Demystifying Power Tap Use in Healthcare Settings

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Nationally Recognized Testing Laboratory (NRTL)

- A private-sector organization that OSHA has recognized as meeting the legal requirements to perform testing and certification of products using consensus based test standards
Who is UL?

- A global company who works with customers and stakeholders to support the responsible design, production, marketing and purchase of goods, solutions, and innovations.
- In addition to being an NRTL, UL authors many product safety standards.
- Provides a variety of product certification services.
UL Listed

- UL has tested representative samples of the product and determined that it meets the specific construction and performance criteria outlined in the Standard.
- These requirements are based primarily on UL’s published and nationally recognized Standards for Safety.
UL Recognized Component

- Covers the evaluation of components or materials intended for use in a complete product or system. These components are intended only for incorporation into other end-use products that may be eligible for UL’s Listing, Classification or Certificate Service.
UL 1363: Relocatable Power Taps (RPTs)

Standard for Safety
Often called outlet strips or power strips; intended for indoor use to supply power to cord-and plug-connected electrical utilization equipment.

Rated 250 V ac or less, 20 A or less.

May be provided with fuses or other supplementary overcurrent protection, switches, suppression components and/or indicator lights.
Intended to be directly connected to a permanently installed branch-circuit receptacle outlet

NOT intended to be series connected (daisy chained) to other relocatable power taps or to extension cords

NOT intended to be permanently secured to building structures, tables, work benches or similar structures, nor are they intended to be used as a substitute for fixed wiring
Can employ a mounting means that does not require the use of tools for mounting or dismounting and conceals the head of a screw or other fastener so that it cannot be tightened after mounting.

The cords are not intended to be routed through walls, windows, ceilings, floors or similar openings of buildings.

The leakage current shall not be more than 0.5 mA. Leakage currents refer to all currents that may be conveyed between exposed conductive surfaces of the product and ground.
Relocatable power taps have **not** been investigated and are not intended **for use with general patient care areas or critical patient care areas** of health care facilities.
“Hospital Grade” RPTs
- Unofficial classification
- Constructed with hospital grade wiring devices
- Typically feature metal enclosures
- No on/off switch
- Still NOT for use in general or critical care patient locations
UL 1363 - Relocatable Power Taps

Listed

- This product is a Listed end product
- Representative samples of this product have been evaluated and meet applicable safety standards
  - Testing may be conducted by any of several NRTLs
UL 1363A: Special Purpose Relocatable Power Taps (SPRPTs)

Outline of Investigation
Must comply with all the requirements for Relocatable Power Taps (UL 1363) except as modified in this outline

Intended for use with medical equipment intended to be used in General Patient Care Areas or Critical Patient Care Areas

Supply power to plug-connected components of movable equipment assemblies that are rack-, table-, or pedestal-mounted
UL 1363A - Special Purpose Relocatable Power Taps (SPRPTs)

Shall be permanently attached to the medical equipment by a means such that it is only removeable with the use of a tool; it shall not be located or positioned on the floor.

Shall be provided with Hospital Grade attachment plugs and Hospital Grade outlets.

The sum of the ampacity of all appliances connected to the SPRPT shall not exceed 80 percent of the ampacity of the flexible cord supplying the power to the SPRPT receptacles.
Shall comply with certain construction and performance requirements in the Standard for Medical Electrical Equipment, Part 1: General Requirements for Safety, UL 60601-1

Enclosure leakage current, under normal conditions, must not exceed 0.1 milliamperes

Fuses or over-current releases shall be provided in each supply lead
UL Recognized Component

- These components are intended only for incorporation into other end-use products that may be eligible for UL’s Listing, Classification or Certificate Service
- Representative samples of this product have been evaluated by UL and meet applicable safety standards
UL 60601-1: Medical Electrical Equipment, Part 1: General Requirements for Safety

Standard for Safety
Essentially the same electrical performance requirements specified in UL 1363A, but is Listed for use as a finished product.

Mains terminal devices (outlets) shall not be accessible without the use of a tool, even if their live parts are not accessible.

If mounted on emergency trolleys, must limit number of outlets to 4.
UL 1449: Surge Protective Devices (SPDs)

Standard for Safety
UL 1449: Surge Protective Devices

- Type 3 – Point of utilization SPDs
  - Covers cord-connected direct plug-in, and permanently connected SPDs intended for indoor and outdoor use in accordance with the National Electrical Code, ANSI/NFPA-70
Model Codes

NFPA 99 & NFPA 70
NFPA 99, 2012 Edition

Chapter 10: Electrical Equipment

- RPTs referred to as multiple outlet connections
- They are permitted to be used in conjunction with patient care-related electrical equipment provided that the equipment is a moveable equipment assembly
  - Receptacles must be permanently attached to the equipment assembly
  - The sum of ampacity of all appliances connected to the outlets does not exceed 75 percent of the ampacity of the flexible cord supplying the outlets
  - The ampacity of the flexible cord is in compliance with NFPA 70
  - Means are employed to ensure that additional devices or nonmedical equipment cannot be connected to the multiple outlet extension cord after leakage currents have been verified as safe

NFPA 99: Health Care Facilities Code
The requirements only apply to the use of RPTs in conjunction with patient care-related electrical equipment.

NFPA 99 does not specify the requirements based on patient care areas, non-patient care areas or any other designation.

The code does not prohibit or explicitly allow the use of RPTs in other areas or for other purposes.
NFPA 70: National Electrical Code

- **NFPA 70, 2014 Edition**

- **Article 400**
  - Provides guidance on use of flexible cords
  - Bans use of flexible cords in many of the same areas as UL product safety standards:
    - Cannot be used as substitutes for the fixed wiring of a structure
    - Cannot be run through holes in walls, structural ceilings, suspended or dropped ceilings, or floors
    - Cannot be run through doorways, windows, or similar openings
    - Cannot be attached to building surfaces

- **Article 517**
  - Specifies the types of receptacles to be used in patient care areas
  - Requires the use of Listed equipment in patient care vicinity
Centers for Medicare and Medicaid Services (CMS)
Guidance language provided immediately prior to the recent adoption of the 2012 editions of NFPA 101 and NFPA 99

- Hospitals must have the minimum number of outlets required by the 2012 edition of NFPA 99: Health Care Facilities Code
- RPTs for patient care-related equipment are allowed in the patient care vicinity if requirements in NFPA 99 10.2.3.6 are met
- RPTs in the patient care vicinity are not allowed to power non-patient care related equipment.
- RPTs are allowed outside of the patient care vicinity for both patient and non-patient care-related equipment
- RPTs for patient care-related equipment do not have to be an integral component of manufactured equipment and may be permanently attached by qualified personnel
- Power strips used for patient care-related equipment must be listed SPRPTs
- Power strips for nonpatient care-related equipment must be listed RPTs
What does this all mean?

Applying the rules
### Summary

<table>
<thead>
<tr>
<th></th>
<th>UL 1363 (RPTs)</th>
<th>UL 1363A (SPRPTs)</th>
<th>UL 60601-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intended Use</strong></td>
<td>Indoor use as an extension of a grounded alternating-current branch circuit for general use</td>
<td>Indoor use with medical equipment (when the medical equipment is intended to be used in general or critical care patient care areas per Article 517 of the NEC)</td>
<td>Provides performance requirements for the broader medical electrical equipment category, including medical grade power strips</td>
</tr>
<tr>
<td><strong>Application Area</strong></td>
<td>Support areas and basic care areas <em>outside the patient care areas</em></td>
<td>Critical care areas and basic care and general care areas <em>inside the patient care areas</em>; must be integral to movable cart, IV pole, etc.</td>
<td>Critical care rooms and basic care and general care rooms <em>inside the patient care areas</em></td>
</tr>
<tr>
<td><strong>Safety Standard Type</strong></td>
<td>Listed end-use product certification</td>
<td>Recognized Component</td>
<td>Listed end-use product certification</td>
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Product Safety Standards

- Nationally Recognized Testing Laboratory (NRTL)
  - A private-sector organization that OSHA has recognized as meeting the legal requirements to perform testing and certification of products using consensus based test standards.
## Additional Resources:

- ASHE resources on using power strips, or relocatable power taps (RPTs), in patient care areas
But wait...
New UL Outline of Investigation intended to replace Listing to 60601-1

Similar to requirements outlined in UL 60601-1 and 1363A

- Indoor-use rated 250 V AC or less and 20 A or less
- Intended for use with equipment complying with applicable requirements of the:
  - UL 60601: Standard for Medical Electrical Equipment, Part 1: General Requirements, UL 60601-1
  - IEC 60601-1: Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
New requirement

- For use as a movable power supply connection for cord-and-plug-connected medical electrical utilization equipment in accordance with the NFPA 70, Article 517 Health Care Facilities, and with NFPA 99 for use in Category 2 (General Patient Care) Spaces or Category 1 (Critical Patient Care) Spaces, including Patient Care Vicinities equipped with Patient Equipment Grounding Points
New requirement

• A HCOA shall not be provided with any supplementary protection device that disconnects power from any of the HCOA receptacle outlets
• A HCOA shall not have either a manual or automatic switch that disconnects power from any of the HCOA receptacle outlets
Outline of Investigation

• A transitional document that provides a pathway for UL Certification in the early stages of Standards requirement development
• Once the requirements in the Outline have been more developed and adopted by industry, it evolves into the First Edition of a UL Standard with the same title
Questions?
Thank You
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