RSS Electronics, August 24-27, 2009

P. Kiedron

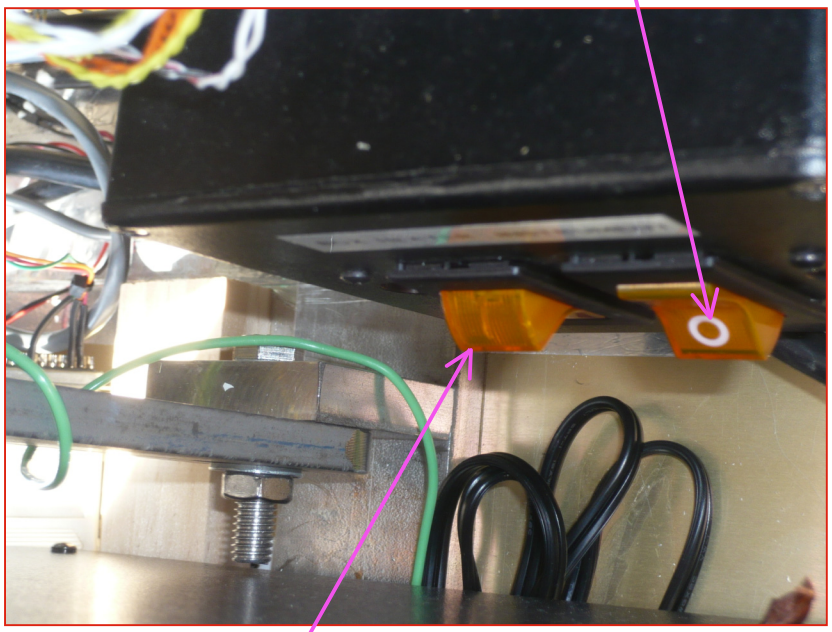
The purpose of this document is to facilitate RSS maintenance and communication between mentor and SGP staff during future repairs. Pictures are annotated to indicate the critical parts.

The major modification of RSS during its overhaul was encapsulating the CCD in the stainless steel vacuum chamber with a fused silica window. The stainless steel vacuum chamber has been pumped down to 10^{-7} Torr. The ion pump (HeatWave Labs) is used to maintain this low pressure. The pressure may oscillate with temperature (due to out-gassing). However it is expected that the ion pump will further reduce the pressure providing that no leak develops. If no leak develops even in the absence of the ion pump the pressure level will remain acceptably low (for CCD) for several years.

YES, Inc. PID controller was replaced with commercial (Wavelength Electronics) PID controller to maintain a constant temperature of the thermoelectric cooler under the CCD. This controller uses separate 12V power supply. Additional fan was added to cool the PID controller.

August 24, 2009

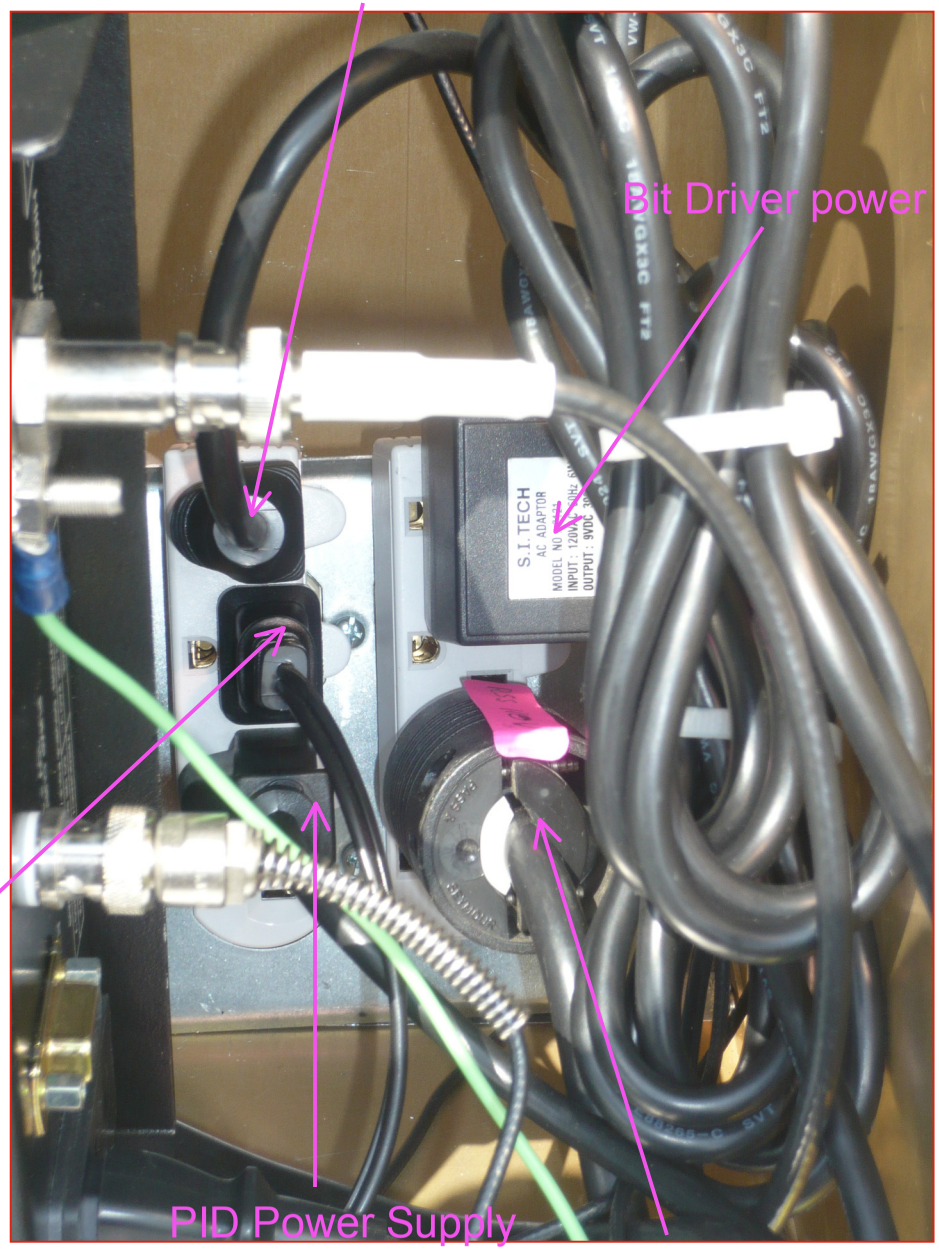
RSS power switch
(view from above, behind
Ion Pump Power supply)



This switch is disabled

PID Fan power
on all the time

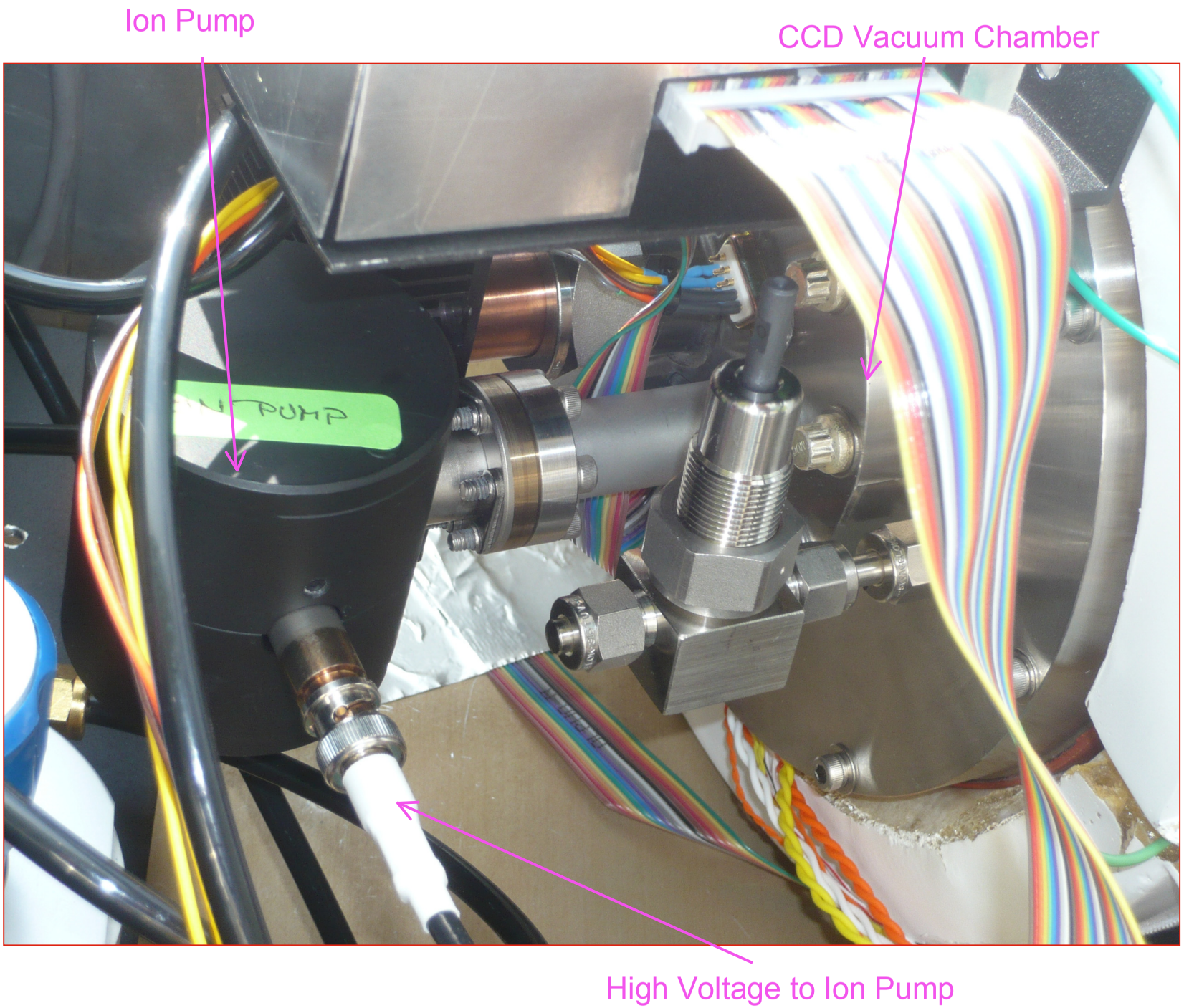
Ion Pump power (stays on all the time)



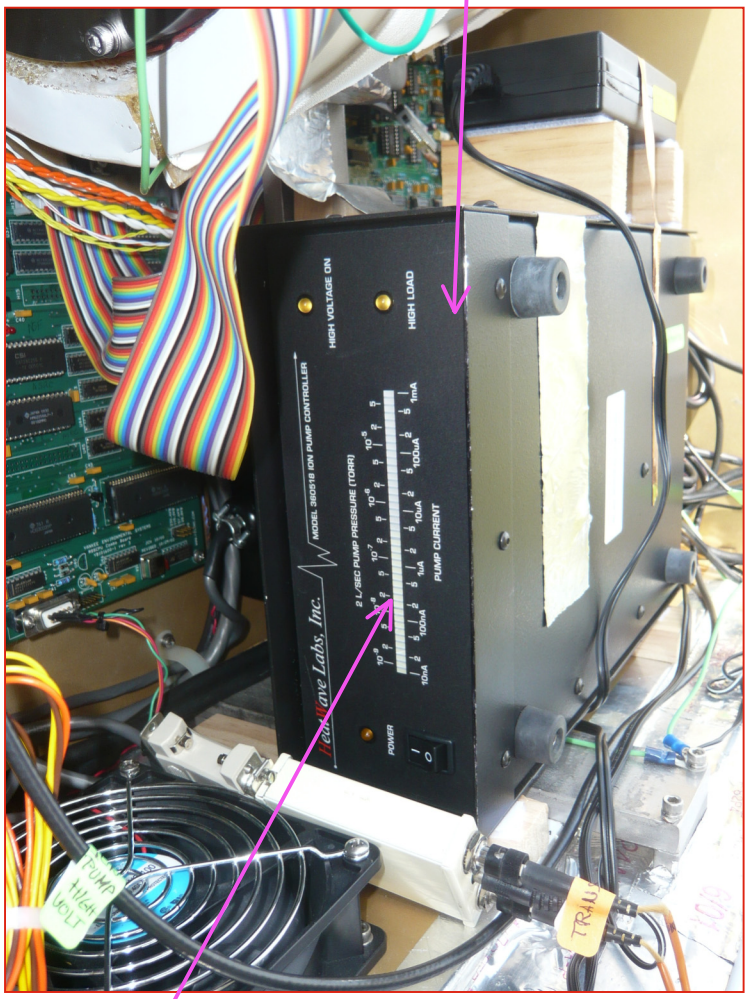
Bit Driver power

PID Power Supply
power on all the time

RSS power

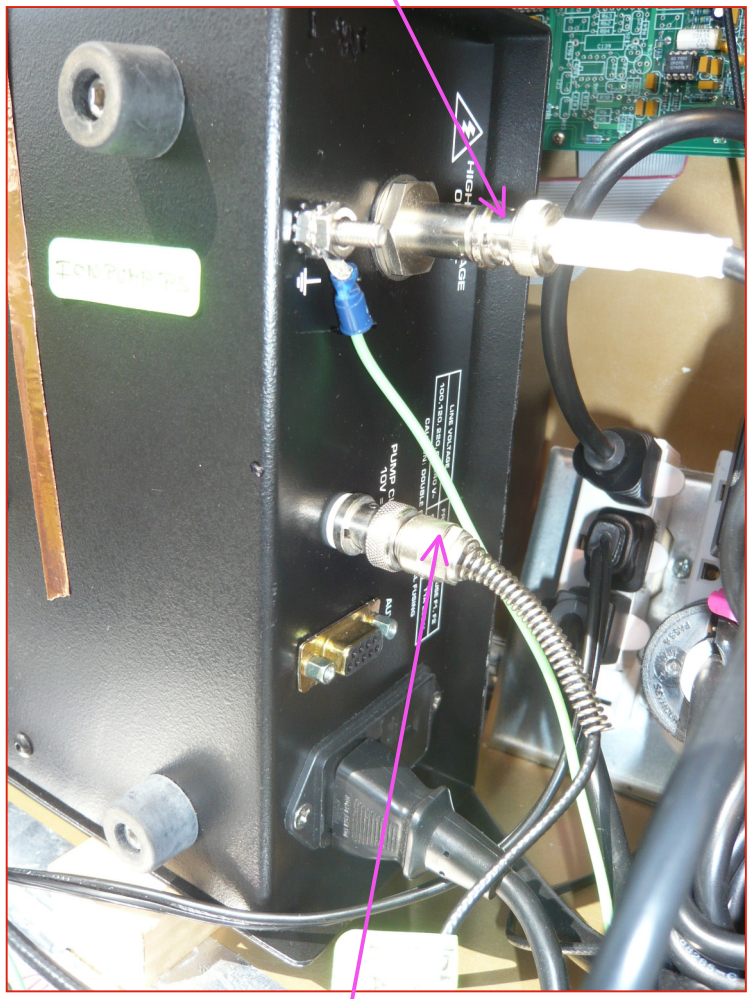

Ion Pump
CCD Vacuum Chamber
High Voltage to Ion Pump

Ion Pump Power Supply
(should stay on all the time)

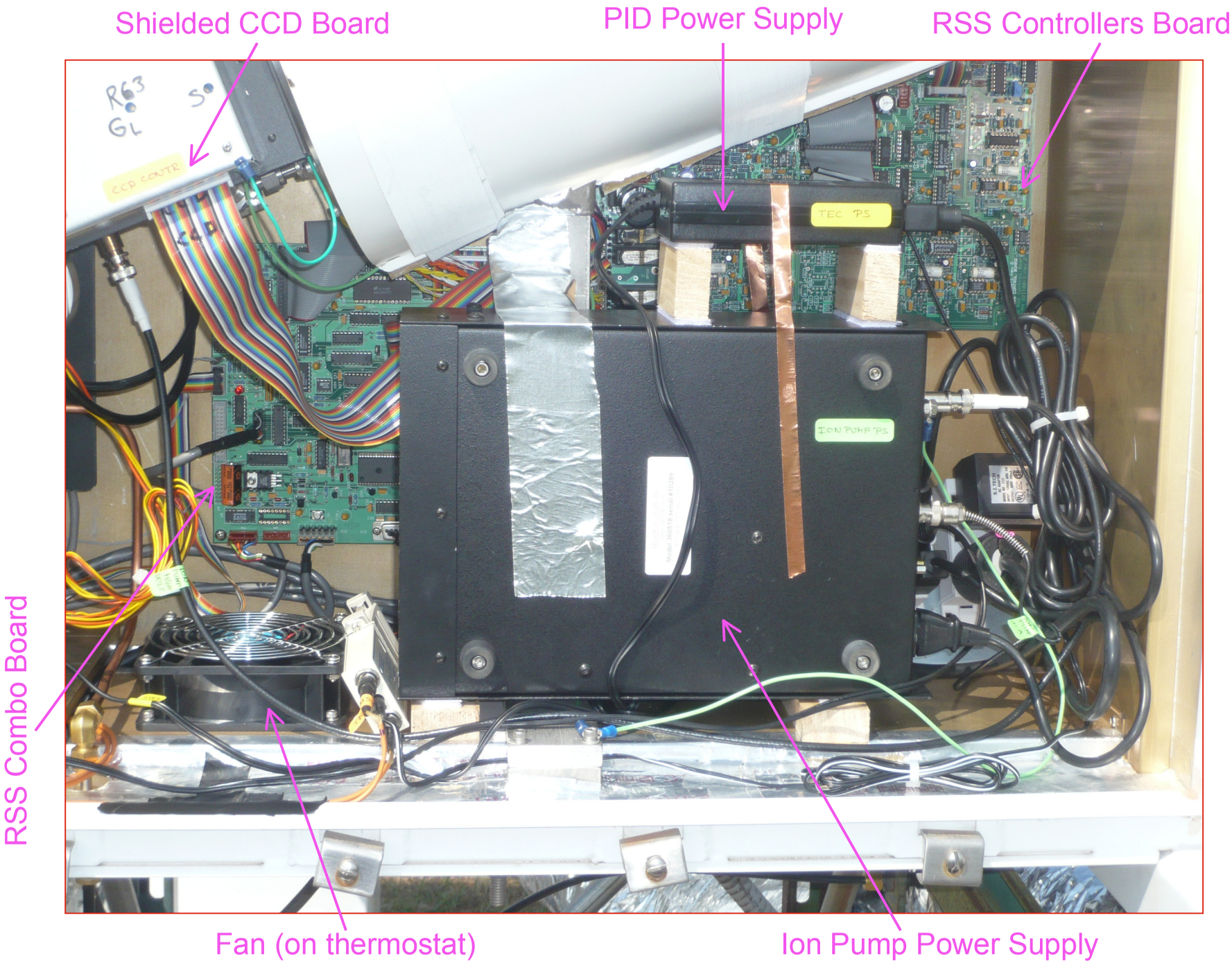


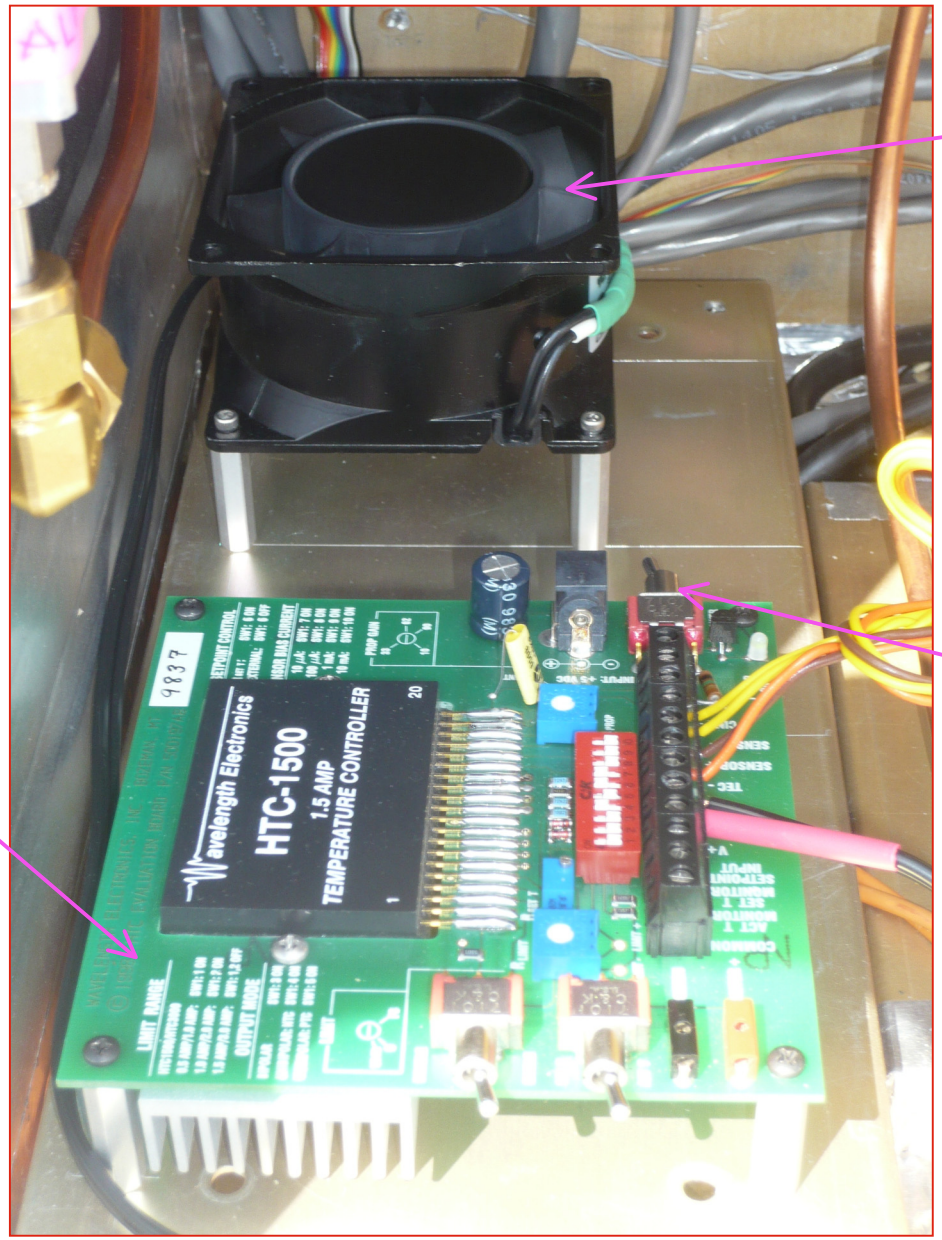
$2*10^{-7}$ - $6*10^{-7}$ Torr
(value depends on temperature)

High Voltage to Ion Pump



Current/Vacuum Pressure Signal


Shielded CCD Board
PID Power Supply
RSS Controllers Board
RSS Combo Board
Fan (on thermostat)
Ion Pump Power Supply
TEC PS
ION PUMP PS
CCD CONTR

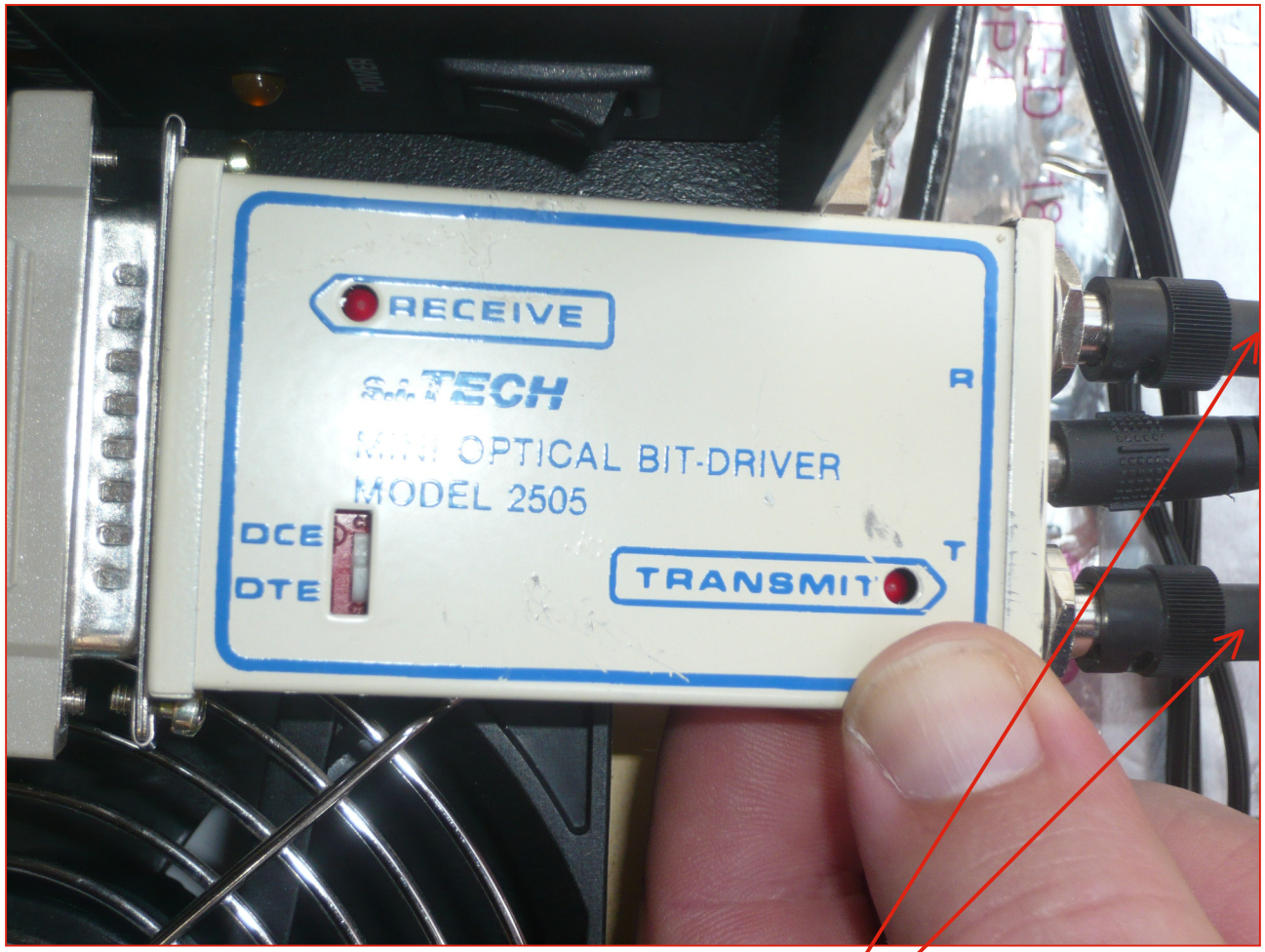


PID Fan
(on all the time)

PID Board
(controls CCD TEC)

Power Switch

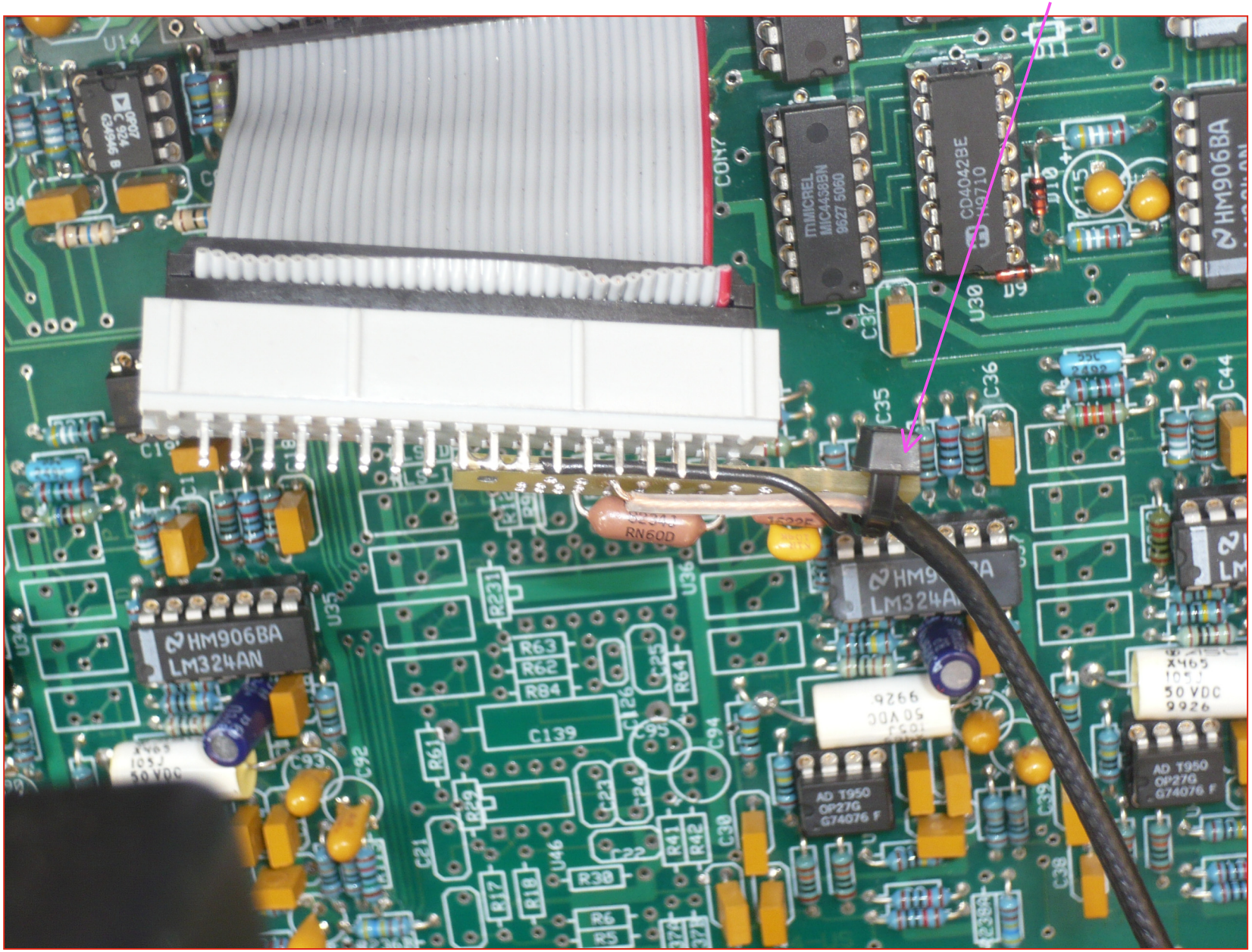
Bit driver and its settings for FO cable on RSS side



FO cable insulation is peeling off!

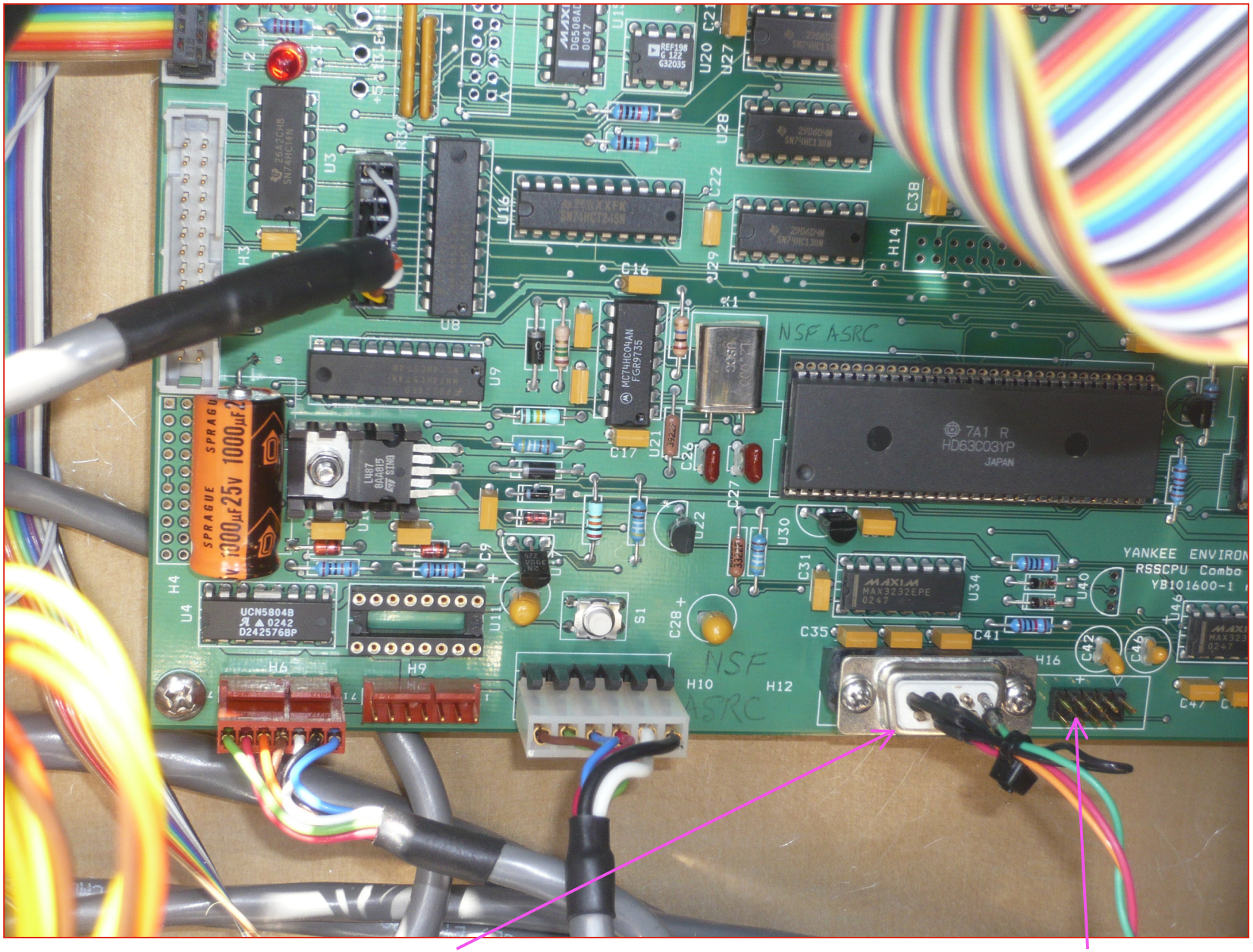
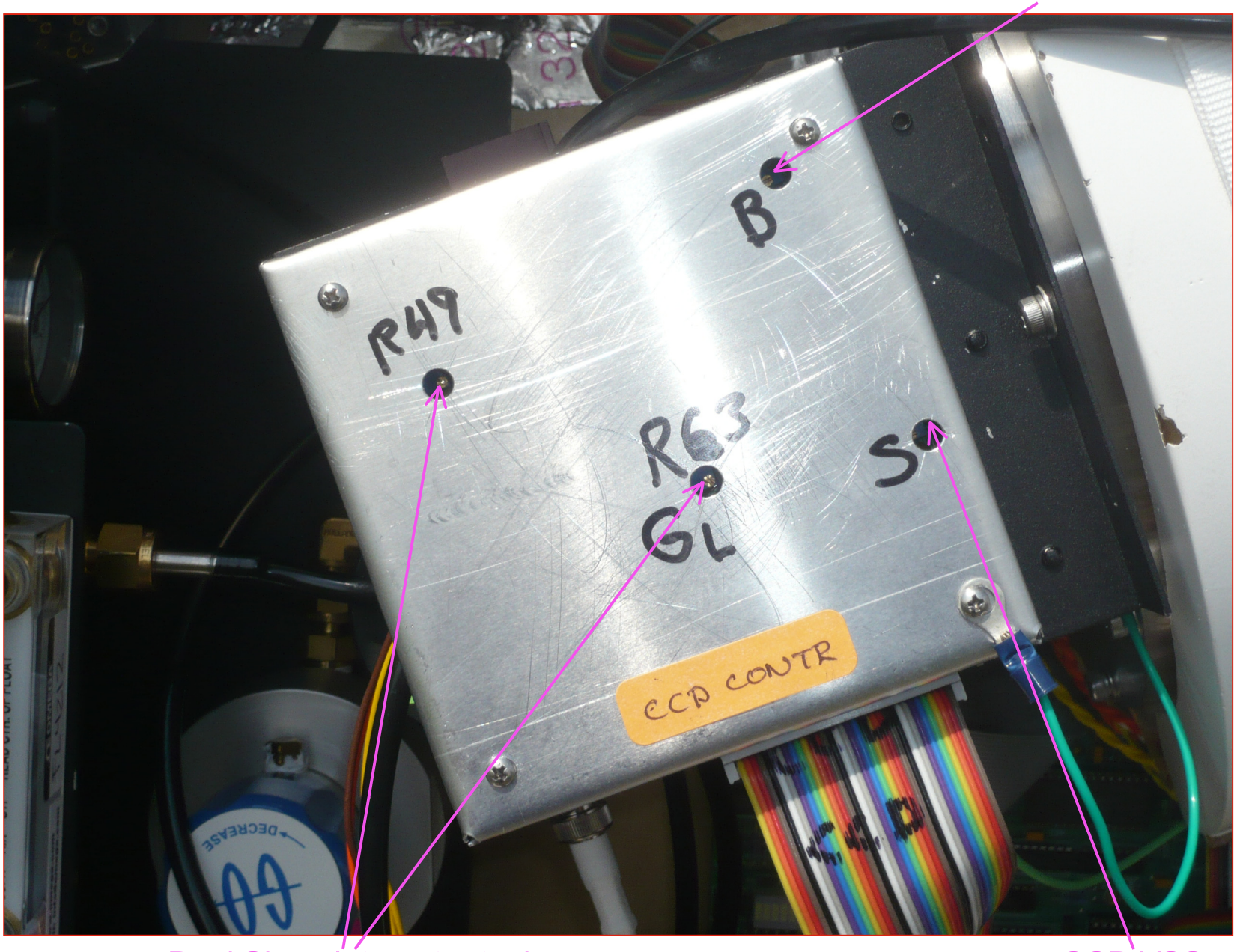
RSS Controllers Board

Current/Vacuum Pressure input



RSS Controllers Board

RSS Combo Board



Shielded CCD Board