

Pbar Note #701

Electrical Centering of Debuncher Pickup Tanks

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December 22, 2005

This is a generalized procedure for centering Debuncher pickup tanks on the beam while stacking. It is worth noting that not all pickup electrical centers are coincident with their physical centers, so care should be taken to insure that the machine's apertures are not compromised when this is done.

At present, parameter pages have been set up that will make this procedure easier. They are P36 DEBUN_COOL <58> & <59>.

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Linux PB P36 STOCHASTIC PARAM'S<NoSets>
P36 ELEC CENTER HBX PICKUPS      SET      D/A      A/D      Com-U  ♦PTools♦
-<FTP>+ *SA♦ X-A/D X=TIME      Y=I: HVF12 ,I: HVF12V, I: HVF12F, HI608
COMMAND ---- Eng-U I= 0      I= 0      , -800    , 0      , 0
-<59>+ s_MD AUTO F= 2      F= 1600  , 800    , 1600   , 29000
stack_t_mo stack_t_be core_m_&b DEBUN_COOL misc_hrdwr lab-4
!HB1 U/S - D: H1AU2 OFF
-D: MH601U Hor/Mom Bnd 1 PU Hor Ups < > * .354 mm ...+
D: H1AU2 Deb Horz Band 1 Up Amp ..
-D: H1PA1 Deb Hor Band 1 PIN Atten 13.5 6.5 dB A
!HB1 D/S - D: H1AL2 OFF
-D: MH601D Hor/Mom Bnd 1 PU Hor Dns < > * 2.754 mm ...+
D: H1AL2 Deb Horz Band 1 Lo Amp ..
-D: H1PA1 Deb Hor Band 1 PIN Atten 13.5 6.5 dB A
!HB2 U/S - D: H2AU2 OFF
-D: MH604U Hor Bnd 2 PU Hor Upstrm < > * -.421 mm ...
D: H2AU2 Deb Horz Band 2 Up Amp ..
-D: H2PA1 Deb Hor Band 2 PIN Atten 19.25 11.75 dB A
!HB2 D/S - D: H2AL2 OFF
-D: MH604D Hor Bnd 2 PU Hor Dnstrm < > * -2.669 mm ...+
D: H2AL2 Deb Horz Band 2 Lo Amp ..
-D: H2PA1 Deb Hor Band 2 PIN Atten 19.25 11.75 dB A
!HB3 U/S - D: H3AU2 OFF
-D: MH106U Hor/Mom Bnd 3 PU Hor Ups < > * -7.907 mm ...+
D: H3AU2 Deb Horz Band 3 Up Amp ..
-D: H3PA1 Deb Hor Band 3 PIN Atten 6.25 3.5 dB A
!HB3 D/S - D: H3AL2 OFF
-D: MH106D Hor/Mom Bnd 3 PU Hor Dns < > * -2.815 mm ...+
D: H3AL2 Deb Horz Band 3 Lo Am ..
-D: H3PA1 Deb Hor Band 3 PIN Atten 6.25 3.5 dB A
!HB4 U/S - D: H4AU2 OFF
-D: MH103U Hor Bnd 4 PU Hor Upstrm < > * -4.523 mm ...+
D: H4AU2 Deb Horz Band 4 Up Amp ..
-D: H4PA1 Deb Hor Band 4 PIN Atten 10.5 7.75 dB A
!HB4 D/S - D: H4AL2 OFF
-D: MH103D Hor Bnd 4 PU Hor Dnstrm < > * -4.358 mm ...+
D: H4AL2 Deb Horz Band 4 Lo Amp ..
-D: H4PA1 Deb Hor Band 4 PIN Atten 10.5 7.75 dB A

L: IN4PHS T4 3 INTERTK MAN AUT -.003 V
  
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Figure 1: P36 Center Horz Pickup Tanks

Having the pickups electrically centered on the beam allows the minimum amount of available TWT power to be wasted on common mode signal. Since the systems are power limited as it is, good centering allows better overall cooling system performance.

Each pickup tank has an upper and lower 1/2 band wave guide pickup. The idea is to turn off one of the 1/2 band inputs and center the other end of the tank around the beam to achieve minimum system power. Using horizontal band 1 as an example, the procedure is as follows:

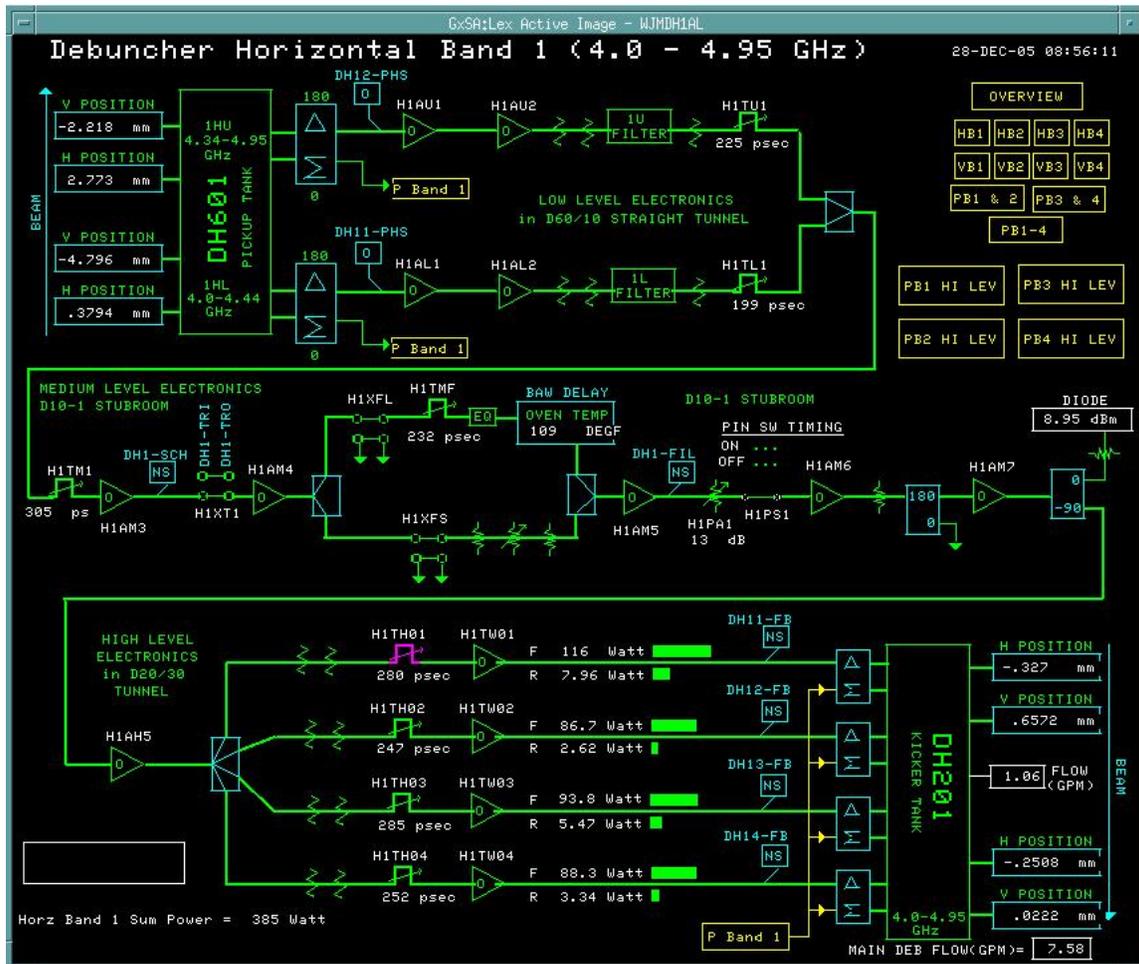


Figure 2: HB1 Graphic

- 1) Turn off gain ramping for the system being centered (the digital property on the attenuator D:H1PA1 in this case).
- 2) If centering the upstream end of the tank, turn off the downstream low level amplifier D:H1AU2; for centering the downstream end, D:H1AL2 should be off. By turning off the amplifier on the end of the tank NOT being moved, you insure all the system power is coming out of the end you are centering.
- 3) To center the upstream end of the tank, start a fast time plot of the tank position vs TWT power. See Figure 3.

- 4) Move tank to position of minimum TWT power. Some pickup tanks (like HB3) do not have clear minimums due to a significant differences between physical and electrical centers, so plotting stacktail system power at 15Hz along with a Debuncher TWT will help locate the correct position for the tank.
- 5) When done with that end of the tank, reconfigure the low level amps and repeat the centering procedure at the other end.

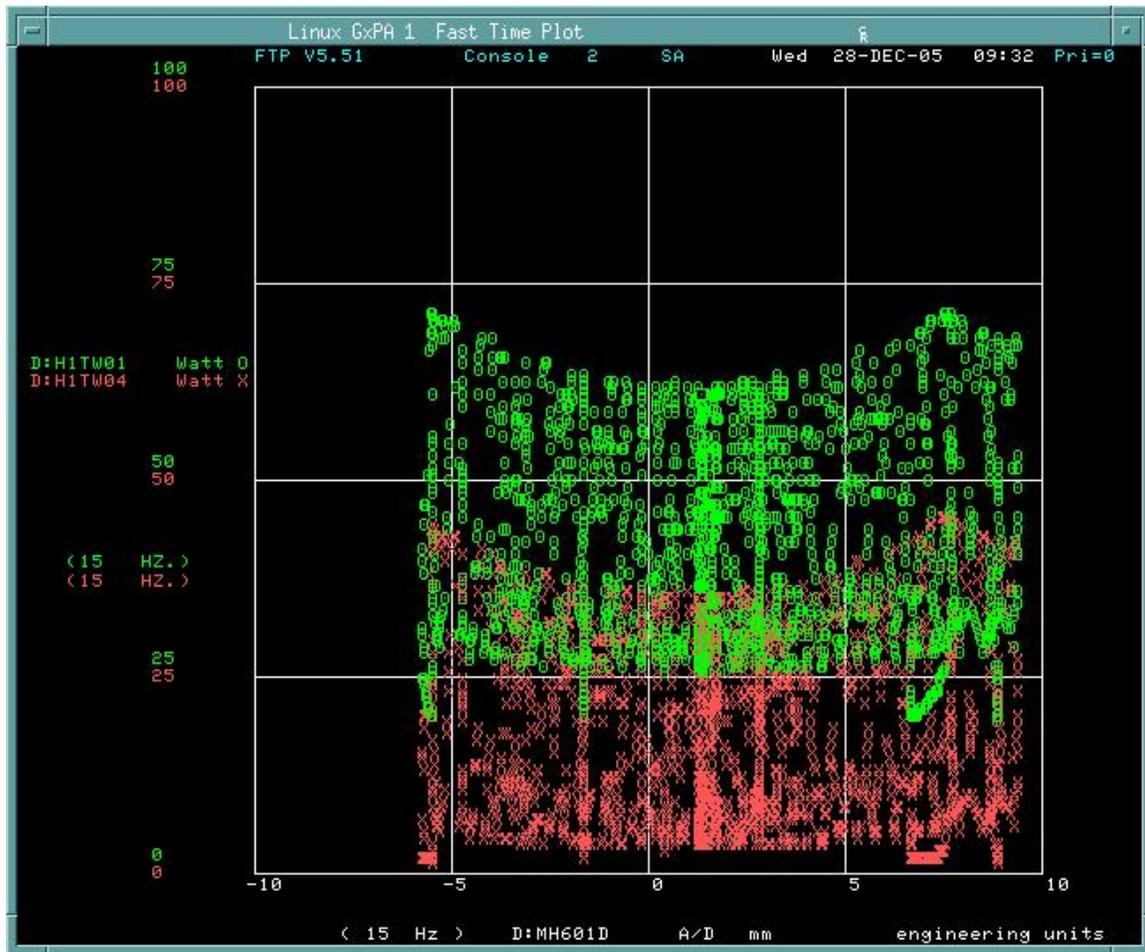


Figure 3: FTP for centering HB1 D/S end