



Manufacturing, Inspection and Test Plan For PVVS Die A Manufacture and Assembly

Procedure Number 03-8083-MITP-01

Prepared By: **Tom Gilmore** Date: **2004/01/20**
Planner
Tom Gilmore, EIT
(Master copy signed at PMW)

Approved By: **David Rioux** Date: **2004/01/21**
President
David Rioux, P. Eng.
(Master copy signed at PMW)

Approved By: **Gary Armsrtong** Date: **2004/01/21**
Quality Assurance Manager
Gary Armstrong, CET
(Master copy signed at PMW)

Customer Acceptance: _____ Date: _____
Purchaser



Job Number: 03-8083
Date: January 18, 2004

Manufacturing and Inspection Test Plan for
PVVS Die Assemblies

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Manufacturing, Inspection and Test Plan

Revision: 0

Job Number: 03-8083

Project Description: Manufacture and assembly of dies to be used in forming of inconel sheets to be used in PVVS prototype.

Customer: Rohwedder Inc

Contract Number: 338302

Technical Specification: NCSX-CSPEC-121-01-01 Rev. 1, Rohwedder MIT Section 1.9

Quality Standard: ISO 9001:2000

Inspection Glossary

VP Indicates 'Verification' point.
WP Indicates 'Witness' point.
HP Indicates 'Hold' point.



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Customer Drawing List

| Model file Name | Revision | Description |
|-----------------|----------|-------------------------------|
| Abtmplat.prt | 4 | Die A enclosure bottom plate |
| Atopplat.prt | 4 | Die A enclosure top plate |
| Aside1.prt | 6 | Die A enclosure side plate #1 |
| Aside2.prt | 5 | Die A enclosure side plate #2 |
| Aside3.prt | 11 | Die A enclosure side plate #3 |
| Aside4.prt | 6 | Die A enclosure side plate #4 |
| Arib1.prt | 9 | Die A rib #1 |
| Arib2.prt | 8 | Die A rib #2 |
| Arib3.prt | 8 | Die A rib #3 |
| Arib4.prt | 7 | Die A rib #4 |
| Arib5.prt | 8 | Die A rib #5 |
| Arib6.prt | 7 | Die A rib #6 |
| Arib7.prt | 8 | Die A rib #7 |
| Arib8.prt | 9 | Die A rib #8 |
| Arib9.prt | 7 | Die A rib #9 |
| Arib10.prt | 7 | Die A rib #10 |
| Arib11.prt | 7 | Die A rib #11 |
| Arib12.prt | 7 | Die A rib #12 |
| Arib13.prt | 7 | Die A rib #13 |
| Arib14.prt | 7 | Die A rib #14 |
| Arib15.prt | 8 | Die A rib #15 |
| Arib16.prt | 8 | Die A rib #16 |
| Arib17.prt | 8 | Die A rib #17 |
| Arib18.prt | 8 | Die A rib #18 |
| Arib19.prt | 8 | Die A rib #19 |
| Arib20.prt | 9 | Die A rib #20 |
| Arib101.prt | 12 | Die A rib #101 |
| Arib102.prt | 9 | Die A rib #101 |
| Arib103.prt | 9 | Die A rib #103 |
| Arib104.prt | 9 | Die A rib #104 |
| Arib105.prt | 9 | Die A rib #105 |
| Arib106.prt | 9 | Die A rib #106 |
| Arib107.prt | 9 | Die A rib #107 |
| Arib108.prt | 9 | Die A rib #108 |
| Arib109.prt | 9 | Die A rib #109 |
| Arib110.prt | 9 | Die A rib #110 |
| Arib111.prt | 10 | Die A rib #111 |
| Arib112.prt | 10 | Die A rib #112 |
| Arib113.prt | 10 | Die A rib #113 |
| Arib114.prt | 10 | Die A rib #114 |
| Arib115.prt | 11 | Die A rib #115 |
| Arib116.prt | 10 | Die A rib #116 |
| Arib117.prt | 9 | Die A rib #117 |
| Arib118.prt | 10 | Die A rib #118 |
| Arib119.prt | 9 | Die A rib #119 |
| Arib120.prt | 7 | Die A rib #120 |



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PMW Drawing List

| Drawing Number | Revision | Description |
|----------------|----------|-----------------------|
| 03-8083-001 | 0 | Die A bottom plate |
| 03-8083-002 | 0 | Die A side plate 1 |
| 03-8083-003 | 0 | Die A side plate 2 |
| 03-8083-004 | 0 | Die A side plate 3 |
| 03-8083-005 | 0 | Die A side plate 4 |
| 03-8083-006 | 0 | Die A top plate |
| 03-8083-007 | 0 | Die Rib mounting hole |
| 03-8083-008 | 0 | Die A Assembly |

Supplier List

| Material Supplier | Material Specification | Part Description | Supplier QA Program Level |
|---------------------------|-------------------------------|--------------------------|---------------------------|
| Carbon Steel Profiles | 2" thick 44W Mild Steel Plate | Die base and side plates | CSA Z299.3-85 |
| Superior Alloy Technology | 1" thick 44W Mild Steel Plate | Die Ribs | Internal |
| Superior Alloy Technology | 1/16" inconel plate | Scab Plate | Internal |

| Component Subcontractor | Address | Scope of Work | QA Program Level |
|---------------------------|--|---------------------------|------------------|
| Superior Alloy Technology | 60 chemin de Tremblay, Boucherville, Quebec, J4B 6Z5 | 5-axis Water jet Die Ribs | Internal |

Procedures Index:

| Supplier | Procedure Number | Description | Revision | Quality Level |
|----------|--------------------|--|----------|---------------|
| PMW | 03-8083-P01 Part 1 | Inspection and Test Control | 1 | ISO 9001:2000 |
| PMW | 03-8083-P01 Part 2 | Inspection and Test Status | 1 | ISO 9001:2000 |
| PMW | 03-8083-P02 | Control of Inspection, Measuring, and Test equipment | 1 | ISO 9001:2000 |
| PMW | 03-8083-P03 Part 1 | Control of Non-conforming Product | 1 | ISO 9001:2000 |
| PMW | 03-8083-P03 Part 2 | Corrective and Preventative Action | 1 | ISO 9001:2000 |
| PMW | 03-8083-P11 | CMM Dimension and Tolerance Verification | 0 | ISO 9001:2000 |



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Manufacturing, Inspection and Test Plan Index:

| Operation Series | Description |
|------------------|---|
| 100 | Receiving and Preparation |
| 200 | Manufacturing and In Process Inspections of Die Enclosure |
| 300 | Manufacturing and In Process Inspections of Die Ribs |
| 400 | Die Assembly and Inspections |

Manufacturing, Inspection and Test Plan Process:

| Operation | Description | PMW | Customer | Authorized Inspector |
|------------|---|-----|----------|----------------------|
| 100 | Receiving and Preparation | | | |
| 101 | Perform receiving of Die bottom, top and sides for enclosure (6 pieces) as per PMW Quality Manual incoming inspection procedures. Complete form F029. Once Inspection is complete proceed to Operation 200 | | | |
| 102 | Perform receiving of individual die ribs (40 pieces) as per PMW Quality Manual Incoming Inspection Procedures using CMM with procedure 03-8083-P11. Complete form F029 for each rib. Once inspections are complete, dies may proceed to operations 300. (MIT section 1.9.4) | | | |
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| | | | | |
| 200 | Manufacturing and In Process Inspections of Die Enclosure (MIT section 1.9.5-1.9.6) | | | |
| 201 | Machine Die A bottom plate complete as per Drawing 03-8083-001 | | | |
| 202 | Inspect Die A bottom plate as per 03-8083-P01 and 03-8083-P11. | | | |
| 203 | Machine Die A side plate 1 complete as per Drawing 03-8083-002 | | | |
| 204 | Inspect Die A side plate 1 as per 03-8083-P01 and 03-8083-P11. | | | |
| 205 | Machine Die A side plate 2 complete as per Drawing 03-8083-003 | | | |
| 206 | Inspect Die A side plate 2 as per 03-8083-P01 and 03-8083-P11. | | | |
| 207 | Machine Die A side plate 3 complete as per Drawing 03-8083-004 | | | |
| 208 | Inspect Die A side plate 3 as per 03-8083-P01 and 03-8083-P11. | | | |
| 209 | Machine Die A side plate 4 complete as per Drawing 03-8083-005 | | | |
| 210 | Inspect Die A side plate 4 as per 03-8083-P01 and 03-8083-P11. | | | |
| 211 | Machine Die A top plate complete as per Drawing 03-8083-006 | | | |
| 212 | Inspect Die A top plate as per 03-8083-P01 and 03-8083-P11. | | | |
| | | | | |
| | | | | |
| 300 | Manufacturing and In Process Inspections of Die Ribs (MIT section 1.9.7) | | | |
| 301 | Machine all Die Ribs as per drawing 03-8083-106 | | | |
| 302 | Inspect all Die Ribs as per 03-8083-P01 | | | |
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| Operation | Description | PMW | Customer | Authorized Inspector |
|------------|--|-----|----------|----------------------|
| 400 | Die Assembly and Inspections (MIT section 1.9.8-1.9.12) | | | |
| 401 | Fit and assemble Die A bottom plate, bottom side plate #1, and bottom side plate #2, and Die A bottom ribs as per drawing 03-8083-008 | | | |
| 402 | Inspect Die A bottom assembly using CMM as per procedures 03-8083-P01, 03-8083-P02, 03-8083-P11 and record results on Form F034 | | | |
| 405 | Fit and assemble Die A top plate, top side plate #1, and top side plate #2, and Die A top ribs as per drawing 03-8083-008 | | | |
| 406 | Inspect Die A top assembly using CMM as per procedures 03-8083-P01, 03-8083-P02, 03-8083-P11 and record results on Form F034 | | | |
| 407 | Cover Die ribs with 1/16" inconel scab plate | | | |
| 408 | Press die top and die bottom together to form scab plate to die profile | | | |
| 409 | Lightly tack weld 1/16" Inconel scab plate to Die A bottom assembly as per Procedure 03-8083-WPS01. | | | |
| 410 | Lightly tack weld 1/16" Inconel scab plate to Die A top assembly as per Procedure 03-8083-WPS01. | | | |
| 411 | Inspect Die A bottom assembly with scab plate using CMM as per procedures 03-8083-P01, 03-8083-P02, 03-8083-P11 and record results on F034 | | | |
| 412 | Inspect Die A top assembly with scab plate using CMM as per procedures 03-8083-P01, 03-8083-P02, 03-8083-P11 and record results on F034 | | | |
| 413 | Fully plug weld scab plate into place on die ribs as per PQR GP-12-F-P1/P43-PMW1 | | | |