

PurCO₂ Recharger™

CO₂ Boosting, Purification, and Delivery Systems

SYSTEM DESCRIPTION



PurCO₂ Recharger™
Model AAD-5-1 Single Stage System

PurCO₂ Recharger is an economical and highly versatile CO₂ boosting, purification, and delivery system. Offered as two systems, Model AAD-5-1 (Single Stage) and AAD-5-2 (Two Stage), the Recharger produces and delivers a continuous supply of up to 80 pounds per hour (PPH) of high-pressure (HP) CO₂ gas, or saturated and supersaturated liquid CO₂ at a pressure between 800-1250 psig from a HP steel cylinder (with or without a siphon tube) at a pressure of between 650-850 psig or a low-pressure (LP) mini-bulk supply tank at a pressure of between 300-350 psig.

The PurCO₂ Recharger is useful for recharging CO₂ piping and lines with HP CO₂ gas or liquid CO₂ to supply remote CO₂ Powered cleaning tools. Using an optional heat exchanger accessory and a supply of chilled water, compressed HP CO₂ gas is condensed to liquid CO₂.

PurCO₂ Recharger is a versatile alternative to our high-capacity, high-duty cycle PurCO₂ Satellite systems, producing and delivering up to 80 lbs./hour (PPH) of three (3) exemplary dense CO₂ supply types (I, II, and III):

- I. **Saturated CO₂ Vapor** (e.g., mini-bulk tank supply, gas-to-vapor boost, 300 psig (g)→800 psig (v), used in the **PowerSno Standard** supply scheme).
- II. **Supersaturated Liquid CO₂** (e.g., cylinder supply with siphon tube, liquid-to-liquid boost, 850 psig (l)→1200 psig (l), used in the **PowerSno Elite** supply scheme).
- III. **Saturated or Supersaturated Liquid CO₂** (e.g., mini-bulk supply, gas-to-vapor-to-liquid boost, 300 psig (g)→850 psig (v)→850-1250 psig (l), used in the **PowerSno USTS** and **MicroSno** benchtop supply schemes).

Type III (g→v→l) is a phase change purified liquid CO₂ produced using an optional chilled water-cooled heat exchanger accessory to remove CO₂ (g/v) pressure boost compression heat to form a pure saturated or supersaturated liquid CO₂ (l) output.

SPECIFICATIONS

PurCO₂ Recharger™

CO₂ Boosting, Purification, and Delivery Systems
Models AAD-5-1 (Single Stage) and AAD-5-2 (Two Stage)

PurCO₂ Recharger Model AAD-5-1 Single Stage

PNEUMATIC OPERATION AND CONTROL

PurCO₂ Recharger utilizes 100% pneumatic operation and control with air pressure regulation to control and limit the CO₂ boost pressure for easy-to-use, trouble-free, versatile, and safe operation.

The front panel (Model AAD-5-1 shown on the right) features an air pressure regulator and CO₂ boost pressure gauge for controlling the internal gas booster pump power (CO₂ outlet pressure) control. The rear panel (Model AAD-5-1 shown right) features air and CO₂ inlet ports and flow control valves.



Front Panel

The single- or two-stage gas booster pump circuit operates until the internal CO₂ pressure safely stalls based on the air pressure set point. After this condition is met, the system idles until the CO₂ pressure lowers during use, triggering the pneumatic re-pressurization cycle. The addition of an optional external heat exchanger and recirculating chilled water system allows the PurCO₂ Recharger to produce up to 80 PPH of liquid CO₂ (800-850 psig) from a mini-bulk tank supply of low-pressure CO₂ gas (300-350 psig).



Rear Panel

A continuous flow of constant pressure, clean high-pressure gas or saturated-supersaturated liquid CO₂ is produced and supplied to remotely located CO₂ Powered tools within the factory or cleanroom.

EXEMPLARY REQUIREMENTS (Model AAD-5-1, Single Stage)

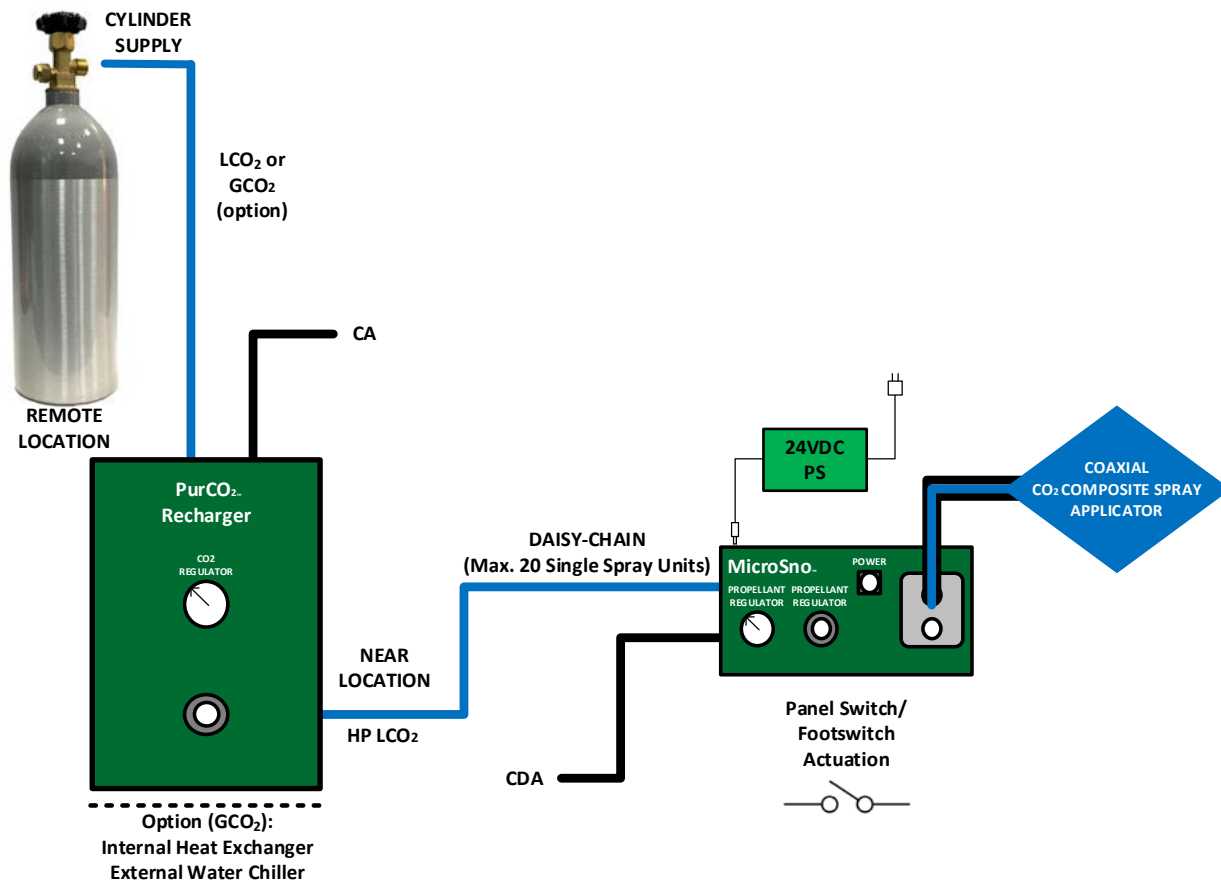
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|---|---|
| CO₂ Supply Input | Gas or Liquid CO ₂ , 325-850 psi, 10-25°C, |
| Dense CO₂ Output Capacity | 25 lbs./hr maximum output – Type I, II, or III |
| Compressed Air Supply and Usage | 70-150 psi, 5 scfm (CO ₂ Output Pressure Dependent) |
| Chilled Water Supply (HE Accessory) | 1-3 kW at 5°C, 3-7 liters/min |
| Maximum Operating Temperature | 25°C (Liquid CO ₂ Changes to scCO ₂ above 31°C) |
| Footprint | 12"W X 18.5"D X 20"H (Recharger Console) |

ACCESSORIES

- Heat Exchanger – Mounted on the 80-20 Recharger Chassis Frame
- 3.5 kW Recirculating Water Chiller



EXAMPLE IMPLEMENTATION SCHEME MicroSno™ Benchtop CO₂ Composite Spray Cleaners





Clean Manufacturing, *Reimagined.*

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imagineering™

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