Nordson MEDICAL has an extensive portfolio of advanced component technologies for the development and manufacture of catheter based devices. Leveraging the technical knowledge of veteran braiding experts, our Center of Excellence is the industry-leading partner for complex braided shafts and component solutions. Let Nordson MEDICAL’s experts partner with your engineering team today to provide leading-edge solutions.

**Braid-Engineered Shafts**

Nordson MEDICAL can provide a wide range of braided shafts in both micro and large sizes ranging from 0.3F – 32F.

Reinforcement is ideal for medical device components including:

- Braided catheters
- Multi-durometer braided catheters
- Deflectable/steerable shafts
- Tapered braided shafts
- Variable pitch braided shafts
- Coil reinforced shafts
- Multi-lumen braid engineered shafts
- Hybrid braid/coiled shafts

**Unique Applications**

- Micro-catheters
- Fiber optics
- High-pressure systems
- MRI compatible devices
- TAVI devices
- Energy-delivery systems

Nordson MEDICAL can manufacture a variety of complex shafts in as little as 2 weeks!
Custom Braid-Engineered Shaft Capabilities

<table>
<thead>
<tr>
<th>Minimum Inner Diameter:</th>
<th>0.004&quot; (0.3F)</th>
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</thead>
<tbody>
<tr>
<td>Maximum Outer Diameter:</td>
<td>0.420&quot; (32F)</td>
</tr>
<tr>
<td>Liner Materials:</td>
<td>PTFE, FEP, HDPE, Pebax®, Nylon, Urethane, TPE, Multi-layers, Polymide, Polymide with Particle Composites, Polyamide-imide, Polyester, Polyphenylsulfone, and others</td>
</tr>
<tr>
<td>Outer Jacket Materials:</td>
<td>All medical-grade polymers, including Nylon, Pebax® and Urethane, Polymide, Polymide w/Particle Composites, Polyamide-imide, Polyester, Polyphenylsulfone</td>
</tr>
<tr>
<td>Reinforcement Materials:</td>
<td>Stainless steel round and flat wire, Nitinol, Kevlar®, PLLA, UHMWPE, PP, Aramid, and others</td>
</tr>
<tr>
<td>Typical Flat Wire Size Range</td>
<td>0.0005&quot; x 0.0025&quot; – 0.001&quot; x 0.007&quot; (0.013 x 0.064 mm – 0.025 x 0.178 mm)</td>
</tr>
<tr>
<td>Typical Round Wire Size Range</td>
<td>0.001&quot; – 0.007&quot; (0.025 mm – 0.178 mm)</td>
</tr>
<tr>
<td>Variable-Pitch Braiders</td>
<td>16, 32, and 48 carriers</td>
</tr>
<tr>
<td>Additional Features</td>
<td>Multi-lumen, variable-stiffness continuous processing, multi-durometer, radiopaque fillers, variable-pitch, braid-over-braid, braid-over-coil</td>
</tr>
</tbody>
</table>

Benefits of Partnering with Nordson

- Faster than industry standard lead times.
- Deep breadth of offering and capabilities including 48 carrier braider and many unique braid materials.
- One place to get braid-reinforced shafts with all secondary processing capabilities including:
  - Soft tips
  - Overmolded hubs
  - Forming
  - Pad printing
  - Tapering
  - Grinding
  - Hole punching
  - Radiopaque market bands
  - Performance testing
  - Custom tipping

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