

TRUCK TO SHORE CONNECTION STANDARDS FOR ON-BOARD SYSTEMS

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Today's Presentation

- Some review from October 2003 EPA workshop
- Compare truck needs to standards for Recreational Vehicle power supply and distribution.
- Make recommendations moving forward regarding truckstop power poles.
- Will not be discussing TRU needs.

120VAC Power Distribution



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120VAC Power Distribution Standards

- NEMA WD-6 Wiring Device - Dimensional Specifications
- UL Std No.62, Flexible Cord and Fixture Wire
- UL Std No.467, Electrical Grounding and Bonding Equipment
- ANSI/UL Std No.498, Electrical Attachment Plugs and Receptacles
- UL Std No.514C, Non-Metallic Outlet Boxes, Flush-Device Boxes and Covers
- UL Std No.817, Cord Sets and Power Supply Cords
- UL Std No.943, Ground Fault Circuit Interrupters
- UL Std No.1077, Supplementary Protectors for Use in Electrical Equipment
- UL Std No.1977, Component Connections for Use in Data, Signal, Control and power applications

SAE Standards

- SAE J1654 - Cable , J1673 - Assembly Design,
- SAE J1742 - SAE, TMC RP for Electrical Connections
- SAE standards alone are weak on shore connection guidelines and are of real value only at OEM level (still a valuable reference)
 - ≡ Technical paper 2002-01-3136 - Requirements for 120VAC Electrical Distribution in Medium and Heavy Duty Trucks
 - ≡ Draft RP for 100-300VAC wiring distribution due October 2004. Currently soliciting assistance.

RV Industry Standards

- NFPA 70 NEC Chapter 5 - Special Occupancies
 - ≡ Article 550 - Mobile Homes and Mobile Home Parks
 - ≡ Article 551 - Recreational Vehicles and Recreational Vehicle parks
- RVIA - Recreational Vehicle Industry Assoc.
 - ≡ Provides design and installation guidelines
- Vehicle design and installation approval from state electrical authority in Arizona, Oregon, Tennessee, Kentucky, Nebraska and Washington. Retro-fits require permits and inspection
- Canadian Standards Assoc. Std. Z240 RV Series-99 has requirements for systems - electrical, hydraulic, structural, etc.

Standards - RV Industry

Problems:

- ⌘ Difficult and costly approval process at all levels (OEM, Owner-Operator)
- ⌘ RV standards are not robust enough for on-board truck wiring
 - Use of solid wire
 - Use of insulation displacement receptacles

Value:

- ⌘ Defined and mature power infrastructure

RV Connection to Power

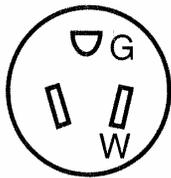
- NEC sets standard
- NEC 551.46 Permanently mounted, flanged surface inlet of a listed type. Usually 5-15P or L5-30
- Power Pole connection NEC 551.71
 - ≧ Every site equipped with at least one 20A 125V
 - ≧ Minimum of 70% equipped with 30A 125V
 - ≧ Minimum of 5% equipped with 50A 125/250V

RV Power Pole Configuration NEC

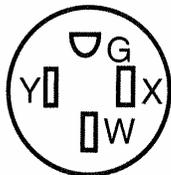
Receptacles



20-A, 125-V,
2-pole, 3-wire,
grounding type



30-A, 125-V, 2-pole, 3-wire, grounding type



50-A, 125/250-V, 3-pole, 4-wire, grounding type

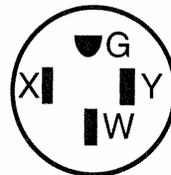
Caps



125-V, 20-A, 2-pole, 3-wire,
grounding type



125-V, 15-A, 2-pole, 3-wire,
grounding type



Unit with single
15 or 20 Amp
branch circuit.
GFCI protected

Unit with two-
five 15 or 20
Amp branch
circuits

Number of
circuits not
defined

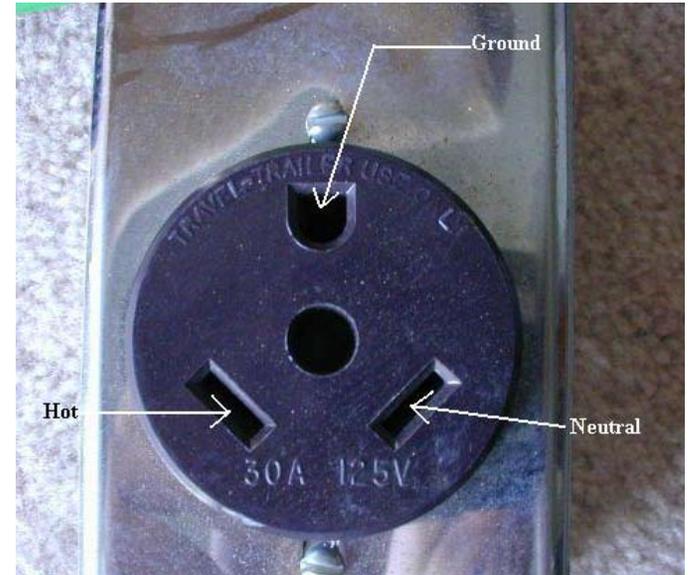
Truckstop Power Pole Recommendation



BLOCK
HEATER

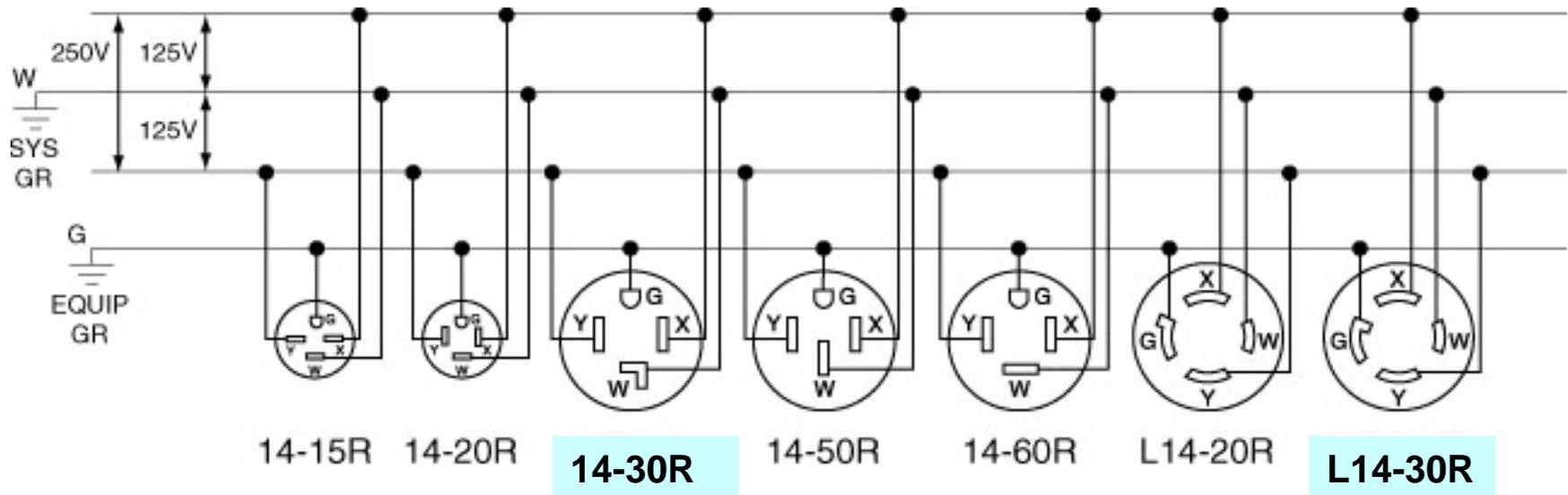


SMALL HVAC &
HOTEL LOADS



NEMA TT-30R
LARGE HVAC &
HOTEL LOADS

Potential Next Step Connection



30 Amp 125/250 VAC supplying 7500 Watts for all HVAC, Block Heater and Hotel Loads.