Material Identification/Usage List

Fluids and Combustion Facility
Combustion Integrated Rack (CIR)

Draft
September 28, 2000

AUTHORIZED by CM when under FORMAL Configuration Control	
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PREFACE

The National Aeronautics and Space Administration (NASA) is developing a modular, multi-user experimentation facility for conducting fluid physics and combustion science experiments in the microgravity environment of the International Space Station (ISS). This facility, called the Fluids and Combustion Facility (FCF), consists of three test platforms: the Fluids Integrated Rack (FIR), the Combustion Integrated Rack (CIR), and the Shared Accommodations Rack (SAR). This document is prepared in accordance with FCF-PLN-0036.

MATERIALS IDENTIFICATION/USAGE LIST FOR THE FLUIDS AND COMBUSTION FACILITY COMBUSTION INTEGRATED RACK (CIR)

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MATERIALS IDENTIFICATION/USAGE LIST FOR THE FLUIDS AND COMBUSTION FACILITY COMBUSTION INTEGRATED RACK (CIR)

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REVISION PAGE
MATERIALS IDENTIFICATION/USAGE LIST

Revision	Date	Description of Change or ECO's/ECP's Incorporated	Verification and Date
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1.0 INTRODUCTION

1.1 Purpose.

The purpose of this document is to identify all materials, commercial assemblies, and specialized manufacturing processes (heat treatment, welding/brazing, NDE, etc.) used in the CIR flight hardware for the purpose of M&P evaluation. Material ratings shall be obtained from the Materials & Processes Technical information System (the electronic version of MSFC-HDBK-527/JSC 09604), or by actual materials testing in accordance with NASA-STD-6001. A Material Usage Agreement (MUA) shall be submitted, and documented on the MI/UL, for any material not "A" rated or better, or for material/assemblies where actual testing is not feasible. The MI/UL will serve as support documentation for certification of CIR flight hardware to the requirements in NSTS 1700.7B ISS Addendum, and SSP 30233.

1.2 Scope.

This Materials Identification/Usage List (MI/UL) is directed towards all materials, commercial assemblies, and processes used in the fabrication of the Combustion Integrated Rack (CIR) flight hardware. The MI/UL does not include the International Standard Payload Rack (ISPR), which is utilized by the CIR. The ISPR-4 racks are developed for the International Space station (ISS), and are provided by Boeing-Huntsville. Also, Ground Support Equipment (GSE) is exempt from inclusion.

1.3 Order of precedence for verification requirements.

The verification requirements contained in this document shall take precedence over any conflicting verification requirements.

2.0 DOCUMENTS

This section lists specifications, models, standards, guidelines, handbooks, and other special publications. These documents have been grouped into two categories: applicable documents and reference documents.

2.1 Order of precedence for documents.

In the event of a conflict between this document and other documents referenced herein, the requirements of this document shall apply. In the event of a conflict between this document and the contract, the contractual requirements shall take precedence over this document. All documents used, applicable or referenced, are to be the issues defined in the Configuration Management (CM) contract baseline. All document changes, issued after baseline establishment, shall be reviewed for impact on scope of work. If a change to an applicable document is determined to be effective, and contractually approved for implementation, the revision status will be updated in the CM contract baseline. The contract revision status of all applicable documents is available by accessing the CM database. Nothing in this document supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.2 Applicable documents.

The documents in these paragraphs are applicable to the FCF Project to the extent specified herein.

FCF-PLN-0036 08/08/00	FCF Materials and Processes Control Plan
NASA-STD-6001 02/09/98	Flammability, Odor, Offgassing, and Compatibility Requirements and Test Procedures for Materials in Environments That Support Combustion
MSFC-HDBK-527/JSC 09604 (MAPTIS Database)	Materials Selection List for Space Hardware
FCF-DOC-002	Science Requirements Envelope Document – Fluids and Combustion Facility

2.3 Reference documents.

The documents in this paragraph are provided only as reference material for background information and are not imposed as requirements.

NSTS 1700.7B 05/22/96	Safety Policy and Requirements for Payloads Using the Space Transportation System
NSTS 1700.7B ISS Addendum, 12/01/95	Safety Policy and Requirements for Payloads Using the International Space Station

3.0 MATERIALS IDENTIFICATION/USAGE LIST

See attached.

APPENDIX A ACRONYMS AND ABBREVIATIONS

CIR	Combustion Integrated Rack
FCF	Fluids and Combustion Facility
FIR	Fluids Integrated Rack
GSE	Ground Support Equipment
ISS	International Space Station
ISPR	International Standard Payload Rack
MUA	Material Usage Agreement
MU/UL	Materials Identification/Usage List
NASA	National Aeronautics and Space Administration
SAR	Shared Accommodations Rack

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELH200 (Test Chamber Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts:	Fasteners											
	Chamber Arm Slide											
	Chamber Arm Guide											
	O-Ring, Outer Door											
	O-Ring, Inner Door											
	O-Ring, Outer WS/IRR											
	O-Ring, Inner WS/IRR											
	Carr Lane CL-5-HRP											
	10-32 Spring Plunger											
	Flanged Oil-Less											Berg B7-44
MEDH201	Window Section	AL 7075-T73	51487	Mil-A-22771D	Mil-Std-2154			B	A		610	
				(forging)	ASTM-E1417							
					Mil-H-6088							
					Mil-C-5541							
					Mil-A-8625							
MEDH203	Lock Ring Handle	AL 6061-T6	10023	ASTM-B210	Mil-A-8625			B	A		610	
	Adhesive	Loctite 608				U	U				105, 203	Small amounts usage
MEDH204	Lock Ring	Cres 304	10090	QQ-S-766	Mil-Std-2154			A	A			Fracture Critical
					ASTM-E1417							
					QQ-P-35							
MEDH207	Slide Guide (Modified Commercial Part)											
	Support Rail	Al 6061-T6	10024		Mil-A-8625			B	A		610	P/N NSR8-PD-24
	Shaft	Cres 440C	50822					B	C		TBD	P/N NIPDL8
	Shaft	Cres 440C	50822					B	C		TBD	P/N NIPDL8
MEDH211	Interface Ring	AL 7075-T651	51382	QQ-A-250/12	Mil-Std-2154			B	C		TBD	Fracture Critical: Heat-treated
					ASTM-E1417							to T7351 condition (A for SCC).

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELH200 (Test Chamber Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
					Mil-H-6088							
					Mil-C-5541							
					Mil-A-8625							
MEDH212	Front end Cap	AL 7075-T73	51487	QQ-A-250/12	Mil-Std-2154			B	A		610	Fracture Critical
					ASTM-E1417							
					Mil-H-6088							
					Mil-C-5541							
					Mil-A-8625							
		Xylan Coating	60665			A	K					
MEDH213	Chamber Arm Rotary	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A		610	
MELH220	IRR Ass'y											See MI/UL 67212MELH220
MEDH218	Retaining Sleeve	Cres 316	50801	QQ-S-763	QQ-P-35			A	A			
MEDH219	Retaining Sleeve	Cres 316	50801		QQ-P-35			A	A			
MEDH222	Chamber Arm Linear	AL 6061-T6	51371	ASTM-B308	Mil-A-8625			B	A		610	
	Spring Plunger	Cres										Carr Lane P/N CL-31-SSPN-2
MEDH223	Hinge Arm Detent	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625			B	A		610	
MEDH224	Arm Detent Pin	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625			B	A		610	
MEDH225	Detent Roller Axle	Cres 304	10090	QQ-S-766	QQ-P-35			A	A			
MEDH226	Detent Roller	Cres 304	10090	QQ-S-766	QQ-P-35			A	A			
MEDH248	Vent Port Assembly	Cres 304	10090	QQ-S-763	QQ-P-35			A	A			
					Mil-Std-2219							Weld retainer ring in place
	Retainer Ring	Cres 304	10090	QQ-S-763	QQ-P-35			A	A			
	Filter Disc	Cres 304	10090					A	A			Ejay #84800-1.370-70
	Threadlocker	Teflen Pellet										McMaster #884935K49
	Adhesive	B/A 1838 Epoxy										3M Scotchweld
MEDH249	GC Port Filter Ass'y	Cres 304	10090	QQ-S-766	QQ-P-35			A	A			
					Mil-Std-2219							Weld retainer ring in place
	Retainer Ring	Cres 304	10090	QQ-S-766	QQ-P-35			A	A			
	Filter Disc	Cres 304	10090					A	A			Ejay #84800-0.625-70
	Threadlocker	Teflon Pellet										McMaster #884935K49
	Adhesive	B/A 1838 Epoxy										3M Scotchweld

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELH200 (Test Chamber Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
MELH230	Window Ass'y											See MI/UL 67212MELH230
MELH250	Rear End Cap Ass'y											See MI/UL 67212MELH250
MEDH251	Rear End Cap	AL 7075-T73	51487	Mil-A-22771D	Mil-Std-2154			B	A		610	Fracture Critical
					ASTM-E1417							
					Mil-C-5541							
					Mil-A-8625							
					Stress Relieve							No spec. listed for stress relief
MEDH253	End Cap Port Plug	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A		610	
					Mil-A-8625							
MEDH254	Handle Hinge	AL 6061-T6	51371	ASTM-B308	Mil-A-8625			B	A		610	
MEDH255	Door Hinge Pin	Cres 302	10382	QQ-S-763	Mil-Std-2154			A	A			
					ASTM-E1417							
					QQ-P-35							
MEDH257	End Cap Center Plug	AL 7075-T73	50239	QQ-A-250/12	Mil-Std-2154			B	A		610	Fracture Critical
					ASTM-E1417							
					Mil-C-5541							
					Mil-A-8625							
MEDH258	Wire Strain Relief	AL 6061-T6	50645	QQ-A-250/11	ASTM-E1417			B	A		610	
					Mil-A-8625							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELH230 (Window Subass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:	67212MELH200 (Test Chamber Ass'y)											
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts	Retaining Ring											Smalley P/N WS-525
	Retaining Ring											Smalley P/N WH-487
	O-Ring	Viton	TBD									Parker P/N 2-158
	O-Ring	Viton	TBD									Parker P/N 2-159
	O-Ring	Viton	TBD									Parker P/N 2-258
	Wave Spring											Smalley P/N TBD
MEDH231	Window Insert	AL 6061-T6	50645	QQ-A-250/11	Mil-Std-2154			B	A		610	
					ASTM-E1417							
					Mil-A-8625							
					Mil-C-5541							
MEDH232	Holder	AL 6061-T6	50645	QQ-A-250/11	Mil-Std-2154			B	A		610	
					ASTM-E1417							
					Mil-A-8625							
					Mil-C-5541							
MEDH233	Window	Silica Glass			Hydro Test	N	N					Fracture Critical?
	or	Saphire (Al2O3)				N	N					
MEDH234	Retainer Nut	AL 6061-T6	50645	QQ-A-250/11	Mil-Std-2154			B	A		610	
					ASTM-E1417							
					Mil-A-8625							
MEDH235	Speed Bump Ring	Cres 430	30066	ASTM-A240	Mil-S-5002			B	A		506	No spec. listed for heat-treat
					QQ-P-35							
					Heat Treat							
MEDH236	D Handle	AL 6061-T6	50645	QQ-A-250/11	Mil-Std-2154			B	A		610	
					ASTM-E1417							
					Mil-A-8625							
					Mil-C-5541							
MEDH237	D Handle Adapter	AL 6061-T6	50645	QQ-A-250/11	Mil-Std-2154			B	A		610	
					ASTM-E1417							
					Mil-A-8625							
					Mil-C-5541							
MEDH238	Latch Stud	Cres 17-4PH	10693	AMS-5643	Mil-S-5002			A	B		TBD	
					QQ-P-35							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELH230 (Window Subass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:	67212MELH200 (Test Chamber Ass'y)											
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
MEDH239	Hinge Pin	Cres	TBD		Mil-S-5002							
					QQ-P-35							
MEDH240	Window Gasket	Viton	TBD									Viton usually A-Flam, K-Tox
MEDH241	Window Spacer	Cres 304	10090	QQ-S-766	Mil-S-5002			A	A			
					QQ-P-35							
MEDH242	Spring Retainer	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625			B	A		610	
MEDH244	Window Spacer	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625			B	A		610	
MEDH245	Window Gasket	Viton	TBD									Viton usually A-Flam, K-Tox

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MFLM100 (FOMA Control Unit)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
LM140	MFC Enclosure and Base Ass'y											See MI/UL 67212MELM140

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MFLM140 (MFC Enclosure & Base Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts	Fasteners											M4 x 0.7 x 35 Lg
	Fasteners											M4 x 0.7 x 6 Lg
	Washers											M4
DM141	Base	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
LM142	MFC Enclosure Ass'y											
	Fasteners											M1.6 x 0.35
	Plug											Airborn #MQ212015113220006u
	Washers											#2-56
	Standoff											MFC
	Fasteners											M3 x 16 Lg
	PCB											
	Spacers											RAF #M0505-3-SS
	Hex Nut											M3 x 05
	Enclosure Front	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			Detail Dwg. DM143
	Support Mount	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			Detail Dwg. DM144
	Enclosure Back	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			Detail Dwg. DM145
	Keenserts	Cres 300	50224					A	A			Detail Dwg. DM145

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MFLM200 (Exhaust Vent Manifold Assembly)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MFLM200 (Exhaust Vent Manifold Assembly)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MFLM220 (Vent Manifold Assembly)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM221	Vent Manifold	AL 6061-T651		QQ-A-250/11	Mil-Std-2154			B	A			
					ASTM E1417							
					Mil-C-5541							
					Mil-A-8625, ty II							
	Threaded Inserts	Cres 303						A	A			
DM222	EVP Mounting Plate	AL 6061-T651		QQ-A-250/11	Mil-Std-2154			B	A			
					ASTM E1417							
					Mil-C-5541							
	Threaded Inserts	Cres 303						A	A			
DM224	Hold Down Bracket	AL 6061-T651		QQ-A-250/11	Mil-Std-2154			B	A			
					ASTM E1417							
					Mil-A-8625, ty II							
DM227	Adapter Block	AL 6061-T651		QQ-A-250/11	Mil-Std-2154			B	A			
					ASTM E1417							
					Mil-C-5541							
DM228	Adapter Fitting	Cres 316	50801	ASTM A276	Mil-Std-2154			A	A			
					ASTM E1417							
					QQ-P-35							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM230 (Exhaust Manifold Assembly)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM231	Exhaust Manifold	Cres 316		QQ-S-766	Mil-Std-2154			A	A			
					ASTM E1417							
					QQ-P-35							
DM234	Adapter Fitting	Cres 304		QQ-S-763	QQ-P-35			A	A			
LM235												
DM236	Adapter Fitting	Cres 300			QQ-P-35			A	A			Parker #4-4QHW-SS
DM237	Hex Jam Nut	Cres 304		QQ-S-766	Mil-Std-2154			A	A			
					ASTM E1417							
					QQ-P-35							
LM210	Bottle Support Bracket Ass'y											
	Release Pin											McMaster-Carr #98700A006
	Wave Spring Washer											Spec #W0492-007-S
	Support Bracket	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625 TyIII							Detail Dwg DM201
	Clamp Arm	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625 TyIII							Detail Dwg DM202
	Pivot Pin Screw	Cres 316		QQ-S-763	QQ-P-35							Detail Dwg DM205
	Pivot Pin	Cres 304		QQ-S-763	QQ-P-35							Detail Dwg DM206
	Pivot Pin Spacer	Cres 304		QQ-S-763	QQ-P-35							Detail Dwg DM207
	Support Pad	Viton										Detail Dwg DM209

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM240 (Manual Vent Valve Manifold Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM241	Manifold	AL 6061-T6	50645	QQ-A-250/11	Mil-Std-2154			B	A			
					ASTM E1417							
					Mil-C-5541							
					Mil-A-8625 TyII							
	Keenserts	Cres 303						A	A			
LM244	EVP Modified Tylan MFC Ass'y											
DM245	Base	Cres 300						A	A			Tylan #FC-2921V6V-J100SLMN2
LM246	Solenoid Valve Ass'y											
DM247	EVP Valve Base											Skinner #71215RN2MV

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM250 (Exhaust Vent Pump Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM251	Pump Housing	Cres 316		QQ-S-763	QQ-P-35			A	A			
DM252	Pump Flange	Cres 316		QQ-S-763	QQ-P-35			A	A			
DM253	Motor Housing	AL 6061-T6		QQ-A-250/11	Mil-A-8625 Tyl			B	A			
	Keenserts	Cres 300						A	A			
DM254	Rotor	Cres 316		QQ-S-763	QQ-P-35			A	A			
DM255	Pump Bolt	Cres 300			QQ-P-35			A	A			
DM259	Rotor	Cres 316		QQ-S-763	QQ-P-35			A	A			

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM300 (Fuel Manifold Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts:												
DM301	Fuel Manifold	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM-E1417							
					QQ-P-35							
LM302	Q-D Mounting Plate Ass'y											See list
DM303	Q-D-Mounting Plate	Cres 304	10090	QQ-S-763/766	Mil-Std-2154			A	A			
					QQ-P-35							
LM304	Poppet Press. Indicator Ass'y											See list
DM305	Poppet	Delrin Plastic	65155	ASTM D4181		X	K				TBD	
DM306	Indicator Body	Cres 304	10090	QQ-S-763/766	QQ-P-35			A	A			
DM307	Indicator Cap	Cres 304	10090	QQ-S-763/766	QQ-P-35			A	A			
DM308	Transducer Adapter	Cres 304	10090	QQ-S-763/766	QQ-P-35			A	A			
DM309	Modified Cap Screw	Cres 300	50224					A	A			
LM310	!/4" Hi.Pr. Inlet Valve Ass'y											See MI/UL 67212MELM310
LM315	1/4" Lo.Pr. Outlet Valve Ass'y											See MI/UL 67212MELM315
DM317	Seal Washer											
DM318	Modified Cap Screw	Cres 300	50224					A	A			
DM319	Modified Cap Screw	Cres 300	50224					A	A			
DM321	Support Bracket	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625 TyII			B	A			
DM322	Support Bracket	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625 TyIII			B	A			
DM323	Support Rod	Cres 300	10431		QQ-P-35			A	A			
DM324	Clip Pin	Cres 304	10090	QQ-S-766	QQ-P-35			A	A			
DM325	Bottle Retaining Clip	Cres 300 wire	10514		QQ-P-35			A	A			
DM326	Support Bkt. Insert	TBD										
DM327	Front Guide Block	Cres 304	10090	QQ-S-763/766	QQ-P-35			A	A			
	Coating	Xylan 1010	60665			A	K					
DM328	Bottle Rear Support	AL 6061-T651	50645	QQ-A-250/11	Mil-A-8625 TyIII			B	A			
					Mil-C-5541							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM300 (Fuel Manifold Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
	Bearing	TBD										Pacific Bearing #PSM-1014-10
LM330	Press. Regulator Ass'y											See MI/UL 67212MELM330
DM331	Bottle Rear Clip Pin	Cres 304	10090	QQ-S-766	QQ-P-35			A	A			
DM332	Bottle Retaining Clip	Cres 300 Wire	10514		QQ-P-35			A	A			
DM333	1/4" Hi.Pr. Valve Seat	Vespel SP-21	05122			A	K					
DM334	Poppet Guide	Cres 316	10370	QQ-S-763	QQ-P-35			A	A			
LM335	1/4" Low Press. Inlet Valve Ass'y											See MI/UL 67212MELM335
DM338	Solenoid Coil Nut	Cres 416	50065	QQ-S-764	Mil-Std-2154			B	B		TBD	
					ASTM-E1417							
					QQ-P-35							
DM339	Coil Nut Lock Screw	Cres304	10306	QQ-S-763	QQ-P-35			A	A			
LM340	1/4" Low Press. Inlet Valve ass'y w/Check Valve											See MI/UL 67212MELM340

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM310 (1/4" High Pressure Inlet Valve Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:	67212MELM300 (Fuel Manifold Ass'y)											
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts:	Valve Poppet	Cres 303	30080					A	A			Skinner #
	Spring											Century #
	Sleeve Ass'y	Cres 304	10090					A	A			Skinner #
		Cres 430	30066					B	A			
	Valve Spring	Cres 18-8	10419					A	A			Skinner #
	O-Ring	TBD										#M83248/1-003
	O-Ring	TBD										#M83248/1-016
	O-Ring	TBD										#M83248/1-023
	Back-Up Ring	TBD										#MS28774-016
	Back-Up Ring	TBD										#MS28774-023
	Seal Ring	Viton	TBD									Skinner #
DM311	Inlet Valve Body	Cres 316	10370		Mil-Std-2154			A	A			
					ASTM-E1417							
					QQ-P-35							
DM312	Valve Armature	TBD										
DM313	Valve Insert	Vespel SP-21	05122			A	K					
DM333	Valve Seat	Vespel SP-21	05122			A	K					
DM334	Poppet Guide	Cres 316	10370	QQ-S-763	Mil-S-5002			A	A			
					QQ-P-35							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM315 (1/4" Low Pressure Outlet Valve Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:	67212MELM300 (Fuel Manifold Ass'y)											
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts	Valve Armature	TBD										
	Valve Sleeve	TBD										
	Valve Spring	TBD										
	O-Ring	TBD										
	O-Ring	TBD										
	Valve Seal Ring	TBD										
DM316	Valve Body (Short)	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM-E1417							
					QQ-P-35							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM335 (1/4" Low Pressure Inlet Valve Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:	67212MELM300 (Fuel Manifold Ass'y)											
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts	Valve Armature	TBD										
	Valve Sleeve	TBD										
	Valve Spring	TBD										
	O-Ring	TBD										
	O-Ring	TBD										
	Valve Seal Ring	TBD										
DM336	Valve Body	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM-E1417							
					QQ-P-35							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM340 (1/4" Low Pressure Inlet Valve Ass'y w/Check)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:	67212MELM300 (Fuel Manifold Ass'y)											
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts	Valve Armature	Cres 430	30066					B	A			Skinner #
	Valve Sleeve	Cres 304	10090					A	A			Skinner #
		Cres 430	30066					B	A			
	Valve Spring	Cres 18-8	10419					A	A			Skinner #
	Retaining Ring	TBD										Tru-Arc #N5000-50-H
	Check Valve	TBD			O2 Cleaned							Circle Seal #C2932T-4Q-1
	O-Ring	TBD										M83248/1-012
	O-Ring	TBD										M83248/1-016
	O-Ring	TBD										M83248/1-023
	Valve Seal Ring	Viton	TBD									Skinner #
	Assembly Nut	TBD										Skinner #U99-011
	Lubricant	Krytox 240-AC	TBD									
DM341	Valve Body	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM-E1417							
					QQ-P-35							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM350 (High % Oxygen Manifold Assembly)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM351	O2/Diluent Manifold	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM-E1417							
					QQ-P-35							
DM357	Front Guide Block	Cres 304	10090	QQ-S-763	QQ-P-35			A	A			
	Coating	Xylan 1010	60665			A	K					

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MEDM360 (Modified MFC Assembly)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM361	MFC Shroud	Aluminum		QQ-A-250/11	Mil-C-5541							
					Mil-A-8625 TyIII							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM400 (Diluent/Premixed Gas Manifold Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM427	Guide Block	Cres 304	10090	QQ-S-763	QQ-P-35			A	A			
	Coating	Xylan 1010	60665			A	K					

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MEDM450 (Nitrogen/Hi-Pressure Manifold Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM451	Manifold	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM E1417							
					QQ-P-35							
DM453	Swagelok Fitting	Cres 300	50224					A	A			Swagelok #SS-4-VCR-1-00032
DM455	Valve Body Ass'y											
DM456	Valve Body	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM E1417							
					QQ-P-35							
DM457	Guide Block	Cres 304	10090	QQ-S-763	QQ-P-35			A	A			
	Coating	Xylan 1010	60665			A	K					

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MEDM460 (1/4" Hi-Pressure Inlet Valve)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM461	Valve Body	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM E1417							
					QQ-P-35							

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELM500 (Static Mixer Manifold Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
DM501	Manifold Block	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM E1417							
					QQ-P-35							
DM502	Mixer Housing	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A			
					ASTM E1417							
					QQ-P-35							
LM520	Solenoid Valve Ass'y											
DM521	Valve Body	Cres 316	50801	QQ-S-763	Mil-Std-2154			A	A			
					ASTM E1417							
LM525	Solenoid Valve Ass'y											
DM526	Washer	Cres 316	50801	QQ-S-763				A	A			
DM527	Washer	Cres 316	50801	QQ-S-763				A	A			
LM530	Solenoid Valve Ass'y											
DM531	Valve Body	Cres 316	50801	QQ-S-763				A	A			

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:
DRAWING NO:	67212MELM900 (Bottle Assemblies)				TEMP. RANGE:	Station Ambient					REV:
NEXT ASS'Y:											
							NASA Ratings				
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #
Commercial Parts											
DM911	Spacer Block	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625 TyII			B	A		
DM912	Guide Plate	AL 6061-T6	50645	QQ-A-250/11				B	A		
	Coating	Xylan 1010	60665			A	K				
DM913	Guide Plate	AL 6061-T6	50645	QQ-A-250/11				B	A		
	Coating	Xylan 1010	60665			A	K				
DM914	Guide Plate	AL 6061-T6	50645	QQ-A-250/11				B	A		
	Coating	Xylan 1010	60665			A	K				
DM915	Guide Plate	AL 6061-T6	50645	QQ-A-250/11				B	A		
	Coating	Xylan 1010	60665			A	K				
LM950	3" Adsorber Cartridge Ass'y										
DM951	Housing	Cres 316	50801	QQ-S-766				A	A		
DM953	Screen Assembly	Cres 316	50801	QQ-S-766	QQ-P-35			A	A		
	Wire Cloth	Cres 316	50801	QQ-S-766	AWS B2.2			A	A		
	Filler Material	Bag-21		AWS A5.8							
DM955	Retaining Wire			NASM20995C41	QQ-P-35						
DM956	End Cap	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A		
					ASTM E1417						
					Mil-Std-2219						
					QQ-P-35						
	Swagelock Fitting	Cres 300	50224					A	A		
	Nut	Cres 300	50224					A	A		
DM957	Lock Lever	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625 TyIII			B	A		
					Mil-C-5541						
DM958	Lock Lever	AL 6061-T6	50645	QQ-A-250/11	Mil-A-8625 TyIII			B	A		
					Mil-C-5541						
LM960	Bracket Assembly, Fixed Connection										
DM961	Bracket, Fixed	AL 6061-T651	50645	QQ-A-250/11	Mil-A-8625 TyIII			B	A		
					Mil-C-5541						
					Mil-Std-2154						
	Inserts	Cres 300	50224					A	A		
DM962	Bracket, QD	AL 6061-T651		QQ-A-250/11	Mil-A-8625 TyIII			B	A		
					Mil-C-5541						

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:
DRAWING NO:	67212MELM900 (Bottle Assemblies)				TEMP. RANGE:	Station Ambient					REV:
NEXT ASS'Y:											
							NASA Ratings				
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #
					Mil-Std-2154						
					ASTM E1417						
DM963	Spring Spacer	Cres 316	50801	QQ-S-766				A	A		
DM964	Spring Spacer	Cres 316	50801	QQ-S-766				A	A		
DM965	Bracket Assembly, Floating Connection										
DM966	Bracket, Floating	AL 6061-T651		QQ-A-250/11	Mil-A-8625 TyIII			B	A		
					Mil-C-5541						
					Mil-Std-2154						
					ASTM E1417						
	Insert	Cres 300	50224					A	A		
DM967	Slide Lock Bracket	AL 6061-T651		QQ-A-250/11	Mil-A-8625 TyIII			B	A		
					Mil-C-5541						
					Mil-Std-2154						
					ASTM E1417						
LM970	2" Adsorber Cartridge Ass'y										
DM971	Housing	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A		
					ASTM E1417						
					QQ-P-35						
DM973	Screen Assembly	Cres 316	50801	QQ-S-766	QQ-P-35			A	A		
	Wire Cloth	Cres 316	50801	QQ-S-766	AWS B2.2			A	A		
	Filler Material	Bag-21		AWS A5.8							
LM972	End Cap Assembly										
DM974	End Cap	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A		
					ASTM E1417						
					QQ-P-35						
					Mil-Std-2219						
	Gland	Cres 300	50224					A	A		
	Nut	Cres 300	50224					A	A		
LM975	1" Adsorber Cartridge Ass'y										
DM976	Housing	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A		
					ASTM E1417						
					QQ-P-35						

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:
DRAWING NO:	67212MELM900 (Bottle Assemblies)				TEMP. RANGE:	Station Ambient					REV:
NEXT ASS'Y:											
							NASA Ratings				
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #
DM978	Screen Assembly	Cres 316	50801	QQ-S-766	QQ-P-35			A	A		
	Wire Cloth	Cres 316	50801	QQ-S-766	AWS B2.2			A	A		
	Filler	Bag-21		AWS A5.8							
DM979	End Cap	Cres 316	50801	QQ-S-766	Mil-Std-2154			A	A		
					ASTM E1417						
					QQ-P-35						
					Mil-Std-2219						
	Gland	Cres 300	50224					A	A		
	Nut	Cres 300	50224					A	A		

Preliminary
Remarks
Vacuum Furnace Braze
Weld fitting to end cap
Swagelok #6LV-4-VCR-3S
Swagelok #SS-4-VCR-1

Preliminary
Remarks
Vacuum Furnace Braze
Weld fittings to end cap
Swagelok #6LV-4-VCR-3S
Swagelok #SS-4-VCR-1

Preliminary
Remarks
Vacuum furnace braze
Weld fitting to end cap
Swagelok #6LV-4-VCR-3S
Swagelok #SS-4-VCR-1

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELH900 (Gas Chromatograph Package Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:												
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts												
LH910	GC Enclosure Ass'y											See MI/UL 67212MELH910

MATERIALS IDENTIFICATION / USAGE LIST

PROJECT:	Combustion Integrated Rack (CIR)				ENVIRONMENT:	25% Oxygen					DATE:	
DRAWING NO:	67212MELH910 (GC Enclosure Ass'y)				TEMP. RANGE:	Station Ambient					REV:	Preliminary
NEXT ASS'Y:	67212MELH900 (Gas Chromatograph Package Ass'y)											
							NASA Ratings					
Detail Drawing	Part Name	Material(s)	Code	Mat'l Spec.	Process Spec.	Flam	Tox	Corr	SCC	TVS	MUA #	Remarks
Commercial Parts	Fasteners											NAS 1102E04-4
	Locking Clinchnut											Penn Corp. #PLC-440
	Locking Clinchnut											Penn Corp. #PLC-632
	Rivets				MSFC-Std-156							NAS 523
	Stenciling	Epoxy										Union Ink #UGLZ-8050
DH911	Baseplate	AL 6061-T651		QQ-A-250/11	Mil-C-26074			B	A			Electroless nickel plating
DH912	Top Plate	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
	Paint	Polyurethane	02543	TT-P-2756	160 F / 72 hrs	U	U					A' Tox- see code 04616
DH913	Corner Extrusion	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
	Paint	Polyurethane	02543	TT-P-2756	160 F / 72 hrs	U	U					A' Tox- see code 04616
DH914	Corner Extrusion	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
	Paint	Polyurethane	02543	TT-P-2756	160 F / 72 hrs	U	U					A' Tox- see code 04616
DH915	Support Bracket	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
DH916	Corner Extrusion	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
DH917	Guide Block	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
DH918	Rear Enclosure Plate	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
	Paint	Polyurethane	02543	TT-P-2756	160 F / 72 hrs	U	U					A' Tox- see code 04616
	Stenciling	Epoxy										Union Ink #UGLZ-8050
DH919	Left Enclosure Plate	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
	Paint	Polyurethane	02543	TT-P-2756	160 F / 72 hrs	U	U					A' Tox- see code 04616
DH920	Lock-down Plate	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
	Paint	Polyurethane	02543	TT-P-2756	160 F / 72 hrs	U	U					A' Tox- see code 04616
	Stenciling	Epoxy										Union Ink #UGLZ-8050
DH921	Lock-down Plate	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			
	Paint	Polyurethane	02543	TT-P-2756	160 F / 72 hrs	U	U					A' Tox- see code 04616
	Stenciling	Epoxy										Union Ink #UGLZ-8050
DH922	GC Screen	Cres 300 Cloth			Mil-C-5541			A	A			
DH923	Screen Retainer	AL 6061-T6	50645	QQ-A-250/11	Mil-C-5541			B	A			