

**Opening: 75 Sq Ft Maximum  
Area: 1200 Sq Ft Maximum**

## Technical Description

Model WDP-24 is a pressurization unit for control rooms or buildings containing no internal source of flammable vapors or gases. The unit utilizes a primary and secondary fan to pressurize rooms or buildings with opening(s) not exceeding a total of 75 square feet and a floor area not exceeding 1200 square feet. The primary fan is controlled by a variable speed drive to maintain a safe (0.25") pressure when the doorway is sealed. The secondary fan engages upon loss of safe pressure, to generate a minimum air velocity of sixty (60) feet per minute through the doorway, and functions as a redundant fan if the primary fan fails. This unit, combined with an intake stack that draws fresh air from a nonhazardous area, reduces the hazardous (classified) area rating within the room or building from Class I, Division 1 or 2 to nonhazardous, in accordance with NFPA 496, Chapter 5.

## Basic Operation

Unit must be powered by a local disconnect switch connected ahead of building power or connected to a separate power source. The unit is started by closing the building door and placing the secondary fan switch in the "automatic" position and the primary fan switch in the "on" position. The primary fan then engages to regulate air flow and maintain a safe pressure. When the door is opened, pressure will fall below the alarm setpoint. The primary fan will then increase velocity, and the unit will activate an alarm signal delay timer and a secondary fan delay timer. Both timers are field-adjustable, to permit immediate or delayed response to changes in pressure. Both timers are activated and reset as pressure falls below and rises above the alarm setpoint. If the secondary fan or alarm engages, they disengage when the door is sealed and pressure rises above the alarm setpoint.

### **DIVISION 1 AREA APPLICATION NOTE:**

**INSTALLER MUST PROVIDE DISCONNECT EQUIPMENT TO AUTOMATICALLY REMOVE POWER FROM ALL NONRATED DEVICES, UPON FAILURE OF THE PRESSURIZATION UNIT.**

## Standard Controls

### **Primary Fan "On" Indicator**

- indicates that primary fan is engaged

### **Primary Fan Control Switch**

- engages and disengages primary fan

### **Secondary Fan Control Switch**

- off, manual and automatic positions

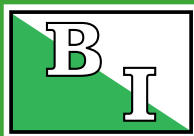
### **Alarm "Engaged" Indicator**

- indicates alarm signal is active

- flashes when alarm signal is bypassed

### **Alarm Signal Bypass Switch**

- latches and unlatches alarm relay



# MODEL WDP-24

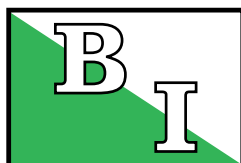
## WALL MOUNT DUAL BLOWER BUILDING PRESSURIZATION UNIT

ECU Division Technical Bulletin WDP-24-R1.0

05/97

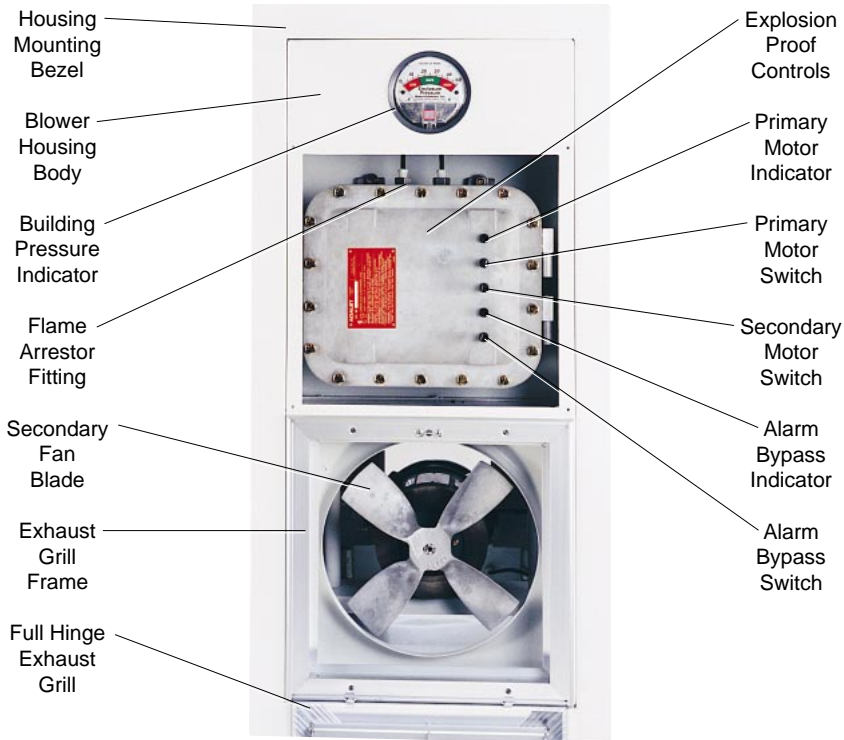


**Front View  
(with mounting bezel attached)**

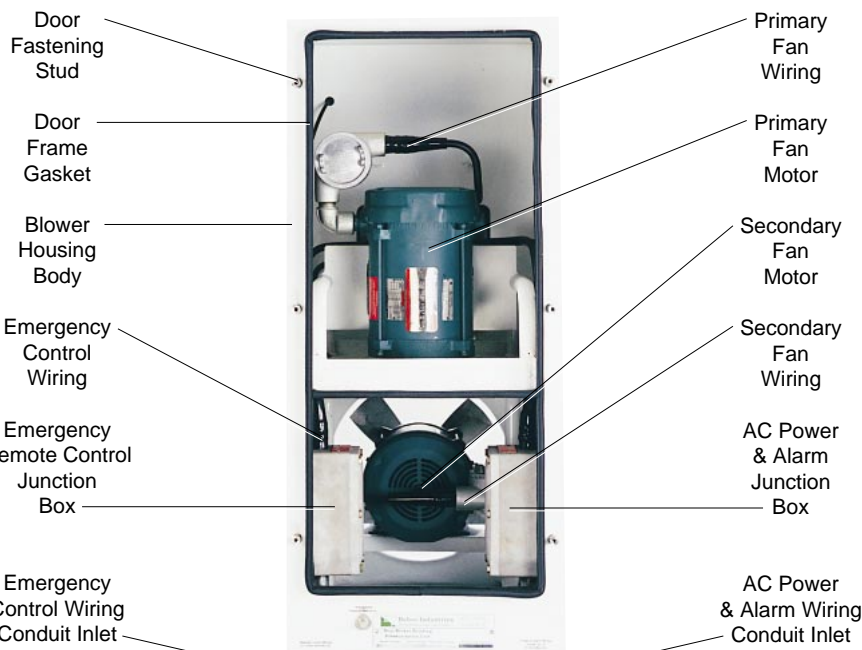


**Bebco Industries**  
Environmental Control Units Division

600 Gulf Freeway  
Texas City, TX 77591  
PHN: (409) 935-5743  
FAX: (409) 938-4189



**Front View**  
with exhaust grill open and control enclosure cover plate removed



**Rear View**  
with access door removed

Intrinsic Safe Version

Hard Wire Version



**Optional Emergency Remote Control Junction Boxes**

**AC Power & Alarm Junction Box**

## Unit Specifications

Shipping Dimensions:	67" h x 36" w x 45" d
Shipping Weight (Lbs):	555
Operating Temp Range:	-40° F - 120° F
Power Requirements:	208 / 240 VAC 1Ø, 20 A
Safe Pressure Setpoint:	0.25" - field adjustable
Alarm Setpoint:	0.15" - field adjustable
Average CFM:	* 61.77
Maximum CFM:	4633
Normal Sound Level:	** 60 db min. / 70 db max.
Fresh Air Intake:	24" Diameter
Field Wiring Conduit Entries:	3/4" FPT
Alarm Contact Rating:	15 Amps @ 120 VAC
Division 1 Unit Motors:	Rated Cl. I, Div. 1, Gr. C & D
Division 2 Unit Motors:	Rated Cl. I, Div. 2, Gr. C & D
Primary Motor:	3Ø Inverter Duty, T3, 60 Hz
Secondary Motor:	1Ø Perm. Split Cap., T3, 60 Hz
Primary Motor RPM:	1725 Max.
Secondary Motor RPM:	1725 Max.

\* Average CFM through a 75 square feet opening

\*\* Normal sound level tested in acoustic sound chamber with primary fan engaged and door sealed

## Material Specifications

NEMA 4 Blower Housing:	* Painted 14 Ga Galv. Steel
NEMA 4X Blower Housing:	*Painted 14 Ga 316 SS
Fan Venturis:	Painted Carbon Steel
Fan Blades:	Nonsparking Alum.
Pressure Gauge:	Alum. w / Enamel Finish
Tube Fittings:	316 SS & Nylon
Press. Reference Tubing:	1/4" Heavy Wall Tygon
Unit & Device Nameplates:	Silkscreened Lexan®
Model Number Nameplate:	Silkscreened SS
Fastener Hardware:	SS Screws & Bolts
Rear Door Fasteners:	Cast Zinc Body / Zinc Bolt
Elect. Enclosure & Fittings:	Cast Zinc & Aluminum
Electrical Wiring:	Brass MI Cable & Fittings w / PVC Jacket

\* Paint Finish Specifications:

2 mil epoxy primer & 2 mil white textured urethane finish

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## Mechanical Description

The body of Model WDP-24 is a seal welded NEMA 4 or 4X blower housing that features one (1) full size rear access door, three (3) intake stack openings, two (2) stack opening covers, one (1) removable wall mounting bezel, four (4) mounting angle brackets, one (1) exhaust grill and one (1) reusable aluminum screen filter. The housing is suitable for self-supported mounting through walls up to 8" thick, and it can be inserted from the inside or outside.

The blower housing is fitted with primary and secondary fans, mounted in a compact, vertical arrangement, to reduce consumption of horizontal wall space. The primary fan occupies the top position, to minimize control room noise levels during normal operation. The secondary fan occupies the bottom position, just behind the exhaust grill. The housing features a sealed cavity above the exhaust grill which contains an explosion proof control enclosure. The enclosure contains a variable speed drive, a VFD interface card, and an array of control switches and indicators. The housing is fitted with a screw fastened cover plate that conceals the cavity and explosion proof control enclosure. Above the cover plate, the housing is fitted with a 4" building pressure indicator which is scaled to inches of water and color coded to indicate low, high and safe building pressures. The housing features a power and alarm junction box and an optional emergency remote control junction box for wiring. All devices are connected with approved fittings and MI (mineral insulated) cable.

# Operation Control Features

## FIELD-ADJUSTABLE PRESSURE & ALARM SETPOINTS

**PFS** - (Primary Fan Speed) Adjusts primary fan speed to set desired pressure. CW (Clockwise) to decrease.

Factory setpoint: 0.25"  
Normal range of adjustment: 0.10" to 0.40"

**ASP** - (Alarm Setpoint) Adjusts alarm setpoint to activate alarm at desired pressure. CW (Clockwise) to decrease.

Factory setpoint: 0.15"  
Normal range of adjustment: 0.05" to 0.25"

## FIELD-ADJUSTABLE SECONDARY FAN & ALARM DELAYS

**SFD** - (Secondary Fan Delay) adjusts time delay cycle to prohibit secondary fan from engaging when pressure falls below alarm setpoint.

Factory setpoint: 0 seconds  
Normal range of adjustment: 0-35 seconds

**ASD** - (Alarm Signal Delay) adjusts time delay cycle to prohibit alarm relay from deenergizing when pressure falls below alarm setpoint.

Factory setpoint: 15 seconds  
Normal range of adjustment: 0-35 seconds

**Notes:** Time delay cycles reset automatically if "safe" building pressure is restored before cycles end. All controls permit real-time adjustment.

# Emergency Remote Control

## OPTIONAL USER INPUTS

**ESD** - (Emergency Shutdown) When VFD Interface Board jumper is installed, unit allows user to remotely disengage primary and secondary fans, regardless of primary and secondary fan control switch positions.

Typical input devices: emergency shutdown switches, fire extinguishing or alarm systems and stack mounted combustible gas or hydrogen sulfide sensors.

**ECO** - (Emergency Control Override) When VFD Interface Board jumper is installed, unit allows user to remotely engage primary and secondary fans, regardless of primary and secondary fan control switch positions.

Typical input devices: control room mounted combustible gas, hydrogen sulfide, or oxygen deficiency sensors.

## OPTIONAL WIRING METHODS

**HW** - (Hard Wiring) Selection of this option requires the use of conduit, seals and wiring approved for the location.

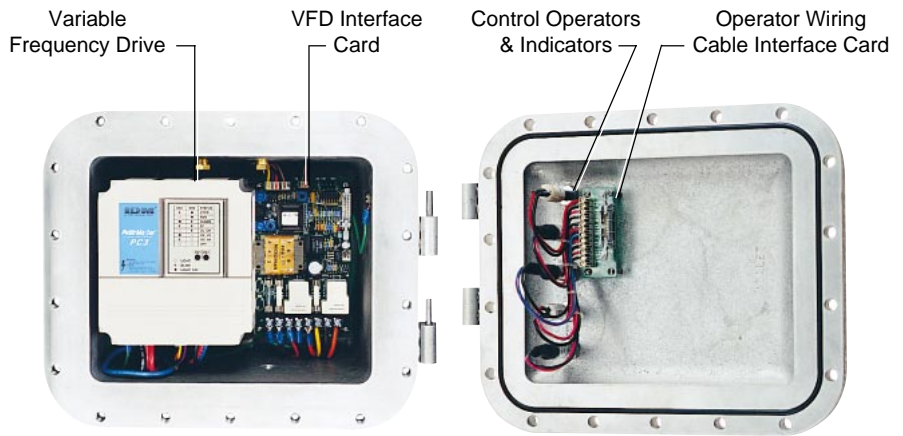
**IS** - (Intrinsically Safe) Selection of this option allows use of intrinsically safe cabling approved for the location.

**NOTE:** Loops are self-powered 5 VDC 20 ma signals, regardless of wiring method selection. Signals must be maintained independently by normally closed switches to prevent shutdown or override.

## PRIORITY SELECTION SWITCH

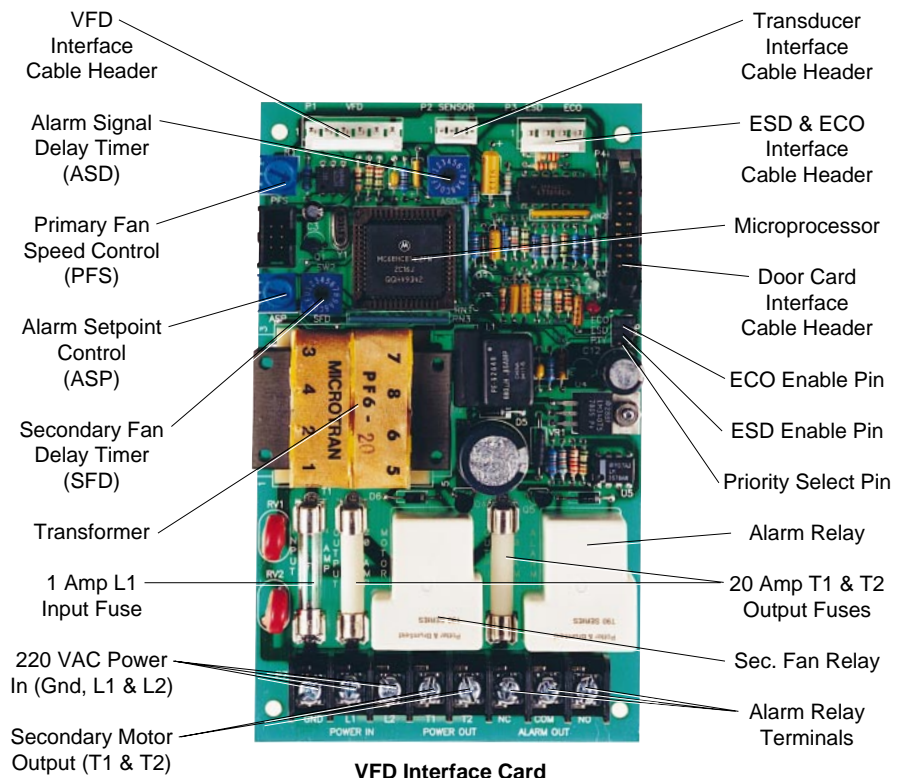
In cases where both optional inputs are utilized, VFD Interface Board jumper allows user to select the preferred action (shutdown or override) in the unlikely event of simultaneous loss of signal. When VFD Interface Board priority (PTY) jumper is installed, priority is given to the Emergency Control Override function.

See rear cover for ESD & ECO input ordering information.



Explosion Proof Control Enclosure

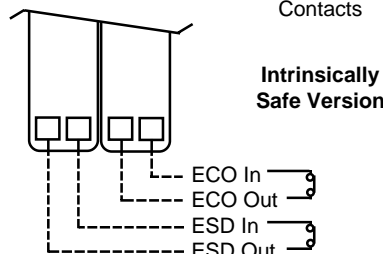
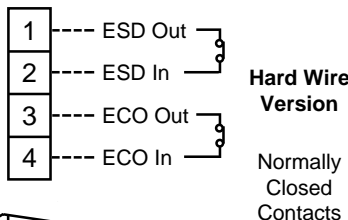
Explosion Proof Control Enclosure Door



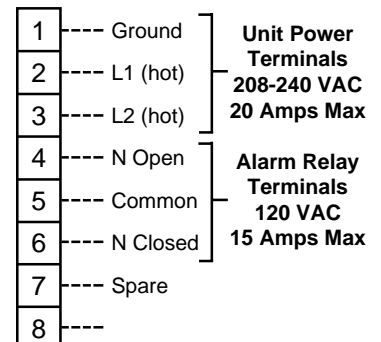
VFD Interface Card

# Junction Box Electrical Wiring Diagram

## Optional ESD & ECO Input Junction Box



## AC Power & Alarm Junction Box



## Model WDP-24 Unit Accessories

**GALVANIZED OR STAINLESS STEEL SPIRAL PIPE**

SP-24-120 10' Flanged Stack Section  
 SC-24 Flanged & Screened Rain Cap  
 ST-24 Flanged Tee w/ Coupler  
 SN-24 Flanged Elbow w/ Coupler  
 BC-24 Blind Flange Cover Plate  
 GK-24 Flange Gasket & Bolt Kit

**SPIRAL PIPE STACK & GUY WIRE ANCHOR KITS**

SPAK-24 Spiral Pipe Anchor Bolt Kit  
 EAGK-40-2024 Earth Anchor Guy Wire Kit  
 CAGK-40-2024 Concrete Anchor Guy Wire Kit

**GAL. OR S.S. FREE STANDING RIGID PIPE STACKS**

RP-24-25 25' 10 ga Rigid Pipe Stack  
 RPAK-24 Rigid Pipe Anchor Bolt Kit

**ADDITIONAL ITEMS**

FDK-24-300 25' Flexible Duct Intake Kit  
 AUSK-5 Adjustable Unit Support Kit  
 EDS-240-20-2 2 Pole 20 Amp Disconnect

**INSTALLATION & OPERATION MANUAL**

WDP-24-IOM Inst. & Operation Manual

**GAS DETECTOR SYSTEMS**

CGDM-100 Combustible Gas Monitor  
 CGDS-100 Combustible Gas Sensor  
 HGDM-100 Hydrogen Sulfide Monitor  
 HGDS-100 Hydrogen Sulfide Sensor  
 OGDM-100 Oxygen Deficiency Monitor  
 OGDS-100 Oxygen Deficiency Sensor  
 GDPS-100 24 VDC Monitor Power Supply  
 GDSB-2024 Sensor Stack Mount Bracket

**WARNING NAMEPLATES**

BPCN-1 Building Pressurization Caution  
 SDWN-1 Sealed Door Warning

**EMERGENCY REMOTE CONTROL INPUTS**

ESD/ECO-HW-24 Hard Wire ESD & ECO  
 ESD/ECO-IS-24 Intrin. Safe ESD & ECO  
 ESD-IS-24 Intrin. Safe ESD  
 ECO-IS-24 Intrin. Safe ECO

**REMOTE ALARM BEACONS AND HORNS**

RAB-1 Div. 1 Remote Alarm Beacon  
 RAB-2 Div. 2 Remote Alarm Beacon  
 RAH Div. 1 Remote Alarm Horn

## Model Number Designations

**WDP - 24 - D1 - GS**

**Series Model Number** ————  
 Wall Mount Dual Blower  
 Building Pressurization Unit

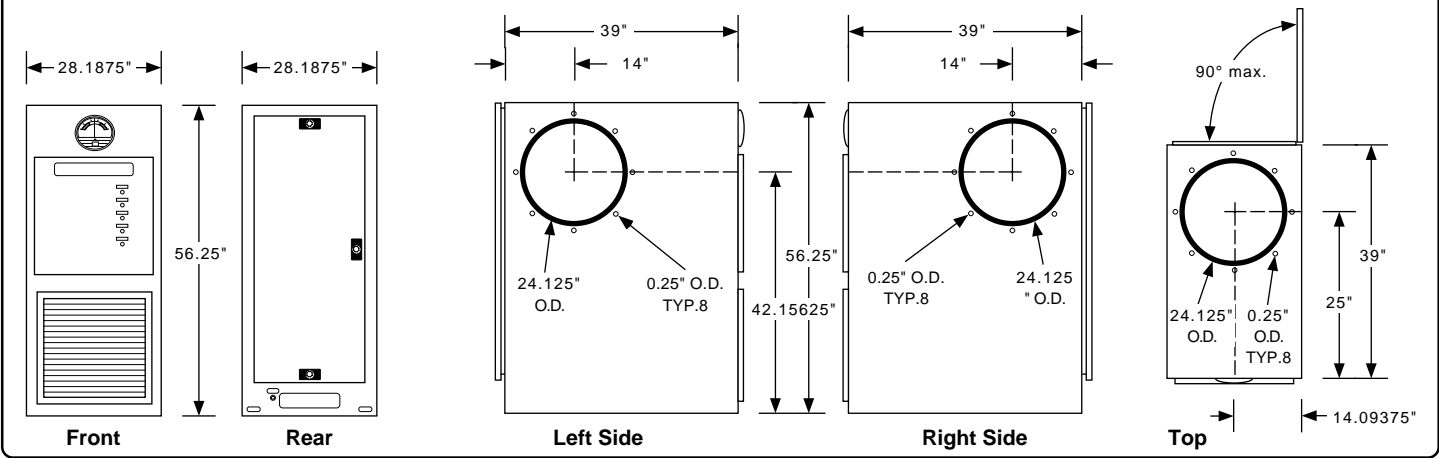
**Unit Size** ————  
 24 - 24" Diameter Fan Blades

**Division Rating** ————  
 D1 - Division 1  
 D2 - Division 2

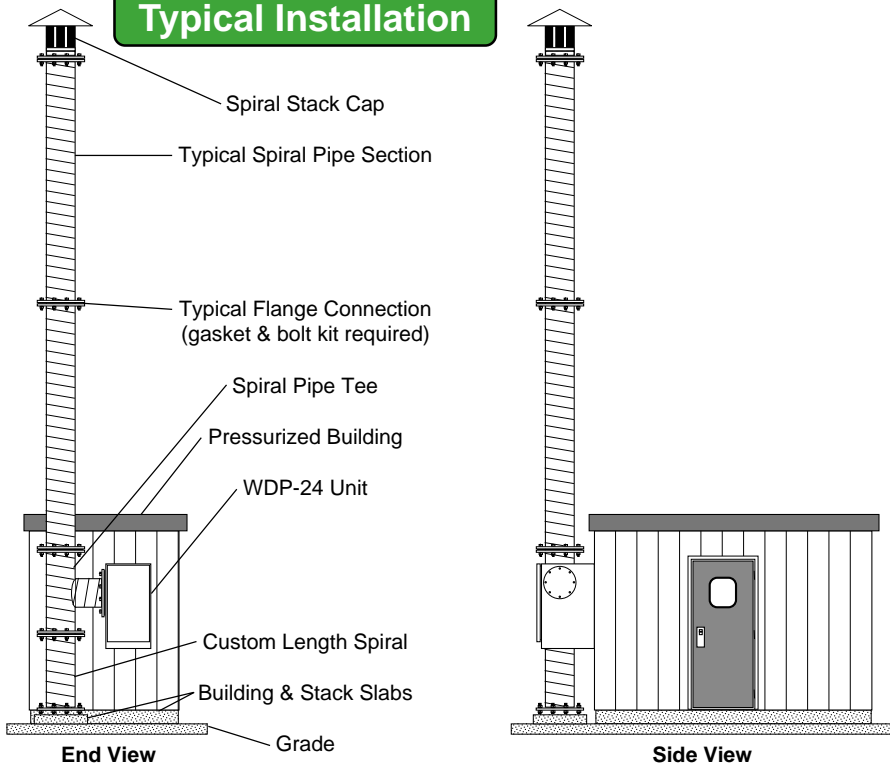
**Housing Material** ————  
 GS - 14 Ga Galvanized Steel w/ White Paint Finish  
 SS - 14 Ga Stainless Steel w/ White Paint Finish

**ONE (1) BPCN-1 NAMEPLATE & ONE (1) INSTALLATION & OPERATION MANUAL PROVIDED WITH UNIT**

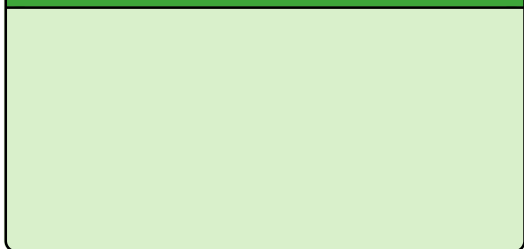
## Housing Dimensions



## Typical Installation



## Local Sales Representative



### IMPORTANT NOTES

All specifications subject to change without notice. Warranty & Liability policies available upon request.

The simplified installation diagrams to the left are shown without guy wire or structural support systems, for the purpose of maintaining diagram clarity.

Installers must recognize the need for adequate stack guy wire or structural support systems as well as foundation anchoring systems. Installers assume all liability for the installation and integrity of said systems, wherein design considerations should ensure that stack guy wire or structural support systems are capable of withstanding local inclement weather conditions.