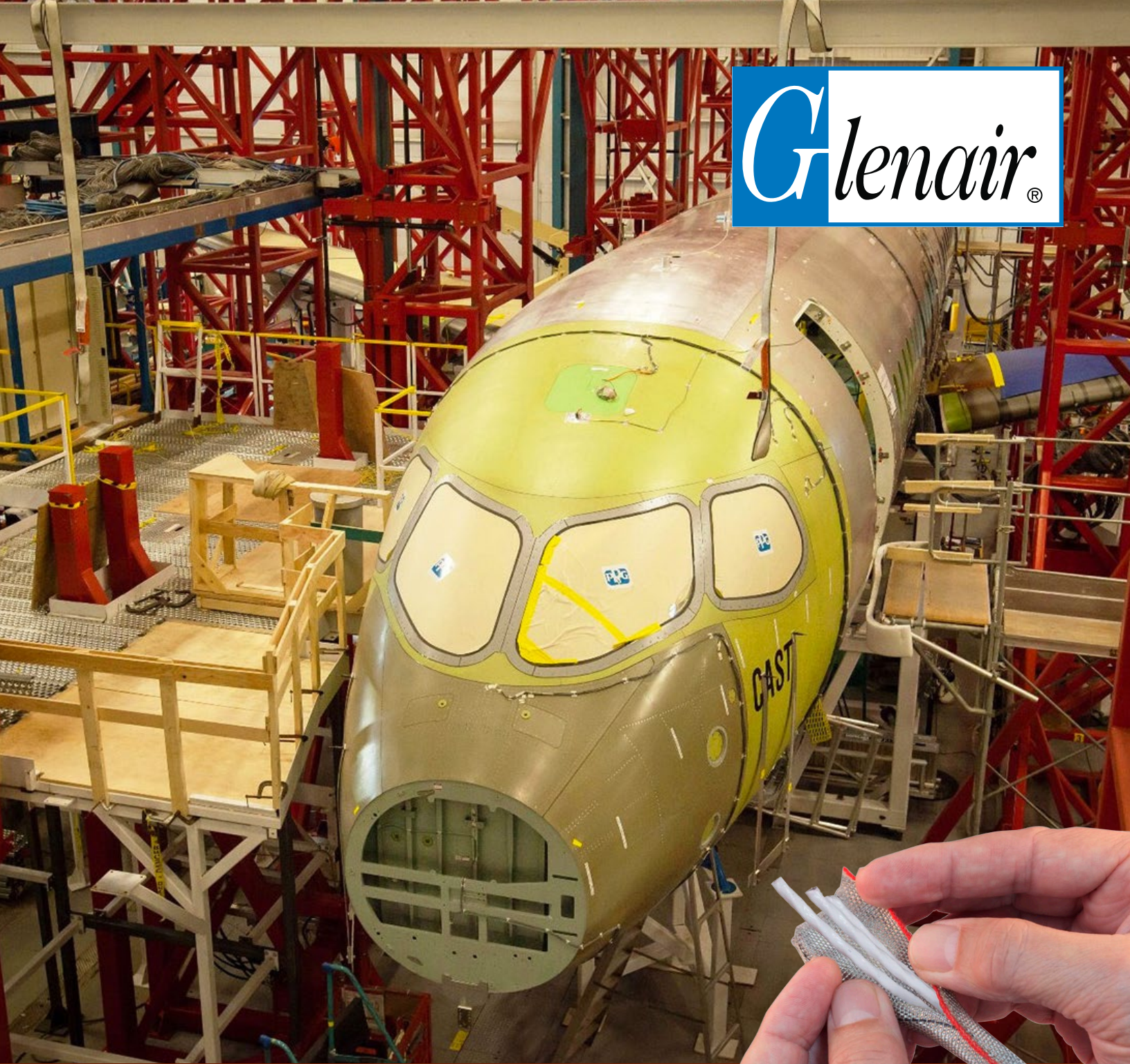




**LIGHTWEIGHT SIDE-ENTRY EMI SHIELDING**

# **MasterWrap™**

**ARMORLITE™ SELF-WRAPPING WIRE PROTECTION SAVES TIME AND WEIGHT**

**SEPTEMBER 2015**



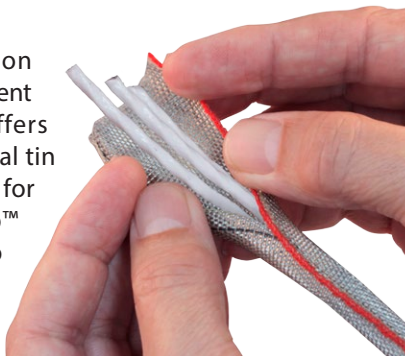
## SERIES 103

# MasterWrap™

Lightweight, side-entry EMI/RFI cable wrap  
with **ARMORLITE™** technology

**T**ubular braided sleeving meets the broad range of shielding and mechanical protection requirements of aircraft harness assemblies. But the need to apply conductive shielding materials over installed aircraft wire and cable bundles requires new technology. Legacy self-wrapping cable braid has long been available for EMI/RFI applications and abrasion protection, albeit with poor high-frequency shielding performance due to its heavy weight, inflexibility, and windowing. MasterWrap™, a lightweight, easy-to-install, side-entry, self-wrapping shielding solution solves these problems and more. MasterWrap™ is ideally suited for both long-run wire harness protection as well as spot coverage and maintenance of EMC cable applications.

Glenair MasterWrap™ is both a weight reduction technology as well as an ease-of-assembly improvement for wire and cable protection. The material offers significant weight savings compared to traditional tin copper and nickel braid, and is already qualified for use at major aircraft manufacturers. MasterWrap™ adds flexibility and reparability capabilities to wire and cable harness applications traditionally shielded with tubular braid—from long runs to spot coverage and repairs.



MasterWrap™

- **Saves weight:** 70% material weight reduction compared to QQ-B-575 / A-A-59569 nickel copper
- **Simplifies installation:** Replaces harder-to-install tubular EMI/RFI sleeving
- **Saves time:** Fast and easy side-entry installation and removal
- **Improves EMI/RFI shielding:** Reduces windowing and coverage gaps
- **Improves mechanical performance:** Delivers superior flexibility, durability and reparability

# Flexible, lightweight EMI/RFI side-entry shielding

## for spot coverage and repair of wire harness applications

### MASTERWRAP™ KEY FEATURES AND PERFORMANCE

- Side-entry wrap-around design delivers outstanding EMI/RFI shielding with easy assembly and maintenance
- Core materials ideally suited for a broad range of temperature extremes from -65°C to 200°C
- Breakthrough weight reduction technology for electrical wire interconnect systems: up to 70% weight reduction compared to standard metallic EMI shielding
- High-frequency EMI shielding performance comparable to both standard metallic braid as well as lightweight tubular braid designs
- Halogen-free and RoHS compliant
- 500 hour salt spray corrosion resistance
- 50,000 cycle 90°–120° bend flex tested
- Outstanding caustic chemical and corrosive fluid resistance

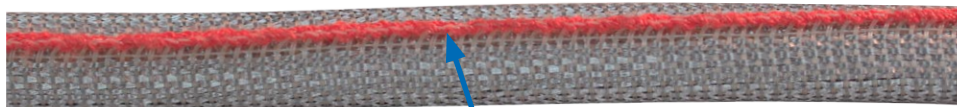
### MATERIAL CONSTRUCTION, SIZE COLOR CODING, AND HANDLING PERFORMANCE

- Flexible material eliminates kinking and windowing
- Spring members ensure shielding stays tight to wire bundle

Ultra-lightweight microfilament stainless steel core, conductively plated with nickel for outstanding shielding performance



MasterWrap™ is interwoven with high-temperature tolerant PEEK composite thermoplastic spring members that ensure up to 95% optical coverage



Color-coded MasterWrap size indicator

- Material design provides uniform surface with limited interference to structures and clamps during installation and routing
- Provides optimum surface coverage and adherence to bundle without buckling during both straight and angled routing
- Delivers increased abrasion protection with additional axial edge strength members compared to standard tubular braided shielding
- Reduces kinking and windowing compared to full metal braid solutions, and as a result delivers excellent shielding performance, particularly at high frequencies

### HERE'S WHAT YOU NEED TO KNOW ABOUT WEIGHT

| Weight of standard metallic tubular braided cable shielding        |                |               |
|--------------------------------------------------------------------|----------------|---------------|
| EMI Braided Shielding Type<br>(measured samples all 1/2" diameter) | Weight<br>g/ft | Weight<br>g/m |
| Glenair nickel-clad copper braid                                   | 21.6           | 70.9          |
| Raychem RAY-103-12.5 nickel-clad copper braid                      | 21.9           | 72.0          |
| Weight of lightweight tubular (LWB) braided cable shielding        |                |               |
| AmberStrand® 100%                                                  | 3.7            | 12.1          |
| AmberStrand® 75% / 25%                                             | 4.9            | 16.1          |
| ArmorLite™ 100%                                                    | 4.4            | 14.4          |
| ArmorLite™ 75% / 25%                                               | 5.4            | 17.7          |
| Raychem INSTALITE                                                  | 13.4           | 44.0          |
| Weight of side-entry self-wrapping braided cable shielding         |                |               |
| MasterWrap™                                                        | 6.2            | 20.3          |
| Federal Mogul ROUNDIT® EMI FMJ                                     | 18.0           | 59            |
| Federal Mogul ROUNDIT® EMI C27 XWS                                 | 23.5           | 77            |

**100-003**  
tubular metal  
braid ASTM B355 Class 4  
OFHC nickel-plated copper

**103-051**  
ArmorLite™  
microfilament metal-clad  
stainless steel

**103-079**  
MasterWrap™  
side-entry braided shielding



# MasterWrap™

Made from ArmorLite™ lightweight microfilament stainless steel braid, plus thermoplastic (PEEK) spring members

Qualification Test Plan (QTP) QTP-405 summary results. For more information or for a copy of the full report, please contact the factory



| Mechanical and Environmental Performance Summary |                                                                     |                                 |
|--------------------------------------------------|---------------------------------------------------------------------|---------------------------------|
| Vibration                                        | No evidence of wear or visible defect                               | DO-160G Cat S and H             |
| Abrasion                                         | No evidence of wear, visible defect or electrical degradation       | EN-3475-511:2002                |
| High Temperature Exposure                        | 168 hours at 200°C; no visual or electrical degradation             | EN 6059-302 part 302            |
| Rapid Change of Temperature                      | 10 hour hot and cold cycling; no evidence of wear or visible defect | EN 6059-308 part 308            |
| Vertical Flammability                            | Pass                                                                | 14 CFR part 25.853              |
| Fluid Immersion Testing                          | No visual or electrical degradation                                 | DO-160G                         |
| Bending Properties                               | 25000 cycles; no breakage, no plating delamination                  | EN 6059-402                     |
| Salt Fog 500 Hours                               | No evidence of base metal on braid                                  | ASTM B117-03 Sodium Chloride 5% |

MasterWrap is compatible with most aerospace industry fluids. Consult factory for specifics.

## AVAILABLE WIRE LOOM TOOL FOR EASY ASSEMBLY

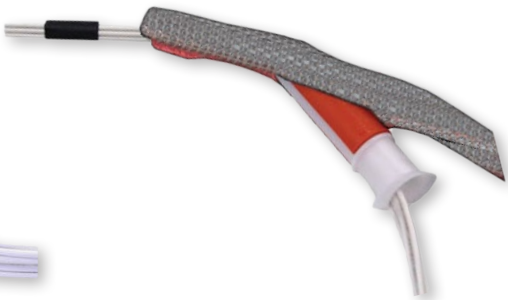
Select size based on max bundle diameter



| Part Number | Max Bundle Dia. |
|-------------|-----------------|
| 600-180-08  | 3/8 in (8mm)    |
| 600-180-15  | 5/8 in (15mm)   |
| 600-180-20  | 3/4 in (20mm)   |
| 600-180-25  | 1 in (25 mm)    |
| 600-180-32  | 1 1/4 in (32mm) |



Easy to use: simply gather wire bundle into the tool...



...Insert tool and wires into MasterWrap and run through

# Flexible, lightweight EMI/RFI side-entry shielding

for spot coverage and repair of wire harness applications



## WHAT YOU NEED TO KNOW ABOUT EMI/RFI SHIELDING PERFORMANCE

|                                                                                       | NiCu     | Armorlite™ | Amberstrand® | MasterWrap™ |
|---------------------------------------------------------------------------------------|----------|------------|--------------|-------------|
| TRANSFER IMPEDANCE (Per IEC 62153-4)<br>(Max values for 1/2 inch diameter shields)    |          |            |              |             |
| FREQUENCY                                                                             |          |            |              |             |
| 10 KHz                                                                                | 5 mΩ/m   | 50 mΩ/m    | 60 mΩ/m      | 40 mΩ/m     |
| 100 KHz                                                                               | 5 mΩ/m   | 50 mΩ/m    | 60 mΩ/m      | 40 mΩ/m     |
| 1 MHz                                                                                 | 12 mΩ/m  | 50 mΩ/m    | 60 mΩ/m      | 40 mΩ/m     |
| 10 MHz                                                                                | 80 mΩ/m  | 50 mΩ/m    | 80 mΩ/m      | 40 mΩ/m     |
| 100 MHz                                                                               | 130 mΩ/m | 30 mΩ/m    | 110 mΩ/m     | 80 mΩ/m     |
| SHIELDING ATTENUATION (Per IEC 62153-4)<br>(Min values for 1/2 inch diameter shields) |          |            |              |             |
| FREQUENCY                                                                             |          |            |              |             |
| 1 GHz                                                                                 | 38 dB    | 55 dB      | 48 dB        | 40 dB       |
| 3 GHz                                                                                 | 40 dB    | 60 dB      | 55 dB        | 35 dB       |
| 5 GHz                                                                                 | 44 dB    | 60 dB      | 60 dB        | 45 dB       |
| 8 GHz                                                                                 | 40 dB    | 50 dB      | 60 dB        | 40 dB       |
| WEIGHT                                                                                | 154 g/m  | 14.4 g/m   | 12.1 g/m     | 20.3 g/m    |

The table at left is a useful summary of shielding performance for both QQ-B-575 / A-A-59569 NiCu as well as lightweight braid and MasterWrap™. Transfer impedance as well as shielding attenuation data is supplied for 1/2" diameter test samples. At high frequencies, both LWB and MasterWrap™ provide comparable and even superior performance to nickel-copper due to reduced windowing and superior optical coverage with significant reduction in weight. Further improvements in high-frequency shielding attenuation can be achieved using conductive tape wraps and/or via hybrid blends of LWB and NiCu.

## DIMENSIONAL INFORMATION • HOW TO ORDER

How to Order

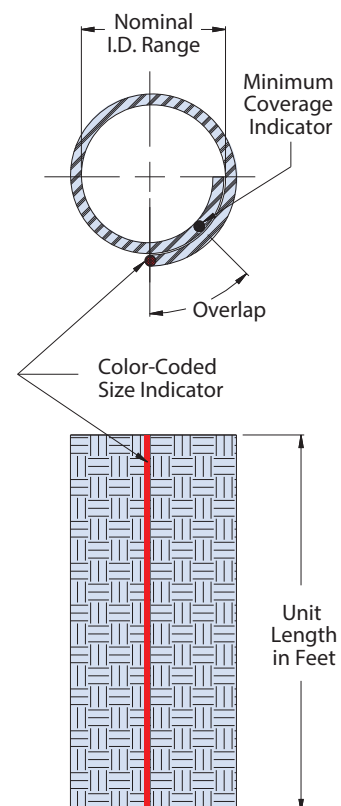
103-079

-024

Product Series

Dash No (See Table 1)

| Table I |                    |                                     |                              |                                 |                          |                           |
|---------|--------------------|-------------------------------------|------------------------------|---------------------------------|--------------------------|---------------------------|
| Dash No | Nominal I.D. (Ref) | Reference Wire Bundle Range Nominal | Approximate Weight Grams/Ft. | Approximate Milliohms per Meter | Min. Pull Strength (lbs) | Size Indicator color code |
| 004     | .125 (3.2)         | .093 (2.4)<br>.170 (4.3)            | 2.1                          | 99.8                            | 39                       | BLACK                     |
| 008     | .250 (6.4)         | .170 (4.3)<br>.300 (7.6)            | 4.0                          | 52.2                            | 75                       | BROWN                     |
| 012     | .375 (9.5)         | .300 (7.6)<br>.406 (10.3)           | 5.0                          | 41.8                            | 94                       | RED                       |
| 016     | .500 (12.7)        | .406 (10.3)<br>.520 (13.2)          | 6.2                          | 34.0                            | 116                      | ORANGE                    |
| 020     | .625 (15.9)        | .520 (13.2)<br>.675 (17.2)          | 8.7                          | 24.2                            | 158                      | YELLOW                    |
| 024     | .750 (19.1)        | .675 (17.2)<br>.825 (21.0)          | 10.6                         | 20.0                            | 193                      | GREEN                     |
| 032     | 1.000 (25.4)       | .825 (21.0)<br>1.100 (27.9)         | 12.9                         | 16.4                            | 237                      | BLUE                      |
| 040     | 1.250 (31.8)       | .938 (23.8)<br>1.312 (33.3)         | 17.4                         | TBD                             | TBD                      | VIOLET                    |
| 048     | 1.500 (38.1)       | 1.187 (30.1)<br>1.590 (40.4)        | 21.2                         | TBD                             | TBD                      | GRAY                      |
| 064     | 2.000 (50.8)       | 1.812 (33.0)<br>2.090 (53.1)        | 25.8                         | TBD                             | TBD                      | WHITE                     |





## *Out of This World* **INTERCONNECT SOLUTIONS**

### **Glenair, Inc.**

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Telephone: 818-247-6000 • Fax: 818-500-9912 • [sales@glenair.com](mailto:sales@glenair.com)

**[www.glenair.com](http://www.glenair.com)**

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06492

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60712

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ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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