Before buying your equipment – questions to consider:

- What is your budget?
- What kinds of applications are you going to do – premises or outside plant – or both? That will dictate the types of tools and test equipment you need.
- What types of components - fiber, cable and connectors - will you be working with? Some cable and connector types (like ADSS cable and prepolished connectors) require special manufacturer-specific kits. They types of connectors you do will also dictate the types of supplies like adhesives and polishing films.

**LIST OF TEST EQUIPMENT, TOOLS AND CONSUMABLES:**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Tool or Test Equipment</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tubing Cutter – cuts through armored cable</td>
<td>A regular tubing cutter is perfect for cutting the cable jacket and armor</td>
</tr>
<tr>
<td>1</td>
<td>Rotary Cable Slitting &amp; Ringing Tool</td>
<td>To cut cable jacket for removal – to cut around cable or slit jacket for removal</td>
</tr>
<tr>
<td>1</td>
<td>Cable Jacket Stripper</td>
<td>Used for cutting 2-3mm cable jacket for removal</td>
</tr>
<tr>
<td>1</td>
<td>Fiber Optic Stripper</td>
<td>Used to remove primary coating from fiber without nicking the optic fiber. Some are also capable of cutting 2-3mm cable jacket</td>
</tr>
<tr>
<td>1</td>
<td>Buffer Tube Stripper – to cut jacket/buffer tubes in loose tube cable</td>
<td>Similar to some coax or UTP jacket cutters but must be precise to prevent fiber damage</td>
</tr>
<tr>
<td>1</td>
<td>Crimp Tool – crimps FO connector on the cable</td>
<td>Must have crimp die appropriate for the crimp size</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>1</td>
<td>Kevlar Scissors – super-sharp to cut Kevlar fibers in fo cable</td>
<td>NEVER use these scissors to cut anything else – they are expensive and will dull easily if used to cut other materials</td>
</tr>
<tr>
<td>1</td>
<td>Scribe – used to cleave fiber when terminating</td>
<td>Sapphire or carbide are best</td>
</tr>
<tr>
<td>1</td>
<td>Needle Nose Pliers – use when accessing and pulling cords or ripcords.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Tweezers</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Polishing Plate – place under polishing pad</td>
<td>Need smooth surface for polishing</td>
</tr>
<tr>
<td>1</td>
<td>Polishing Pad – place under polishing film</td>
<td>Provides soft polishing surface for PC connectors</td>
</tr>
<tr>
<td>1</td>
<td>Polishing Puck – insert connector into this polishing tool, lay on polishing paper</td>
<td>Need one for 2.5mm ferrule connectors (ST/SC/FC) and one for 1.25mm ferrule connectors (LC)</td>
</tr>
<tr>
<td>1</td>
<td>Safety Glasses</td>
<td>ALWAYS wear safety glasses</td>
</tr>
<tr>
<td>Optional</td>
<td>Connector Curing Oven – to cure epoxy/polish connectors</td>
<td>Epoxy/polish connectors are still the cheapest and most reliable and a portable curing oven allows fast installation</td>
</tr>
<tr>
<td>1</td>
<td>Lineman Scissors – heavy duty to cut through cables or other heavy materials</td>
<td>Use these for general cutting – NOT your kevlar scissors which are expensive and dull easily</td>
</tr>
</tbody>
</table>

**Test Equipment**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flashlight Continuity Tester (MM only) or Visual Fault Locator (VFL – red laser – SM or MM) – bright, visible light source for checking continuity or tracing fibers, VFL can find faults also</td>
<td>Continuity tester as a minimum, VFL recommended – the higher power makes it more versatile</td>
</tr>
<tr>
<td>1</td>
<td>Light source</td>
<td>850/1300nm LED for MM, 1310 and/or 1550 for SM</td>
</tr>
<tr>
<td>1</td>
<td>Power meter</td>
<td>Calibrated at 850/1300/1550 nm</td>
</tr>
<tr>
<td>As needed</td>
<td>Power meter adapters</td>
<td>One adapter can fit 2.5mm ferrules (ST/SC/FC) on some meters or may require dedicated adapters</td>
</tr>
<tr>
<td>Item Type</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>-----------</td>
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<td>-------</td>
</tr>
<tr>
<td>2 per test kit</td>
<td>Reference Test Cables - tested and known to be low loss</td>
<td>Need 2 each (launch and receive) that match the fiber type (62.5/125, 50/125 or SM) and connector types. If meter has universal 2.5mm adapter, you may be able to test all 3 types (ST/SC/FC) using one type with hybrid mating adapters, these wear out and need frequent replacement. Test and replace as needed.</td>
</tr>
<tr>
<td>2 per test kit</td>
<td>Connector Mating Adapters – with metal or ceramic alignment sleeves (NOT PLASTIC)</td>
<td>ST/ST, SC/SC, etc. or hybrid ST/SC, etc. Note that just like reference cables, these wear out and need frequent replacement.</td>
</tr>
<tr>
<td>1</td>
<td>Connector inspection microscope</td>
<td>100-400X microscope with adapters for fiber optic connectors. Should have oblique lighting for best viewing of connector ferrule surface and e IR filter to protect eyes from fiber optic source light in fibers.</td>
</tr>
<tr>
<td>Optional</td>
<td>ST Bare fiber adapter – to test bare fibers</td>
<td>This is a connector with a clamp on the back that allows cleaving the fiber and using for tests.</td>
</tr>
<tr>
<td>Optional</td>
<td>Optical Time Domain Reflectometer (OTDR)</td>
<td>Used for OSP cables to verify splices and troubleshoot problems. Special OTDRs can also be used in premises if cables are sufficiently long.</td>
</tr>
<tr>
<td>2 per test kit</td>
<td>Reference Test Cables - ~100m for MM, ~1km for SM - tested and known to be low loss</td>
<td>Need 2 each (launch and receive) that match the fiber type (62.5/125, 50/125 or SM) and connector types. Test and replace or reterminate as needed.</td>
</tr>
<tr>
<td>Cleaning/Safety Materials</td>
<td>Safety Glasses</td>
<td>ALWAYS wear safety</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Alcohol-saturated</td>
<td>Many Alcohol-saturated pads – to clean fiber and connectors during splice, termination, test,</td>
<td>MUST be pure alcohol since rubbing types have high water content that will cause problems</td>
</tr>
<tr>
<td>pads</td>
<td>CleanTex 806 or equivalent (may also use lab wipes and reagent grade ethanol)</td>
<td>with adhesives and fibers</td>
</tr>
<tr>
<td>Trash bin</td>
<td>1 per job Trash bin – small disposable container with top to hold fiber scraps</td>
<td>1 pint deli container with lid works well</td>
</tr>
<tr>
<td>Lab wipes</td>
<td>Many Lab wipes – e.g. Kimwipes</td>
<td>Use to clean up, dry off connectors after cleaning with alcohol pads</td>
</tr>
<tr>
<td>Black work mat</td>
<td>1 per student Black work mat</td>
<td>Helps see the fiber scraps to clean up – black place mats or vinyl cut to size</td>
</tr>
<tr>
<td>Dry connector cleaner</td>
<td>1 Dry connector cleaner</td>
<td>These have opening to push connector in, operate once to clean connector. Neater than</td>
</tr>
<tr>
<td>Termination</td>
<td>Termination Consumable Kit:</td>
<td>wet cleaning, just as effective</td>
</tr>
<tr>
<td>Connector Curing</td>
<td>Optional Connector Curing Oven – to cure epoxy/polish connectors</td>
<td>Epoxy/polish connectors are still the cheapest and most reliable and a portable curing</td>
</tr>
<tr>
<td>Oven</td>
<td></td>
<td>oven allows fast installation</td>
</tr>
<tr>
<td>Heat Cure</td>
<td>Several Heat Cure, 2-Part Epoxy, 2.5 Gram</td>
<td>“BiPax” Package has epoxy and hardener in plastic package that is mixed in the package.</td>
</tr>
<tr>
<td>Cheap scissors</td>
<td>Several Cheap scissors to cut corner off epoxy package</td>
<td>Can be used with many connectors at one time</td>
</tr>
<tr>
<td>3cc Application</td>
<td>1 3cc Application Syringe w/flat end needle to apply epoxy.</td>
<td>You will get epoxy on these when you cut the epoxy package so get cheap ones and discard</td>
</tr>
<tr>
<td>Syringe</td>
<td></td>
<td>after use</td>
</tr>
<tr>
<td>Anaerobic Adhesive</td>
<td>1 bottle Anaerobic Adhesive + Accelerator (optional)</td>
<td>See recommended directions on FOA site (Anaerobic connector termination)</td>
</tr>
<tr>
<td>+ Accelerator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(optional)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polishing puck</td>
<td>1 for each type of connector Polishing puck</td>
<td>Usually come in versions for 2.5mm ferrule or 1.25mm ferrule. May be plastic or metal.</td>
</tr>
<tr>
<td>Aluminum Oxide</td>
<td>Sheets as needed 12 µm Aluminum Oxide Lapping Film, 3x6&quot; Sheet with 3mil Backing.</td>
<td>Use for “air polishing” fiber – first polishing step. Purchase</td>
</tr>
<tr>
<td>Lapping Film</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>Sheets as needed</td>
<td>3 µm Aluminum Oxide Lapping Film, 3x6&quot; Sheet with 3mil Backing</td>
<td>Place on pad on top of polishing plate for first flat polish with polishing puck</td>
</tr>
<tr>
<td>Sheets as needed</td>
<td>1µm Aluminum Oxide Lapping Film, 3x6&quot; Sheet with 3mil Backing</td>
<td>Place on pad on top of polishing plate for final polish with polishing puck</td>
</tr>
<tr>
<td><strong>Splicing Kit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Fusion splicer</td>
<td>Many types and manufacturers are available</td>
</tr>
<tr>
<td>1</td>
<td>Fiber cleaver</td>
<td>Most fusion splicers come with a quality cleaver. The same cleaver should be used with mechanical splices</td>
</tr>
<tr>
<td>As needed</td>
<td>Fusion splice protectors</td>
<td>Use the type recommended by the fusion splicer manufacturer</td>
</tr>
<tr>
<td>As needed</td>
<td>Mechanical splices</td>
<td>Many types exist, mostly used for restoration</td>
</tr>
<tr>
<td>1</td>
<td>Mechanical splice tool(s)</td>
<td>Some mechanical splices require special tools to crimp the splice or fibers</td>
</tr>
<tr>
<td>As needed</td>
<td>Wipes and reagent-grade (99%+ pure) alcohol (ethanol)</td>
<td>Use for cleaning fibers before splicing</td>
</tr>
<tr>
<td><strong>Reference Materials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As needed</td>
<td>Instruction sheets and manuals, websites, videos, etc. for all equipment and processes</td>
<td>Don’t forget all the FOA Guide, YouTube and Fiber U free information available on your smartphone or tablet: <a href="http://www.thefoa.org">www.thefoa.org</a></td>
</tr>
</tbody>
</table>

*Information provided by the FOA is intended to be a guide to assist you in making decisions as to what kinds of equipment you need. It’s not complete – you need to use it only as guidelines to develop your own equipment and materials lists. FOA assumes no liability for this list’s use or your work.*