

| Schematic Reference    |                           |
|------------------------|---------------------------|
| FIOC CD                | T3-2050-FIOC.D.SchDoc     |
| FIOC Motor Relay Board | T3-2051-FIOC-Relay.SchDoc |
| T3C023                 | T3-2205-T3C023.SchDoc     |
|                        |                           |
|                        |                           |

| Schematic Reference |                         |
|---------------------|-------------------------|
| 710-459             | Tube Ring Cable Harness |
| 710-460             | Tube Ring Electronics   |
| 710-461             | Chopping Secondary Assy |
|                     |                         |
|                     |                         |

The Collimation controls are located on the MCC2 GUI Tab. Details are located in MCC/Details/FIOC.

The ic/fio\_c/collimate.c program handles 2 motor, the NS and EW collimation. They are controlled independently.

Variables: Coll\_NS & Coll\_EW

```

float dpos; // UI: requested position as voltage.
float apos; // AI: actual position (as volts)
int stuck; // UO: set if collimation does not respond to move command

```

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Analog Inputs:
FIOC_AI_Collimation_EW_Pos - raw -7.21(E) to +12.11(W); -4.80 to 8.00 scaled.
FIOC_AI_Collimation_NS_Pos - raw -13.52(N) to 6.09(S); -9.00 to 4.07 scaled.

```

```

Digital Outputs:
FIOC_DO_Collimate_N - '1' moves NS more negative.
FIOC_DO_Collimate_S - '1' moves NS more positive.
FIOC_DO_Collimate_E - '1' moves EW more negative.
FIOC_DO_Collimate_W - '1' moves EW more positive.

```

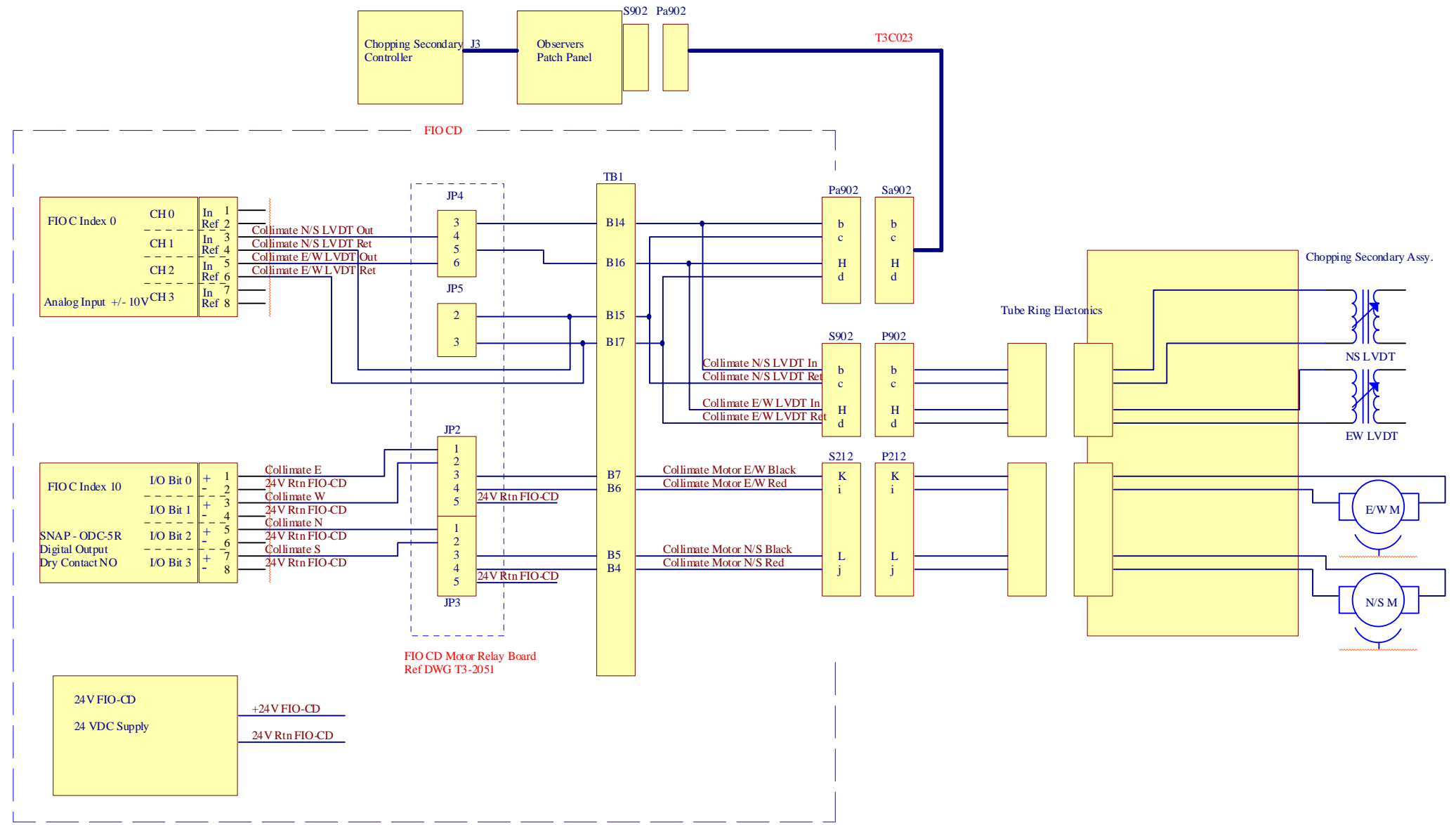
N & S outputs cannot be both ON at the same time. Both off when not moving.  
E & W outputs cannot be both ON at the same time. Both off when not moving.

Summary of Logic:

apos is the actual position. The motor relay board reduces the voltage (+/- 15V) by 2/3 before feeding it to the opto22 A2D (+/- 10V range). The collimate program multiplies it by 1.5 to reserve the motor\_relay/opto22.

User inputs sets the dpos. The collimate program will move the collimation using the Digital Outputs. This program handles both the NS and EW collimation. The collimate is consider in position when (apos-dpos) < 0.01 volts.

When trying to move the mechanism, if the voltages does not change within 1.0 seconds, a stuck flag is set to alert the operator. And mccl warning is generated with the focus is stuck.



|       |  |          |                                     |  |  |
|-------|--|----------|-------------------------------------|--|--|
| Title |  |          | T3-3020-COLLIMATION_OVERVIEW.SCHDOC |  |  |
| Size  | Number   | Revision |                                     |  |  |
| B     |  |          |                                     |  |  |
| Date: | 9/4/2008   | Sheet of |                                     |  |  |
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