

CALCULATING UNIT TOTAL STATIC PRESSURE (TSP)

Understanding static pressure in HVAC equipment is essential to a good design. Static pressure, usually expressed in inches water column (“wc), is the pressure exerted on a surface at rest with respect to the air moving in duct. Static pressure is the force exerted on the duct not due to the pressure from the moving air.

Each “module” of the ARES Indirect Gas Fired (IDF) Makeup Air Unit has an internal static pressure. The blower module’s static pressure is based on the total cfm of the unit, the greater the cfm, the greater the internal static pressure of the module. Static pressure values can be found on “Blower & Accessories Pressure Loss Table 1.0” below. Each Indirect Gas Fired Furnace has an internal static pressure, taken from the “Gas Furnace Pressure Loss Table 1.1” Some of the optional accessories have an internal static pressure as well, also found on the “Blower & Accessories Pressure Loss Table 1.0” below. To calculate the Total Static Pressure of your ARES Makeup Air Unit (TSP^A), you must add all of these values together. TSP^A of an ARES unit cannot exceed 3.00”wc. Finally, the system duct work static pressure, or external static pressure (ESP), is supplied by the Engineer. Record the total static pressure of the system (TSP^S) for later use in selecting the proper motor for you ARES Makeup Air Unit.

$$\text{Total Static Pressure of the System} = \text{TSP}^A + \text{ESP} = \text{TSP}^S$$

Blower & Accessories Pressure Loss Table 1.0

BLOWER MODULE	(<3500 = .15) (>3501 = .25)
CEV EVAP COOLER	(.25"W.C.)
INLET HOOD w/ BIRDSCREEN	(.13"W.C.)
INLET HOOD w/ FILTERS	(.25"W.C.)
V-BANK FILTER SECTION	(.25"W.C.)
INLET DAMPER	(.13"W.C.)
GAS FURNACE MODULE	(SEE CHARTS)
COIL MODULE	(SEE COIL CALC)
ELECTRIC FURNACE MODULE	(SEE SUBMITTAL)
DOWN DISCHARGE PLENUM	(.25"W.C.)
DISCHARGE DAMPER	(.15"W.C.)
SYSTEM DUCT WORK E.S.P.	(BY ENGINEER)