



DC/AC POWER INVERTERS

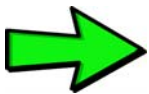
Newsletter

TUN-TB_CPAP-1118-EN

November 13, 2018

GUIDELINES FOR IN-CAB USE OF CPAP SYSTEMS IN SLEEPER TRUCKS

An increasing number of drivers require the use of a CPAP (Continuous Positive Airway Pressure) system in their truck to counteract the effects of sleep apnea and improve the quality of their rest period. CPAP systems are designed to help people with Obstructive Sleep Apnea (OSA) breathe easier during sleep. In some cases, the use of a CPAP is mandatory, and its operating data must be made available at all times to the US Department of Transportation (DOT). Therefore, the way the CPAP is powered within the sleeper cab is important.



All CPAP systems operate on DC power (12 or 24 VDC) and require an AC-DC power supply to be operated from a typical 120 V receptacle. This power supply (Figure 1) comes standard with all systems.

Best Practice – DC-DC Power Supply

Because it already works in direct current, using a DC-DC adapter (also called “travel adapter”) offers the lowest consumption and the greatest autonomy in powering a CPAP in a truck. This type of adapter (Figure 2) is available from all CPAP manufacturers for about \$80 and can be connected to an accessory port or permanently to the vehicle. Using this configuration, the overall consumption will be around 125 W at the batteries (10.4 A @ 12 VDC). This is by far the most effective solution.

NOTES: 1) This solution allows the driver to change truck without worrying about its CPAP power source.
2) The use of a Low Voltage Disconnect (LVD) is strongly recommended.

Figure 1

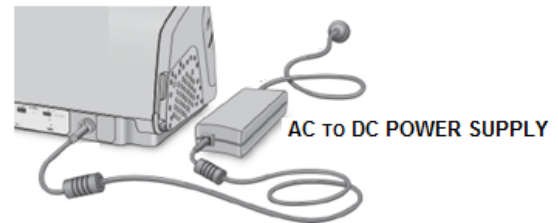


Figure 2



Alternative – Pure Sine Wave Power Inverter

If you opt for the standard AC-DC power supply (Figure 1), it must be fed by a high-quality power inverter in order to feed the CPAP with the correct DC power. A quality modified sine wave such as the M or S Series from Tundra will work fine, but proper operation is not guaranteed using low-end inverters. It is therefore strongly recommended that CPAP systems be connected to high-quality inverters only. A typical CPAP system requires about 175 W to operate and when supplied by a power inverter, the combined efficiency loss of the power supply and the inverter will increase consumption to more than 200 W at the batteries (16.6 A @ 12 VDC). This is about 60% more than with a DC to DC travel adapter. Take note that this is the least effective solution given the higher consumption and accelerated discharge rate of the vehicle’s batteries.