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Engineering Release (ER)

**NORTHROP GRUMMAN**

<b>ER Type</b> <input type="checkbox"/> Initial Release <input checked="" type="checkbox"/> Engineering Order <input type="checkbox"/> Revision Notice <input type="checkbox"/> Variation Engineering Order <input type="checkbox"/> Advanced		<b>CLASSIFICATION</b> II	<b>QUAL STATUS IMPACTED?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>ECN NUMBER</b> ECN-00000 109161												
			<b>ATP AFFECTED?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	PAGE 1 OF 4												
<b>DOC NUMBER:</b> 1030-5579	<b>DOCUMENT TITLE:</b> CABLE ASSEMBLY, 1W1, GQM-163A STBD BOO		<b>FROM:</b> -2	<b>TO:</b> -3												
<b>JOB NUMBER:</b> 106413.18S.202.2021202010																
<b>ATTACHED EFFECTIVITY WORKSHEET(S), WHEN REQUIRED</b> REQUIRED PER INSTRUCTION BLOCK 15 ITEM b		<b>NEW DASH NUMBERS:</b> N/A	<b>NEXT HIGHER ASSY (S)</b> N/A													
<a href="#">CHANGE CODE:</a> D1A																
<b>ECR(S) INCORP:</b> GQM-823R2		<b>IPCR(S) INCORP:</b> N/A	<b>NC(S) INCORP:</b> N/A													
<b>ZONE</b>	<b>DESCRIPTION OF CHANGE</b>															
SEE ATTACHED REDLINES  Class II Change Justification: Adding substitute parts for obsolete and phase out parts. There are no changes to the interchangeability of part as there are only substitute parts being added while the primaries remain the same.  **Keep all obsolete and phase out parts in BOM**  Add to BOM: <table><thead><tr><th>PN</th><th>DESCRIPTION</th><th>CAGE CODE</th><th>QTY</th></tr></thead><tbody><tr><td>FN 6 - FGL0.44BK</td><td>SLEEVING, FIBERGLASS, 7/16", BLACK</td><td>02GC6</td><td>SUB</td></tr><tr><td>FN 21 - LC-136/BLACK</td><td>CORD-LACING NYLON BLACK</td><td>92194</td><td>SUB</td></tr></tbody></table>					PN	DESCRIPTION	CAGE CODE	QTY	FN 6 - FGL0.44BK	SLEEVING, FIBERGLASS, 7/16", BLACK	02GC6	SUB	FN 21 - LC-136/BLACK	CORD-LACING NYLON BLACK	92194	SUB
PN	DESCRIPTION	CAGE CODE	QTY													
FN 6 - FGL0.44BK	SLEEVING, FIBERGLASS, 7/16", BLACK	02GC6	SUB													
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FM61-223 (TM-14168)  
Rev AD 22 January 2018

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See Next Sheet for Signatures



Prepared By: <a href="#">Kozlowski, Alex</a>	Date: 8/27/2018	Configuration Management: Mayberry, Robert	Date: 10/15/2018
Program: Wimble, Jeff	Date: 10/2/2018	Electrical Engineering: N/A	Date:
Design: Robinette, Joseph	Date: 10/2/2018	Propulsion Engineering: Precup, Mark	Date: 10/3/2018
Product Lead: N/A	Date:	Mechanical Engineering: Van Der Geest, Sjaak	Date: 10/12/2018
Manufacturing: Andrade, Ruby	Date: 10/8/2018	Systems Engineering: N/A	Date:
Software Quality Assurance: N/A	Date:	Mechanical Test: N/A	Date:
Hardware Quality Assurance: Duff, Phil	Date: 10/2/2018	Materials & Processes: N/A	Date:
Material Planning: Wilson, Kelly	Date: 8/29/2018	Operational Safety: N/A	Date:
Software Engineering: N/A	Date:	System Safety: N/A	Date:
Cable Design Team: N/A	Date:	N/A	Date:
N/A	Date:	N/A	Date:
N/A	Date:	N/A	Date:
N/A	Date:	N/A	Date:
N/A	Date:		Date:

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NORTHROP GRUMMAN

## Parts List

## CDM Released - Master Redline

Drawing Number:	Title:	Cage Code:	Revision:	ECN#:
<b>PL 1030-5579</b>	CABLE ASSY, 1W1, GQM-163A STBD	27555	-2	ECN-00000071672

Find No	Part or Ident No	Nomenclature	Cage	U/M	Status	Comdty Cde	Dash#
0001	D38999/26FD18PN	CONNECTOR CIRC STR PLUG	MS	EA	Released	10304-01	1
0002	MS3126E10-6S	CONNECTOR CIRC PLUG STRT	MS	EA	Released	10304-01	2
0003	440DS031M1031-3	BACKSHELL-STRAIGHT-BANDING	06324	EA	Released	10304-03	1
0004	440DH031M1031	BACKSHELL-BANDING	06324	EA	Released	10304-03	1
0005	TTVF150WE-100	TEDLAR LABEL, ACRYLIC ADHESIVE, 1.5"W, CONTINUOUS	00779	RL	Released	00310	AR
	WRCM-717-637W	LABEL, CABLE, WHITE	85480	RL	Obsolete	10419	SUB
0006	FLEX7412	SLEEVING-1/2" INSIDE DIAMETER, 1/16" WALL	87585	FT	Obsolete	10316	7
	<b>FGL0.44BK</b>	<b>SLEEVING, FIBERGLASS, 7/16", BLACK</b>	<b>02GC6</b>	<b>EA</b>	<b>Released</b>	<b>10316</b>	<b>SUB</b>
0007	FIT-221-1	TUBING, SHRINK, BLK, 1"	92194	FT	Released	10316	AR
0008	FIT-221-1/2	TUBING, SHRINK, 1/2"	92194	FT	Released	10316	AR
0009	2172	BRAID-METAL TUBULAR 3/8	92194	FT	Released	10316	4
0010	M83519/2-8	TERMINATOR, SHIELD, W / LEAD	MS	EA	Released	10304	AR
0011	S063-3-01	TERMINATOR, SHIELD W / BRAIDED STRAP	06090	EA	Released	10304	AR
0012	600-052	BAND, METAL	06324	EA	Released	10307	3
0013	M27500-20SP2S23	CABLE, 20 AWG, TW / SH / PR	MS	FT	Released	10316	5
0014	M22759/43-20-9	WIRE, 20 AWG STRANDED, SINGLE	MS	FT	Released	00316	2
0015	1030-2013-001	TUBE, CONNECTOR LANYARD	27555	EA	Released	10317-02	1
0016	1030-2016-001	PLUG, CONNECTOR ADAPTER	27555	EA	Released	10317-01	1
0017	1030-2120-001	PLUG, HOLD DOWN	27555	EA	Released	10317-01	1
0018	1030-2122-001	GROMMET	27555	EA	Released	10310	1
0019	NAS1423-20	NUT HEX PLAIN 1.25-12 UNF	MS	EA	Released	10307	2
0020	NAS1149C2016R	WASHER-FLAT-1/14	MS	EA	Released	10307	2
0021	LC-136	TAPE, FLAT, BRAIDED	92194	RL	Obsolete	10419	SUB
	LC-136/WHITE	CORD-FLAT BRAIDED NYLON-WHITE	92194	RL	Released	10316	AR
	<b>LC-136/BLACK</b>	<b>CORD-LACING NYLON BLACK</b>	<b>92194</b>	<b>RL</b>	<b>Released</b>	<b>00316</b>	<b>SUB</b>
0022	69	TAPE, FIBERGLASS CLOTH	76381	EA	Obsolete	10419	SUB
	69-0.75	TAPE, GLASS CLOTH, ELECTRICAL, (3/4"X36 YD), WHITE, 3" CORE	76381	RL	Released	10419	AR
0023	ST-620-1R	TAPE, SILICON, RED, (MOX TAPE) .020" THICK, 1" WD	0H6Y7	EA	Released	10419	AR
0024	TM-8575	CABLE WORKMANSHIP AND ACCEPTANCE STANDARDS	27555	REF	Released	10700	REF
0025	TM-16599	GQM-163A ACCEPTANCE TEST PROCEDURE FOR FLIGHT AND	27555	REF	Released	10700	REF

**NORTHROP GRUMMAN****Parts List****CDM Released - Master Redline**

Drawing Number:	Title:	Cage Code:	Revision:	ECN:#:
<b>PL 1030-5579</b>	CABLE ASSY, 1W1, GQM-163A STBD	27555	-2	ECN-00000071672

0026	FIT-221-3/16	SHRINK TUBING, 3/16" BLK	92194	FT	Released	00316	AR
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**Parts List****UNRELEASED**

Drawing: 1030-5579 Description: CABLE ASSEMBLY, 1W1, GQM-163A STBD BOOSTER INTFC Rev Change To: -3 Cage ID: 27555 ECN ID: ECN-00000109161

Comp Find NO	Comp Line NO	Comp Part ID	Comp Part Rev	Item Description	Cage Code	U/M	Type	-001
0001	1	D38999/26FD18PN		CONNECTOR CIRC STR PLUG	MS	EA		1
0002	2	MS3126E10-6S		CONNECTOR CIRC PLUG STRT	MS	EA		2
0003	3	440DS031M1031-3		BACKSHELL-STRAIGHT-BANDING	06324	EA		1
0004	4	440DH031M1031		BACKSHELL-BANDING	06324	EA		1
0005	1005	WRCM-717-637W		LABEL, CABLE, WHITE	85480	RL	SUB	0
	8005	TTVF150WE-100		TEDLAR LABEL, ACRYLIC ADHESIVE, 1.5"W, CONTINUOUS (COMMENTS)	00779	RL	AR	0
0006	6	FLEX7412		SLEEVING-1/2" INSIDE DIAMETER, 1/16" WALL	87585	FT		7
	1006	FGL0.44BK		SLEEVING, FIBERGLASS, 7/16", BLACK	02GC6	EA	SUB	0
0007	8007	FIT-221-1		TUBING, SHRINK, BLK, 1"	92194	FT	AR	0
0008	8008	FIT-221-1/2		TUBING, SHRINK, 1/2"	92194	FT	AR	0
0009	9	2172		BRAID-METAL TUBULAR 3/8	92194	FT		4
0010	8010	M83519/2-8		TERMINATOR, SHIELD, W / LEAD	MS	EA	AR	0
0011	8011	S063-3-01		TERMINATOR, SHIELD W / BRAIDED STRAP	06090	EA	AR	0
0012	12	600-052		BAND, METAL	06324	EA		3
0013	13	M27500-20SP2S23		CABLE, 20 AWG, TW / SH / PR	MS	FT		5
0014	14	M22759/43-20-9		WIRE, 20 AWG STRANDED, SINGLE	MS	FT		2
0015	15	1030-2013-001	C1	TUBE, CONNECTOR LANYARD	27555	EA		1
0016	16	1030-2016-001	-1	PLUG, CONNECTOR ADAPTER	27555	EA		1
0017	17	1030-2120-001	-1	PLUG, HOLD DOWN	27555	EA		1
0018	18	1030-2122-001	-	GROMMET	27555	EA		1
0019	19	NAS1423-20		NUT HEX PLAIN 1.25-12 UNF	MS	EA		2

## Parts List

### UNRELEASED

Drawing: 1030-5579    Description: CABLE ASSEMBLY, 1W1, GQM-163A STBD BOOSTER INTFC    Rev Change To: -3    Cage ID: 27555    ECN ID: ECN-00000109161

Comp Find NO	Comp Line NO	Comp Part ID	Comp Part Rev	Item Description	Cage Code	U/M	Type	-001
0020	20	NAS1149C2016R		WASHER-FLAT-1/14	MS	EA		2
0021	1021	LC-136		TAPE, FLAT, BRAIDED	92194	RL	SUB	0
	2021	LC-136/BLACK		CORD-LACING NYLON BLACK	92194	RL	SUB	0
	8021	LC-136/WHITE		CORD-FLAT BRAIDED NYLON-WHITE	92194	RL	AR	0
0022	1022	69		TAPE, FIBERGLASS CLOTH	76381	EA	SUB	0
	8022	69-0.75		TAPE, GLASS CLOTH, ELECTRICAL, (3/4"X36 YD), WHITE, 3" CORE	76381	RL	AR	0
0023	8023	ST-620-1R		TAPE, SILICON, RED, (MOX TAPE) .020" THICK, 1" WD	0H6Y7	EA	AR	0
0024	9024	TM-8575	N	CABLE WORKMANSHIP AND ACCEPTANCE STANDARDS	27555	REF	REF	0
0025	9025	TM-16599	G	GQM-163A ACCEPTANCE TEST PROCEDURE FOR FLIGHT AND GSE CABLES	27555	REF	REF	0
0026	8026	FIT-221-3/16		SHRINK TUBING, 3/16" BLK	92194	FT	AR	0

# ENGINEERING DESIGN CHECKLIST

***NORTHROP GRUMMAN***

Date: 10/01/2018	DWG #: 1030-5579	DWG Name: CABLE ASSEMBLY, 1W1, GQM-163A STBD BOOSTER INTFC
Engineer: Alex Kozlowski	NHA: 1030-5019	

Item #	Description	Complete	Item #	Description	Complete
120	All Design Analyses Are Complete Including, But Not Limited To, Primary Structures, Secondary Structures, Fasteners, And Pull Test Loads (N/A Allowable Only If Not Structural In Nature) Structural Analysis #: Fastener Analysis #: Pull Test Load Analysis #: Additional Analysis #:	N/A	200	Bill Of Materials (BOM) Is Accurate (If Applicable)	Yes
			210	All Necessary Test Documents Identified (If Applicable) Document:	N/A
			220	Critical Attach Hardware (CAH per TM-8861) Hardware Marking Requirements Reviewed (N/A Allowable Only If Part Is Not CAH)	N/A
130	Tolerance Analysis Is Complete <b>*see note below</b> (A Peer Reviewed Released Analysis Is Required For All Primary Structures, Payload Interfaces And Vehicle GSE Interfaces. All Other Tolerance Stack Analyses Are Not Required To Be Released, But Shall Be Filed With The ME Lead Engineer Or Engineering Manager.) --Analysis #: --ME Lead/Engineering Manager Initials For N/A: --At A Minimum, Unreleased Tolerance Analyses Must Be Attached To The Engineering Design Checklist	N/A	230	Interference Check Performed On All Piece Parts And/Or Assemblies. Moving Or Separating Parts/Assemblies Shall Be Checked Through The Entire Range Of Motion	N/A
			240	Connector/Backshell & Cable Bend Radii Reviewed (N/A Allowable If No Cables/Connectors Or Brackets That Interface With Cables/Connectors On Drawing)	N/A
			250	Weld Design: Reviewed For Weld Symbolology & Notes, Engineering For Weld Design, And PM&P (PM&P Not Required For Drawings Of Hardware Welded On An SSG Welder Per TO-PS1036) For Filler Material & NDT Processing. (N/A Allowable If No Welds On Drawing Or If Drawing Was Previously Checked For Weld Design And Change Does Not Affect The Weld Design)	N/A
140	Running Torque Addressed/Torque Table Complete (N/A Allowable Only If No Torques Required On Drawing) Analysis #:	N/A	* Note For Item #130: N/A Allowable Only If: One Of The Following Conditions Are True: 1) Drawing Does Not Control The Fabrication Or Assembly Of An Item (e.g. Vehicle Profile Drawing Wind Tunnel Drawing, ATP, Etc...) 2) Drawing Is An Interconnect, Schematic, Or Cable Drawing 3) It Is A Class II Change That Does Not Affect An Interface Or The Physical Geometry Of The Part 4) Other Miscellaneous Circumstances That Don't Require Any Tolerance Review (e.g. Tube Cleaning, NDI Testing, Proof Testing, Etc...) 5) Features Of Heritage Drawings Not Undergoing Change Other Notes 6) Any "N/A" For Tolerance Analysis Exemption Must Have A Justification Filed In Place Of The Analysis 7) All Unreleased Tolerance Analyses Must Be Uploaded Into OSCAR		
150	Fasteners Meet TM-8861 Requirements (SF, Thread Protrusion) (N/A Allowable Only If No Fasteners Called Out On Drawing)	N/A			
160	All Dimensions Reviewed (If Applicable)	N/A			
170	All Notes Reviewed (If Applicable)	N/A			
180	Responsible Engineer Has Reviewed For Accuracy Of Materials, Adhesives, Specifications, Inspection Methods, Etc. (N/A Allowable For Drawings With No Material Sensitivity Such As Schematics, Specs, ICD's, Profile Drawings, Drawing Trees, Etc.)	Yes			

Explanation Required For All Items Answered N/A.  
 Director Of Mechanical Engineering Or Mechanical Engineering Manager Must Approve All Items Answered NO  
 Item(s): #120: No structural changes from previous revision. #130: No tolerance changes from previous revision. #140: No torque changes since last release. #150: No fasteners on drawing. #210: No test documents for the drawing. #220: No CAH. #230: No changes to the final part compared to previous revision. #240: No changes since last release. #250: No welds on drawing.

Dir/Mgr, ME Dept

**NORTHROP GRUMMAN**

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PREPARED BY: Kozlowski, Alex	DATE: 10/12/18	QUALITY ASSURANCE: Duff, Phil	DATE: 10/02/18
MATERIAL PLANNING: Kelly Wilson	DATE: 8/29/18	CONFIGURATION MANAGEMENT: Mayberry, Robert	DATE: 10/12/18