| REV | DESCRIPTION | DATE | APPROVED |
|-----|---------------------------------|----------|-----------|
| Α | INCORPORATE ECN C25052 | 94-10-21 | LAD |
| В | UPDATE DOCUMENT TO L-3 FORMAT | 08-07-11 | L TARVER |
| | DELETED OBSOLETE PART NUMBERS | | M JOHNSON |
| | UPDATED OBSOLETE SPECIFICATIONS | | |

| | GEN USAGE | |
|------|-------------|---------|
| DASH | NEXT ASSY | USED ON |
| | APPLICATION | |

UNLESS OTHERWISE SPECIFIED

1 INTERPRET DRAWING IN ACCORDANCE WITH ASME Y14.100.

- 2 DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994 IN INCH STANDARD AND INCLUDE APPLIED FINISHES.
- 3 TOLERANCES
 - 2 PLACE DECIMAL ±.03 - 3 PLACE DECIMAL - ±.010 - ANGULAR - ±.0°30"

TOLERANCES FOR DRAWN or EXTRUDED ALUMINUM RAW MATERIAL per ANSI H35.2

ALL SHEETS ARE THE SAME REVISION STATUS.

DISTRIBUTION STATEMENT A.

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

VENDOR ITEM CONTROL DRAWING

CONTRACT NUMBER



| APPROVED | J.LOVE | 93-05-11 | DRAW | DRAWING TITLE | | | | |
|------------------|-------------|----------|--------------------------------------|---------------|-----------------|-------------|-----|--|
| ENGR | N.LORENZO | 93-05-05 | | | | | | |
| ENGR | K.SCHELLER | 93-05-03 | | SHIELD, CA | BLE, DOUBLE BRA | ID, TUBULAR | | |
| CHECK | D.CAMPOS | 93-05-11 | WITH EXPANDABLE WOVEN BRAID SLEEVING | | | | | |
| DRAWN | J.M.SPENCER | 93-05-03 | | | | | | |
| SPRT ENGR | E.MARURI | 93-05-05 | SIZE | CAGE CODE | DWG NO. | | REV | |
| | | | А | 0GCL4 | JW000 | 023 | В | |
| Prepared by Waco | | Sc | ale: None | | SHEET 1 C | F 8 | | |

1. SCOPE

- 1.1 **Scope**. This drawing detail the requirements for EMI / RFI shielding, double braided tubular construction, to provide shielding in general aircraft electronic shielding.
- 1.2 **Part Number.** The complete part number shall be as shown in the following example.

JW000023 -XXX

Drawing Number Dash Number

2. APPLICABLE DOCUMENTS

2.1 **Government specifications, standard and handbook.** Unless otherwise specified, the following specification(s), standard(s) and handbook(s), of the issue listed in the Department of Defense Index of Specifications and Standards as specified in the solicitation, form a part of this drawing to the extent specified herein.

Standards

Military

MIL-C-12000 Cable, Cord, and Wire, Electric, Packaging of

NEMA WC 27500 Cable, Electrical, Shielded and Unshielded, Aerospace

Standards

MIL-STD-129 Marking for Shipment or Storage

Federal

FED-STD-228 Cable and Wire, Insulated, Methods of Testing

A-A-59551 Wire, Electrical, Copper Uninsulated

A-A-59569B Braid, Wire (Copper, Tin-coated, or Silver Coated, Tubular,

or Flat)

ASTM B33 Tinned Soft of Annealed Copper Wire for Electrical Purposes.

Specifications for

Federal Aviation Regulations

FAR PART 25 Airworthiness Standards; Transport Category Airplanes

(Copies of the specification, standard, and handbook required by manufacturers in connection with specific acquisition function should be obtained from the contracting activity or as directed by the contracting activity.)

| SIZE | CAGE CODE | DWG NO. | | REV | |
|------|-----------|---------|---------|-----|--|
| Α | 0GCL4 | JW000 | 023 | В | |
| Sc | ale: None | | SHEET 2 | | |

L-3/IS employees shall maintain the confidentiality of information entrusted to them by the Company and any other confidential information about the Company except when displosure is authorized or legally mandated. Replaients of L-3/IS information shall protect L-3 documents and use discretion in

3. **REQUIREMENTS**

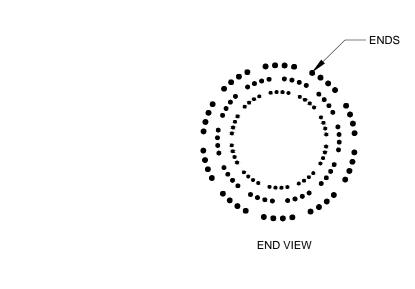
- **3.1 Material.** The wire used in the construction of the braids covered by this specification shall conform to the requirements of ASTM B33 for tin coated copper. See also Figure 1 and Table 1.
- **3.1.1 Individual Wires.** Individual wires shall be to size and shall be uniform in cross-section. Each wire shall be one continuous length, free from splices except as specified herein. All wire shall be commercially free from lump, kinks splits, abrasions, scrapped or corroded surfaces, and skin impurities.
- **3.1.2** Transfer Impedance. Transfer impedance shall not exceed 7 -10 milliohms per meter maximum.
- **3.1.3** Cleanliness. Braid shall be free of all corrosion, oxidation and other contaminants.
- **3.1.4 Lanyard.** A lanyard having a tensile strength minimum of 300 pounds shall be placed through the center.
- **3.1.5 Exterior covering.** The exterior covering shall be made of an expandable monofilament braid capable of meeting the following temperature ratings.

1 thru 8 +125°C 101 thru 108 +200°C

- **3.1.6 Burn Test.** A burn test per Federal Aviation Regulation, Part 25, Appendix F Paragraph 7 will be required for some construction. (See Table I for identification of those constructions).
- **Design and construction**. The wire braid shall have the number of carriers and ends shown in Table I for the braid and wire sizes specified.
- **3.2.1 Splices.** There shall be not more than one splice or break in any carrier in each 25-feet of the braid.
- **3.2.2** Coverage (tubular braid only). Tubular braids shall be designed with the braid angle or picks per inch which will produce a minimum of 90 percent coverage except for .078 inch and smaller, which shall be 70 percent minimum (see 4.2).
- **3.2.3 Lengths.** Unless otherwise specified (see 6.1), 90 percent of the total order for braid to be supplied in continuous, unspliced lengths as shown in Table II. Ten percent of the total order braid shall be acceptable in random unspliced lengths as shown below.
- **3.3** Flattening of Tubular braid. Unless otherwise specified, tubular shielding braid shall not be flattened beyond the point which will occur only by its own weight when wound on spools for shipment.
- **3.4 Workmanship.** Workmanship shall be in accordance with high-grade commercial practice.
- **3.5 Conformity.** The suppliers listed herein are suggested sources of these items. All items shall conform to the requirements disclosed herein. All changes in items supplied to this document are subject to prior inspection and deviation from requirements may be cause for rejection.

| SIZE | CAGE CODE | DWG NO. | | REV | |
|------|------------|---------|---------|-----|--|
| А | 0GCL4 | JW0000 | 023 | В | |
| Sc | cale: None | | SHEET 3 | | |

-31/S employees shall maintain the confidentiality of information entrusted to them by the Company and any other confidential information about the confidential information statement is authorized for flegally mandated. Replacement in information is about an accordance with applicable company policy. The amounts and the decision of confidential or proprietally information is half be in accordance with applicable company policy.



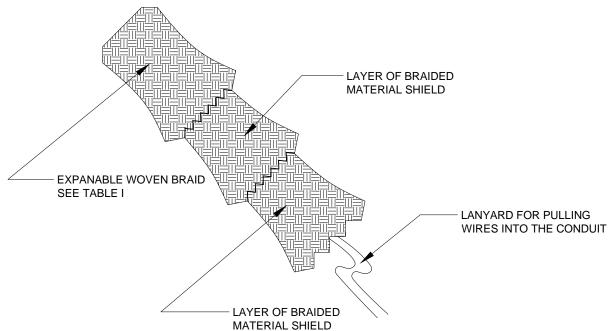


Figure 1. Shielding - Physical Characteristics.

| SIZE | CAGE CODE | DWG NO. | | REV | |
|------|-----------|---------|---------|-----|--|
| Α | 0GCL4 | JW000 | 023 | В | |
| Sc | ale: None | | SHEET 4 | | |

- **3.6 Supporting data.** Suppliers of items disclosed herein shall have available upon request supporting data providing evidence of compliance with performance characteristics specified herein.
- **3.7 Marking.** Part markings shall meet the requirements of MIL-STD-130.
- **3.8 Notification of Change**. Notification of change to the items depicted in this drawing shall be made to the procuring activity's purchasing department, in writing, prior to acceptance of a purchase order for this item. For definitive purposes of this drawing, "change to the Item" is intended to include, but not be limited to, changes that affect performance, physical and / or functionally interchangeability, quality, or reliability of the item.

4. QUALITY ASSURANCE PROVISIONS

- **Sampling and Inspection**. The manufacturer is responsible for the performance of all tests and requirements specified herein in order to ensure the delivery of a product that conforms to this drawing. Sampling for visual and dimensional examinations shall be in accordance with MIL-STD-1916, Level I.
- **4.2 Coverage (tubular braid only).** The percent of coverage shall be determined by using the following formula per NEMA WC 27500.

$$F = \frac{NPW}{CSINA}$$

$$tanA = \frac{2\pi (d + 2W) P}{C}$$

Where

K = percent coverage of braided shields

A = braid angle

C = number of carriers (Table I)

D = inside diameter in inches (Table I)

N = total number of ends (Table I)

P = picks per inch

W = diameter of individual braid wires in inches

There shall be no evidence of holes in shielding and the coverage shall be 90% minimum.

- **Rejected Lots**. Rejected lots shall not be resubmitted for inspection without furnishing full particulars concerning previous rejections and means taken to correct the defects.
- **4.4 Inspections of packaging.** The sampling and inspection of the preservation, packing and container marking shall be in accordance with the requirements of MIL-C-12000.

| SIZE | CAGE CODE | DWG NO. | | REV | |
|------|-----------|---------|---------|-----|--|
| Α | 0GCL4 | JW000 | 023 | В | |
| Sc | ale: None | | SHEET : | | |

Media Code: Microsoft Word 2002

Table I. Physical Characteristics

| DASH | NOMINAI WHEN RO | | BRAID CONSTRUCTION | | | BRAID MATERIAL | OUTER JACKET |
|------|--------------------|-------|-------------------------------|----------|--------------------------------------|-------------------|-----------------|
| NO. | INCHES | ММ | AWG OF INDIVIDIUAL ENDS | CARRIERS | TOTALNUMBER OF INDIVIDUAL ENDS | MATERIAL | MATERIAL |
| 001 | 3/8 | 9.53 | 36 | 48 | 384 | | |
| 002 | 1/2 | 12.70 | 36 | 48 | 528 | | |
| 003 | 3/4 | 19.05 | 36 | 48 | 864 | | |
| 004 | 1 | 25.40 | 36 | 64 | 768 | | Polyethylene |
| 005 | 1 1/2 | 37.10 | 36 | 72 | 936 | _ | Terephtalate |
| 006 | 1/4 | 6.35 | 36 | 24 | 384 | | |
| 007 | 5/8 | 15.88 | 36 | 48 | 720 | | |
| 008 | 7/8 | 22.23 | 36 | 64 | 640 | Tin | |
| 101 | 3/8 | 9.53 | 36 | 48 | 384 | Copper | |
| 102 | 1/2 | 12.70 | 36 | 48 | 528 | | |
| 103 | 3/4 | 19.05 | 36 | 48 | 864 | | |
| 104 | 1 | 25.40 | 36 | 64 | 768 | | PPS/PEEK or |
| 105 | 1 1/2 | 38.10 | 36 | 72 | 936 | | E-CTFE |
| 106 | 1/4 | 6.35 | 36 | 24 | 384 | | <u>1</u> / |
| 107 | 5/8 | 15.88 | 36 | 48 | 720 | | |
| 108 | 7/8 | 22.23 | 36 | 64 | 640 | | |

^{1/} Burn test IAW Appendix F. Paragraph 7 of FAR Part 25 required.

Table II. Braid Lengths Versus Splices.

| BRAID | LEN | GTHS |
|-------------------|-------------|-------------|
| DIAMETER (INCHES) | 90% NOMINAL | 10% MINIMUM |
| ≤ .171 | 250 ft. | 40 ft. |
| ≥ .203 | 100 ft. | 25 ft. |

SIZE CAGE CODE DWG NO.

A 0GCL4 JW000023 B

Scale: None SHEET 6

5. PREPARATION FOR DELIVERY

- **5.1 Packaging requirements.** Parts delivered to this drawing shall be packaged in such a manner as to ensure their ability to withstand normal shipping and handling without damage by a common carrier.
- **5.1.1 Marking of Spools and Reels**. In addition to the marking requirements of MIL-C-12000, each spool and reel shall be marked with the following information.
 - a. Federal part number (in lieu of manufacturer' part number and Cage Code).
 - b. Net Weight (in pounds)
 - c. Date (Month, Day and Year) and number of inspections.
 - d. Date (Month, Day and Year) of manufacture.
 - e. Manufacturer's name of trademark.

6. NOTES

- **Ordering data.** Purchaser should exercise any desired options offered herein and procurement documents should specify the following:
 - a. Title, number, and date of this specification
 - b. Length
 - c. Color
 - 1. White
 - 2. Black
 - 3. White with black tracers
 - 4. Black with white tracers
- **6.2 Exterior covering and metal braid**. Exterior covering and metal braid shall be supplied assembled.

 SIZE
 CAGE CODE
 DWG NO.
 REV

 A
 0GCL4
 JW000023
 B

 Scale: None
 SHEET 7

L-3/IS employees shall maintain the confidentiality of information entrusted to them by the Company and any other confidential information about the Company except when displosure is authorized of legally mandated. Recipients of L-3/IS information shall protect L-3 documents and use discretion in

7.0 SUGGESTED SOURCE(S) OF SUPPLY.

Identification of the suggested source(s) of supply herein is not to be construed as a guarantee of the present or continued availability as a source of supply for the items described in this drawing.

Source 2 Source 3

Continental Cordage Corp.

GlenAir, Inc.

Bunker Sales and Marketing
303 North Nursery
Cazenovia, NY 13035

Glendale, CA 91201

Bunker Sales and Marketing
303 North Nursery
Irving, TX 75061

Cage Code: 4U897 Cage Code: 06324 Cage Code: 0EXL9

¹Table III. <u>SOURCE(S) OF SUPPLY</u>

| L-3/IS Part Number | Manufacturer's Part Number - Source 1 | Manufacturer's Part Number - Source 2 | Manufacturer's Part Number - Source 3 | Figure No. |
|-----------------------|---|---|---|------------|
| 001 | ES172-3/8 | 103-001A375LP | BPT-GLTC-3/8 | |
| 002 | ES174-1/2 | 103-001A500LP | BPT-GLTC-1/2 | |
| 003 | ES176-3/4 | 103-001A781LP | BPT-GLTC-3/4 | |
| 004 | ES178-1 | 103-001A1000LP | BPT-GLTC-1 | |
| 005 | ES182-1 1/2 | 103-001A1500LP | BPT-GLTC-1 1/2 | |
| 006 | ES171-1/4 | 103-001A250LP | BPT-GLTC-1/4 | |
| 007 | ES175-5/8 | 103-001A625LP | BPT-GLTC-5/8 | |
| 008 | ES177-7/8 | 103-001A937LP | BPT-GLTC-7/8 | |
| 101 | | 103-001A375LH | BDM-GLTC-3/8 | |
| 102 | | 103-001A500LH | BDM-GLTC-1/2 | |
| 103 | | 103-001A781LH | BDM-GLTC-3/4 | |
| 104 | | 103-001A1000LH | BDM-GLTC-1 1/2 | |
| 105 | | 103-001A1500LH | BDM-GLTC- 1/4 | |
| 106 | | 103-001A250LH | BDM-GLTC-1/4 | |
| 107 | | 103-001A625LH | BDM-GLTC-5/8 | |
| 108 | | 103-001A937LH | BDM-GLTC-7/8 | |

¹Strikethrough denotes Obsolete part(s).

| SIZE | CAGE CODE | DWG NO. | | REV | |
|------|-----------|---------|---------|-----|--|
| Α | 0GCL4 | JW0000 | 023 | В | |
| Sc | ale: None | | SHEET 8 | | |

L-3/IS employees shall maintain the confidentiality of information entrusted to them by the Company and any other confidential information about the Company except when displosure is authorized or legally mandated. Repotents of L-3/IS information shall protect L-3 documents and use dispration in