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| Traveler Title | FPC End Group Inspection |
| Traveler Abstract | This traveler details the steps required to inspect C20 and C50 end groups before cutting apart from cavity. Also, this traveler captures inspecting new end groups built. Traveler steps include engraving SN, visual, dimensional, and RF inspection. |
| Traveler ID | C20-CAV-INSP-FPCEG |
| Traveler Revision  | R3 |
| Traveler Author | Aaron DeKerlegand |
| Traveler Date | 23-Feb-2021 |
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| Approval Dates |  |  |  |  |
| Approval Title | Author | Reviewer | Project Manager |  |

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| References | List and Hyperlink all documents related to this traveler. This includes, but is not limited to: safety (THAs, SOPs, etc), drawings, procedures, and facility related documents. |
| Cavity/End group drawing package | [11115-D-0001](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-239120/CEBAF%20OC%205-cell%20drawing%20package.pdf) |  |  |
| M: drive end group drawing package | M:\cmm\Drawings\C20 |  |  |

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| Revision Note |  |
| R1 | Initial release of this Traveler. |
| R2 | Added box to specify Formed or Welded end group type |
| R3 | Engraving SN format listed. EG-(cavity serial number). Link added for drawing package for cavities, end groups, etc. |

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| Step No. | Instructions | Data Input |
| 1 | Serialize end group with engraver. End group SN will match cavity SN. Format shown below:**EG-(cavity serial number).** **Ex. IA110 will be engraved EG-IA110****Ex. TBW will be engraved EG-TBW**NOTE – Please upload pictures of cavity SN and end group serial number. | [[FPCEGSN]] <<FPCEGSN>>[[EngraverUser]] <<SRF>>[[EngravingDate]] <<TIMESTAMP>>[[EngravingComment]] <<COMMENT>>[[EngravingAddFiles]] <<FILEUPLOAD>> |
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| 2 | End group type. Please select **Welded** or **Formed**. | [[EndGroupType]] {{Welded,Formed}} <<SELECT>> |
| 3 | RF incoming inspection. Record Q ext. of FPC | [[RFlInspUser]] <<SRF>>[[RFInspDate]] <<TIMESTAMP>>[[RFInspComment]] <<COMMENT>>[[MeasValue1]] <<FLOAT>>[[RFAddFiles]] <<FILEUPLOAD>> |
| 4 | Visually inspect the end group externally and internally (borescope). Record any damage found in the comment box (any stains, dents, scratches thru indium seal path, stretched/damaged holes should be noted).  | [[VisualInspUser]] <<SRF>>[[VisualInspDate]] <<TIMESTAMP>>[[VisualInspComment]] <<COMMENT>>[[VisualInspAddFiles]] <<FILEUPLOAD>> |
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| 5 | Dimensionally inspect the end group. **NOTE – Inspection performed before end groups are cut apart/removed from cavity.** | [[CMMUser]] <<SRF>>[[CMMDate]] <<TIMESTAMP>>[[CMMComment]] <<COMMENT>>[[CMMAddFiles]] <<FILEUPLOAD>> |
|  | **TABLE A - CMM Measurements**   |
| **Drawing Number** | **Description** | **Drawing Value** | **Tolerance** | **Measured Value** | **Within Tolerance** |
|  | End cell to Fpc WG flange center | 3.303 | ± .010” | [[MeasValue2]] <<FLOAT>> | [[Tolerance2]] <<YESNO>> |
|  | Fpc WG flange thickness | 0.500 | ± .010” | [[MeasValue3]] <<FLOAT>> | [[Tolerance3]] <<YESNO>> |
|  | Fpc BT flange thickness | 0.375 | ± .010” | [[MeasValue4]] <<FLOAT>> | [[Tolerance4]] <<YESNO>> |
|  | BT distance to Fpc WG | 1.817 | ± .005” | [[MeasValue5]] <<FLOAT>> | [[Tolerance5]] <<YESNO>> |
|  | Fpc depth inside WG | 7.510 | ± .010” | [[MeasValue6]] <<FLOAT>> | [[Tolerance6]] <<YESNO>> |
|  | Fpc flange distance to beamline | 2.996 | ± .005” | [[MeasValue7]] <<FLOAT>> | [[Tolerance7]] <<YESNO>> |

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| **Drawing Number** | **Description** | **Drawing Value** | **Tolerance** | **Measured Value** | **Within Tolerance** |
|  | Fpc WG flange flatness | 0.000 | 0.002 | [[MeasValue8]] <<FLOAT>> | [[Tolerance8]] <<YESNO>> |
|  | Fpc Beam Tube flange flatness | 0.000 | 0.002 | [[MeasValue9]] <<FLOAT>> | [[Tolerance9]] <<YESNO>> |
|  | Fpc distance #1 | 8.560 | ± .010” | [[MeasValue10]] <<FLOAT>> | [[Tolerance10]] <<YESNO>> |
|  | Fpc distance #2 | 5.540 | ± .010” | [[MeasValue11]] <<FLOAT>> | [[Tolerance11]] <<YESNO>> |
|  | Fpc distance #3 | 1.240 | ± .010” | [[MeasValue12]] <<FLOAT>> | [[Tolerance12]] <<YESNO>> |
|  | Fpc distance #4 | 3.360 | ± .010” | [[MeasValue13]] <<FLOAT>> | [[Tolerance13]] <<YESNO>> |
|  |  Fpc distance #5 | 3.360 | ± .010” | [[MeasValue14]] <<FLOAT>> | [[Tolerance14]] <<YESNO>> |
|  | Fpc distance #6 | 1.240 | ± .010” | [[MeasValue15]] <<FLOAT>> | [[Tolerance15]] <<YESNO>> |
|  | FPC distance #7 | 1.240 | ± .010” | [[MeasValue16]] <<FLOAT>> | [[Tolerance16]] <<YESNO>> |