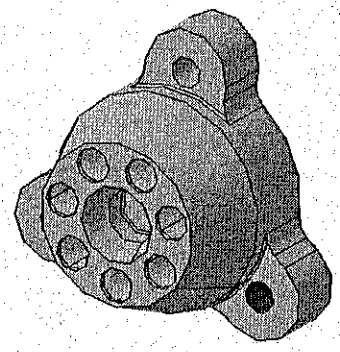
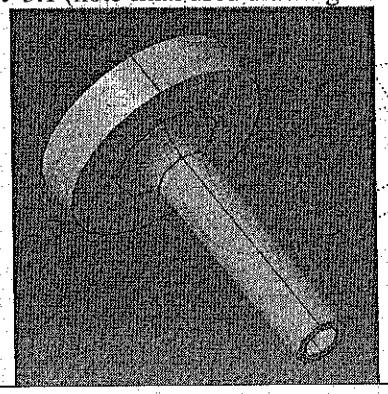
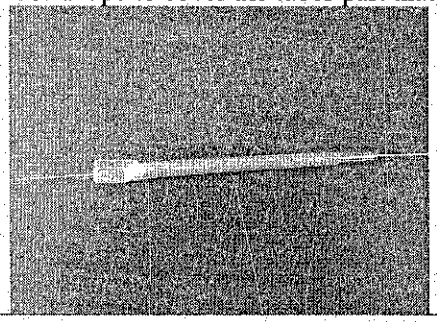
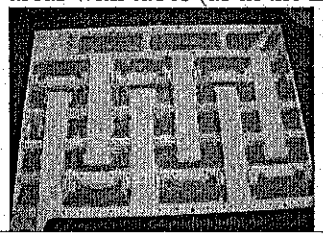
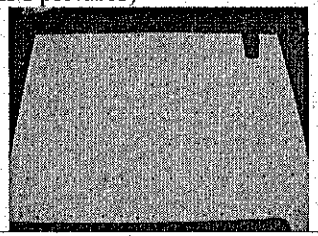
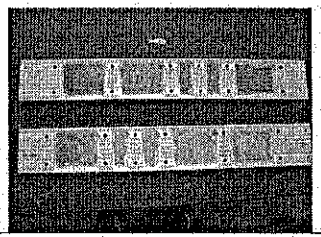
4.2 Manifold Integration and Brazing procedure in steps

Test sample indication:	Test engineer: OM. Swek	Test Date: 10/6 2008
Step	**Action to be taken**	**Result**
1.	Condenser manifold test sample number /Condenser QM or FM	FM2
	Record material specification	
2.	Material part 2.1 & Material part 3.1 (note final used drawing numbers here)  	2.1 = SS 316L 3.1 = SS 316L
3.	Filter material	SS 316L
4.	Capillary condenser tube material	INCONEL 718
5.	Brazing plate material (N.A for test sample)	SS 304
6.	Record stop off agent material used (N.A for test sample)	NICROBRAZ wall COLMONOY corporation TYPE I
7.	Check brazing and binder material (requirement: AMS4787 powder(85~90%) will be combined with	ok

	binder(10~15%)(Wall Colmonoy Nicrobraz cement510) and Acetone(as require)	ok
8.	Record vacuum oven used (type and serial number)	
9.	Use a tape to cover the tubes part that will not experience the nickel plating process. Record the tape type. 	3M core series 4-1000
10.	Close the entrance of the tube to avoid the nickel plating flow inside the tubes (use something like a wire)	"
11.	Perform nickel plating on tubes area that will be in contact with brazing material (i.e. manifold side) according to AMS 2403L	"
	Apply stop-off agent (N.A for test sample)	
12.	Apply stop off agent on bottom&top brazing plates and bottom&top brazing strain relieves in the contact areas with tubes (as in the EM pictures)   	ok
13.	Apply stop off agent on brazing fasteners	ok. and on jig brackets

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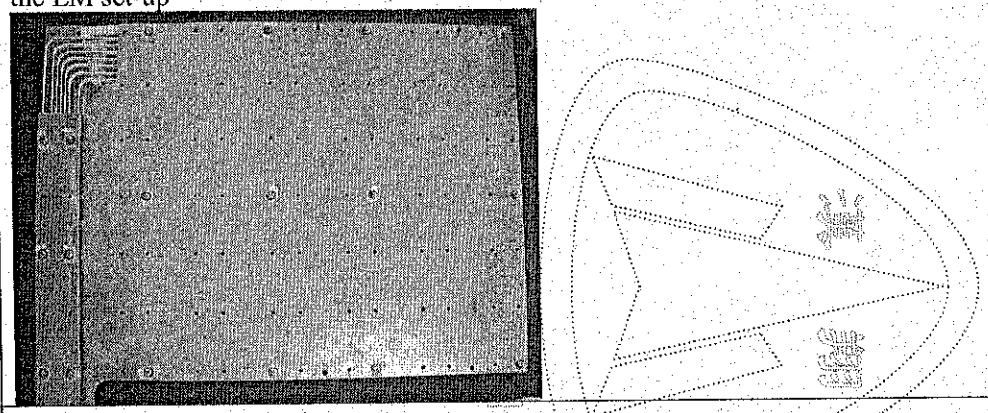
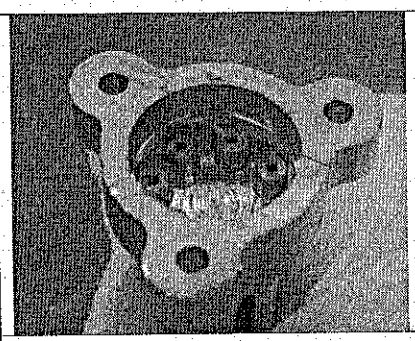
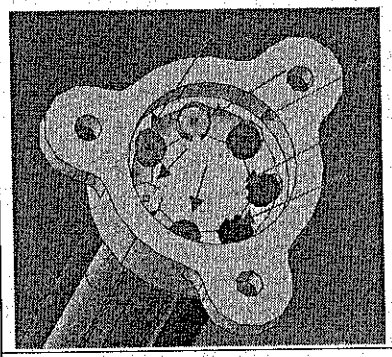
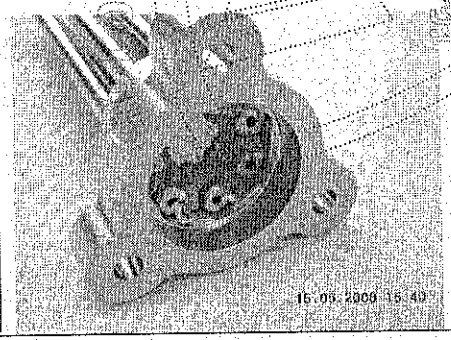
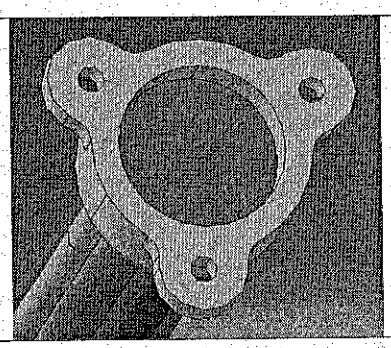
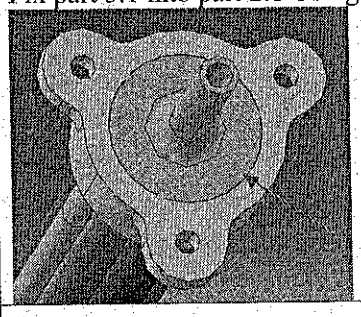
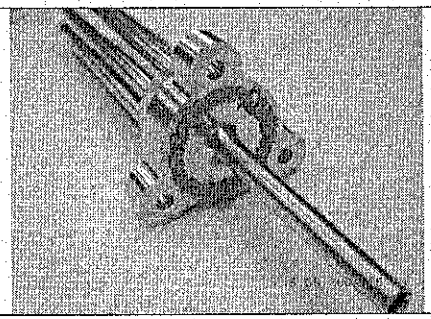
14.	Install brazing plates(bottom, top and strain relieves) on brazing and transport jig using brazing bolts as in the EM set-up 	ok
	Brazing preparations and manifold filter integration	ok
15.	Clean Manifold parts according to AMSTR-NLR-PR-039 QM/FM Condenser Cleaning Procedure	ok
16.	Use clean gloves when handling the clean manifolds during spot welding	ok
17.	Spot weld 7 (condenser or sample) tubes to part 2.1 .Use Argon Tig Welding without weld material. Leave 1 mm length of tube inside part 2.1. Spot Weld as far away as possible from the brazing area to avoid oxidation problem. Write down spot welding equipment and main parameters.	ok

		
18.	Put brazing material at brazing positions. Apply brazing material into the edge between tube & part 2.1(RED arrow).No necessary to cover the central area with the brazing material.  	ok
19.	Remove manifold bracket from the transport& brazing Jig (N.A for test sample)	ok
20.	Put filter into part 2.1	ok

		
21.	Make digital pictures of the filter set-up and store it digitally	ok
22.	IT IS NOT ALLOWED TO USE STOP-OFF AGENT on manifold area	ok
23.	Fix part 3.1 into part 2.1 Using argon welding without weld material (see green points) 	ok
24.	Apply solder material into edge between part 2.1 and part 3.1	ok

		
	Perform temperature cycle as indicated in Figure 4-1 and Figure 4-2 with oven	
25.	Put set-up in vacuum oven together with reference sample	ok
26.	Apply vacuum to oven	ok
27.	Perform temperature profile as indicated in Figure 4-1. Pay attention: Last slope of Figure 4-1 is applied by cooling with Argon to ambient temperature	ok
28.	Inspect visually the brazing product	ok
29.	Make picture from the brazing product (note picture file name)	ok
30.	Apply vacuum to oven	ok
31.	Perform temperature profile as indicated in Figure 4-2 .	ok
32.	Inspect visually the brazing product	ok
33.	Make picture from the brazing product (note picture file name)	ok
34.	ONLY FOR TEST SAMPLE: Close/seal the 7 tube ends hermetically to withstand (240 bar).Seal the end of 7 small tube using Argon welding(TIG) with weld material CRES347(MSRR9500/207) .030"Dia. FOR TEST AND QM/FM: close end of manifold with plastic bag	ok
35.	Transport to AIDC Taichung facility	ok

36.	Perform Helium leak test according to : AMSTR-NLR-PR-002 ISSUE 2.0 MAY 2007 : for TEST SAMPLES AMSTR-NLR-PR-040: for QM & FM condenser assembly Remark: Swagelok couplings for leak testing	ok
37.	Perform Proof Pressure test to test sample up to 240 bar with N2 according to: Addendum to AMSTR-NLR-PR-002 ISSUE 2.0 MAY 2007 : for TEST SAMPLES AMSTR-NLR-PR-040- : for QM & FM condenser assembly	ok
38.	Inspect visually the brazing product	ok
39.	Make picture from the brazing product (note picture file name)	ok
40.	Perform Helium leak test according to : AMSTR-NLR-PR-002 ISSUE 2.0 MAY 2007 : for TEST SAMPLES AMSTR-NLR-PR-040- : for QM & FM condenser assembly	ok
41.	ONLY FOR TEST SAMPLE: Perform Brazing check according to AMSTR-NLR-PR-005 ISSUE 2.0 December 2007	ok
42.	**General remarks and notes**	

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END OF DOCUMENT

AEF-AIDC	表面處理施工說明書 OPERATION INSTRUCTION SHEET OF SURFACE TREATMENT	OIS. No. : C-009 Rev: J , Issue Date: 2003/09/25 Customer: HONEYWELL

規範(Spec. No.) : C5041R,CLASS II / AMS-QQ-P-35(May 1998),TYPE VI
用途(Application): 耐熱耐蝕合金之表面清洗及鈍化處理
(Surface Cleaning and Passivation of Corrosion- and Heat-Resistance Alloys)
件號(Part Number): General Working Instruction
件號名稱(Part Name): N/A
材料(Material): 201, 301, 304, 304L, 304H, 310, 314, 316, 316L, 316H, 321, 321H, 347, 347H, etc.
工作號碼(Op No.): N/A
相關文件(Appliable Document):
WI-6L0-S03 不銹鋼鈍化處理工作指導說明
(Corrosion-Resistant Steel Passivation Treatments Working Instruction)

DOCUMENT APPROVAL (文件核可)		
Prepared (擬定) : 黃琨笙	Date (日期): 2003/09/25	Customer Approval(顧客核准)
Approved (核准): 林秉彰	Date (日期): 2003/10/03	
QA (品保核准): 羅建平	Date (日期): 2003/10/03	N/A

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表面處理施工說明書

OPERATION INSTRUCTION SHEET OF SURFACE TREATMENT

OIS. No. : C-009

Rev: J , Issue Date: 2003/09/25

Customer: HONEYWELL

工作號碼(OP NO):

工作部門(DEPT NO): 6L0

件號: PART NO. General Working Instruction

材料: BASE MATERIAL 見頁次1(See Page 1)

規範: SPEC NO. C5041R, CLASS II / AMS-QQ-P-35(May 1998),TYPE VI

用途(APPLICATION): 耐熱耐蝕合金之表面清洗及鈍化處理 (Surface Cleaning and Passivation of Corrosion- and Heat-Resistance Alloys)

程序 SEQ. NO.	說明 DESCRIPTION	裝備 EQUIPMENT	溶液 SOLUTION	溫度(℃) TEMPERATURE	時間(分) TIME(MINUTES)	備註 REMARKS
(1)	溶劑除油 SOLVENT DEGREASE	#00	M.E.K. or Acetone	室溫 Room Temperature	10秒以上 10 SEC min.	( )視需要 If required
2	熱鹼脫脂 HOT ALKALINE DEGREASE	#3 or #4	DIAKITE CLD-9061B 23-60g/L	71-88℃ 160-190°F	5-15分 5-15 MINUTES	
3	冷水沖洗 SPRAY WASH	#6	自來水 TAP WATER	室溫 Room Temperature	30秒以上 30 SEC min.	
4	噴水並測試工件表面是否斷水紋,如不乾淨,重複程序2&3 WATER SPRAY AND CHECK FOR WATER BREAK FREE, IF UNCLEAN, REPEAT SEQ. NO. 2 AND 3					
5	鈍化處理 PASSIVATION TREATMENT	#33	25-45 v/v% HNO_3	21-32℃ 70-90°F	30分 30 MINUTES	注意!不可損傷到工件 CAREFULLY! NOT TO DAMAGE THE PARTS
6	清水漂洗 COLD WATER RINSE	#34	自來水 TAP WATER	室溫 Room Temperature	15秒以上 15 SEC MIN.	
(7)	冷水沖洗 SPRAY WASH	#21	純水 DEIONISED WATER	室溫 Room Temperature	15秒以上 15 SEC MIN.	
8	除水份 REMOVE MOISTURE	空氣槍 AIR GUN	純淨壓縮氣 Clean,dry,oil-free Comp. Air	室溫 Room Temperature	視需要 As required	
(9)	烘乾 OVEN DRY	烤箱 OVEN	AIR	100±15℃ 212±25°F	30-60分 30-60 MINUTES	
10	檢驗 INSPECTION	目視: 須檢驗所有另件. 表面須無鐵金屬或其他外物污染而可能影響另件的使用、壽命. 另件須為清潔, 無腐蝕, 無蝕點, 無外物. 但輕微變色則可允許. Visual: All parts shall be visually inspected. Parts shall be free of iron contamination or other foreign material which would adversely affect the suitability, use, or life of the part. Parts shall be clean and show no etching or pitting. A slight discoloration is allowed.				

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AEF-AIDC	表面處理施工說明書 OPERATION INSTRUCTION SHEET OF SURFACE TREATMENT	OIS. No. : C-009 Rev: J , Issue Date: 2003/09/25 Customer: HONEYWELL

工作號碼(OP NO):　　工作部門(DEPT NO): 6L0

件號: PART NO.	General Working Instruction	材料: BASE MATERIAL	見頁次1(See Page 1)	規範: SPEC NO.	C5041R, CLASS II / AMS-QQ-P-35(May 1998),TYPE VI

用途(APPLICATION): 耐熱耐蝕合金之表面清洗及鈍化處理 (Surface Cleaning and Passivation of Corrosion- and Heat-Resistance Alloys)

文件修訂記錄(DOCUMENT REVISION STATUS) :

REV. 版期	DESCRIPTION 修定內容	REVISER 擬訂者	DATE 發佈日期
I	---	李昭興	1999/09/21
J	1.更改OIS格式(Change OIS Form.)。	黃琨筌	2003/09/25

ONOY on Type