BLKTR12(NMR4<4>)	
JJ	BLKTR13(NMR4<5>)	
NN	TRIG0	
C	BLKGDX(MNR0<32>)	
H	BLKGDY(NMR0<33>)	
M	BLKGDZ(NMR0<34>)	
S	BLKTR14(NMR4<6>)	
W	BLKTR15(NMR4<7>)	
AA	MIXCC(option)	

	DC CONNECTIONS	
PIN	BURNDY 1	BURNDY 2
D		
J		
N		
T		
X		
BB	NMR2<8> (FXA)	
FF	NMR2<9> (FXB)	
LL		
A		
E		
K		
P		
U		
Y		
CC	AGND HPPR	
HH	DGND HPPR	
MM		
EE		
KK	+19V HPPR	

Figure 4.3. Backpanel Periph. HPPR (SE451)

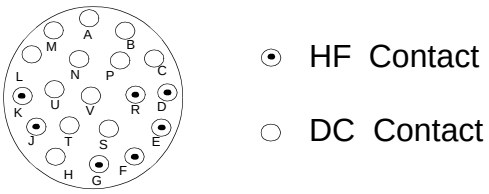


Table 4.1. Signal Name Periph. HPPR (SE451)

PIN	COAX Connections
D	NMR2<7> RCP Paswitch
E	TGPPA2 (SPPAX)
F	SPFO
G	RGPc (EPc)
J	TGPPA3(SPPAF19)
R	TGPPA1 (SPPAH)

PIN	DC Connections
A	+19V HPPR
B	AGND HPPR
C	+19V HPPR
H	AGND HPPR
K	
L	-19V HPPR
M	DGND HPPR
N	+9V HPPR
U	+9V X
V	GND X

Main Power Wiring 6

Figure 6.1. Avance 2 bay console Main Power Wiring

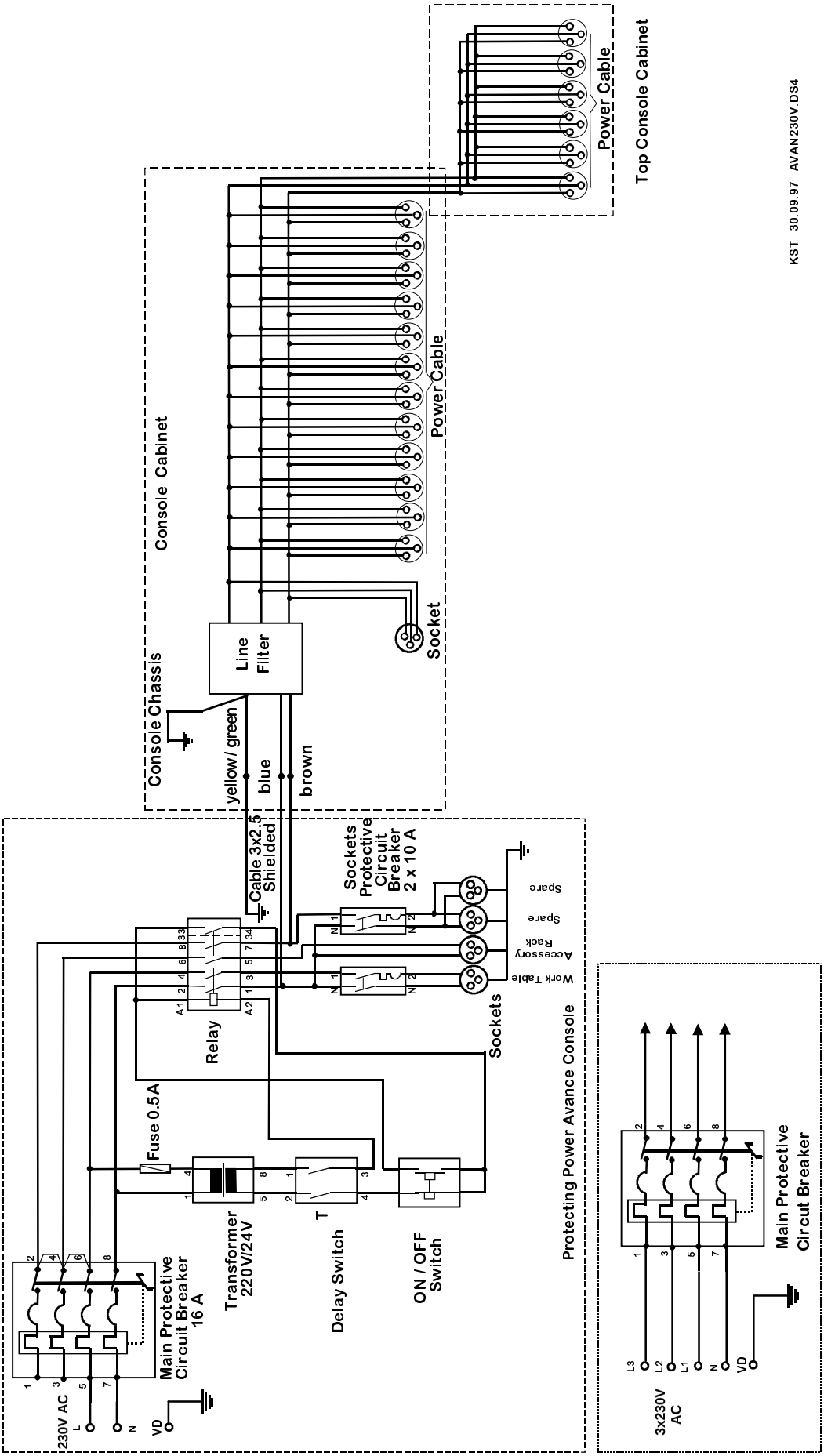
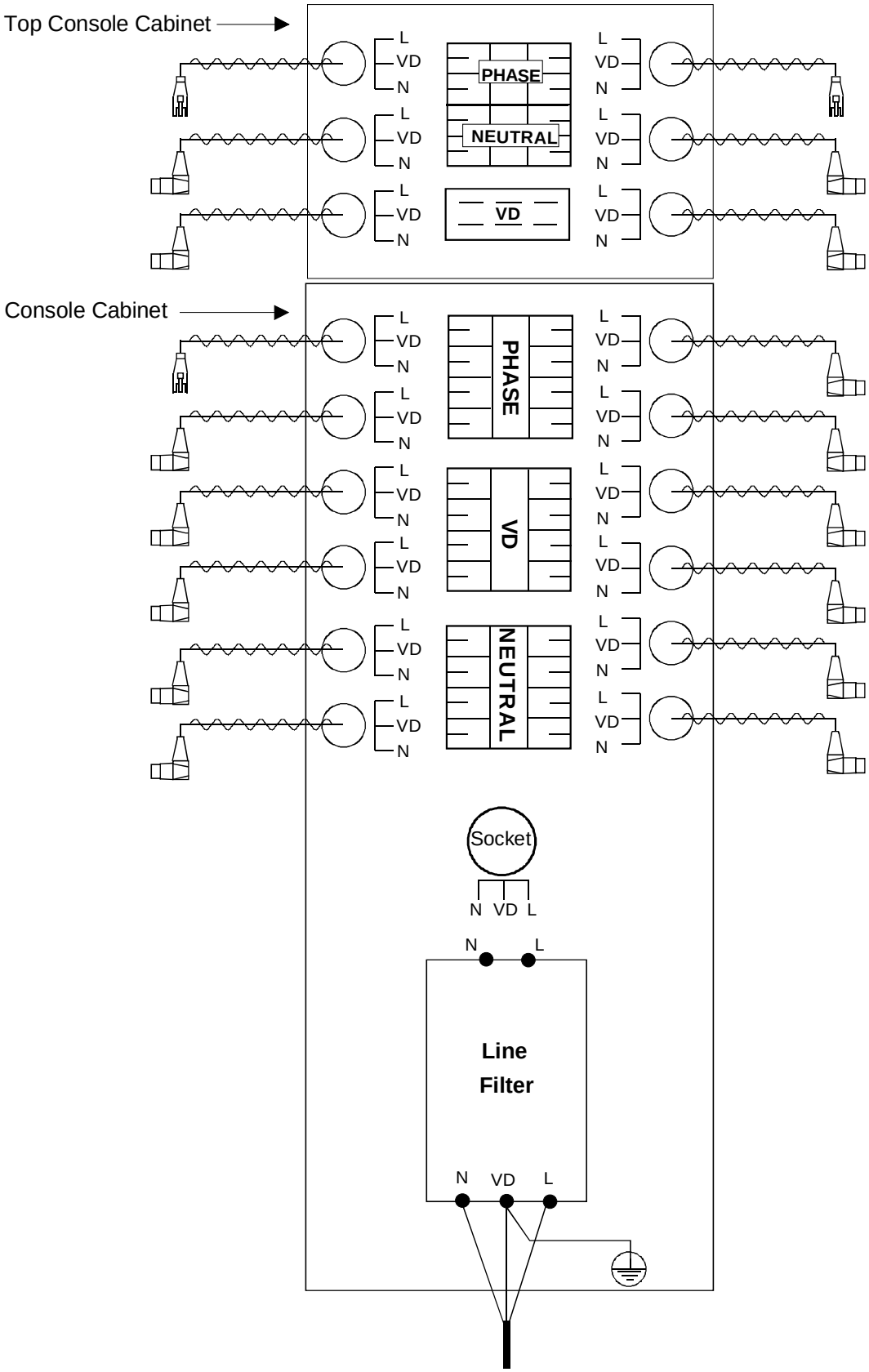


Figure 6.2. Avance 2 bay console Power Distribution 230V



Figures

Figures

Tables

Tables