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| Traveler Title | C100R Warm Window Brazed Assembly | | | |
| Traveler Abstract | The purpose of this document is to capture the brazing process and run parameters associated with brazing of AL300 Ceramic Warm Window into copper eyelet, and stainless steel window frame. This document also takes the window assembly fabrication & testing process to final it’s completion (ready for installation). | | | |
| Traveler ID | C100R-FURN-WINW-BRAZ | | | |
| Traveler Revision | R1 | | | |
| Traveler Author | Greg Grose | | | |
| Traveler Date | 27-May-22 | | | |
| NCR Informative Emails | Mosby | | | |
| NCR Dispositioners | Grose,scott | | | |
| D3 Emails | Grose,scott,mosby | | | |
| Approval Names | S. Williams | G. Grose | A. Reilly |  |
| Approval Signatures |  |  |  |  |
| 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. | | | |
| [115120-1010](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-75143/115120-1010%20Rev.D.pdf%20)  Shell/Ceramic Assembly | [115120-1011](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-75144/115120-1011%20Rev.B.pdf%20)  Ceramic Window Cu Eyelet | [115120-1012](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-75145/115120-1012%20Rev.G.pdf%20)  Metalized Ceramic Window | [1140-D-0176](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-75146/11140-0176%20Rev.%20D.pdf%20)  Warm Window Flange  1140-D-0176 |  |
| [CRM-088-2025-0020](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-75148/CRM-088-2025-0020%20Rev.A.pdf%20)  Eyelet to Frame Braze Preform | [CRM-088-2025-0021](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-75149/CRM-088-2025-0021%20Rev.A.pdf%20)  Eyelet to Ceramic Preform | [115120-1019](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-75147/115120-1019%20Rev.B.pdf%20)  Ceramic Warm Window Assembly |  |  |

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| Revision Note |  |
| R1 | Initial release of this Traveler. |

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| Step No. | Instructions | Data Input |
| 1 | Record Ceramic, Metalization and Copper Eyelet numbers. | [[DataCaptureTech]] <<SRFFAB>>  [[WINWSN]] <<WINWSN>>  [[CeramicPO]] <<SN>>  [[MetalizationPO]] <<SN>>  [[EyeletBatchNo]] <<SN>>  [[DataCaptureDate]] <<TIMESTAMP>>  [[DataCaptureComm]] <<COMMENT>> |
| 2 | Verify that all components are clean and properly packaged prior to use  (pre-forms, ceramic windows, eyelets, fixturing, ect.). | [[PartsCleaned]] <<YESNO>>  [[DateCleaningStatus]] <<TIMESTAMP>>  [[CleanStatusComm]] <<COMMENT>> |
| 3 | Handle with gloves & visually inspect both metalized ceramic and copper eyelet for imperfections (scratches, metalization, staining, oxidation, dings/dimples, chipped ceramics, etc.) | [[VisInspTech]] <<SRFFAB>>  [[VisInspDate]] <<TIMESTAMP>>  [[VisInsptComm]] <<COMMENT>> |

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| Step No. | Instructions | Data Input |
| 4 | Perform test fit-up, verifying proper mating of components, insuring flatness of ceramic to eyelet sub-assembly prior to installing 65Cu/35Au braze pre-form . | [[FitTestTech]] <<SRFFAB>>  [[FitTestDate]] <<TIMESTAMP>>  [[FitTestComm]] <<COMMENT>> |
| 5 | Assemble brazements by placing pre-form braze foil (65Cu/35Au) into copper eyelet, install AL300 Metalized Ceramic Window into eyelet and place sub-assembly into lower braze fixturing. Place top braze fixture onto eyelet assembly, insuring proper alignment & mating of lower fixture. | [[BrazeFoilEyeAssyTech]] <<SRFFAB>>  [[BrazeFoilEyeAssyDate]] <<TIMESTAMP>>  [[BrazeEyeAssyComm]] <<COMMENT>> |
| 6 | Place protective clean ceramic on top of ceramic window along with (2) additional ceramics of same size (approx. 190 grams Ea.) and (1) 5/8" x 2 1/4" x 5 1/4" (approx. 430 grams) placed on top of one another for added weight (approx. 1000 grams total). Top fixture receives (2) additional 190 gram Ea. ceramics on top plate as well. | [[CerEyeAssyTech]] <<SRFFAB>>  [[Date\_CerEyeAssembly2]] <<TIMESTAMP>>  [[CerEyeAssyComm]] <<COMMENT>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 7 | Fixtured brazements are placed on individual 4" alumina wafers, 2 across side by side running parallel with furnace rail assembly. Brazements placed in close proximity with thermal couples, initiate braze run and start Labview temperature profile recording.  Add link for picture | [[BrazeRunTech]] <<SRFFAB>>  [[BrazeRunDate]] <<TIMESTAMP>>  [[BrazeRunComm]] <<COMMENT>> |
| 8 | Record braze program run profile # and upload Labview temperature profile file of run. | [[ProfileDataTech]] <<SRFFAB>>  [[CeramicEyeletBrazementSN]] <<SN>>  [[FurnaceUsed]] {{Big Blue,Little Blue}} <<SELECT>>  [[ProgramNameLittleBlue]] <<TEXT>>  [[ProgramProfileNoBigBlue]] {{1,2,3,4,5,6,7,8,9,10}} <<SELECT>>  [[ProfileFileTemp]] <<FILEUPLOAD>>  [[QuantityOfPartsRan]] <<INTEGER>>  [[ProfileDataDate]] <<TIMESTAMP>>  [[ProfileDataComm]] <<COMMENT>> |
| 9 | Leak check per [11141-S-0029](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-72485/11141S0029-Rev.%20A.pdf).  Component passed leak test? | [[LeakTestTech]] <<SRFCMP>>  [[LeakTestPassed]] <<YESNO>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 10 | Ensure that re-coining fixture is clean and free of burrs. Re-coin eyelet. | [[ReCoinTech]] <<SRFFAB>>  [[ReCoinDate]] <<TIMESTAMP>> |
| 11 | Clean ceramic/eyelet sub-assembly using a ultra-sonic micro-clean degrease, DI rinse, followed by a final 10 minute ultra-sonic cleaning in acetone. | [[CerEyePartsCleaned]] <<YESNO>>  [[CerEyeCleaningTech]] <<SRFCVP>>  [[CerEyeCleanDate]] <<TIMESTAMP>> |
| 12 | At this stage eyelet sub-assembly is ready for brazing into cleaned stainless steel window frame. Store in plastic protective case with ID label visible. | [[SubAssyReadyTech]] <<SRFFAB>>  [[SubAssyReadyDate]] <<TIMESTAMP>> |
| 13 | Record Serial No. of stainless steel window frame.  Note whether flange is a reworked flange from a previous window installation. | [[FrameSerialTech]] <<SRFFAB>>  [[DSRFSN]] <<DSRFSN>>  [[ReworkedFlange]] <<YESNO>>  [[FrameSerialDate]] <<TIMESTAMP>> |
| 14 | Place clean Ag54/Pd25/Cu21 braze pre-form into SS window frame and place ceramic top braze fixture onto window/eyelet sub-assembly, insuring that top fixture is seated into window flange recess. | [[SetupTech]] <<SRFFAB>>  [[SetupDate]] <<TIMESTAMP>> |
| 15 | Place protective clean ceramic on top of ceramic window. Place (2) additional ceramics (approx. 190 grams Ea.) on each side of fixture and bridge a 5/8" x 2 1/4" x 5 1/4" ceramic (approx. 430 grams) across the two smaller ones.  Add link for picture | [[FinalSetupTech]] <<SRFFAB>>  [[FinalSetupDate]] <<TIMESTAMP>> |
| 16 | Fixtured brazements are placed on individual 4" alumina wafers, two across side by side running parallel with furnace rail assembly. Brazements placed in close proximity with thermal couples, initiate braze run and start Labview temperature profile recording.  Add link for picture | [[FinalBrazeTech]] <<SRFFAB>>  [[FinalBrazeDate]] <<TIMESTAMP>>  [[FinalBrazeComm]] <<COMMENT>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 17 | Record braze program run profile # and upload Labview Temperature Profile file of run. | [[ProfileDataFinal]] <<SRFFAB>>  [[FurnaceUsedFinal]] {{Big Blue,Little Blue}} <<SELECT>>  [[LittleBlueProgramNameFinal]] <<FLOAT>>  [[BigBlueProgramProfileNameFinal]] {{1,2,3,4,5,6,7,8,9,10}} <<SELECT>>  [[TemperatureProfileFileFinal]] <<FILEUPLOAD>>  [[QuantityOfPartsRanFinal]] <<INTEGER>>  [[ProfileDataDateFinal]] <<TIMESTAMP>>  [[ProfileDataCommFinal]] <<COMMENT>> |
| 18 | Perform leak test as per [11141-S-0029](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-72485/11141S0029-Rev.%20A.pdf) and upload file. | [[LeakTestTechFinal]] <<SRF>>  [[LeakTestDateFinal]] <<TIMESTAMP>>  [[LeakTestFileFinal]] <<FILEUPLOAD>>  [[PassedLeakTestFinal]] <<YESNO>>  [[LeaktestCommFinal]] <<COMMENT>> |
| 19 | Remove any visible discolorations on exposed ceramic surfaces resulting from unwanted residuals developed during braze run. (Swam-Blast Bead Blaster with 50 micron Alumina ) | [[CleanupBlastingTech]] <<SSRFFAB>>  [[CleanupBlastingDate]] <<TIMESTAMP>>  [[CleanupBlastingComm]] <<COMMENT>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 20 | Clean and bag warm window assembly for standard UHV, insuring that any vacuum grease or alumina particulates are removed prior to delivering to RF Testing Work Center. | [[UHVCleaningChemTech]] <<SRFCVP>>  [[UHVCleaningDate]] <<TIMESTAMP>>  [[UHVCleaningComm]] <<COMMENT>> |
| 21 | Perform 8kW RF Qualification Test and upload files. | [[RFTestingTech]] <<SRFCMP>>  [[RFTestingDate]] <<TIMESTAMP>>  [[RFTestingFile]] <<FILEUPLOAD>>  [[PassedRFTesting]] <<YESNO>> |
| 22 | Perform final leak test as per [11141-S-0029](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-72485/11141S0029-Rev.%20A.pdf) and upload file. | [[FinalLeakTestTech]] <<SRFCMP>>  [[FinalLeakTestDate]] <<TIMESTAMP>>  [[FinalLeakTestFile]] <<FILEUPLOAD>>  [[PassedFinalLeakTest]] <<YESNO>>  [[FinalLeakTestComm]] <<COMMENT>> |
| 23 | Perform final Lapping to both window seal surfaces, achieving a 32 microinch surface finish and flatness within .002". | [[LappingTech]] <<SRFCVP>>  [[LappingDate]] <<TIMESTAMP>>  [[LappingComm]] <<COMMENT>> |
| 24 | Perform final QA inspection of completed window assembly. | [[InspTech]] <<SRF>>  [[InspDate]] <<TIMESTAMP>>  [[InspComm]] <<COMMENT>> |
| 25 | Perform standard UHV cleaning to window assembly, bag in dry nitrogen, & store in inventory. | [[UHVCleaningChemTechFinal]] <<SRFCVP>>  [[UHVCleaningDateFinal]] <<TIMESTAMP>>  [[UHVCleaningCommFinal]] <<COMMENT>> |