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CABLE FABRICATION DOCUMENTATION UPDATE

Release Date: 2/12/2007 00:00:00
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NASA Concurrence	BROWN ROBERT G Nasa Ksc Mail: Phone: Documentum User Name : brownrg	02/06/2007 16:03:00 Document has been Approved
Technical	Hill Clifford M United Space Alliance LLC 55140 Mail:USK-753 Phone:321/861-9488 Documentum User Name : hillcm	02/06/2007 19:39:21 Document has been Approved
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TDC Release	Marrocco Cheryl L Troutman Technical 50250 Mail:TTS-038 Phone:321/861-4345 Documentum User Name : marroccl	02/12/2007 21:25:42 Document has been Approved

SPOC Document Release Authorization

United Space Alliance

PCN N/A	DRA Number SEE SIGNATURE PAGE	Page 1 of 4
ESR N/A	Title CABLE FABRICATION DOCUMENTATION UPDATE	Rev/Date
DIR N/A		Signature
EFF NFLT		
EQ. LOC. KSC, 4322, 4323, 4324		Ven Code N/A
		Contract N/A

Documents

I#	Pref.	Document Number	Issue	Size	Shts	B/L No.	Model Number	Maximo Work Order
1	SP *	75M13302	F	A	19	358.00	N/A	N/A
2	DD *	79K19600	E	A	13	358.00	N/A	N/A
3	FAB *	80K51393	B	F	2	358.00	N/A	N/A
4	FAB	80K61565	B	D	7	358.00	N/A	N/A

Technical Remarks

* DWG PREFIX CHANGE

Maximo Work Order: N/A

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NASA Concurrence SEE SIGNATURE PAGE				Joint Release N/A			
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Baseline Summary [Folder: 75M13302 Rev F]

01/22/07 08:06 PM

Instructions - Print this Baseline Summary report and number all pages accordingly to become part of your DRA. Review all of the information including station sets and locations. Please draw a single line through data that should be removed, but do not obliterate it. TDC must be able to read all information being removed. New PMN data must be added on the DRA directly.

THIS INFORMATION HAS BEEN REVIEWED AND VALIDATED AS COMPLETE AND CORRECT BY:

Print Approval Name: HARRIET A. ROBERTSON **Signature:**_____ **Of Org:** USA 55140 **On Date:** 2007-01-22

Doc Number: 75M13302 **Rel-Date:** 07/18/05 **Status:** ACTIVE
PREF: ~~DR~~ SP **Rev:** E **Previously Validated?:** Y **RO:** USA
Title: CONNECTOR INSPECTION SPECS
Locations: 4323 4322, 4324, KSC

B/L	PMN	SS	CRIT	SUST ENG	TITLE OF PMN	STAT
358.00	-	-				

Doc Number: 79K19600 **Rel-Date:** 03/25/05 **Status:** ACTIVE
PREF: ~~SP~~ DD **Rev:** D **Previously Validated?:** Y **RO:** USA
Title: ELECTRIC CABLE FABRICATION REQUIREMENTS
Locations: 4322, 4323, 4324, KSC

B/L	PMN	SS	CRIT	SUST ENG	TITLE OF PMN	STAT
358.00	-	-				

Doc Number: 80K51393 **Rel-Date:** 07/07/05 **Status:** ACTIVE
PREF: ~~CA~~ FAB **Rev:** A **Previously Validated?:** Y **RO:** USA
Title: BACKSHELL ELECTRICAL CONNECTOR
Locations: 4322, 4323, 4324 KSC

B/L	PMN	SS	CRIT	SUST ENG	TITLE OF PMN	STAT
022.01	S77-1342	-	C	USA 55140	SYSTEM, SRB ELEC. (FOR SRB JOINT HEATRS)	A
039.01	S77-1342	-	C	USA 55140	SYSTEM, SRB ELEC. (FOR SRB JOINT HEATRS)	A
358.00	-	-		~~USA 55140~~	~~SYSTEM, SRB ELEC. (FOR SRB JOINT HEATRS)~~	

Doc Number: 80K61565 **Rel-Date:** 03/25/05 **Status:** ACTIVE
PREF: FAB **Rev:** A **Previously Validated?:** Y **RO:** USA
Title: T-0 CABLES CONNECTOR/SLEEVE BUILD-UP
Locations: 4322, 4323, 4324, KSC

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D	REVISED & REDRAWN INC. E.O. 1,2,3,6 AND 7	3/3/78	KEITH JENKINS
E	REVISED & REDRAWN SHTS 1-8 ADDED SHT 9 THRU 14 1) WAS SHT 1 OF 8	2005/ 06/08	C.M. HILL
F	REVISED & REDRAWN SHTS 1 - 14 ADDED SHEETS 15 - 19 1) WAS SHT 1 OF 14	2006/ 08/18	C.M. HILL

CONNECTOR

INSPECTION

SPECIFICATION

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	ORIGINAL DATE OF DRAWING 12 JUN 64	CONNECTOR INSPECTION SPECIFICATION	JOHN F. KENNEDY SPACE CENTER, NASA
	DRAFTSMAN / MATERIALS		
	CHECKER / STRESS		
MATERIAL	ENGINEER / ENGINEER J.H. BARROW		KENNEDY SPACE CENTER FLORIDA
HEAT TREATMENT	SUBMITTED KEITH JENKINS		
FINAL PROTECTIVE FINISH	APPROVED F.D. GRIFFIN 15 JUNE 64	SCALE / UNIT WT	DWG SIZE A
			75M13302
			SHEET 1 OF 19

KSC FORM 21-2C (REV. 3/76) (C/G 11/92)

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SPECIFICATION CHANGE LOG

This change log is furnished in order to maintain a record of changes to this statement of work

CHANGE NO	DESCRIPTION OF CHANGE	SECTION	CHANGE DATE	APPROVAL SIGNATURE
E	Revised Format Updated Applicable Documents Updated Mil Specs as applicable Added Section 3.9.4 Added Table 6 Added Title to Figure 2 Added Note 4 for Tables 3, 4, 5 & 6	All 2.0 As Req'd 3.9.4 Tables & Figures	2005/ 06/08	C.M. Hill
F	Added DL-NED No. 005 to 2.1 Added section for NASA documents Revised Paragraphs 3.4.1, 3.4.1.2, 3.6.1, 3.9.1 through 3.9.4 Added Paragraphs 3.9.5 through 3.9.7 Revised Notes for Figure 1 Revised Figure 2 Revised Tables 1 through 6 Added Tables 7, 8 and 9 Moved Notes to Tables to end of document and revised as required	2.1, 3.4.1, 3.4.1.2, 3.6.1, 3.9.1 through 3.9.7, Figure 1 and 2, Tables 1 through 9, Notes for Tables	2006/ 08/18	C.M. Hill

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1.0 SCOPE

This specification provides the minimum requirements for inspection of electrical connectors prior to and after installation of the connectors onto cables or harnesses used for Space Shuttle ground support equipment at KSC.

This specification does not replace or preclude connector factory quality control inspection requirements or Government agency source inspection to the applicable military specifications.

This specification is for the assurance that the connectors have met the applicable military specification prior to installation on the cables and after fabrication to assure that the connectors have maintained their quality during installation onto the cables.

2.0 APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on the date of invitation to bid or request for proposals shall apply.

This specification applies only to the connectors that are manufactured to the specifications listed below.

2.1 SPECIFICATIONS, STANDARDS, AND PUBLICATIONS

Military

MIL-DTL-5015	Connector, Electrical, AN Type
MIL-C-22992	Connectors, Electrical, Waterproof Quick Disconnect, Heavy Duty Type
MIL-C-26482	Connectors, Electrical, Circular Miniature Quick Disconnect
MIL-DTL-38999	Connectors, Miniature Cylindrical Electrical, High Density

Kennedy Space Center

GP-864, Volume II, Rev A (or later)	Kennedy Approved Parts List Electrical GSE Cables Handbook
DL-NED, No. 005	Design and Fabrication Guidelines

NASA

40M38277	Connectors, Electrical, Circular, Miniature High Density, Environmental Resisting
40M38298	Connectors, Electrical, Special Miniature Circular, Environmental Resisting 200º C
40M39569	Connectors, Electrical, Miniature Circular, Environmental Resisting

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3.0 REQUIREMENTS

3.1 Connector Inspection

The following types of connectors require inspection:

a. Connectors supplied on GSE (cables, harnesses, and other related types of equipment.)

b. Connectors supplied as spares and delivered to KSC.

c. Mating connectors that are used to mate with any connector supplied or delivered to KSC. This includes any test fixtures (contractor or Government-owned) that mate with KSC connectors.

3.1.1 Inspection Identification

All connectors passing the requirements of this specification shall be marked with semi permanent yellow ink or paint dot approximately 1/8 inch diameter on metal surface near the part number if practical, and shall be easily visible after assembly and in an area most unlikely to be obliterated during handling. Unless the connector is to be immediately used, it shall be sealed in a transparent bag with a tag showing the inspection date, manufacturer's name, part number, NASA drawing number (if applicable), and the inspector's name and organization office code. Inspection shall be performed either by KSC Quality Assurance or by Contractor Quality Assurance personnel approved by KSC. Reject tags shall be placed on all connectors not meeting requirements of this specification. Prior unidentified inspection markings shall be ignored.

3.2 Inspection Documents

Connectors shall be inspected for conformance to documents, drawings, or specifications listed in Tables 1 through 5 of this specification.

3.2.1 Defect Report

A report containing each connector defect, name of connector manufacturer, number of connectors of each type tested, and degree of defect shall be forwarded to the cognizant design activity within 10 days after rejection.

3.3 Tools

Tools for measuring dimensions, limits, etc. shall be of the "GO" and "NO-GO" type where possible (Figure 1.). Other tools require prior approval of the cognizant design activity. Tools shall be inspected periodically for wear by KSC Quality Assurance representatives and shall be replaced whenever excessive wear has occurred. A depth micrometer is an acceptable tool in lieu of the above.

3.4 Contacts

3.4.1 Contact Recess Spacing

Connector pins and sockets shall be tested for correct spacing to front of barrel (recess). See dimensions A, C and E in Tables 3 through 8. For connectors with crimp contacts, this inspection will be performed after the conductors are crimped and the contacts inserted into the insert. For connector series not listed in this document, refer to appropriate specification for dimensional information.

3.4.1.1 Pins

A "GO" "NO-GO" tool shall be passed over each pin in both the GO and in the NO-GO position. The tool shall not touch any pin in the GO position, but shall touch each pin in the NO-GO position.

T-0 connections recess dimensions can be found in table 6. Critical T-0 connections pin recess dimensions shall be in accordance with note 4 and the dimensions shown in Table 6. Note 4 to Table 6 defines critical T-0 connections.

3.4.1.2 Sockets

Sockets shall be checked with applicable tables (Tables 3 through 8).

3.4.2 Pin Contact Diameter

Pin diameters shall be in accordance with dimensions in Table 2. In most cases, a visual inspection will reveal that the pins are of equal diameter.

3.4.3 Contact Finish

Finish shall not be damaged to the extent that scratches, nicks, or burrs penetrate through the protective plating, or would damage mating contacts, or prevent adequate contact area.

3.5 Wire Wells

3.5.1 Wire Well Dimensions

Wire well depth and diameter shall be in accordance with Table 1. These dimensions may be verified by manufacturer's certification if wells are presoldered or wired.

3.6 Insert

3.6.1 Insert Spacing

Insert position from end of barrel shall be in accordance with dimension B or D listed in Tables 3, 4, 5, 7 & 8.

3.6.2 Insert Clocking

All inserts shall be clocked as specified on the drawings, plus or minus 1 degree. Clocking shall be checked visually and by mating into a standard mating check connector to insure that insert is not clocked to such a degree that proper mating is hampered or impossible.

3.6.3. Contact Identification

Contact identification on the insert shall be clear and concise and located so that no confusion exists as to which contact is identified.

3.7 "O" Ring or Gasket

The "O" rings or gaskets supplied with connectors shall be inspected and replaced if any deterioration is noted.

3.8 Shell

The shell dimensions shall be as specified in the appropriate military or NASA specification.

3.9 Connector Identification Markings

Connector type and part number shall be legibly marked such that the connector can be readily identified. All examples below show only the basic type prefix that are to be completed by the requirement of the drawing. Reference GP-864 Tables 3-1 & 3-2 for Military Specification Numbers.

3.9.1 MIL-DTL-5015

MIL-DTL-5015 connectors may be identified by the MS numbers, by the manufacturer's part numbers, or by KSC drawing numbers, e.g., MS3100R or E, 10-72, 75M13310, BFR, TBF, etc. as long as they meet the applicable requirement of the cable subassembly drawing and MIL-

DTL-5015. Reference GP-864, Sections 3.2 & 3.7 for details.

3.9.2 MIL-C-22992

MIL-C-22992 connectors may be identified by the MS numbers, by the manufacturer's part numbers, or by the KSC part numbers, e.g., MS17344, HK06P, HK06L, HKC06P, 10-323640, 10-1946, 75M143XX, or 79K80259-X, etc. as long as they meet the applicable requirement of the cable subassembly drawing and MIL-C-22992. Reference GP-864, Sections 3.3 & 3.8, for details.

3.9.3 MIL-C-26482

MIL-C-26482 connectors may be identified by the MS numbers, by the manufacturer's part numbers, or by the KSC part numbers, e.g., MS3476L, MS3116, MS3126, PT06, KPT06, BPT06, 75M13710, etc. as long as they meet the applicable requirement of the subassembly drawing and MIL-C-26482. Reference GP-864, Sections 3.4 & 3.9, for details.

3.9.4 MIL-DTL-38999

MIL-DTL-38999 connectors may be identified by the MS numbers, or by the manufacturer's part numbers, e.g., MS27473, JT06R, 10-475, CTS06RE, KJ6E, NLS6E, (MFSC designation) etc. as long as they meet MIL-DTL-38999 series 1. Reference GP-864, Sections 3.5 & 3.10, for details.

3.9.5 40M39569

40M39569 connectors are identified by the NB number, e.g., NB6WGE22-55PNT2. These are flight-qualified versions of MIL- C-26482 Series 2 connectors. For GSE checkout cables, the MIL-C-26482 may be substituted, but flight-essential, GSE-vehicle-interfacing connectors must be the NB types. Reference GP-864, Sections 3.9.3 & 3.9.4 for details.

3.9.6 40M38298

40M38298 connectors are identified by the NBS number, e.g., NBS6E8-2PN. There are no substitutions allowed for these connectors. Refer to 40M38298 for approved vendor/part list. Reference GP-864, Section 3.9.5 for details.

3.9.7 40M38277

40M38277 connectors are identified by the NLS number, e.g., NLS7E1835PA. These are flight-qualified versions of MIL-DTL-38999 Series 2 connectors. There are no flight-essential interfaces with ground cables. Therefore, MIL-DTL-38999 Series 2 connectors may be substituted for these connectors. Reference GP-864, Sections 3.5 & 3.10.1 for details.

NOTE: There are certain unacceptable variations of connectors that meet the above MIL, or NASA, Specs. Refer to GP-864 Volume II, Revision A (or later) and DL-NED No. 005 Design and Fabrication Guidelines for approved connectors and substitutes.

4.0 QUALITY ASSURANCE PROVISIONS

4.1 Inspection and Analysis

The contractor is responsible for the performance of all visual inspections and measurements necessary to determine conformance of connectors to the requirements of this specification. The contractor's inspection system shall be in accordance with NASA Reliability and Quality Assurance Publication NHB 5300.4 (1C), as referenced in the contract. The procuring activity, or its designated representative, reserve the right to perform any or all inspections, measurements, and analyses set forth in the specifications, to ensure that the connectors conform to specified requirements.

5.0 PREPARATION FOR DELIVERY

There are no applicable requirements.

6.0 NOTES

6.1 Intended Use

This specification shall be used by KSC and KSC-contractors to ensure that connectors are qualified for use on cable and harness assemblies, or on other related GSE. Connectors should be inspected in accordance with this specification before and after assembling onto GSE.

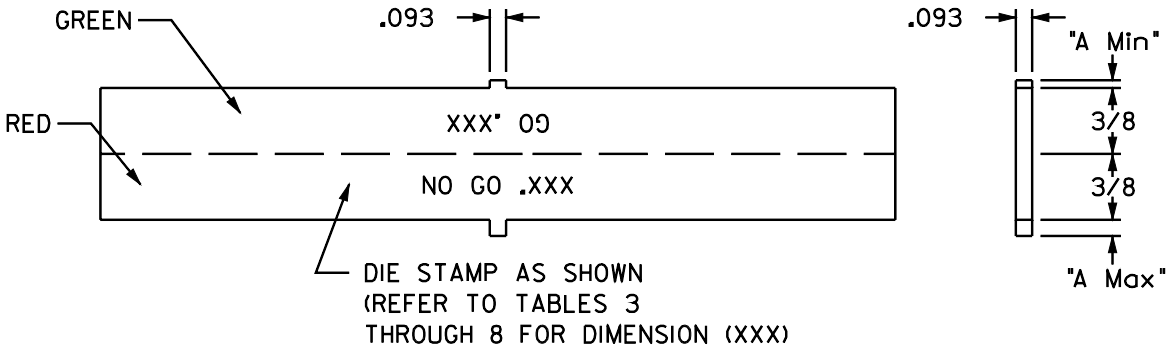
NOTICE: When KSC drawings, specifications, or other data are used for any purpose other than in connection with a definitely related KSC procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever and the fact that KSC may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implementation or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacturer, use, or sell any patented invention that my in any way be related thereto.

Custodian:
NASA-John F. Kennedy
Space Center

Preparing Activity:
John F. Kennedy Space Center
Design Engineering Directorate

FIGURES & TABLES

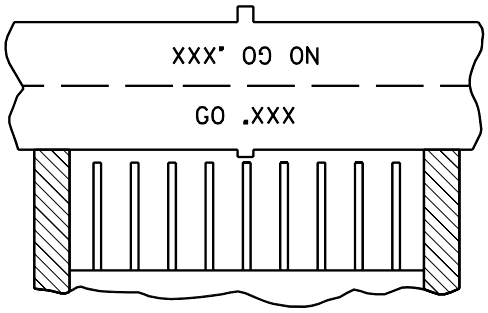
Figure 1 Test Tool



NOTES:

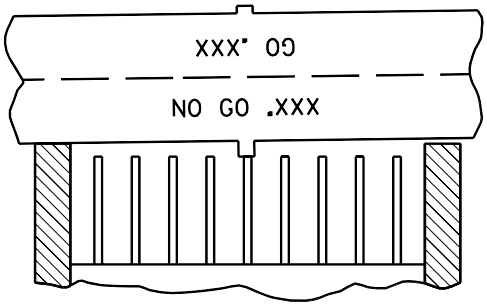
(1) "A Min" shall be as specified for A (Min.) dimensions, see Tables 3 through 8.

(2) "A Max" shall be as specified for A (Max.) dimensions, see Tables 3 through 8.



TOOL TOUCHES BOTH SIDES OF SHELL & DOES NOT TOUCH ANY PINS

GO TEST



TOOL TOUCHES ONLY ONE SIDE OF SHELL & TOUCHES ALL PINS

NO GO TEST

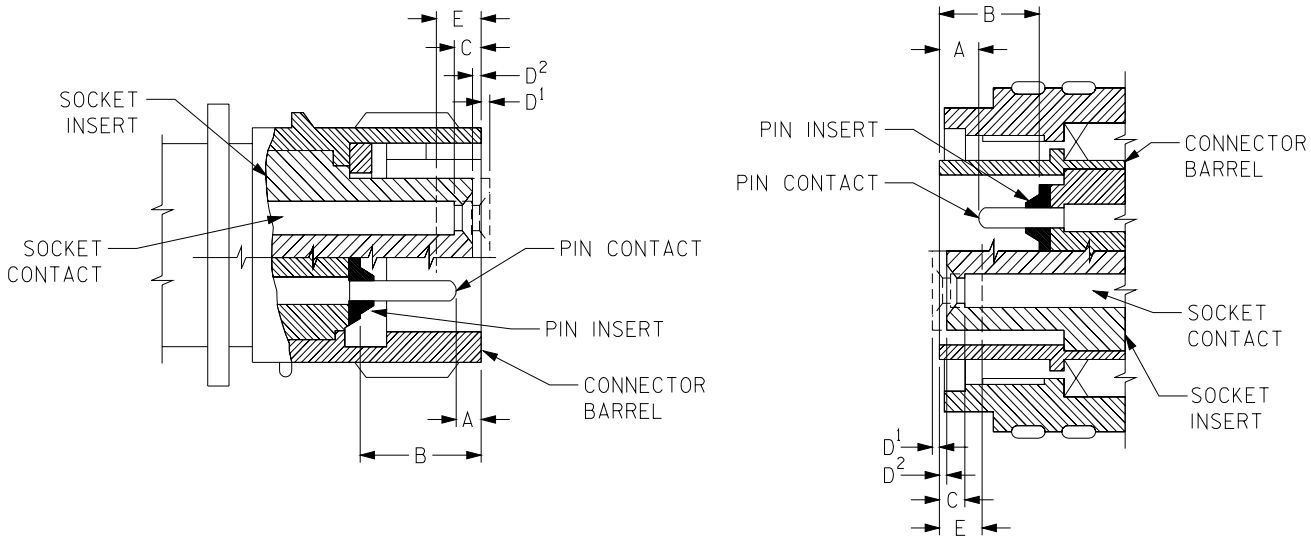
Table 1 Contact Wire Well Diameter and Depth

Contact			Miniature Quick Disconnect, Rear Release (MIL-C-26482 Series 2 & 40M39569)		Miniature Quick Disconnect, Front Release (MIL-C-26482, Series 1)		General Purpose, Rear Release (MIL-DTL-5015)		General Purpose, Front Release (MIL-DTL-5015)		Heavy Duty (MIL-C-22992, Class L)		Heavy Duty (MIL-C-22992, Classes C, J & R)		Miniature Connectors (40M38298)		Miniature High Density Quck Disconnect (MIL-DTL-38999 & 40M38277)	
Specification(s) SAE AS39029 (/XX) or Other		Pin	/4		/31		/29		/44		/48		MIL-C-22992		40M38298		/58, /107	
		Socket	/5		/32		/30		/45		/49		MIL-C-22992		40M38298		/56, /57, /106	
Wire Barrell Size	Wire - AWG		Dia. Min.	Depth Min.	Dia. Min.	Depth Min.	Dia. Min.	Depth Min.	Dia. Min.	Depth Min.	Dia. Min.	Depth Min.	Dia. Min.	Depth Min.	Dia. Min.	Depth Min.	Dia. Min.	Depth Min.
	Max.Size	Max. Dia.																
22D	22	.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.0335	.141
22	22	.033	-	-	-	-	-	-	.0335	.206	-	-	-	-	-	-	.0355	.141
20	20	.041	.048	.157	.048	.157	-	-	-	-	-	-	-	-	.043	.150	.046	.209
20 5	20	.041	.048	.250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16S	16	.059	-	-	-	-	.066	.250	-	-	-	-	-	-	-	-	-	-
16	16	.059	.066	.250	.066	.236	.066	.250	.066	.250	-	-	.069	.250	-	-	.066	.209
12	12	.090	.098	.250	.098	.236	.098	.250	.098	.250	-	-	.112	.375	-	-	.098	.209
10	10	.114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.134	.355
8	8	.173	-	-	-	-	.179	.485	.179	.480	-	-	.205	.500	-	-	-	-
6	6	.217	-	-	-	-	-	-	-	-	.232	.750	-	-	-	-	-	-
4	4	.274	-	-	-	-	.279	.485	.279	.480	.279	.750	.328	.625	-	-	-	-
0	0	.425	-	-	-	-	.451	.580	.451	.636	.403	.750	.464	.625	-	-	-	-
00	00	.475	-	-	-	-	-	-	-	-	.497	.750	-	-	-	-	-	-
0000	0000	.560	-	-	-	-	-	-	-	-	.638	.750	-	-	-	-	-	-

Table 2 Pin Size Diameter

Pins	Miniature Quick Disconnect, Rear Release (MIL-C-26482 Series 2 & 40M39569)		Miniature Quick Disconnect, Front Release (MIL-C-26482, Series 1)		General Purpose, Rear Release (MIL-DTL-5015)		General Purpose, Front Release (MIL-DTL-5015)		Heavy Duty (MIL-C-22992, Class L)		Heavy Duty (MIL-C-22992, Classes C, J & R)		Miniature Connectors (40M38298)		Miniature High Density Quck Disconnect (MIL-DTL-38999 & 40M38277)	
Specification(s) SAE AS39029 (/XXX) or Other	/4		/31		/29		/44		/48		MIL-C-22992		40M38298		/58, /107	
Pin Gage	Dia. Max.	Dia. Min.	Dia. Max.	Dia. Min.	Dia. Max.	Dia. Min.	Dia. Max.	Dia. Min.	Dia. Max.	Dia. Min.	Dia. Max.	Dia. Min.	Dia. Max.	Dia. Min.	Dia. Max.	Dia. Min.
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.0305	.0295
20	.041	.039	.041	.039	-	-	-	-	-	-	-	-	.041	.039	.041	.039
16	.0635	.0615	.0635	.0615	.0635	.0615	.0635	.0615	-	-	.0635	.0615	-	-	.0635	.0616
12	.095	.093	.095	.093	.095	.093	.095	.093	-	-	.095	.093	-	-	.095	.093
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.126	.124
8	-	-	-	-	.143	.141	.143	.141	-	-	.143	.141	-	-	-	-
6	-	-	-	-	-	-	-	-	.179	.177	-	-	-	-	-	-
4	-	-	-	-	.226	.224	.226	.224	.226	.224	.226	.224	-	-	-	-
0	-	-	-	-	.358	.356	.358	.356	.358	.356	.358	.356	-	-	-	-
00	-	-	-	-	-	-	-	-	.407	.405	-	-	-	-	-	-
0000	-	-	-	-	-	-	-	-	.501	.499	-	-	-	-	-	-

Figure 2 Contact and Insert Position Dimensions
(use with Tables 3 through 8)



Receptacle Plug

A Dimension: The distance from end of connector barrel to tip of pin contact
B Dimension: The distance from end of connector barrel to pin insert
C Dimension: The distance from end of connector barrel to end of socket contact
D^1 Dimension: The distance from end of connector barrel to socket insert protrusion
D^2 Dimension: The distance from end of connector barrel to socket insert inset
E Dimension: The distance from end of connector barrel to a point at which a gauge pin, having the same basic diameter as the mating contact and a square face, touches the socket spring

Table 3 Miniature Quick Disconnect Connectors (MIL-C-26482 and 40M39569)

Series	Shell Style	Shell Sizes	A		B		C		D^1	D^2	D^2	E	
			Min	Max	Min	Max	Min	Max	Max	Max	Min	Min	Max
1	Plug	8 thru 24	.055	.085	.293	.330	-	-	.014	.026	-	.065	.143
	Receptacle	8 thru 18	.065	.095	.312	.332	-	-	-	.025	.005	.075	.153
		20, 22, 24	.127	.157	.374	.394	-	-	-	.087	.067	.137	.215
2 & 40M39569	Plug	8 thru 24	.029	.113	.298	.338	.046	.126	.014	.026	-	-	-
	Receptacle	8 thru 18	.048	.109	.317	.334	.065	.122	-	.022	.005	-	-
		20, 22, 24	.110	.171	.379	.396	.127	.184	-	.084	.067	-	-

Series	Plug	Receptacle
1	MS3116 MS3126	MS3110, MS3111, MS3112, MS3114, MS3119 MS3120, MS3121, MS3122, MS3124, MS3127, MS3128
2	MS3475, MS3476	MS3440, MS3442, MS3443, MS3449 MS3470, MS3471, MS3472, MS3474
40M39569	NB6,NB6G, NB6W, NB6WG	NB0, NB4, NB7

Ref. GP-864, Tables 3-4, 3-13, 3-14 & 3-15, for additional part numbers

Table 4 General Purpose Connectors (MIL-DTL-5015)

Connector			Contact Size 16			Contact Size 12-4			Contact Size 0			All Contact Sizes 2				
			A		E	A 2		E	A 2		E	B		C	D[1]	D[2]
Series	Shell Style	Shell Sizes	Min.	Max.	Max	Min.	Max.	Max	Min.	Max.	Max	Min.	Max.	Min.	Max.	Max.
1 Classes E & R	Plug	8S, 10S, 10SL, 12S, 14S, 16S	.062	.125	.281	.062	.125	.375	.062	.125	.281	.448	.552	.060	.052	.005
	Receptacle											.453	.515		.047	.000
	Plug	12,14,16,18,20, 22,24,28,32,36,40	.250	6 .292			6 .105			6 .105		.636	.708		.052	.005
	Receptacle											.641	.703		.047	.000
2	Plug	8S, 10S, 10SL, 12S, 14S, 16S	.062	.125	.281	.062	.125	.328	.062	.125	.281	.486	.516	.062	.024	.006
	Receptacle											.483	.523		.013	.027
	Plug	12,14,16,18,20, 22,24,28,32,36,40	.219	6 .292			6 .105			6 .105		.674	.704		.024	.006
	Receptacle											.671	.711		.013	.027
3	Plug	8S, 10S, 10SL, 12S, 14S, 16S	.062	.125	.281	.062	.125	.328	.062	.125	.281	.499	.521	.080	.010	.010
	Receptacle											.497	.529		.023	.017
	Plug	12,14,16,18,20, 22,24,28,32,36,40	.219	6 .292			6 .105			6 .105		.687	.709		.010	.010
	Receptacle											.685	.717		.013	.027

Series	Plug	Receptacle
1	MS3106, MS3108	MS3100, MS3101, MS3102
2	MS3406, MS3408	MS3400, MS3401, MS3402, MS3404
3	MS3456, MS3459	MS3450, MS3451, MS3452, MS3454

Ref. GP-864, Tables 3-3, 3-6 & 3-7, for additional part numbers

Table 5 Heavy Duty Connectors (MIL-C-22992)

Shell Style	Shell Sizes	Contact Size 16								
		A		B		D^1	D^2	D^2	E	E 1
		Min	Max	Min	Max	Max	Max	Min	Max	Max
Plug	12 thru 40	.227	6 .287	.647	.717	.008	.062	-	6 .261	6 .252
	44			.682	.752	-	.043	.027		
Receptacle	12 thru 40	.294	.354	.699	.759	.010	.050	-	.328	.319
	44			.734	.794	-	.069	.009		

Shell Style	Shell Sizes	Contact Sizes 12 thru 0 2								
		A		B		D^1	D^2	D^2	12 thru 4	0
									E	E
		Min	Max	Min	Max	Max	Max	Min	Max	Max
Plug	12 thru 40	.062	.132	.647	.717	.008	.062	-	6 .355	6 .271
	44			.682	.752	-	.043	.027		
Receptacle	12 thru 40	.109	.179	.699	.759	.010	.050	-	.422	.328
	44			.734	.794	-	.069	.009		

Plug	Receptacle
MS17344 HK06 XX-1946XX	MS17343, MS17345 thru 8 HK00, HK01, HK02, HK03, HK09 XX-1940XX, XX-1941XX, XX-1942XX, XX-1943XX, XX-1949XX

Ref. GP-864, Tables 3-5, 3-9 & 3-9 through 3-12, for additional part numbers.

Table 6 T-0 Connectors – Orbiter End Only

Shell Size and Style	Contact Size(s)	A (critical) 4		A (non-critical)	
		Min.	Max.	Min.	Max.
Shell 22 (NB6WG)	12 and 16	0.029	0.082	0.029	0.113
	20		0.087		
Shell 36 (ME414-0235 and CVA-67-066)	0	N/A	N/A	0.062	0.125

Table 7 Miniature Connectors (40M38298)

Shell Size 8, Contact Size 20

Shell Style	A		B		C		D^1	D^2	D^2	E	
	Min	Max	Min	Max	Min	Max	Max	Max	Min	Min	Max
Plug	.041	.129	.298	.338	-.002	.092	.014	.026	-	-	-
Receptacle	.060	.125	.317	.334	.017	.088	-	.022	.005	-	-

Plug	Receptacle
NBS6, NBS8, NBS8G, NBS9, NBS9G	NBS0H, NBS3H, NBS7

Table 8 Miniature High Density Quick Disconnect Connectors (MIL-DTL-38999 and 40M38277)

Connector				All Contact Sizes								
				A		B		C	D[1]	D[2]	D[2]	E
Series	Shell Style		Shell Sizes	Min.	Max.	Min.	Max.	Min.	Max.	Max.	Min.	Max.
1	Plug		9-25	.364	.407	.561	.581	-	-	.020	.010	.109
	Receptacle			.368	.404	.566	.579	-	-	.023	.015	.111
2 & 40M38277	Plug		8-24	.028	.070	.225	.244	-	-	.026	.012	.110
	Receptacle			.031	.067	.228	.241	-	-	.023	.015	.111
3	in.	Plug	9-25	.349	.393	.565	.585	-	.002	.013	-	.101
		Receptacle		.374	.415	.592	.609	-	-	.037	.025	.128
	mm	Plug	9-25	8.86	9.98	14.36	14.85	-	0.05	0.33	-	2.56
		Receptacle		9.50	10.54	15.04	15.46	-	-	0.94	0.64	3.25
4	in.	Plug	11-25	.382	.422	.580	.596	-	-	.041	.030	.133
		Receptacle	11-17	.390	.434	.587	.608	-	-	.053	.038	.139
			19-25	.389	.435	.586		-	-		.037	
	mm	Plug	11-25	9.70	10.72	14.73	15.14	-	-	1.05	0.76	3.38
		Receptacle	11-17	9.90	11.03	14.91	15.44	-	-	1.34	0.96	3.53
			19-25	9.89	11.04	14.88		-	-	1.35	0.95	

Series	Plug	Receptacle
1	MS27467, 661	MIL-DTL-38999/9, MS27466, 468 Thru 471, 496, 505, 656, 662
2	MS27473, 480, 484, 500	MIL-DTL-38999/10, MS27472, 474 Thru 479, 481, 497, 499, 504, 508, 513
3	MIL-DTL-38999/26	MIL-DTL-38999/20 Thru /25, /27
4	MIL-DTL-38999/46, /47	MIL-DTL-38999/40 Thru /45, /48, /49, /50
40M38277	NLS6, NLS6G, NLS6W	NLS0, NLS3H, NLS5H, NLS7, NLS7H

Ref. GP-864, Table 3-16, for additional part numbers.

Table 9 Critical T-0 Connections (Orbiter Jacks)

4

T-0 Jack	Ref Des	Connector	Cable Subassembly Number(s)
O-1 J56	6010W24	NB6WGE22-55PXT2	79K19757, 80K61132
O-1 J60	6010W22	NB6WGE22-55PYT2	79K19756, 80K61136
O-1 J62	6010W14	NB6WGE22-12PNT2	79K19745, 80K61133
O-1 J64	6010W12	NB6WGE22-55PNT2	79K04908, 80K61139
O-2 J53	6009W3	NB6WGE22-55PXT2	79K19754, 80K61129
O-2 J57	6009W1	NB6WGE22-12PNT2	79K19745, 80K61133
O-2 J61	6009W5	NB6WGE22-55PNT2	79K19747, 80K61137
O-2 J71	6009W21	NB6WGE22-55PNT2	79K04899, 80K61146

T-0 orbiter jack connectors not listed above are to comply with column A (non-critical)

Notes for Tables 3 through 9:

1. Applies to insert 40-81S only.
2. Dimensions A through D apply also to the outer contact only of coaxial connectors. The inner or signal contact does not apply. Does not apply to size 16 contacts.
3. The uniformity of the B and D dimensions shall be within .030 across the face of any one insert.
4. T-0 applications are critical and those that are not dead-faced at T-0 require a greater pin contact engagement with a minimum swipe of 1.5mm. To maintain a minimum connector swipe of 1.5mm (0.059 in.) pin setback dimensions shall conform to those as shown in Table 6, column A (Critical). Connectors affected are those that connect to the T-0 jacks (through connector savers) as shown in Table 9.
5. This contact is a 16 Gage pin with a 20 Gage wire barrel.
6. May be up to 0.020 in. greater on finished cable assemblies.