

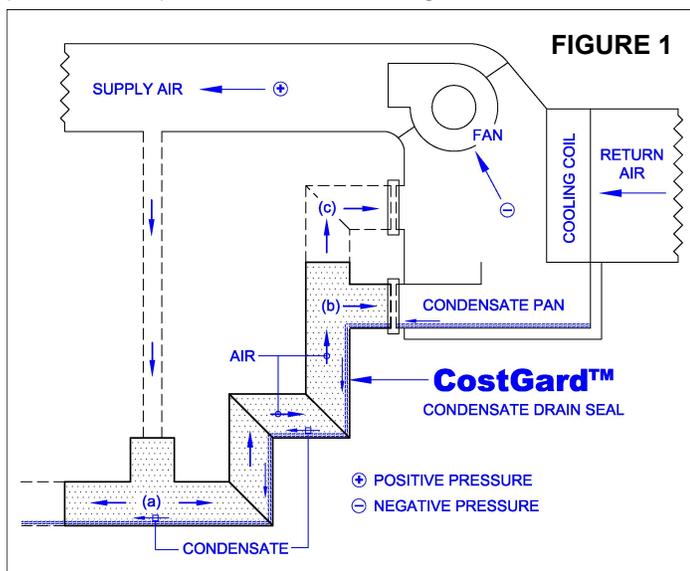


# Light Commercial Kit

The CostGard™ Condensate Drain Seal was developed specifically to replace the condensate trap on draw-through HVAC systems. Unlike a condensate trap, it uses an air seal instead of a water seal and thereby eliminates costly operational and health related problems needlessly tolerated by facility managers for more than half a century. It does this by reducing (1) service calls, (2) maintenance requirements, (3) damage to equipment, (4) damage to surrounding property, and (5) threats to healthy indoor air quality.

## Operation

The CostGard™ Condensate Drain Seal is the result of over four years of engineering research and development. It makes use of the hydraulic and pneumatic forces present in all draw-through air handlers. It is simple, effective and reliable. It has no moving parts. How it operates is illustrated in Figure 1.



During both heating and cooling operations, the air seal is formed as follows:

Fresh air from the fan discharge is supplied to point (a) at a pressure slightly above atmospheric. Some of the air flows away from the HVAC unit; thus, preventing ingestion of outside air. A portion of the air returns to the HVAC unit, passing through points (b) and (c). The quantity of air returning to the unit is minimized by the high-pressure loss in the mitered elbows. This pressure loss plus the air flowing through the bypass connected at point (c) ensures that the air entering the condensate drip pan does not produce blowing and geysering and an aerosol mist. Condensate flows through the device without being trapped. At the same time, the counter-flow of condensate and air creates a pulsing action that ensures free passage of debris. Hence, the potential for freeze-up and flow blockage (common problems with traps) is nil.

## Advantages Over a Trap

When used in place of a condensate trap, the CostGard™ Condensate Drain Seal significantly reduces the cost of owning and operating draw-through HVAC systems. And, it removes a major and serious contributor to poor indoor air quality. The need to replace the condensate trap with an effective and reliable drain seal is well recognized by many in the HVAC industry. Many of the problems caused by condensate traps are clearly stated in ASHRAE Standard 62-89R, paragraph 5.6.4, which reads as follows:

*“Condensate traps exhibit many failure modes that can impact on indoor air quality. Trap failures due to freeze-up, drying out, breakage, blockage, and/or improper installation can compromise the seal against air ingestion through the condensate drain line. Traps with insufficient height between the inlet and outlet [design deficiency] on draw-through systems can cause the drain to back-up when the fan is on, possibly causing drain pan overflow or water droplet carryover into the duct system. The resulting moist surfaces can become sources of biological contamination. Seasonal variations, such as very dry or cold weather, may adversely affect trap operation and condensate removal.”*

The ASHRAE Standard addresses only “building ventilation and indoor air quality”. However, the cost impact of trap failures on system maintenance and property damage is clearly evident.

There are many causes of trap failures. Such failures are much too familiar to facility managers and HVAC maintenance personnel. The maintenance effort required to deal with these destructive results is extremely demanding. In fact, trap deficiencies are so numerous that successful maintenance is often not feasible. Indeed, in some instances adequate maintenance is not realistically possible.

The CostGard™ Condensate Drain Seal eliminates all the problems caused by the condensate trap, including the following:

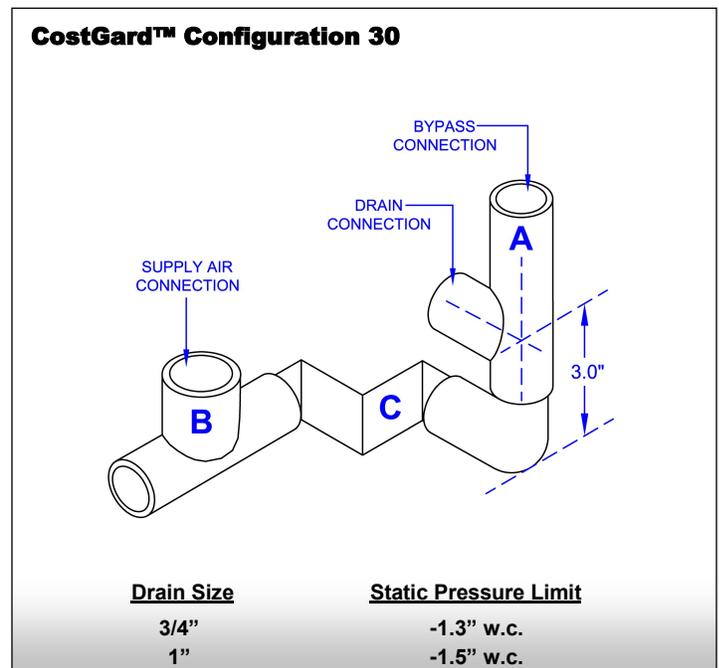
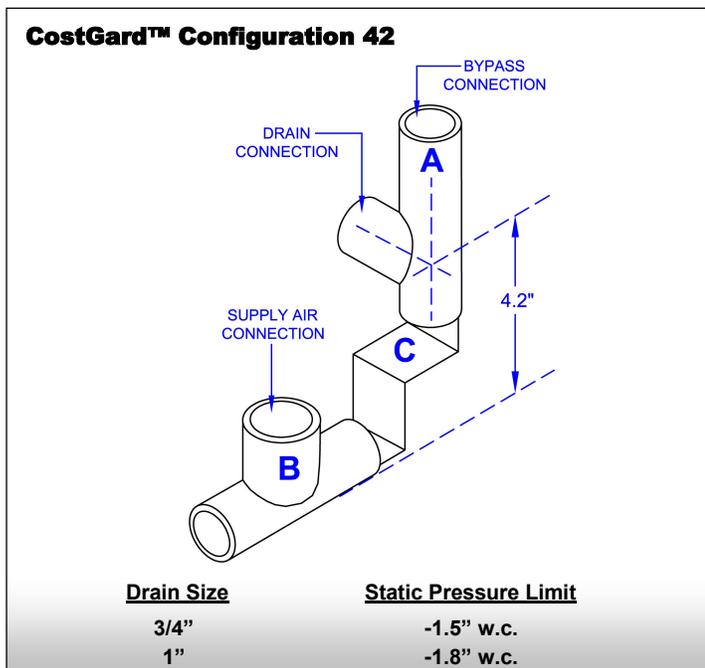
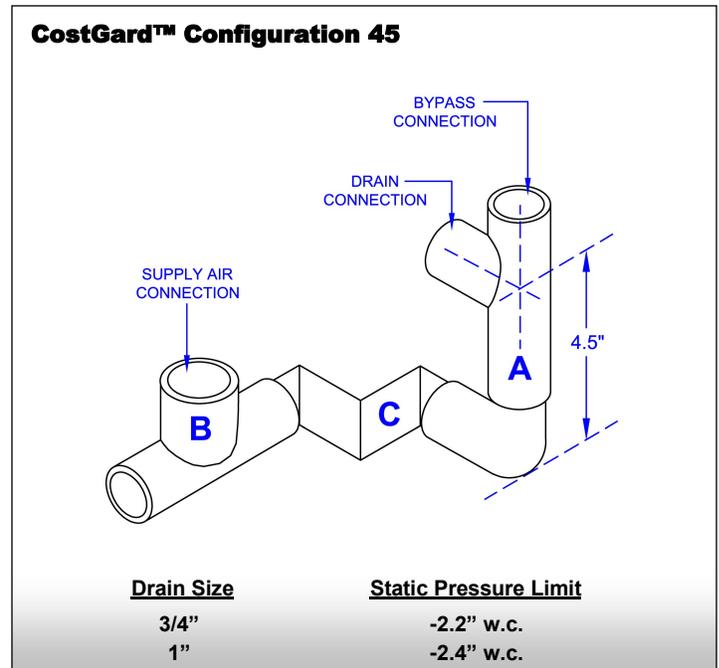
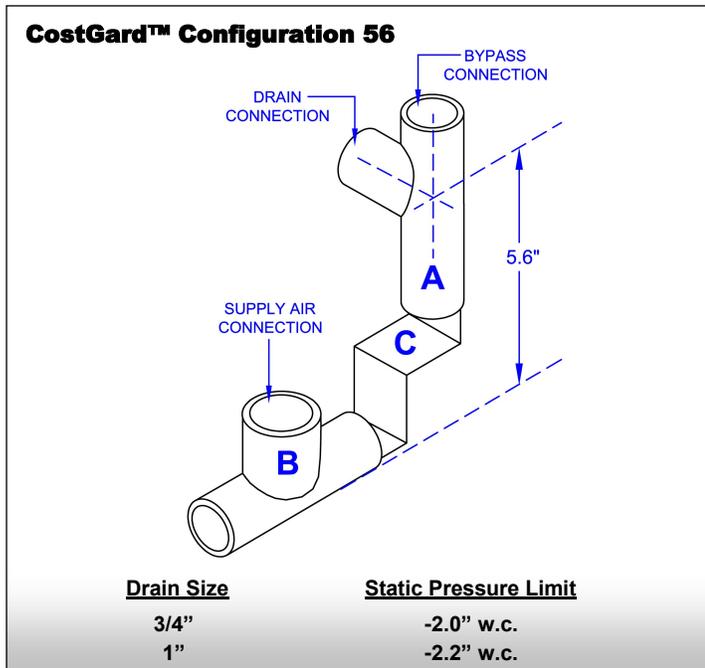
- Trap blockage and condensate pan overflow;
- Seal (trap) freeze-damage in outside locations;
- Ingestion of odorous and toxic gases through the condensate drain system;
- Condensate pan overflow due to negative pressure during start-up;
- Condensate blowing which produces an aerosol mist and causes biological contamination; and
- Shortened life of HVAC systems.

Eliminating these problems is an enormous cost savings for the building owner as a result of fewer service calls, reduced maintenance effort, less property damage, increased equipment life, and improved indoor air quality.

# Light Commercial Kit

The CostGard™ Condensate Drain Seal Light Commercial Kit, model 1525LC, is designed for draw-through air handlers, up to 30 tons, with 3/4" and 1" drains. The Light Commercial Kit is adaptable to air handlers located in restricted spaces. Depending on the installation configuration, as shown in the configuration charts below, the depth requirements can vary from 3.0" to 5.6" with static pressure limits ranging from -1.3" to -2.4" w.c.

## Light Commercial Kit - Configuration Charts



# Light Commercial Kit

## Installation Fundamentals

The CostGard™ Condensate Drain Seal Light Commercial Kit is connected to the drain connection of the HVAC unit the same as the condensate trap. However, in order to form an air seal, in place of a water seal, two other pipe connections are required. For most applications these connections are quite simple; however, some can be more challenging. The basic criteria for a successful installation are stated below:

### Pipe Connections

The CostGard™ Condensate Drain Seal is connected to the air handler with Schedule 40 PVC pipe at the following three points:

- 1) The condensate drain pan connection where condensate traps are usually connected;
- 2) A hole cut into the fan/drain pan compartment between the cooling coil and the supply fan (negative pressure);
- 3) A hole cut into the supply air plenum or duct downstream of the fan (positive pressure).

### Pipe Routing

All pipes must be routed in such a way that they do not interfere with service access doors.

### Pipe Supports

The pipe must be supported and fixed in place to minimize potential damage to the piping and the CostGard™ Condensate Drain Seal.

## Light Commercial Kit - Installation Examples

