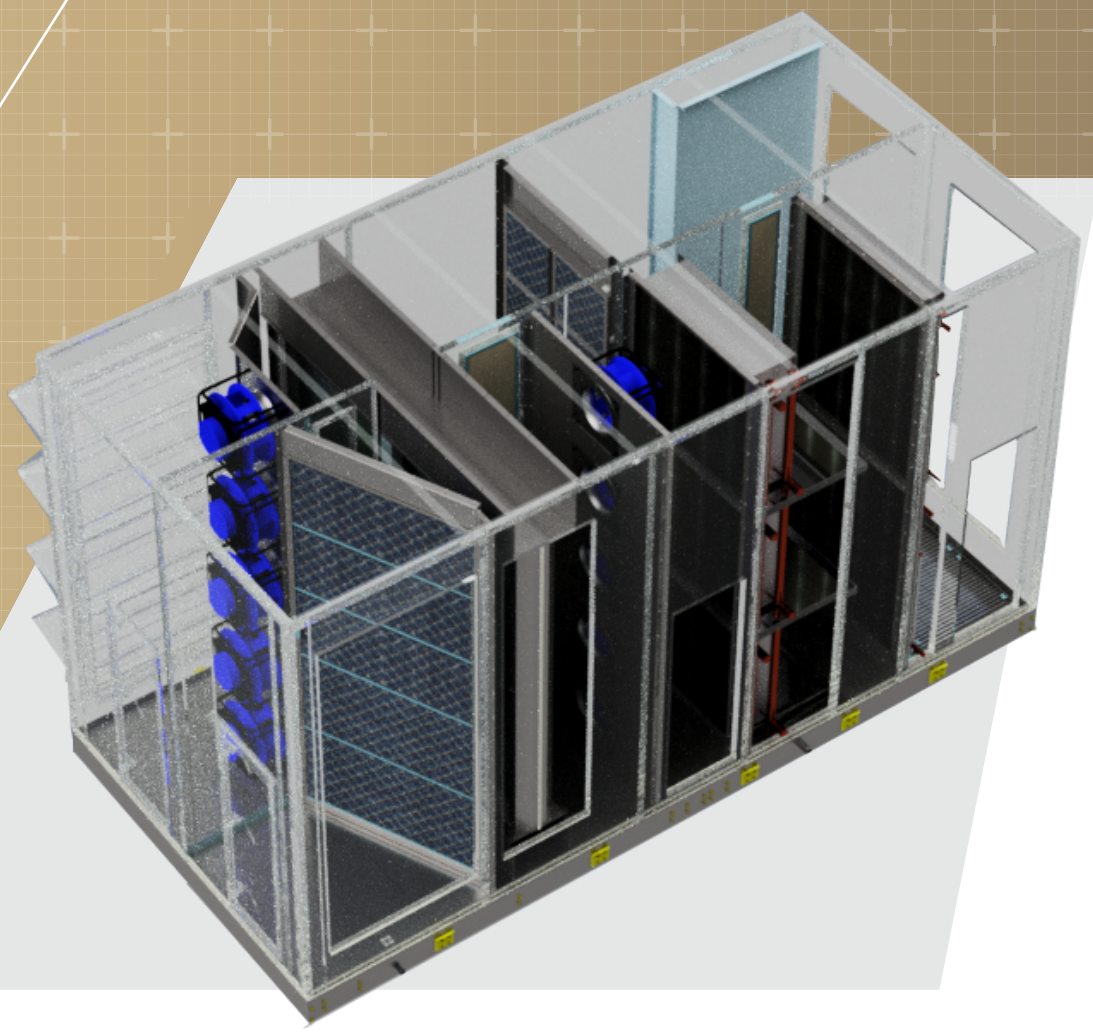
FläktGroup®

SEMCO®

ELITEPRO SERIES

PACKAGED ENERGY RECOVERY SYSTEM

TECHNICAL GUIDE



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ABOUT THIS TECHNICAL GUIDE

This technical guide takes an in depth look at the technology behind Fläktgroup® SEMCO®'s ElitePro Series, as well as, outlining the process required to determine which ElitePro unit to select to ensure effective system design. This material should be thoroughly reviewed, before embarking on the design process.

The ElitePro is a packaged energy recovery unit (ERU), designed around FläktGroup SEMCO's energy recovery wheels. The ElitePro is engineered to provide high quality indoor air, by bringing in and cleaning large quantities of outdoor air with an energy recovery wheel.

The ElitePro may be utilized in a variety of ways for many different types of facilities, to ensure that optimal comfort and air quality is achieved in every design scenario. The ElitePro can be applied as a pre-conditioner to existing, Heating, Ventilating, and Air Conditioning (HVAC) equipment, or as a part of an integrated system that provides total space conditioning and humidity control.

In addition to the guidance and information provided in this technical guide, FläktGroup SEMCO also uses an ElitePro Series Energy Recovery Unit (ERU) selection tool, which simplifies the design process and cost justification.

If you require additional design support, or have any unanswered questions, please visit www.semcohvac.com, for a listing of FläktGroup SEMCO sales representatives in your area, who will be able to assist you with your needs.

THE ANSWER TO THE ENERGY EFFICIENCY AND INDOOR AIR QUALITY DILEMMA

Mechanical engineers, in the HVAC industry, are often confronted with the difficult task of creating energy efficient systems with superior air quality. In recent years, to minimize energy loss, building envelopes have become tighter making them more energy efficient. Tightening building envelopes, lowers heating and cooling costs, because it minimizes the amount of outside air that is allowed to enter the building. While this might be great for lowering energy costs, it is not good news for the building's air quality, due to the fact that outdoor air is crucial for removing air contaminants produced indoors. As stated in ASHRAE Standard 62.1, flushing indoor pollutants to the outdoors, is the most effective way of reducing indoor air contaminant levels.

To reduce indoor air pollutants by bringing in more outdoor air, the average building would need a form of mechanical ventilation to filter controlled amounts of outside air into the building. Then, to balance out the building's air pressure, roughly the same amount of air needs to be exhausted from the building. Now the air quality in the building has been improved, but energy has been wasted, and revenue has been lost.

This dilemma can easily be solved with an energy recovery system, like the ElitePro. With an energy recovery system, the cold or hot air contained in the return air stream is used to precondition the outdoor air being brought into the building. Using the existing return air to treat the new air coming in, reduces the amount of energy needed to treat the incoming air. Always keeping in mind that desiccant carryover can cause major indoor air quality (IAQ) problems. If additional heating and cooling is required to supplement the existing return air being provided by the energy recovery wheel, optional heating and cooling coils can be added.

ASHRAE 62.1-2016 addendum ae calls for space dew point to be limited below 60°F. This type of building control must have a high class energy recovery wheel to reduce cost and meet code.

In addition to being extremely energy efficient, energy recovery system can easily be applied to existing equipment with little or no modification, if there is a separate air-conditioning/ventilation system. The energy recovery system may be connected to one unit or several, in order to ensure that there is some amount of controlled fresh air at all times. In effect, it tricks the existing HVAC unit into using re-circulated air all year long.

INDOOR AIR QUALITY

As stated on the previous page, ASHRAE Standard 62.1, declares that flushing indoor pollutants to the outdoors, with incoming outdoor air, is the most effective way of reducing indoor air contaminant levels. It also states the minimum outdoor air ventilation rate required to achieve acceptable indoor air quality.

While ASHRAE 62.1 allows for 5-10% recirculation of air with heat exchangers, depending on class of air (class 1, 2, or 3), this recirculated air does not qualify as outdoor air. An energy recovery wheel must have an effective purge or the system outdoor air must be increased to account for the recirculated air. Per ASHRAE Standard 62.1, system outdoor air quantities are recommended to be increased from 5 CFM to 20 CFM per inhabitant to avoid poor indoor air quality. ASHRAE Standard 62.1 has been proven so effective at improving indoor air quality that three major United States building codes have ASHRAE Standard 62.1 incorporated into them (BOCA, Southern, and Uniform).

While the implementation of ASHRAE Standard 62.1 may be great news to building inhabitants, many owners, architects, and engineers are concerned about the impact that it my have on humidity control, operating costs, and construction costs.

However, there is no need to worry, because the ElitePro provides an effective solution. As an ERU, the ElitePro recovers up to 83% of the total energy expended by these buildings. Also, when an ElitePro is combined with a conventional HVAC system, it allows for a four-fold increase in outdoor air quantity, 5 to 20 CFM per person, without an increase in operating costs.

If a facility is designed to include unitary packaged HVAC equipment, or heat pumps, the addition of an ElitePro unit can be especially beneficial, because it reduces the cost of operation and greatly improves humidity control; something that is important for providing acceptable indoor air quality.

INTRODUCING THE ELITEPRO SERIES

The FläktGroup SEMCO ElitePro, pre-engineered and factory assembled ERU, offers the ultimate in equal transfer of, latent and sensible performance. As with all of the FläktGroup SEMCO energy recovery systems, the ElitePro is capable of treating a building's exhaust and incoming air supply. The ElitePro system may be used as a outdoor air pre-conditioner for an existing conventional air handling system, or as part of an integrated system, which provides total space air treatment. If supplemental heating is required, additional heating and cooling options are available.

At the heart of the ElitePro, lies the industry leading, FläktGroup SEMCO energy recovery wheels. FläktGroup SEMCO's energy recovery wheel line offers superior performance with the highest latent and sensible heat transfer efficiency media on the market (in its class).

FläktGroup SEMCO's energy recovery wheel line is designed and built to have a long, reliable, and relatively maintenance free life. It is AHRI certified, which verifies that the cassettes will perform accurately and consistently, in accordance with ASHRAE Standard 84. In addition to ASHRAE Standard 84, all wheels are independently certified to pass NFPA 90 requirements for flame spread and smoke generation based upon ASTM E84 fire test method.

To preserve the life of the wheel, each cassette's rotor is coated in ceramic, which provides a high level of corrosion protection. The media found in each wheel, is crafted from aluminum, and is coated in a dense layer of corrosion resistant desiccant, prolonging its life, and minimizing air leakage.

The unique design also contributes to its high performance and reduced energy use. The flutes are designed for less pressure loss, less brake horsepower usage, and a smaller fan size. The purge function reduces the exhaust air transfer ratio, keeping the supply air free of contamination. Additionally, the FläktGroup SEMCO energy recovery line is supplied with a hybrid brush/barrier, perimeter and face contact seals to minimize air leakage and wheel bypass, forming the ideal sealing surface.

ELITEPRO SERIES FEATURES AND BENEFITS

FläktGroup SEMCO's ElitePro is available in eight cabinet sizes ranging in airflow capacity from 3,000 CFM to 15,000 CFM. The standard and optional features that are available with the ElitePro are listed below.

STANDARD FEATURES

1) UNITARY WHEEL CASSETTE

- Slide out cassette
- Highest latent and sensible heat transfer efficiency certified media.
- Uniquely designed fluted media, which generates the highest possible heat transfer characteristics while simultaneously reducing pressure loss parameters, resulting in a reduction of brake horsepower used and fan size.
- The ceramic coating on the rotor gives extremely high corrosion protection.
- The wheel media is crafted from an aluminum substrate and is coated with a dense layer of corrosion resistant desiccant. This coating extends the life of the aluminum media substrate and enhances its structural integrity.
- The wheel media is supported by light weight aluminum extrusions (hub, spokes, and rims), combining strength with precision.
- The UWC is supplied with a hybrid brush/barrier perimeter and face contact seals which minimizes air leakage and wheel bypass.
- Purge function allows for accurate outdoor air CFM to meet ASHRAE 62.1.

2) FOAM-FILLED PANEL SYSTEM

- Dual-wall foam panel construction (2 inches thick) eliminates exposed insulation (R-13) and the associated risk of bacterial growth.
- Dual-wall removable panels provided for large internal components.
- Gasketed dual-wall access doors with stainless steel piano hinges
- Secondary roof of continuous standing-seam panels come standard on units designed for outdoor installation.

3) SUPPLY & EXHAUST AIR EC FANS

- Designed for optimized system efficiency.
- Lowest inlet and outlet noise level.
- 0-10 VDC variable speed control
- Direct mounting without AVs or flexible inlet connection.
- Oversized access doors to allow for fan removal.

4) FILTER SECTIONS

- Filters that are MERV 8 efficient are standard for the outdoor air and return airstreams.

5) HOODS & DAMPERS

- Low-leakage motorized fresh air and exhaust air damper.
- Outdoor units are provided with an intake hood consisting of a metal mesh filter, and an exhaust hood with bird screen.

6) ELECTRICAL PACKAGE WITH SINGLE POINT CONNECTION

- Power distribution panel with non-fused disconnect and branch circuit protection for each motor and transformer.
- Standard control package with variable speed wheel control, including EC fans with airflow measurement.
- 480 volt / 3 phase / 60 hertz single-point connection

OPTIONAL FEATURES

7) INCREASED FILTER EFFICIENCY

- MERV 13 cartridge filters can be provided in place of the standard MERV 8 filters.

8) ELECTRIC PRE-HEAT

- Factory selected sizes to eliminate frost concerns.

9) NO CONTROLS

- Constant volume fan option or controls by others

10) CURB

- 14", 18" and 24" ducted insulated, ducted non-insulated, or open insulated

11) TRUE 3Å®, FUSION®, FUSION 3Å®, OR UWCH WHEEL

- The True3Å®, Fusion® and Fusion 3Å® have the industry's highest recovery performance (AHRI Certified) and recovery efficiency ratios (RER)

- The True 3Å® has a contaminant carry-over of less than .045%.
- The UWCH has a higher performance, same size casing.

12) REHEAT OPTIONS

- Hot water coil

13) COOLING OPTIONS

- Chilled water or direct expansion coil

14) GAS BURNER

- Factory installed and run tested stainless, IIRC gas burner

KEY BENEFITS

- Standard, cataloged energy wheel products that do not compromise indoor air quality, due to contamination carryover.
- Independently certified wheel performance in accordance with ASHRAE Standard 62 with regard to, ventilation for acceptable outdoor air quality, with airflow capacities which range from 3,000 CFM to 20,000 CFM.
- Equal latent and sensible heat transfer.
- Highest performing wheel in its class on the market.
- Wheel media is independently certified to pass NFPA 90A requirements for flame spread and smoke generation based upon ASTM E84 fire test method.
- High energy-efficient electronically commutated (EC) fans maintain a lower temperature for longer life.
- Dual-wall foam panel construction (2 inches thick) eliminates exposed insulation (R-13) and the associated risk of bacterial growth.
- Integrated controls with airflow measurement
- Reliable operation
- Minimal maintenance required
- Greatest engineering expertise in the industry.
- Extended 3 and 5 year service warranty are available.
- Hoods are designed with ASHRAE 62.1 in mind, keeping filters below 500ft/min with intake air passing upward through a filter in a horizontal plane.
- System design also complies with the air intake minimum distance listed in ASHRAE 62.1.

ELITEPRO DETAILED SELECTION PROCEDURE

1) Select unit size from **FIGURE 1**, based on the CFM required. Use the smallest unit with the MIN and MAX CFM range, since it will provide the most cost-effective solution. *Recommended selections are highlighted in yellow.*

UNIT TYPE	MODEL	MINIMUM CFM	MAXIMUM CFM
CONDITIONING	ELT-053	3,000	5,300
PRE-CONDITIONER	ELT-060	4,000	6,000
PRE-CONDITIONER	ELT-075	5,500	7,500
CONDITIONING	ELT-085	4,000	8,500
PRE-CONDITIONER	ELT-090	7,000	9,000
PRE-CONDITIONER	ELT-110	8,000	11,000
CONDITIONING	ELT-120	7,000	12,000
PRE-CONDITIONER	ELT-130	10,000	13,000
CONDITIONING	ELT-150	11,000	15,000
CONDITIONING	ELT-175	14,000	17,500
CONDITIONING	ELT-200	16,000	20,000

FIGURE 1 Unit reference chart

2) Select unit configuration based on project requirements

3) See **FIGURE 2** below to see what conditions are required to make a performance selection.

INPUT UNIT CONDITIONS BELOW:		
		EXTERNAL STATIC (INWG)
SUPPLY AIRFLOW CFM	8,500	2.5
RETURN AIRFLOW CFM	6,500	2.5
OUTDOOR CONDITIONS	COOLING	HEATING
OA DRY BULB	95˚ F	0˚ F
OA WET BULB	77.5˚ F	0.7˚ F
OA GRAINS	114.7 GR	4.2 GR
RETURN CONDITIONS	COOLING	HEATING
RA DRY BULB	72˚ F	70˚ F
RA WET BULB	61˚ F	52˚ F
RA GRAINS	62.7 GR	29.2 GR
RA HUMIDITY	53% RH	27% RH

FIGURE 2

4) UNIT TAG: ERU-1

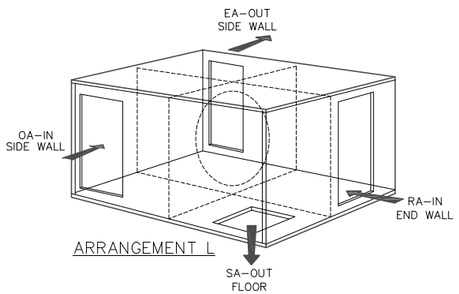
5)

PSYCHROMETRIC ALTITUDE CORRECTION	
ADJUST TO SEA LEVEL	
ALAMOSA, CO	
ALBUQUERQUE, NM	
AMARILLO, TX	
ANCHORAGE, AK	
ALTITUDE USED	0 FEET

6) See **FIGURE 3** below to make selections from the factory options available.

MAKE SELECTABLE OPTIONS BELOW:	
	INPUT DATA
UNIT MODEL	COOLING
SELECTED UNIT	ELT-085
OPENING OPTIONS	L-SA FLOOR, RA END, EA BACK
ENVIRONMENT	ODR 14" DUCTED N-INS CURB
HAND	RIGHT
POWER	480/3
OA FILTER	2" MERV 8
PRE-HEAT REQUIRED?	NO
OA DAMPER	TWO-POSITION ACTUATOR
WHEEL TYPE	UWC
SA FAN	ZIEHL ABEGG EC
COIL ONE TYPE	CW-6 ROW
COIL TOW TYPE	NONE
RA FILTER	2" MERV 8
RECIRCULATION DAMPER	NONE
EA FAN	ZIEHL ABEGG EC
EA DAMPER	TWO-POSITION ACTUATOR
CONTROLS	FULL-VARIABLE CFM
FINISH	PAINT
PRE-HEAT FLA	—
FAN HP	7.1
UNIT FLA	48
DISCONNECT	60
ORDER CONFIGURATION CODE	ELT-085-L-B-A-C-A-0-A-A-B-A-B-A-B-A-0-B-0

FIGURE 3



UNIT SELECTED	
MINIMUM CFM	4,000
MAXIMUM CFM	8,500
WHEEL TYPE	UWC
WHEEL SIZE	64"
SA FAN	QTY 6 ZIEHL ABEGG EC
COOLING OPTION	CW-6 ROW
HEATING OPTION	—

7)

SUPPLY CONDITIONS	COOLING	HEATING
SA DRY BULB	52˚F	70˚F
SA WET BULB	51˚F	51˚F
SA GRAINS	54.1 GR	25.5 GR
SA HUMIDITY	88% RH	47% RH

8) After a selection is made, use the **ORDER CONFIGURATION CODE** to release the order.

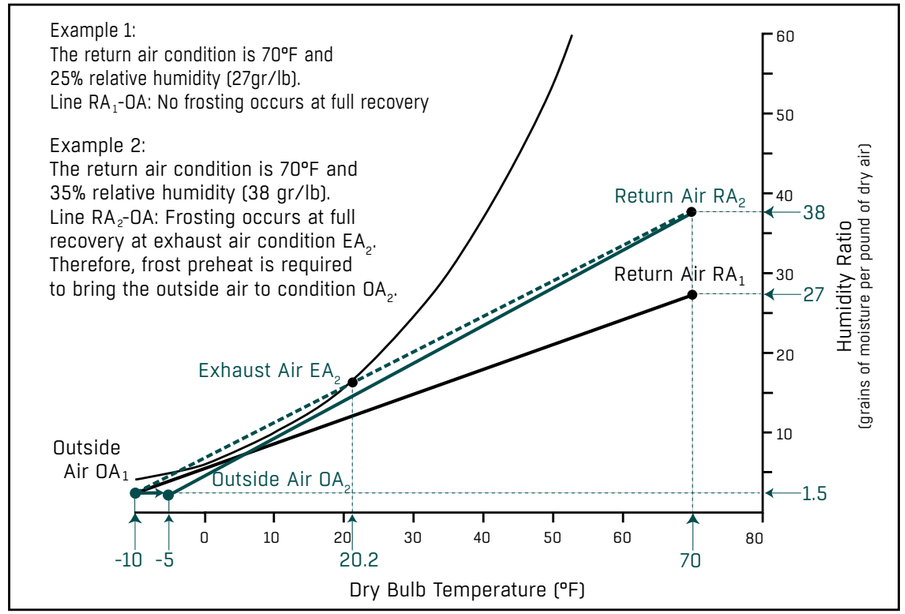
DETERMINING FROST PROTECTION

Plotted on a psychrometric chart, the performance of an enthalpy recovery wheel will form a straight line between the outdoor air and return air conditions (See **FIGURE 2**). If this line does not pass through the saturated line on the psychometric chart or if the leaving exhaust air condition of the wheel is not below freezing, the wheel will not frost. In general, if the space is not humidified above 30% relative humidity on extreme winter days and the outdoor design is above 0°F, then frost protection is probably not required.

Should frost protection be required, a method of frost protection is available on the ElitePro. Preheat is used as the primary method of frost protection for the energy wheel in ElitePro units. This employs an electric heater on the outdoor air intake to raise the incoming air temperature such that the operating line of the wheel no longer hits saturation. This is the preferred method since it requires usually only about 10°F of preheat to avoid frosting and the wheel continues to operate at full capacity even at the extreme conditions.

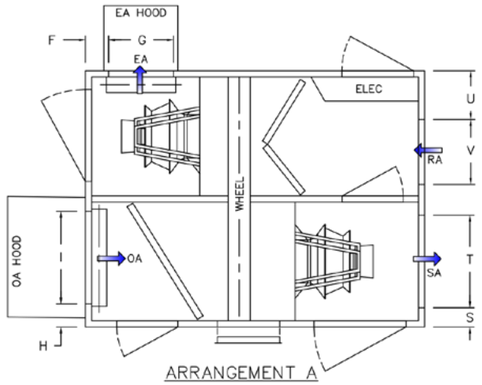
ex. Since the outdoor air winter design temperature for this example is -10°F and the space humidity is below 30%, preheating is not required.

FIGURE 2 Using the psychometric chart to determine the need for preheat frost control.

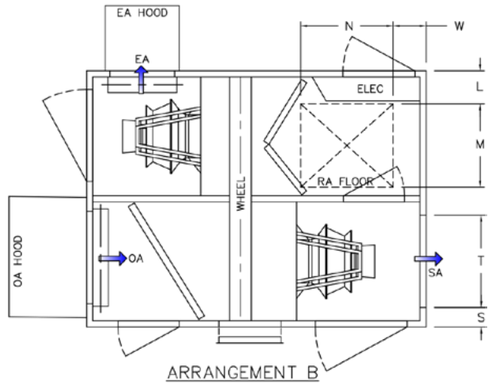


DIMENSIONAL DATA - ARRANGEMENTS A-D

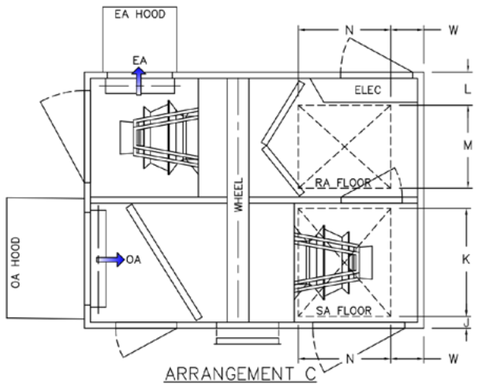
ELT-P



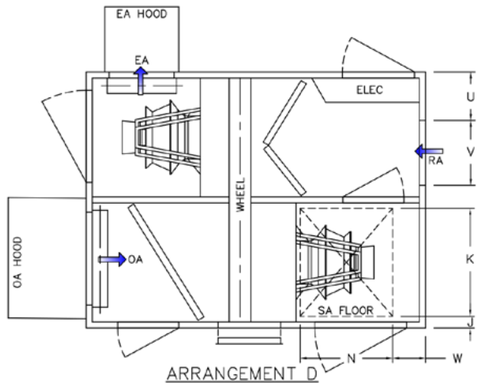
ARRANGEMENT A



ARRANGEMENT B



ARRANGEMENT C



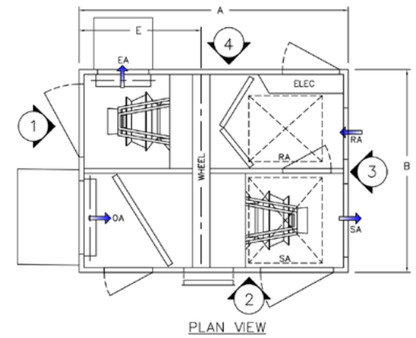
ARRANGEMENT D

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-060	91.4	67.5	73.1	8.0	44.7	7.5	18.0	7.7	20.0	3.9	27.0	8.0	22.0
ELT-075	109.7	73.4	79.3	8.0	54.7	7.5	20.0	7.7	23.0	3.9	30.0	6.1	27.0
ELT-090	111.2	79.2	84.9	8.0	55.6	7.5	20.0	7.6	26.0	4.4	32.0	6.4	30.0
ELT-110	123.1	83.2	89.0	8.0	61.5	7.5	25.0	5.5	30.0	3.8	35.0	4.8	33.0
ELT-130	130.0	89.0	94.7	8.0	54.7	7.7	28.0	7.3	31.0	5.3	35.1	5.3	35.1

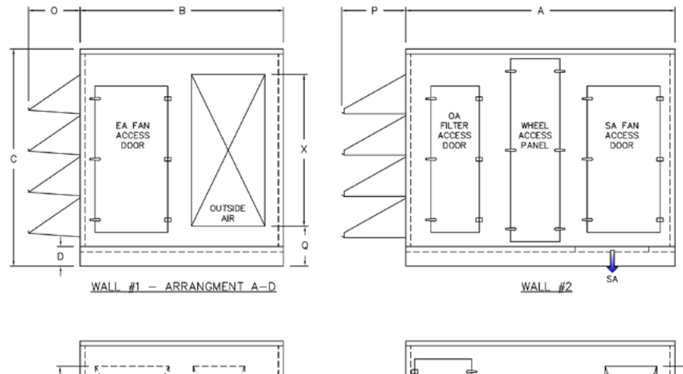
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

ELT-P

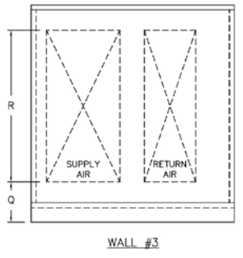


PLAN VIEW

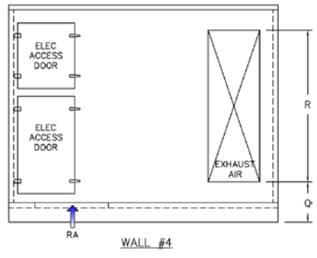


WALL #1 – ARRANGMENT A-D

WALL #2



WALL #3



WALL #4

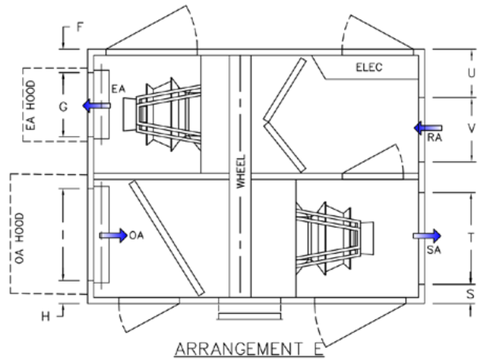
UNIT SIZE	DIMENSION (INCHES)											WEIGHT (LBS.)
	N	O	P	Q	R	S	T	U	V	W	X	
ELT-060	25.0	21.1	20.9	16.5	46.0	6.4	22.0	13.4	18.0	5.5	53.0	2,810 LBS
ELT-075	25.0	21.1	26.0	16.5	52.0	6.4	25.0	14.9	18.0	5.3	57.0	3,450 LBS
ELT-090	27.0	21.1	21.0	16.4	58.0	6.9	27.0	15.4	20.0	5.3	61.0	3,800 LBS
ELT-110	30.0	21.1	26.0	16.4	62.0	6.3	30.0	15.8	21.0	5.2	62.0	4,270 LBS
ELT-130	33.0	24.1	24.1	16.4	68.0	6.3	33.0	13.5	28.0	5.3	71.0	5,000 LBS

Click here for service clearance dimensions

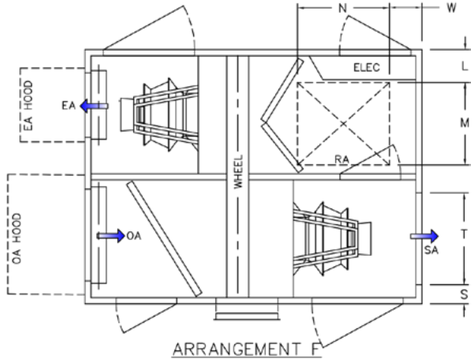
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-P

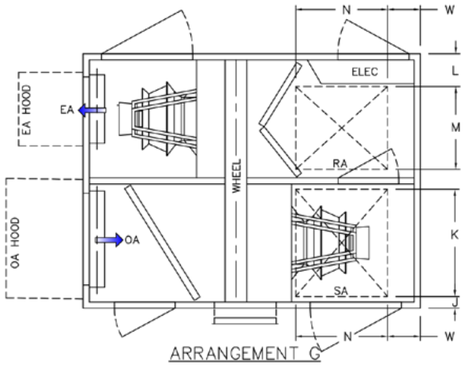
** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*



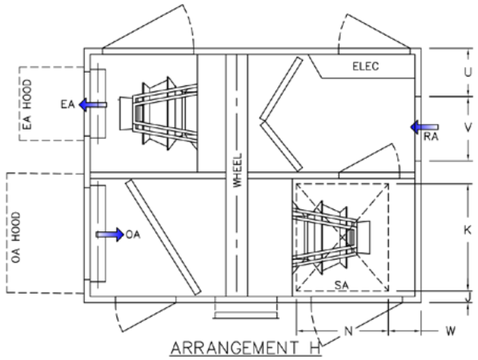
ARRANGEMENT E



ARRANGEMENT F



ARRANGEMENT G



ARRANGEMENT H

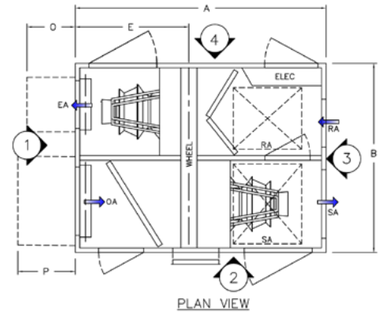
UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-060	91.4	67.5	73.1	8.0	44.7	8.1	18.0	7.7	20.0	3.9	27.0	8.0	22.0
ELT-075	109.7	73.4	79.3	8.0	54.7	9.4	20.0	7.7	23.0	3.9	30.0	6.1	27.0
ELT-090	111.2	79.2	84.9	8.0	55.6	11.9	20.0	7.6	26.0	4.4	32.0	6.4	30.0
ELT-110	123.1	83.2	89.0	8.0	61.5	8.9	25.0	5.5	30.0	3.8	35.0	4.8	33.0
ELT-130	130.0	89.0	94.7	8.0	54.7	8.7	28.0	7.3	31.0	5.3	35.1	5.3	35.1

Click here for service clearance dimensions

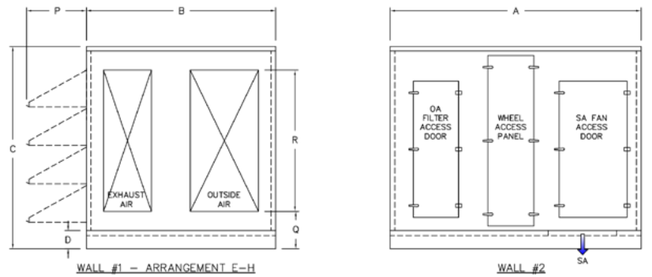
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-P

** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*

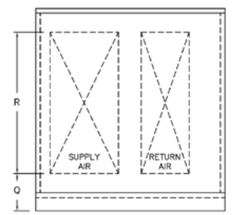


PLAN VIEW

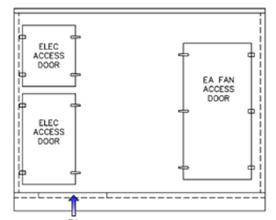


WALL #1 – ARRANGEMENT E–H

WALL #2



WALL #3



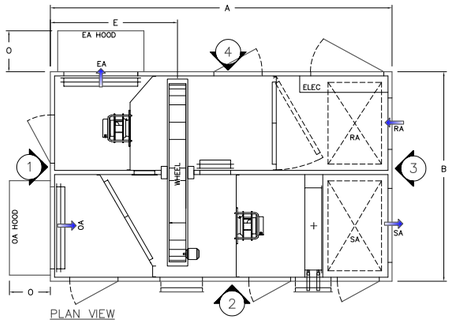
WALL #4

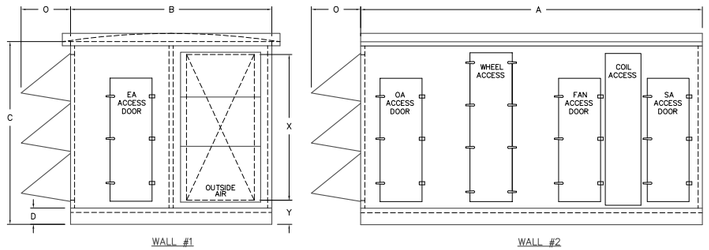
UNIT SIZE	DIMENSION (INCHES)											WEIGHT (LBS.)
	N	O	P	Q	R	S	T	U	V	W	X	
ELT-060	25.0	21.1	20.9	16.5	46.0	6.4	22.0	13.4	18.0	5.5	53.0	2,810 LBS
ELT-075	25.0	21.1	26.0	16.5	52.0	6.4	25.0	14.9	18.0	5.3	57.0	3,450 LBS
ELT-090	27.0	21.1	21.0	16.4	58.0	6.9	27.0	15.4	20.0	5.3	61.0	3,800 LBS
ELT-110	30.0	21.1	26.0	16.4	62.0	6.3	30.0	15.8	21.0	5.2	62.0	4,270 LBS
ELT-130	33.0	24.1	24.1	16.4	68.0	6.3	33.0	13.5	28.0	5.3	71.0	5,000 LBS

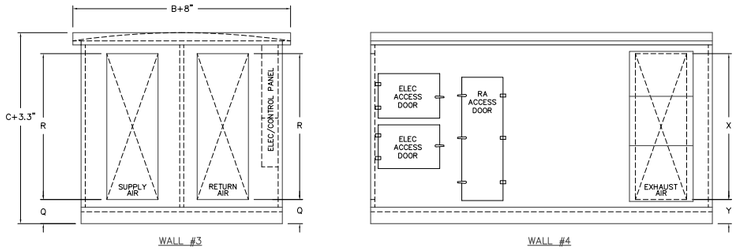
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

ELT-H





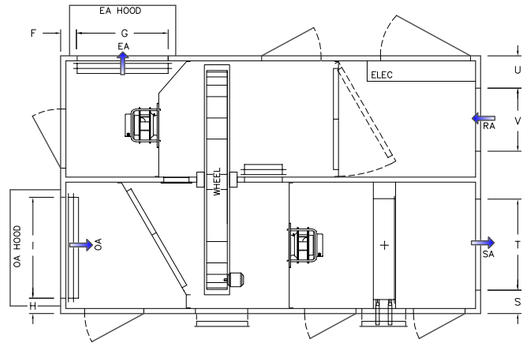


UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	154.5	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	154.5	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	161.6	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	166.4	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	166.4	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	166.4	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

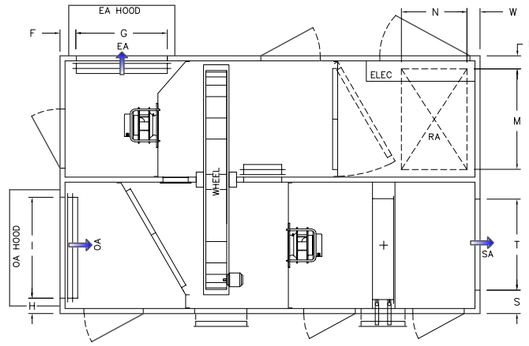
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

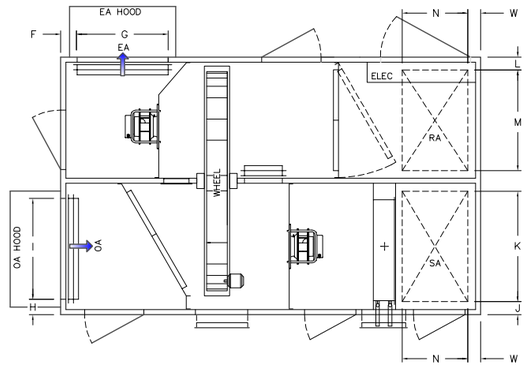
ELT-H



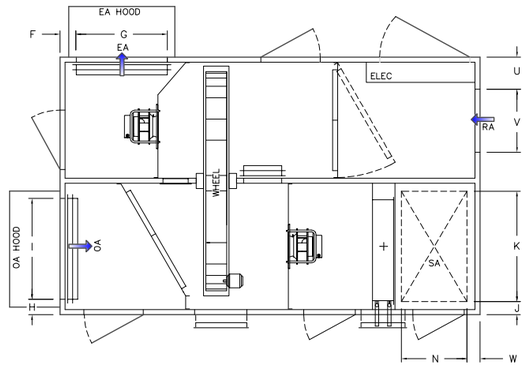
ARRANGEMENT A



ARRANGEMENT B



ARRANGEMENT C



ARRANGEMENT D

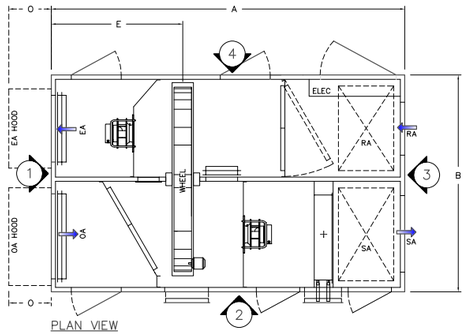
UNIT SIZE	DIMENSION (INCHES)												WEIGHT (LBS.)
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	4,100 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,000 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	5,900 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	7,900 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	8,200 LBS
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	8,400 LBS

Click here for service clearance dimensions

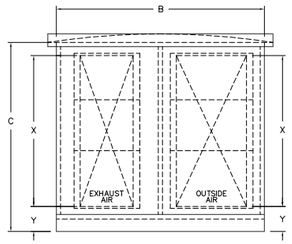
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT -H

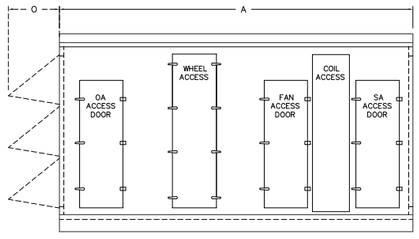
** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*



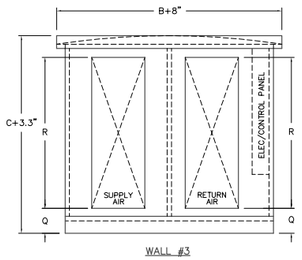
PLAN VIEW



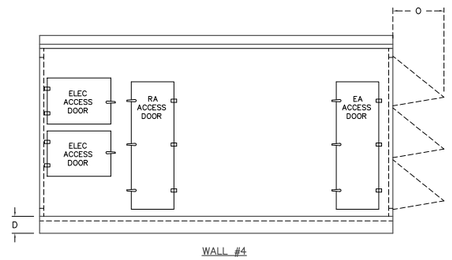
WALL #1



WALL #2



WALL #3



WALL #4

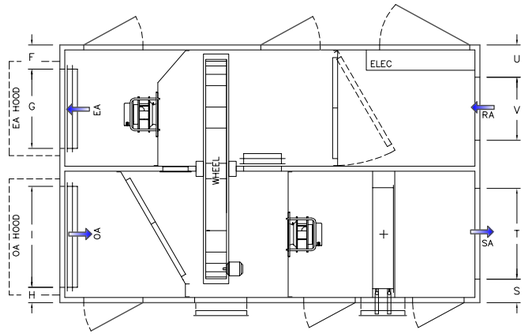
UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	154.25	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	154.5	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	161.6	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	166.4	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	166.4	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	166.4	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

Click here for service clearance dimensions

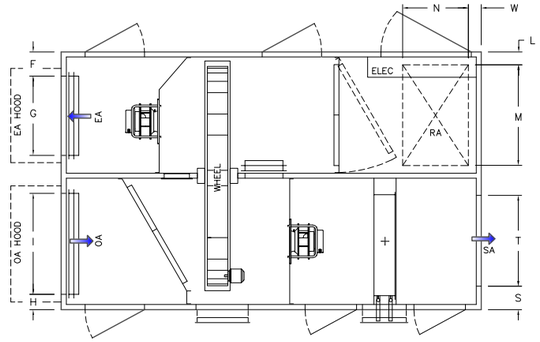
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT -H

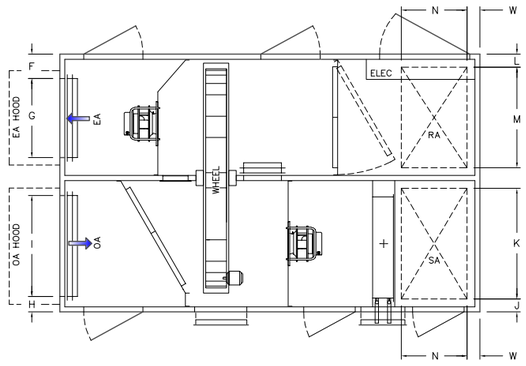
** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*



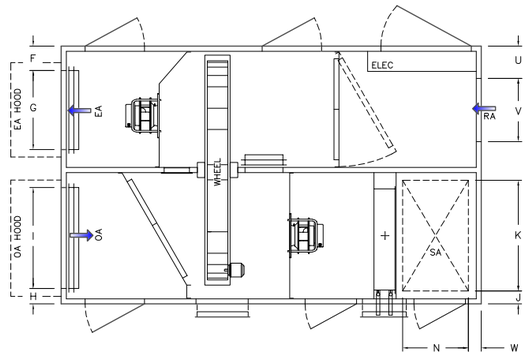
ARRANGEMENT E



ARRANGEMENT F



ARRANGEMENT G



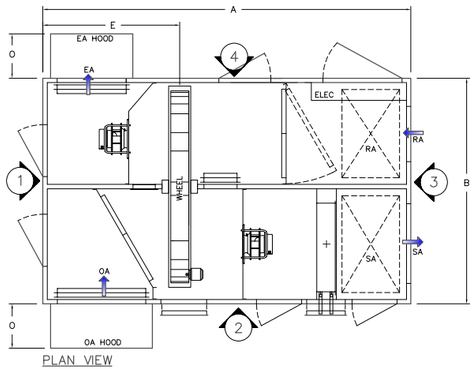
ARRANGEMENT H

UNIT SIZE	DIMENSION (INCHES)												WEIGHT (LBS.)
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	4,100 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,000 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	5,900 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	7,900 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	8,200 LBS
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	8,400 LBS

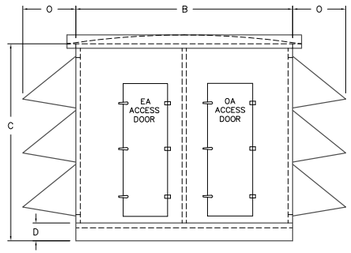
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

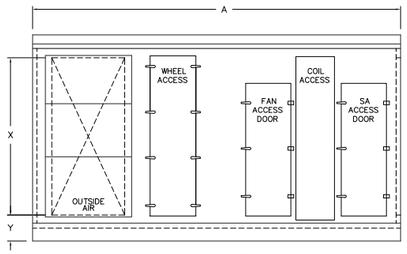
ELT -H



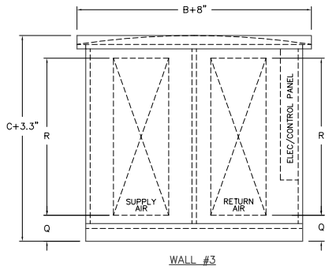
PLAN VIEW



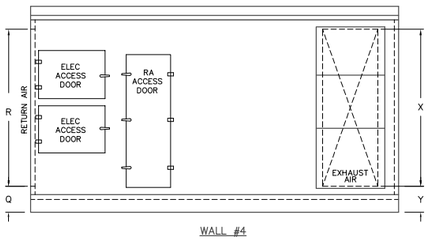
WALL #1



WALL #2



WALL #3



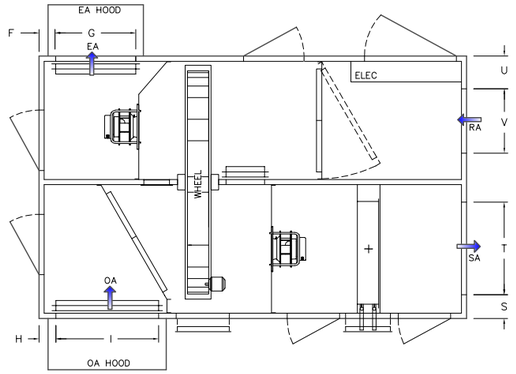
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	154.5	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	154.5	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	161.6	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	166.4	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	166.4	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	166.4	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

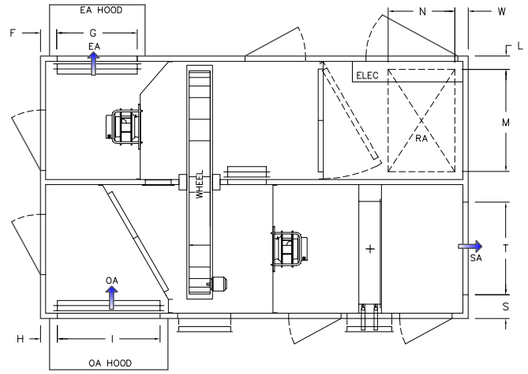
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

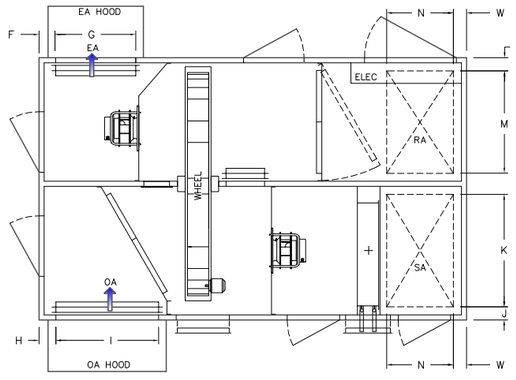
ELT-H



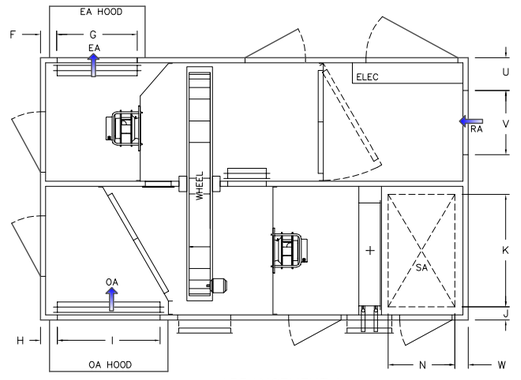
ARRANGEMENT I



ARRANGEMENT J



ARRANGEMENT K



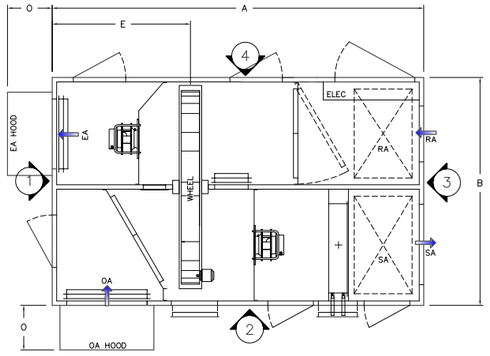
ARRANGEMENT L

UNIT SIZE	DIMENSION (INCHES)												WEIGHT (LBS.)
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	4,100 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,000 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	5,900 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	7,900 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	8,200 LBS
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	8,400 LBS

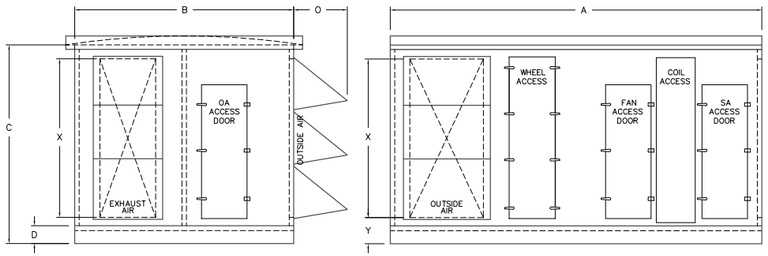
Click here for service clearance dimensions

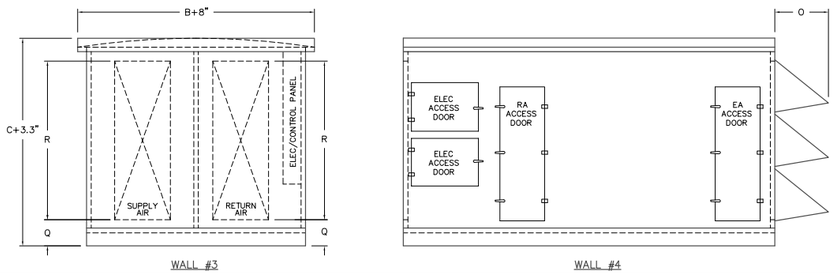
DIMENSIONAL DATA - ARRANGEMENTS M-P

ELT-H



PLAN VIEW



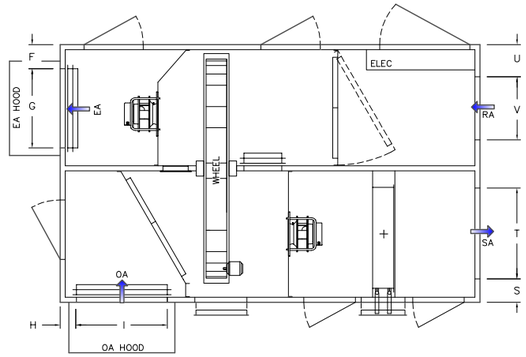


UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	154.5	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	154.5	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	161.6	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	166.4	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	166.4	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	166.4	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

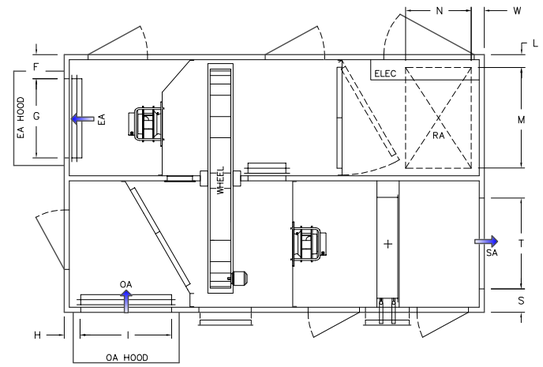
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

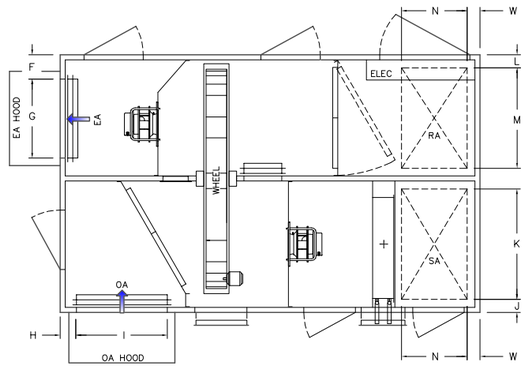
ELT-H



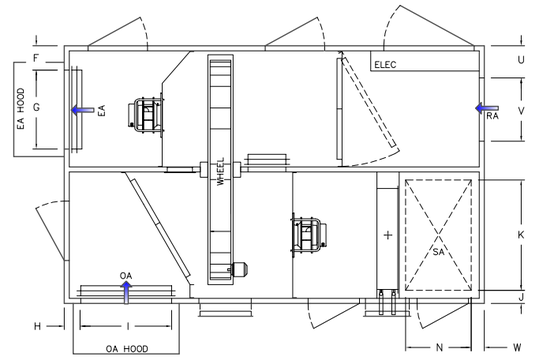
ARRANGEMENT M



ARRANGEMENT N



ARRANGEMENT O



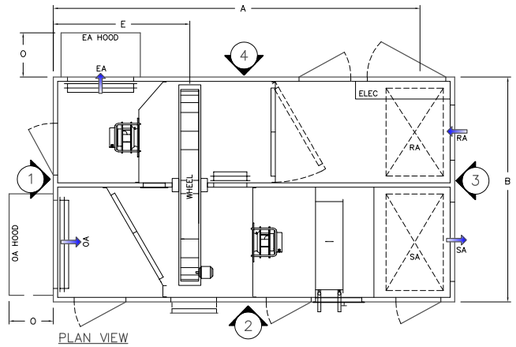
ARRANGEMENT P

UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	4,100 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,000 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	5,900 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	7,900 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	8,200 LBS
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	8,400 LBS

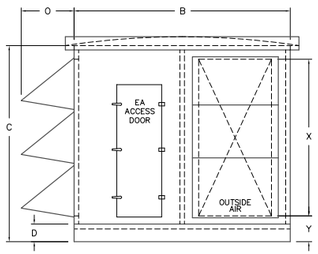
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

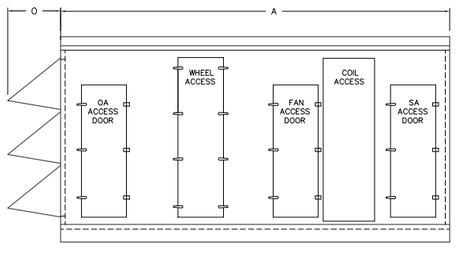
ELT-C



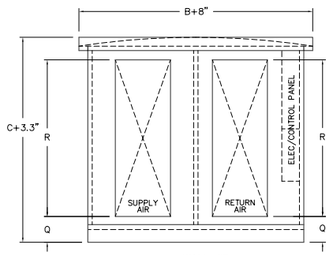
PLAN VIEW



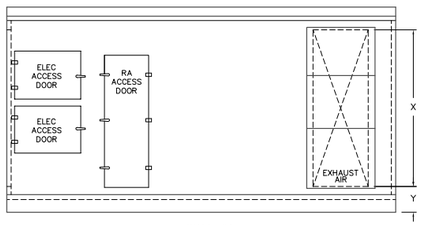
WALL #1



WALL #2



WALL #3



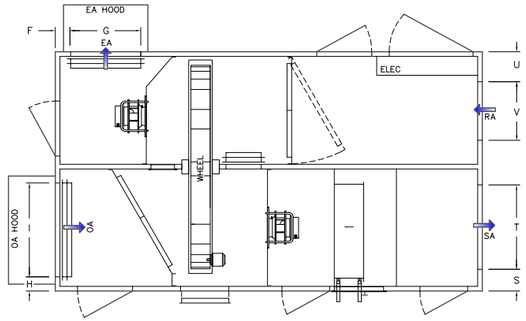
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	178.8	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	178.8	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	186.8	93.0	106.8	7.8	65.2	6.5	32.0	6.6	32.0	5.3	41.8	5.3	32.8
ELT-150	190.8	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

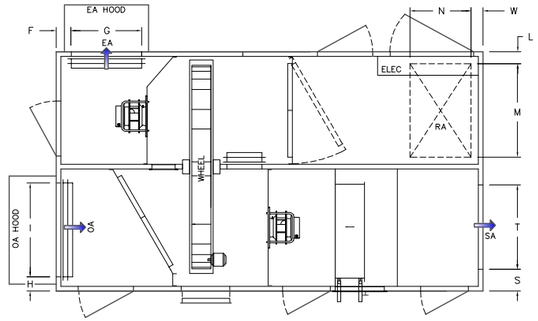
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

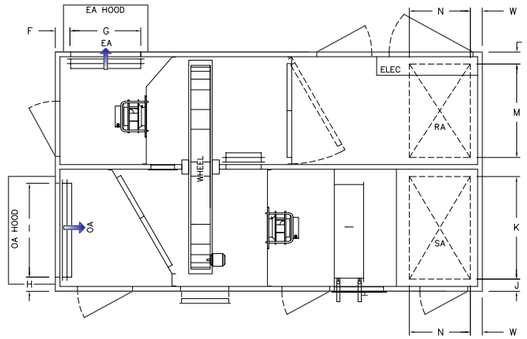
ELT-C



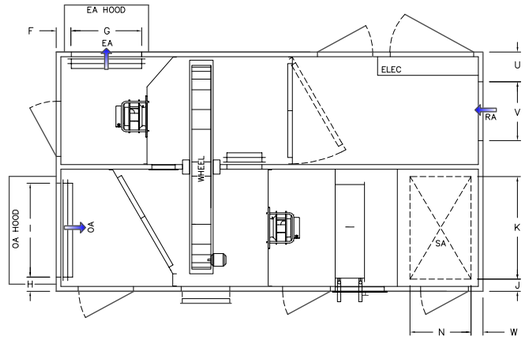
ARRANGEMENT A



ARRANGEMENT B



ARRANGEMENT C



ARRANGEMENT D

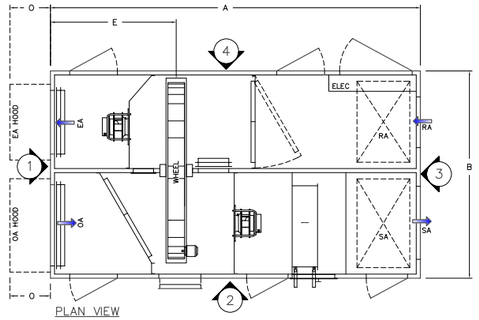
UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	4,800 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,100 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	6,600 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	8,400 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	9,400 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	9,300 LBS.

Click here for service clearance dimensions

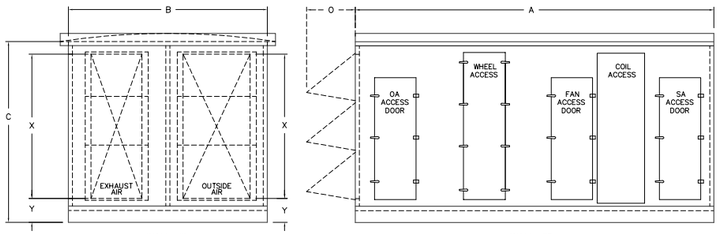
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-C, ELT-CR

** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*

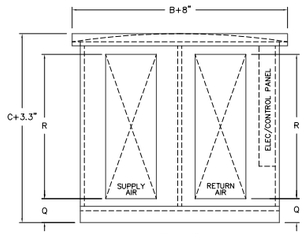


PLAN VIEW

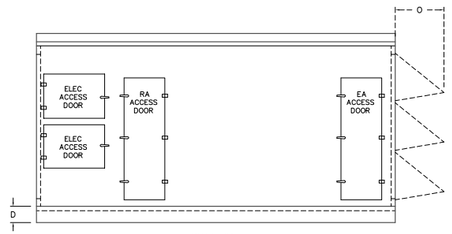


WALL #1

WALL #2



WALL #3



WALL #4

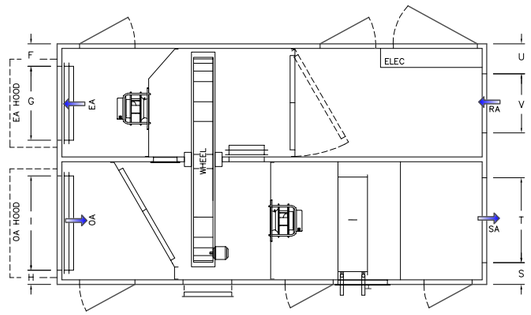
UNIT SIZE	(INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	178.8	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	178.8	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	186.8	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	190.8	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

Click here for service clearance dimensions

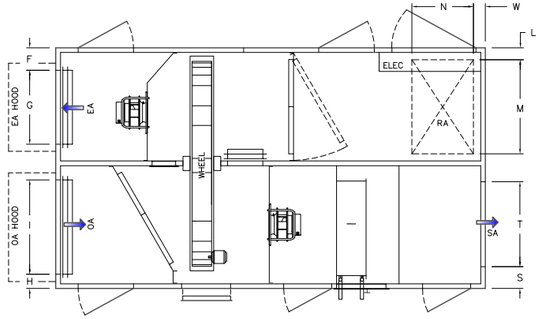
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-C

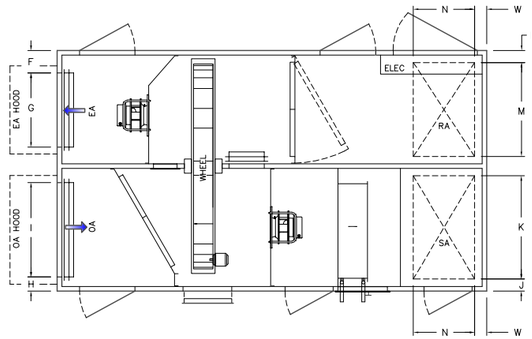
** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*



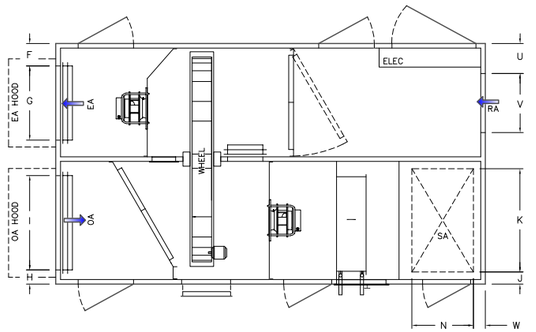
ARRANGEMENT E



ARRANGEMENT F



ARRANGEMENT G



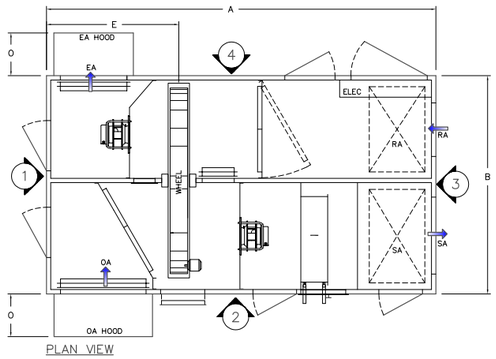
ARRANGEMENT H

UNIT SIZE	DIMENSION (INCHES)												
	N	O	P	Q	R	S	T	U	V	W	X	Y	WEIGHT LBS.
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	4,800 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,100 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	6,600 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	8,400 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	9,400 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	9,300 LBS.

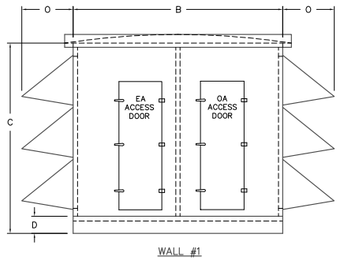
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

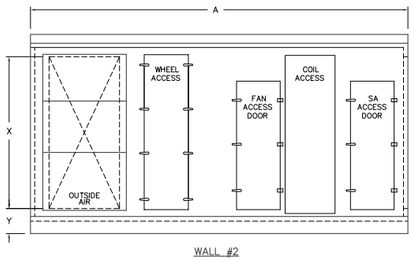
ELT-C



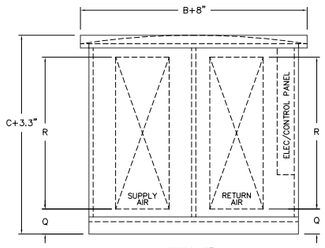
PLAN VIEW



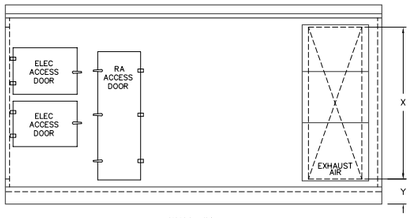
WALL #1



WALL #2



WALL #3



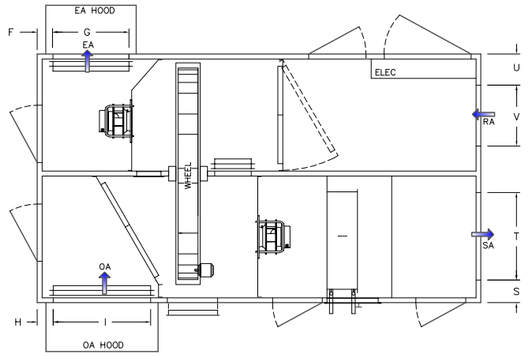
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	178.8	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	178.8	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	186.8	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	190.8	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

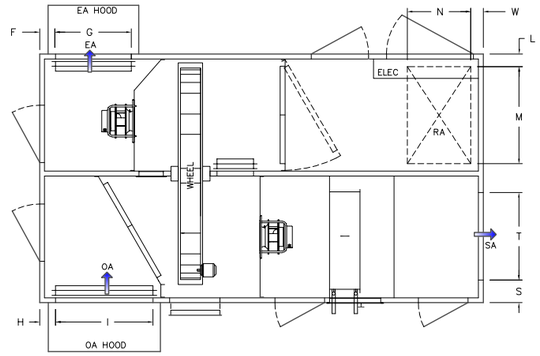
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

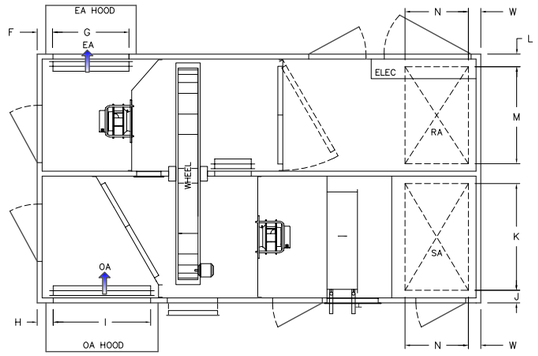
ELT-C



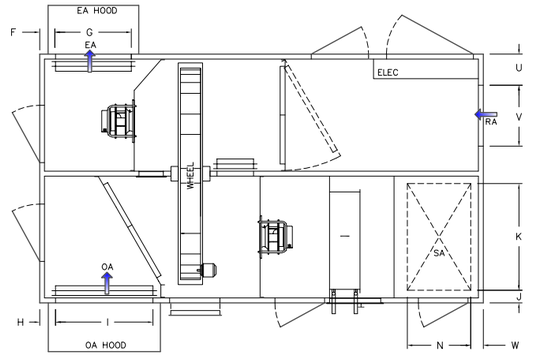
ARRANGEMENT I



ARRANGEMENT J



ARRANGEMENT K



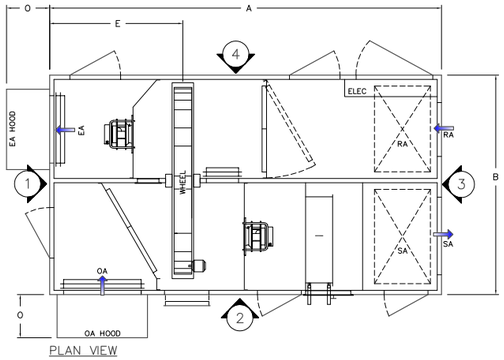
ARRANGEMENT L

UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	4,800 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,100 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	6,600 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	8,400 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	9,400 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	9,300 LBS.

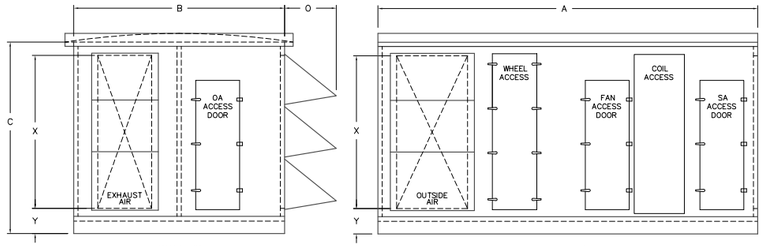
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

ELT-C

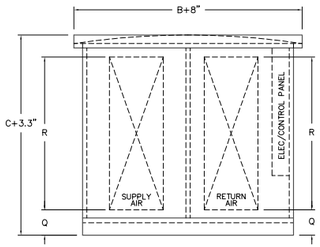


PLAN VIEW

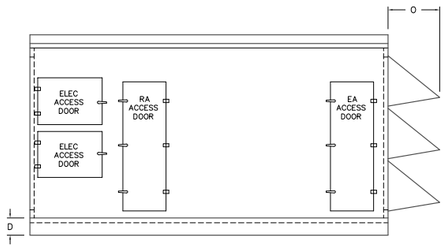


WALL #1

WALL #2



WALL #3



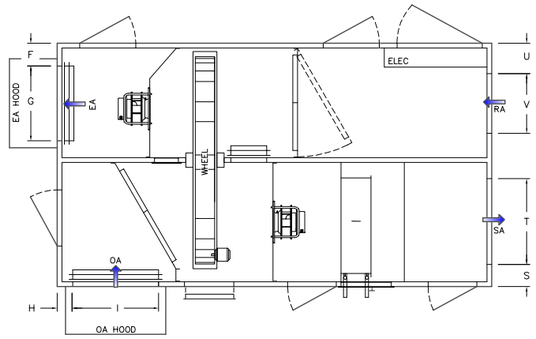
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	178.8	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	178.8	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	186.8	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	190.8	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

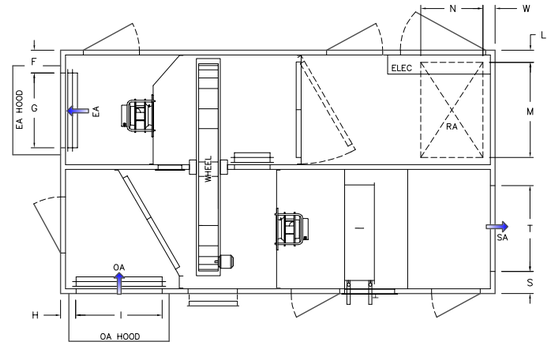
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

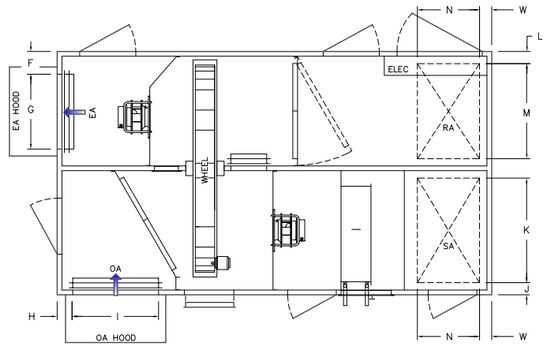
ELT-C



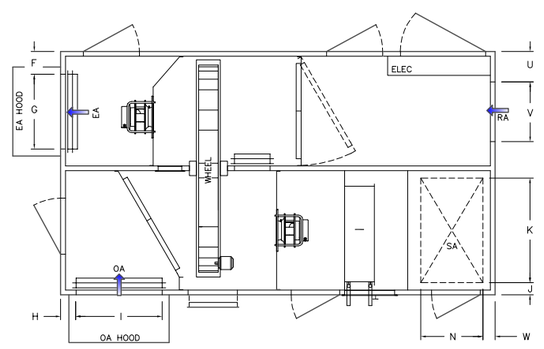
ARRANGEMENT M



ARRANGEMENT N



ARRANGEMENT O



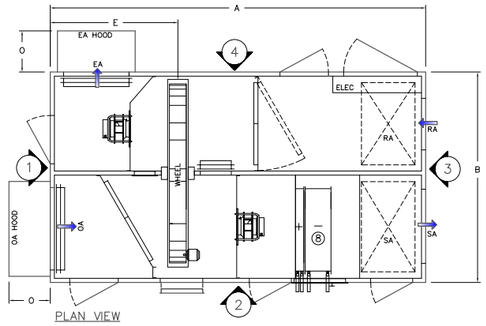
ARRANGEMENT P

UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	4,800 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,100 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	6,600 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	8,400 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	9,400 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	9,300 LBS.

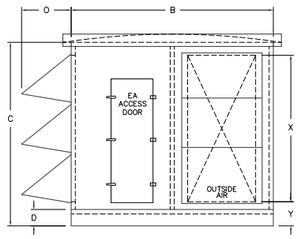
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

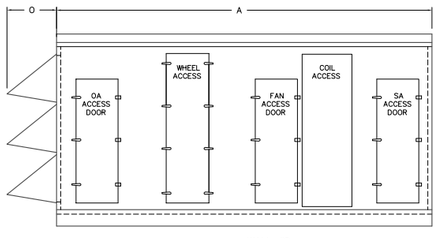
ELT-HC



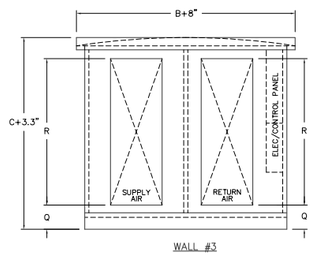
PLAN VIEW



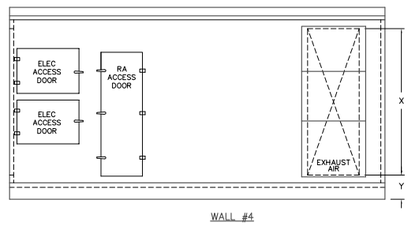
WALL #1



WALL #2



WALL #3



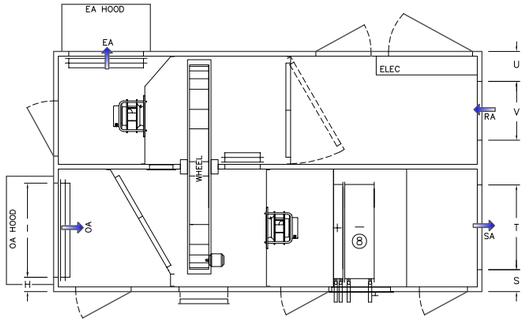
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	178.8	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	178.8	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	186.8	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	190.8	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

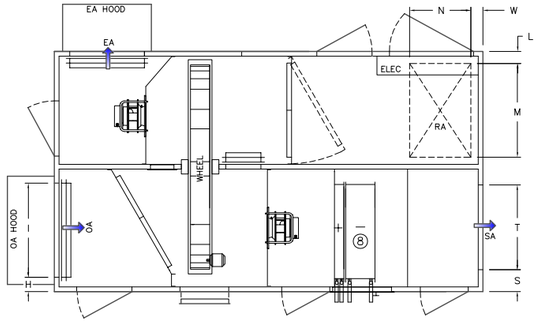
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

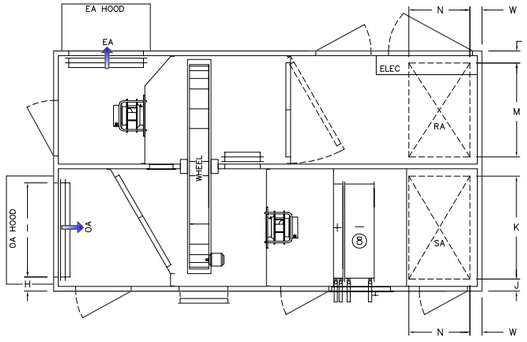
ELT-HC



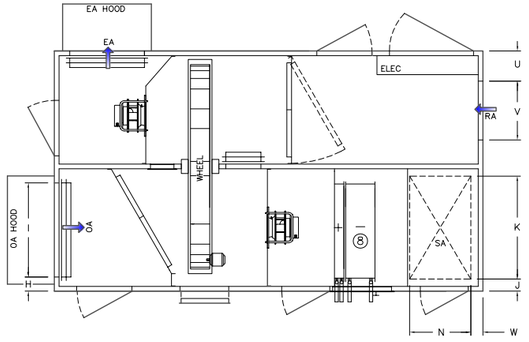
ARRANGEMENT A



ARRANGEMENT B



ARRANGEMENT C



ARRANGEMENT D

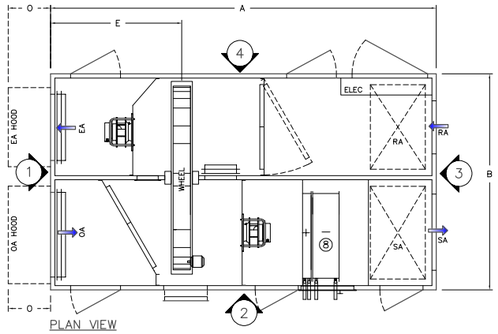
UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	5,000 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,300 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	6,900 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	8,800 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,900 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,800 LBS.

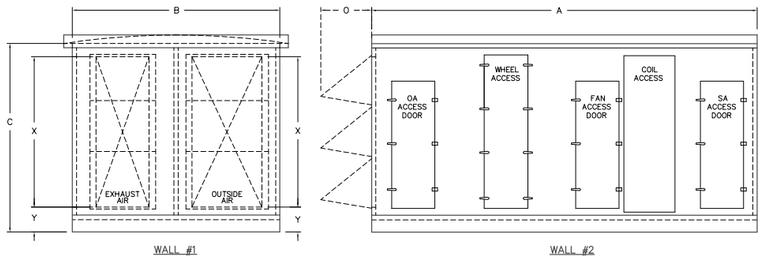
Click here for service clearance dimensions

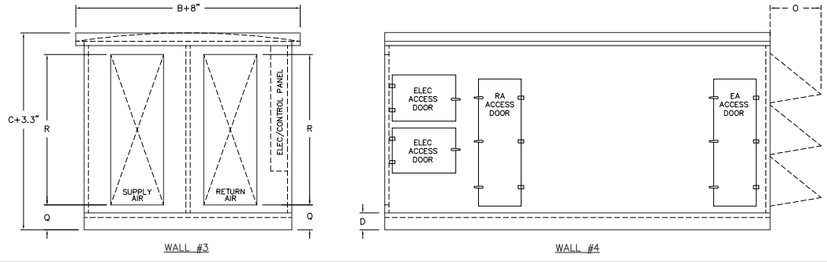
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-HC

** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*







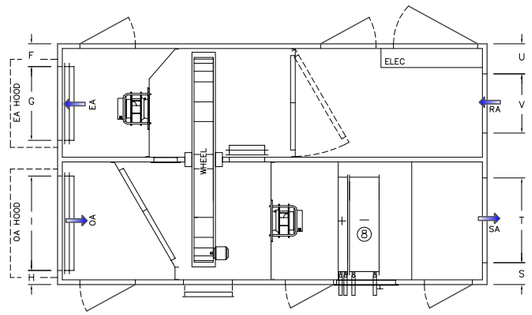
UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	178.8	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	178.8	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	186.8	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	190.8	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

Click here for service clearance dimensions

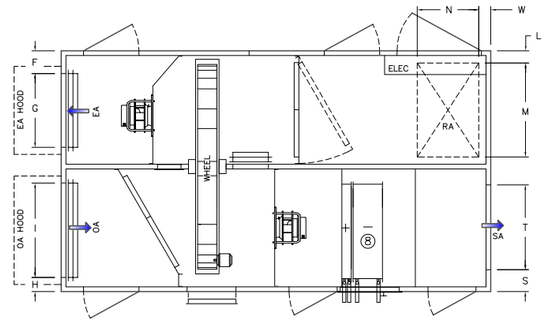
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-HC

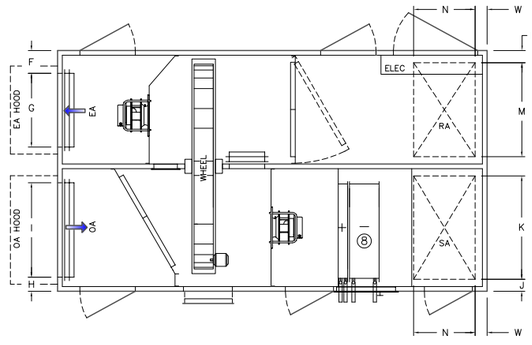
** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*



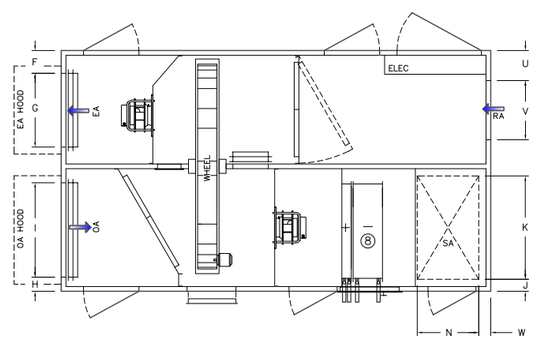
ARRANGEMENT E



ARRANGEMENT F



ARRANGEMENT G



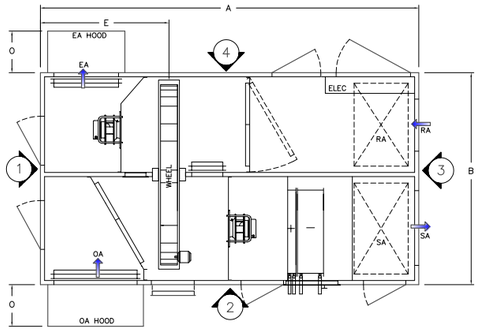
ARRANGEMENT H

UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	5,000 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,300 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	6,900 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	8,800 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,900 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,800 LBS.

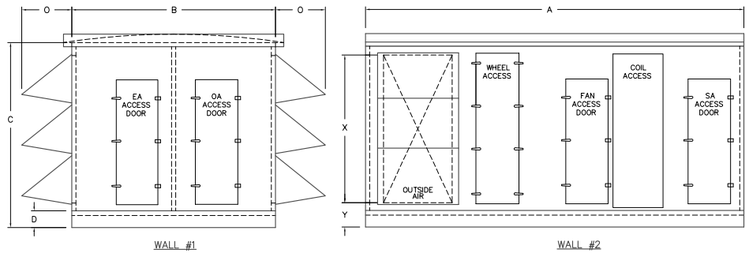
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

ELT-HC

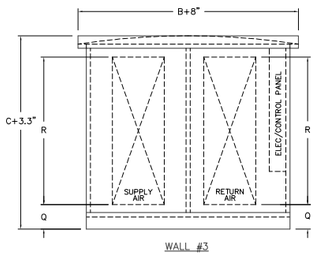


PLAN VIEW

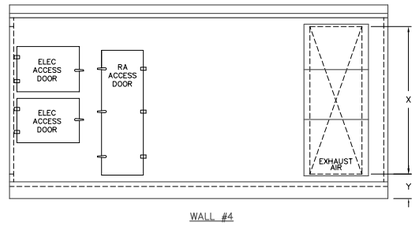


WALL #1

WALL #2



WALL #3



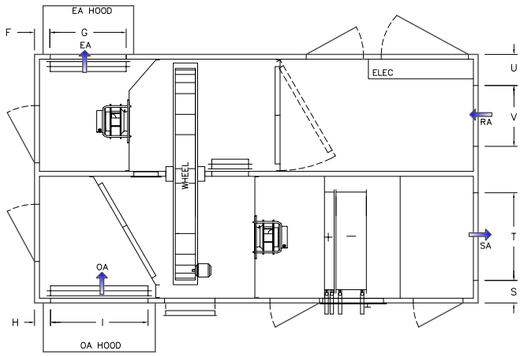
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	178.8	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	178.8	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	186.8	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	190.8	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

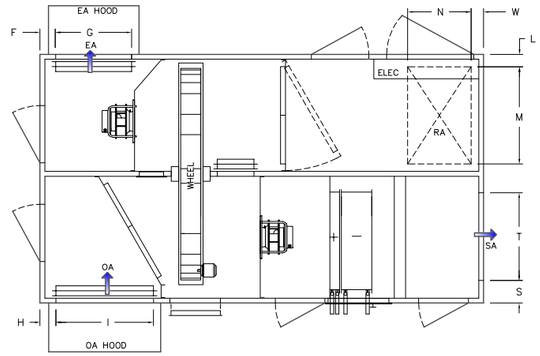
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

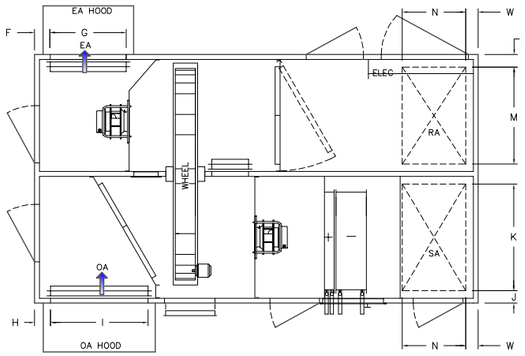
ELT-HC



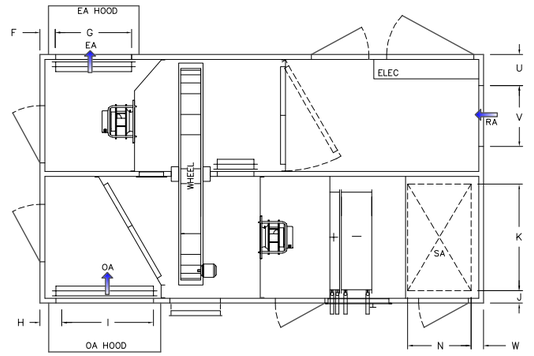
ARRANGEMENT I



ARRANGEMENT J



ARRANGEMENT K



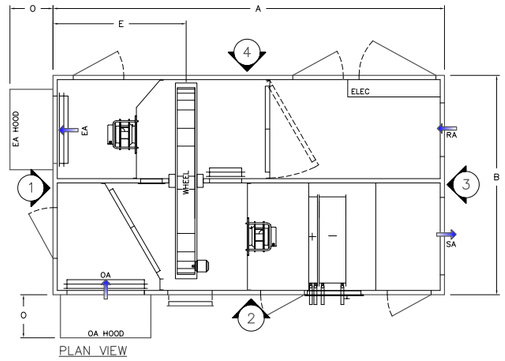
ARRANGEMENT L

UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	5,000 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,300 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	6,900 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	8,800 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,900 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,800 LBS.

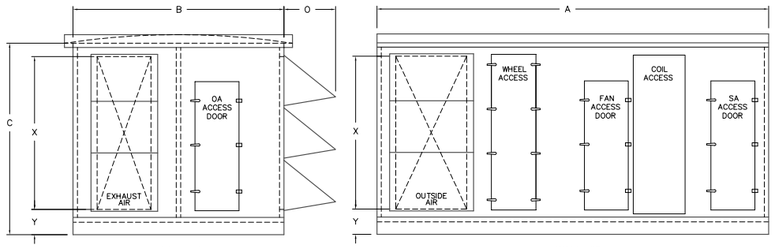
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

ELT-HC

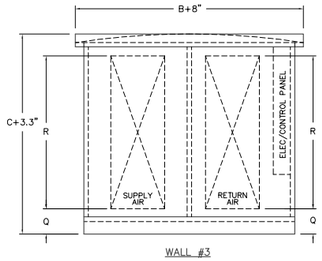


PLAN VIEW

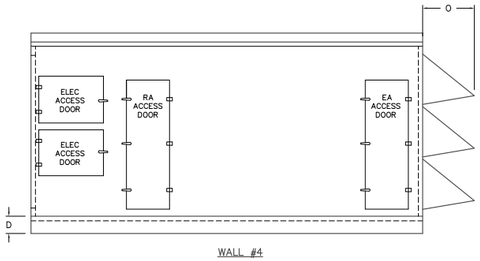


WALL #1

WALL #2



WALL #3



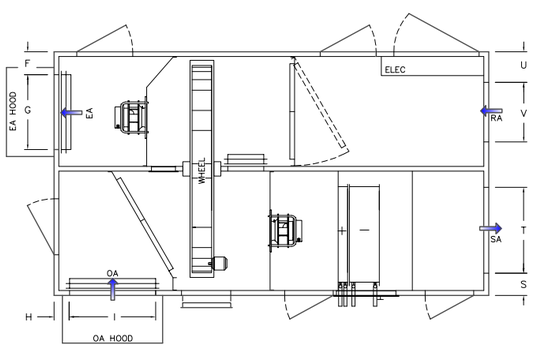
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	178.8	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	178.8	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	186.8	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	190.8	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	190.8	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

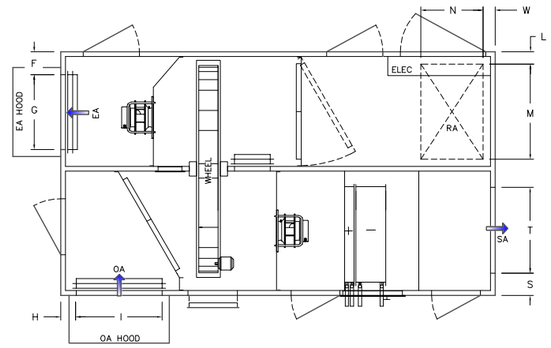
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

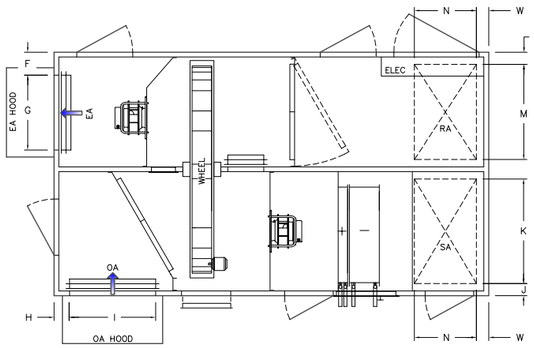
ELT-HC



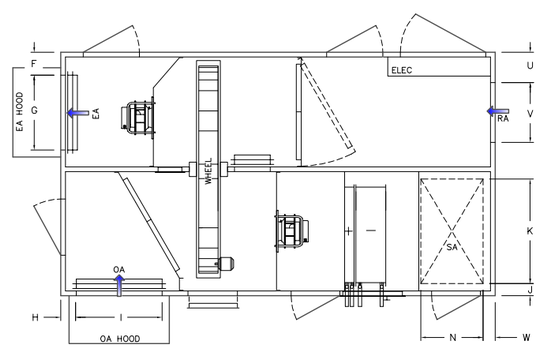
ARRANGEMENT M



ARRANGEMENT N



ARRANGEMENT O



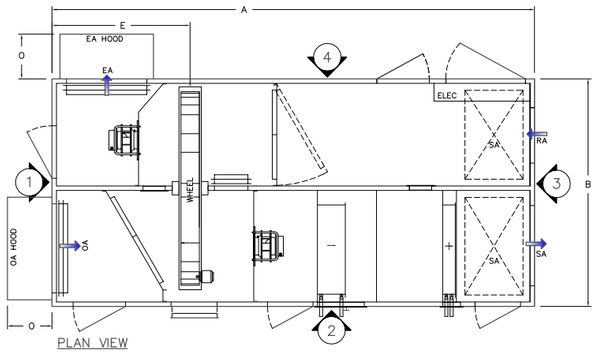
ARRANGEMENT P

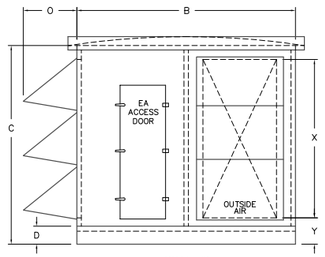
UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	5,000 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	5,300 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	6,900 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	8,800 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,900 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,800 LBS.

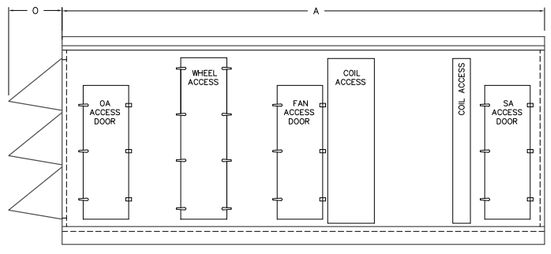
Click here for service clearance dimensions

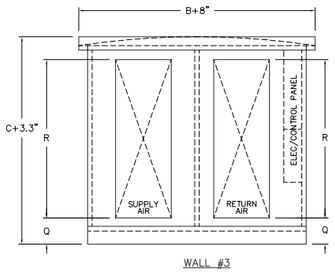
DIMENSIONAL DATA - ARRANGEMENTS A-D

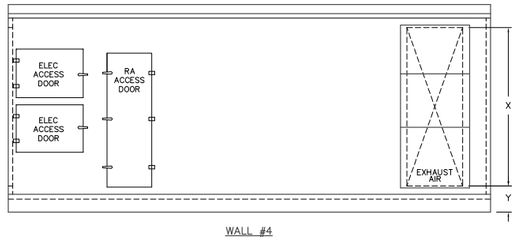
ELT-CH









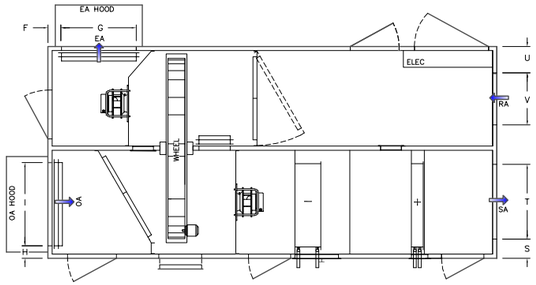


UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	202.3	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	202.1	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	210.1	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	214.1	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	214.1	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	214.1	113.0	127.9	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

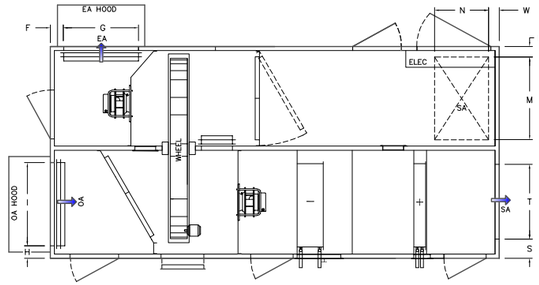
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

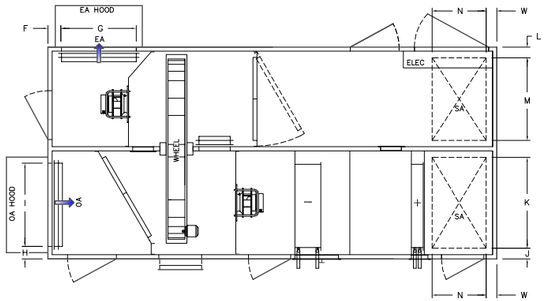
ELT-CH



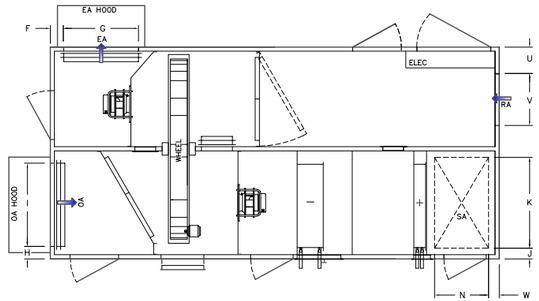
ARRANGEMENT A



ARRANGEMENT B



ARRANGEMENT C



ARRANGEMENT D

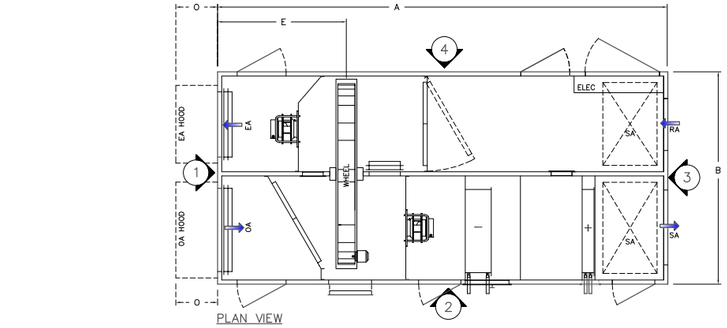
UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	5,200 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	6,500 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	7,200 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	9,000 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,400 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,600 LBS.

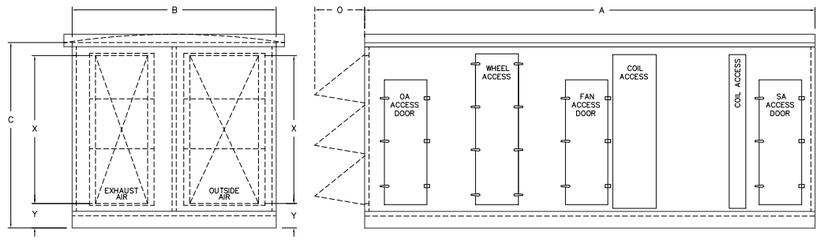
Click here for service clearance dimensions

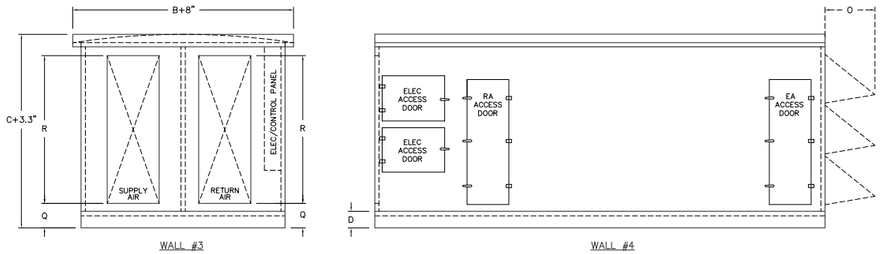
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-CH

** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*







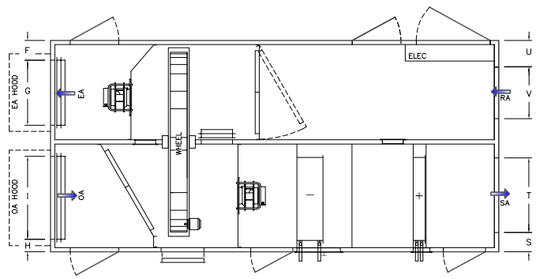
UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	202.3	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	202.1	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	210.1	93.0	106.8	7.8	65.2	6.5	32.0	6.6	40.0	5.3	41.8	5.3	32.8
ELT-150	214.1	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	214.1	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	214.1	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

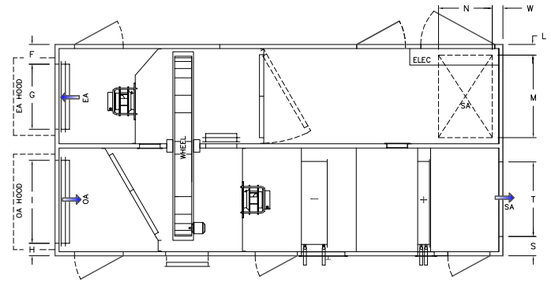
Click here for service clearance dimensions

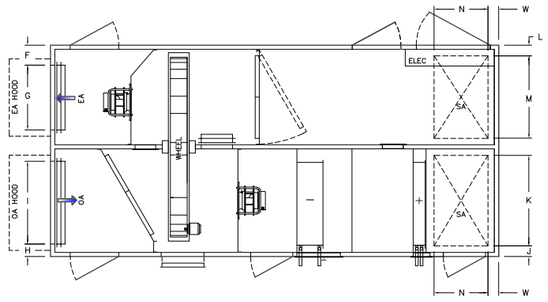
DIMENSIONAL DATA - ARRANGEMENTS E-H

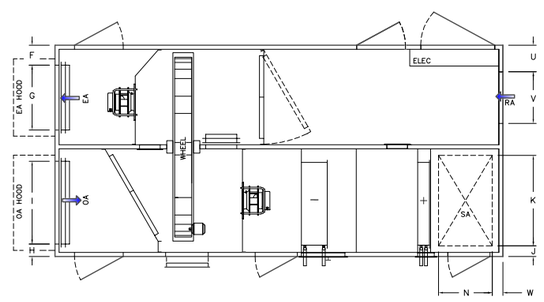
ELT-CH

** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*







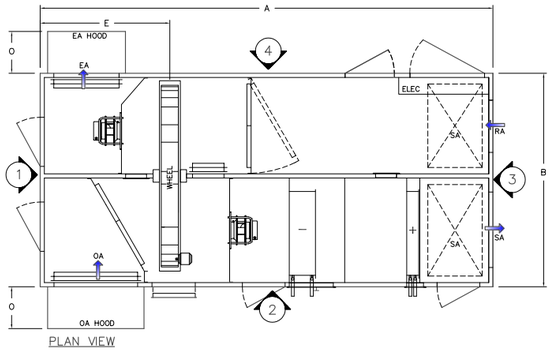


UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	5,200 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	6,500 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	7,200 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	9,000 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,400 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,600 LBS.

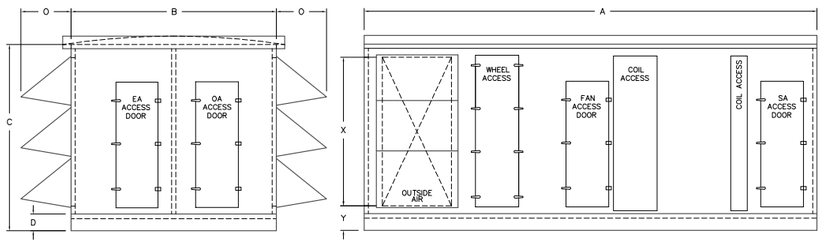
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

ELT-CH

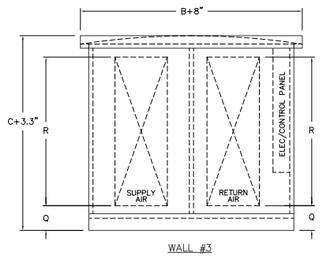


PLAN VIEW

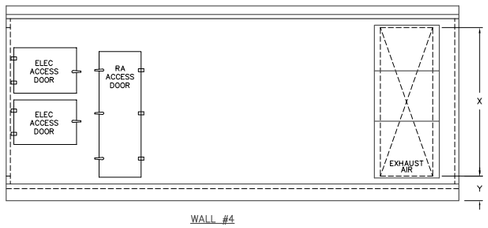


WALL #1

WALL #2



WALL #3



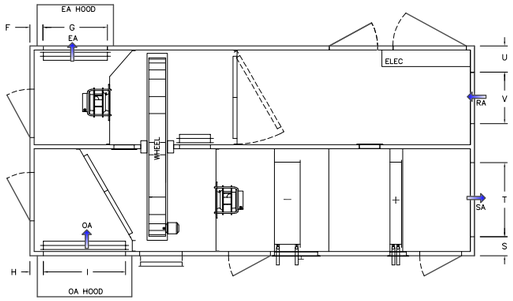
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	202.3	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	202.1	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	210.1	93.0	106.8	7.8	65.2	6.5	32.0	6.6	32.0	5.3	41.8	5.3	32.8
ELT-150	214.1	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	214.1	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	214.1	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

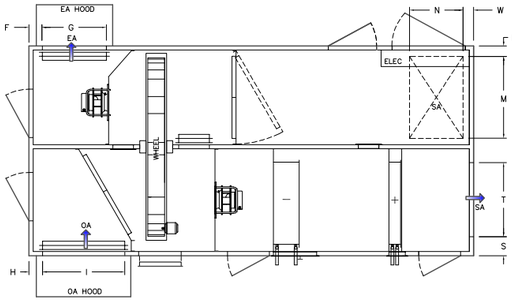
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

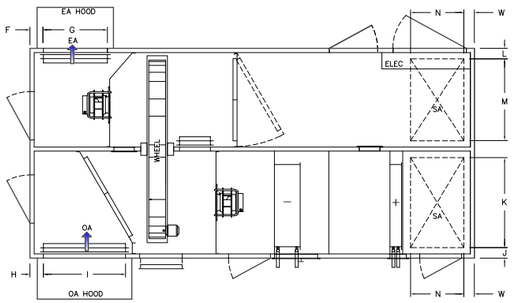
ELT-CH



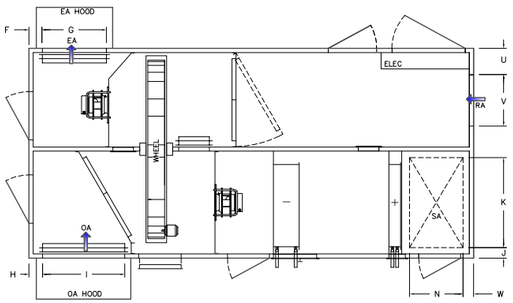
ARRANGEMENT I



ARRANGEMENT J



ARRANGEMENT K



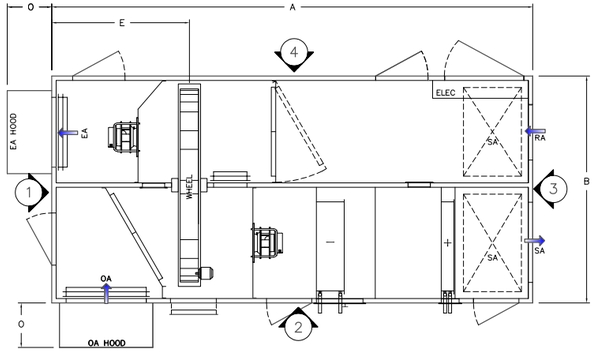
ARRANGEMENT L

UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	5,200 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	6,500 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	7,200 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	9,000 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,400 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,600 LBS.

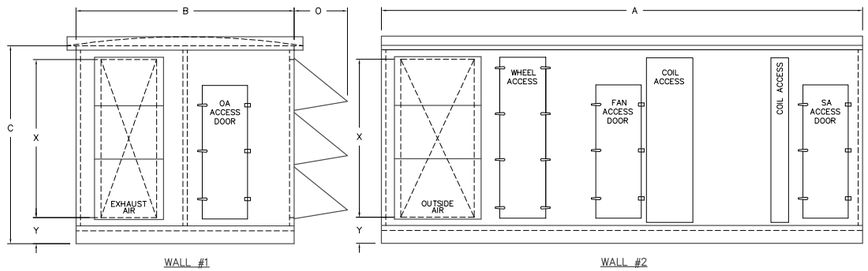
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

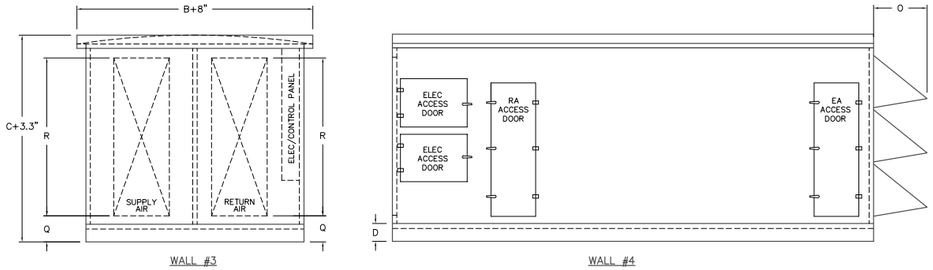
ELT-CH



PLAN VIEW



WALL #1 WALL #2



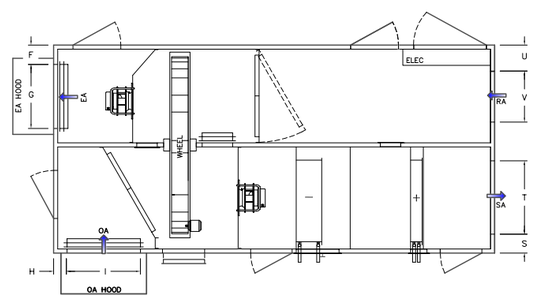
WALL #3 WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	202.3	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	202.1	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	210.1	93.0	106.8	7.8	65.2	6.5	32.0	6.6	32.0	5.3	41.8	5.3	32.8
ELT-150	214.1	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	214.1	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	214.1	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

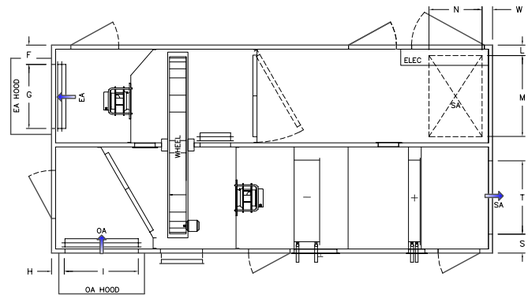
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

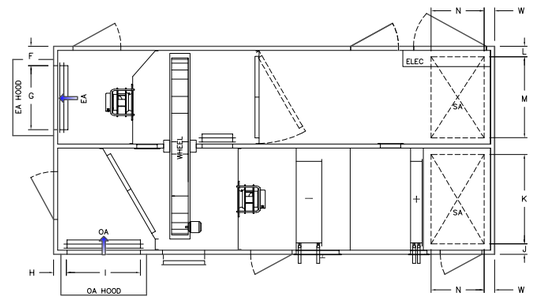
ELT-CH



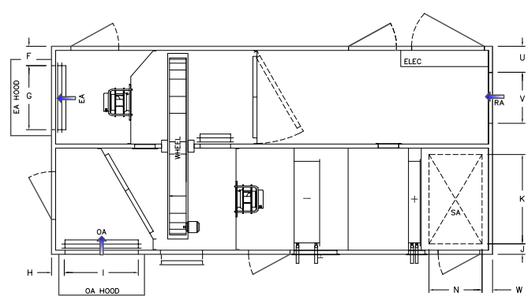
ARRANGEMENT M



ARRANGEMENT N



ARRANGEMENT O



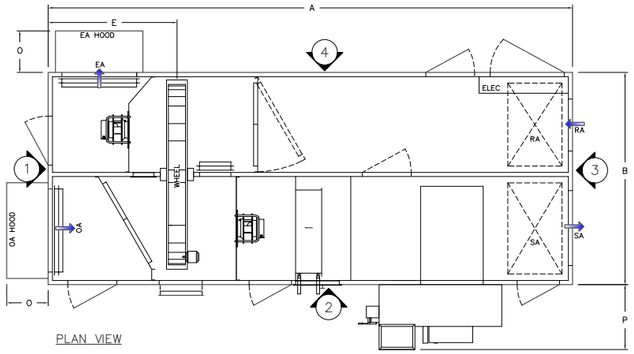
ARRANGEMENT P

UNIT SIZE	DIMENSION (INCHES)												WEIGHT LBS.
	N	O	P	Q	R	S	T	U	V	W	X	Y	
ELT-053	22.0	24.1	—	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	5,200 LBS
ELT-085	22.0	24.1	—	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	6,500 LBS
ELT-120	22.0	24.1	—	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	7,200 LBS
ELT-150	26.0	24.1	—	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	9,000 LBS
ELT-175	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,400 LBS.
ELT-200	26.0	24.1	—	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	10,600 LBS.

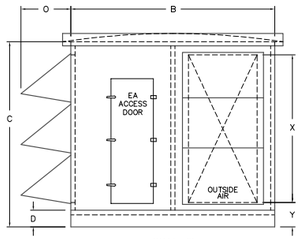
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

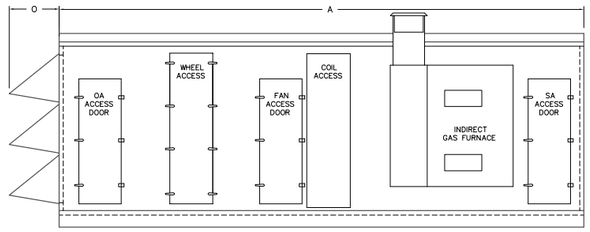
ELT-CGB



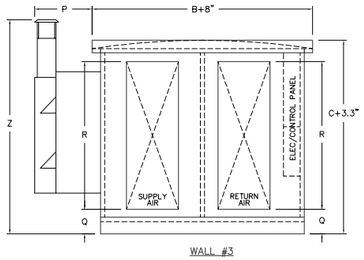
PLAN VIEW



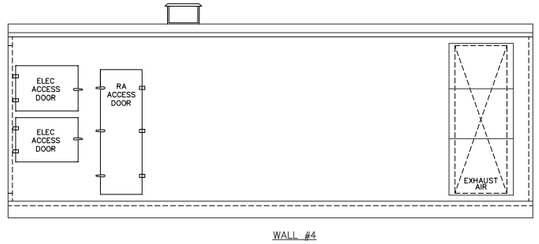
WALL #1



WALL #2



WALL #3



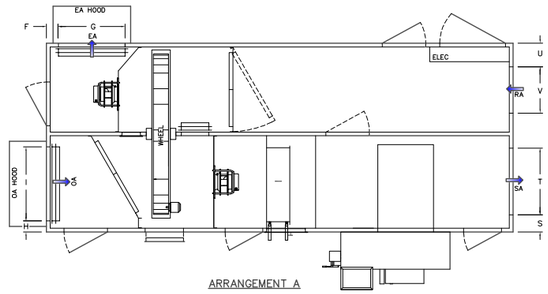
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	237.1	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	245.9	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	254.2	93.0	106.8	7.8	65.2	6.5	32.0	6.6	32.0	5.3	41.8	5.3	32.8
ELT-150	258.1	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	263.0	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.8	5.3	41.0
ELT-200	263.0	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.8	5.3	41.0

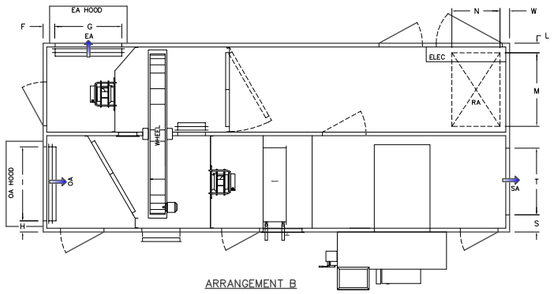
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS A-D

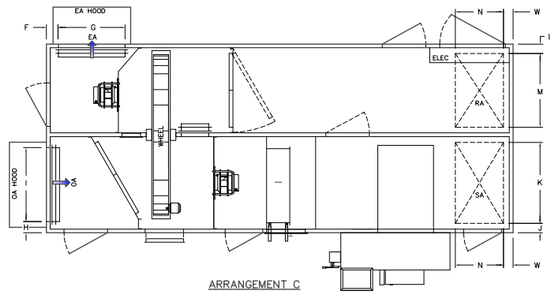
ELT-CGB



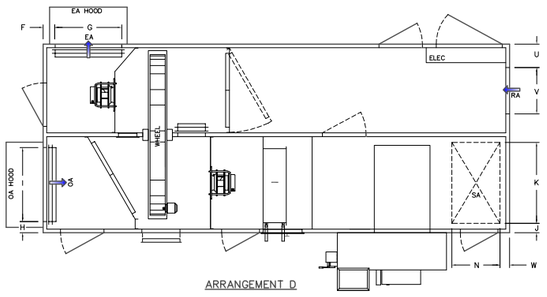
ARRANGEMENT A



ARRANGEMENT B



ARRANGEMENT C



ARRANGEMENT D

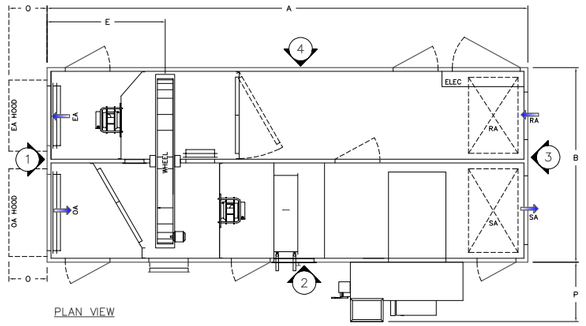
UNIT SIZE	DIMENSION (INCHES)													
	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	WEIGHT LBS.
ELT-053	22.0	24.1	19.3	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	58.4	5,600 LBS
ELT-085	22.0	24.1	27.7	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	97.3	6,700 LBS
ELT-120	22.0	24.1	27.7	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	111.0	9,200 LBS
ELT-150	26.0	24.1	31.2	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	134.4	11,100 LBS
ELT-175	26.0	24.1	31.2	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	150.3	13,200 LBS.
ELT-200	26.0	24.1	31.2	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	150.3	14,400 LBS.

Click here for service clearance dimensions

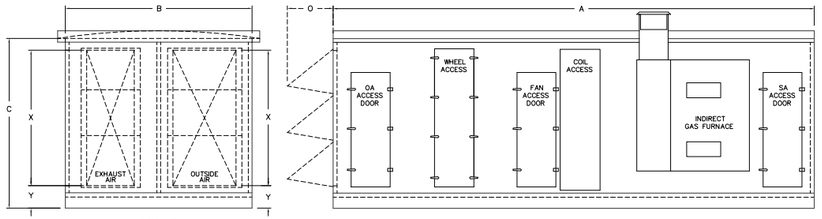
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-CGB

** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*



PLAN VIEW



WALL #1

WALL #3 WALL #4

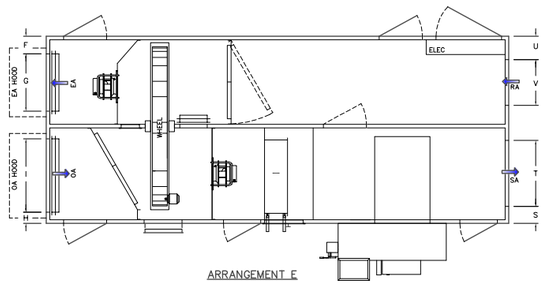
UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	237.1	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	245.9	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	254.2	93.0	106.8	7.8	65.2	6.5	32.0	6.6	32.0	5.3	41.8	5.3	32.8
ELT-150	258.1	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	263.0	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0
ELT-200	263.0	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.6	5.3	41.0

Click here for service clearance dimensions

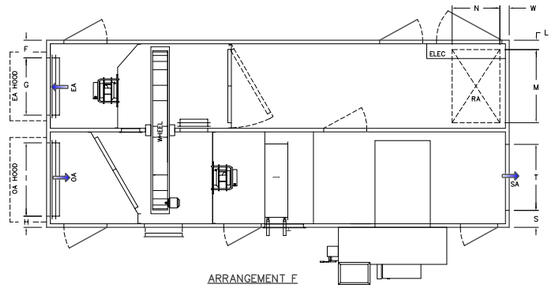
DIMENSIONAL DATA - ARRANGEMENTS E-H

ELT-CGB

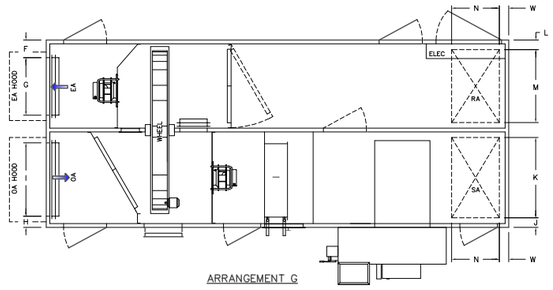
** ARRANGEMENTS E-H MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*



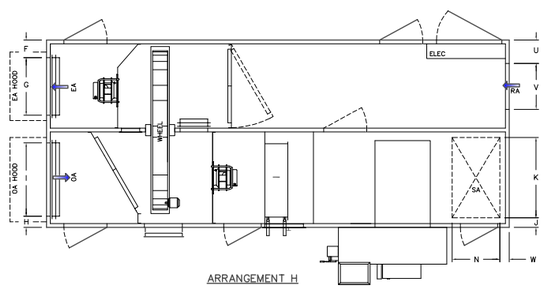
ARRANGEMENT E



ARRANGEMENT F



ARRANGEMENT G



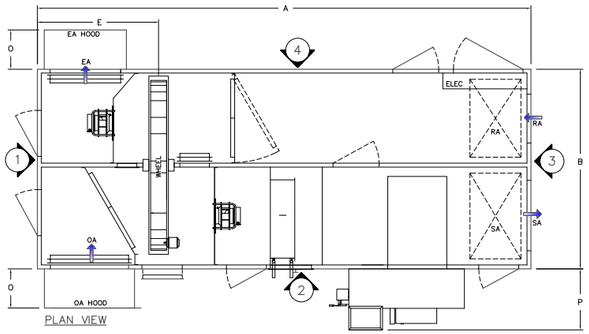
ARRANGEMENT H

UNIT SIZE	DIMENSION (INCHES)													
	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	WEIGHT LBS.
ELT-053	22.0	24.1	19.3	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	58.4	5,600 LBS
ELT-085	22.0	24.1	27.7	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	97.3	6,700 LBS
ELT-120	22.0	24.1	27.7	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	111.0	9,200 LBS
ELT-150	26.0	24.1	31.2	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	134.4	11,100 LBS
ELT-175	26.0	24.1	31.2	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	150.3	13,200 LBS.
ELT-200	26.0	24.1	31.2	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	150.3	14,400 LBS.

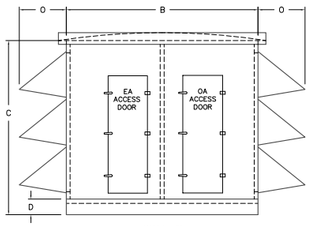
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

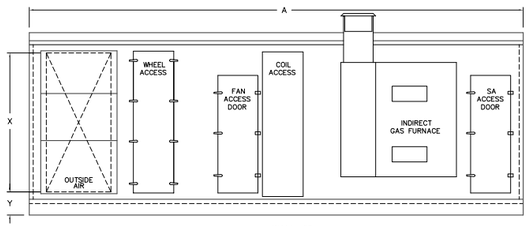
ELT-CGB



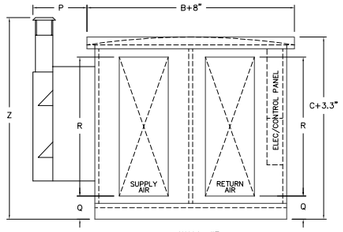
PLAN VIEW



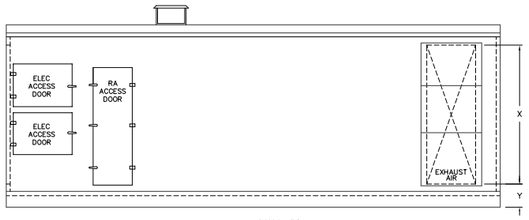
WALL #1



WALL #2



WALL #3



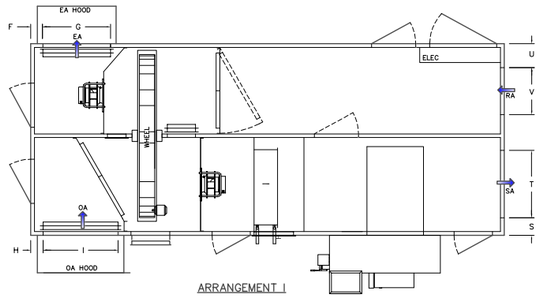
WALL #4

UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	237.1	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	245.9	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	254.2	93.0	106.8	7.8	65.2	6.5	32.0	6.6	32.0	5.3	41.8	5.3	32.8
ELT-150	258.1	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	263.0	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.8	5.3	41.0
ELT-200	263.0	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.8	5.3	41.0

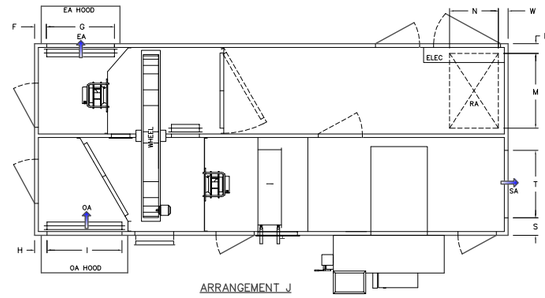
Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS I-L

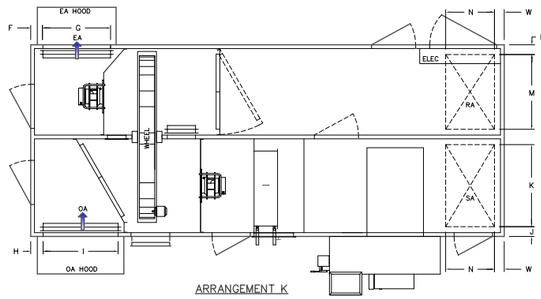
ELT-CGB



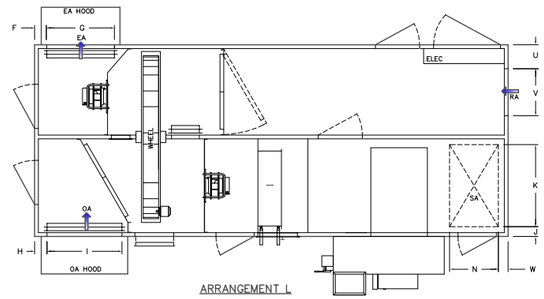
ARRANGEMENT I



ARRANGEMENT J



ARRANGEMENT K



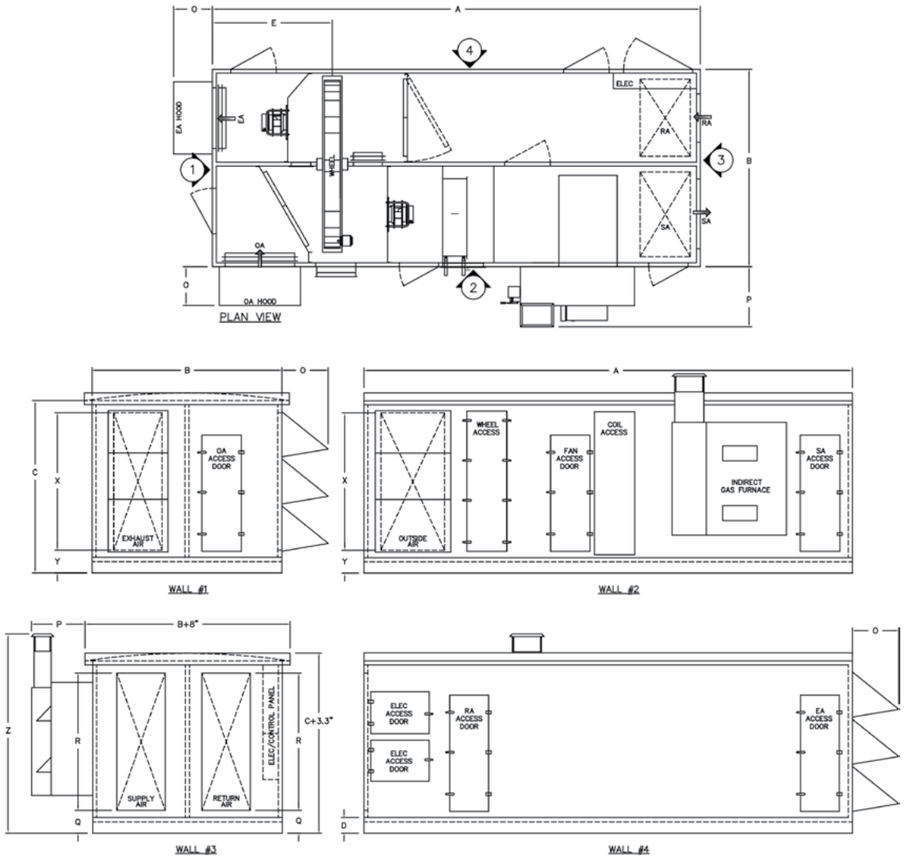
ARRANGEMENT L

UNIT SIZE	DIMENSION (INCHES)													
	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	WEIGHT LBS.
ELT-053	22.0	24.1	19.3	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	58.4	5,600 LBS
ELT-085	22.0	24.1	27.7	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	97.3	6,700 LBS
ELT-120	22.0	24.1	27.7	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	111.0	9,200 LBS
ELT-150	26.0	24.1	31.2	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	134.4	11,100 LBS
ELT-175	26.0	24.1	31.2	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	150.3	13,200 LBS.
ELT-200	26.0	24.1	31.2	19.25	95.0	14.5	32.0	13.0	32.0	5.3	95.0	19.2	150.3	14,400 LBS.

Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

ELT-CGB

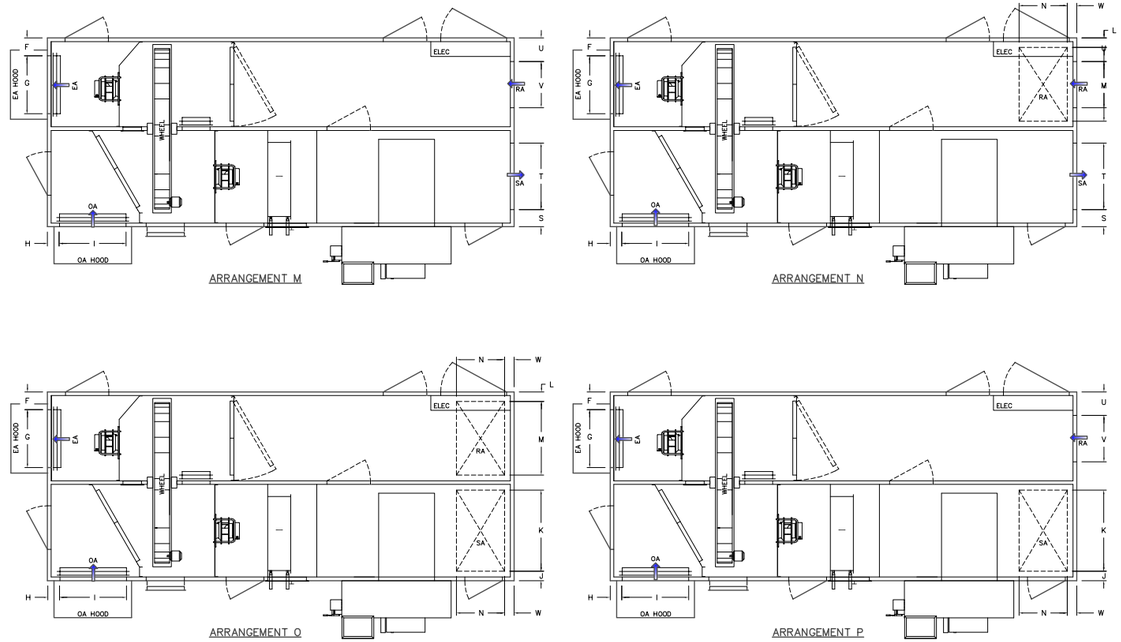


UNIT SIZE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
ELT-053	237.1	75.0	71.8	7.8	59.4	6.5	25.0	6.6	25.0	5.3	32.8	5.3	23.5
ELT-085	245.9	89.0	85.8	7.8	59.4	6.5	25.0	6.6	35.0	5.3	39.6	5.3	30.6
ELT-120	254.2	93.0	106.8	7.8	65.2	6.5	32.0	6.6	32.0	5.3	41.8	5.3	32.8
ELT-150	258.1	102.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	43.8	5.3	39.8
ELT-175	263.0	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.8	5.3	41.0
ELT-200	263.0	113.0	127.8	7.8	65.2	6.5	36.0	6.6	40.0	5.3	50.8	5.3	41.0

Click here for service clearance dimensions

DIMENSIONAL DATA - ARRANGEMENTS M-P

ELT-CGB

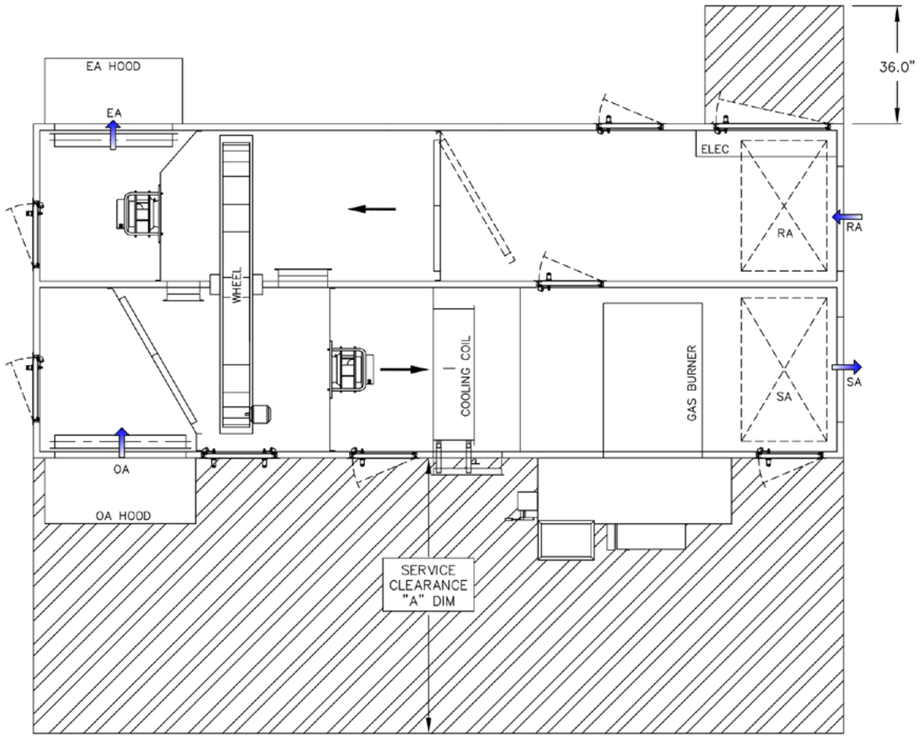


UNIT SIZE	DIMENSION (INCHES)													
	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	WEIGHT LBS.
ELT-053	22.0	24.1	19.3	15.25	47.0	8.8	25.0	11.0	19.0	5.3	47.0	15.2	58.4	5,600 LBS
ELT-085	22.0	24.1	27.7	10.25	71.0	15.8	25.0	12.0	25.0	5.3	71.0	10.2	97.3	6,700 LBS
ELT-120	22.0	24.1	27.7	11.25	90.0	10.8	32.0	12.0	27.0	5.3	71.0	20.7	111.0	9,200 LBS
ELT-150	26.0	24.1	31.2	19.25	95.0	11.0	32.0	13.0	32.0	5.3	95.0	19.2	134.4	11,100 LBS
ELT-175	26.0	24.1	31.2	19.25	95.0	14.5	36.0	13.0	32.0	5.3	95.0	19.2	150.3	13,200 LBS.
ELT-200	26.0	24.1	31.2	19.25	95.0	14.5	36.0	13.0	32.0	5.3	95.0	19.2	150.3	14,400 LBS.

Click here for service clearance dimensions

SERVICE CLEARANCE DIMENSIONS

ALL MODELS



SERVICE CLEARANCE	
UNIT SIZE	"A" DIMENSION (INCHES)
ELT-053	68.0
ELT-060	60.0
ELT-075	66.0
ELT-085	78.0
ELT-090	72.0
ELT-110	76.0
ELT-120	88.0
ELT-130	82.0
ELT-150	95.0
ELT-175	106.0
ELT-200	109.0

OPENING CONFIGURATION OPTIONS

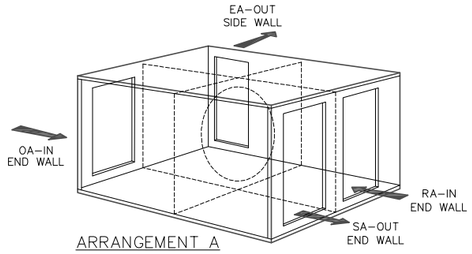
ARRANGEMENTS A-D

ELT-P, ELT-C, ELT-H, ELT-CH, ELT-HC, ELT-CGB

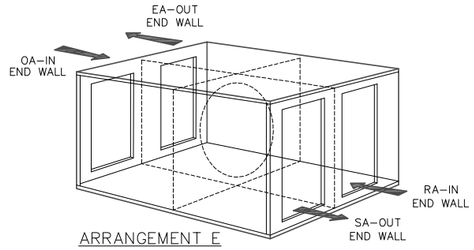
ARRANGEMENTS E-H

ELT-P, ELT-C, ELT-H, ELT-CH, ELT-HC, ELT-CGB

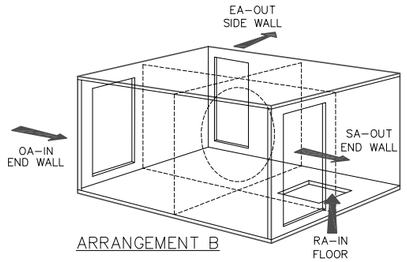
** ARRANGEMENTS: E-H ONLY - MUST DUCT OA OR EA TO MEET AND COMPLY WITH ASHRAE 62.1*



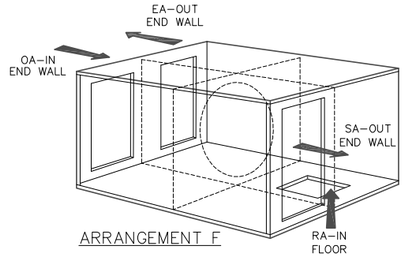
ARRANGEMENT A



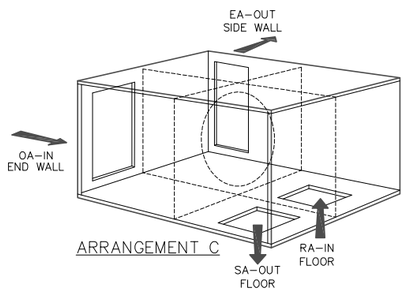
ARRANGEMENT E



ARRANGEMENT B



ARRANGEMENT F



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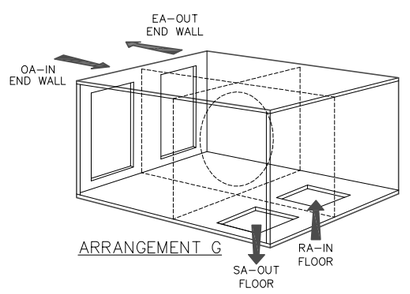

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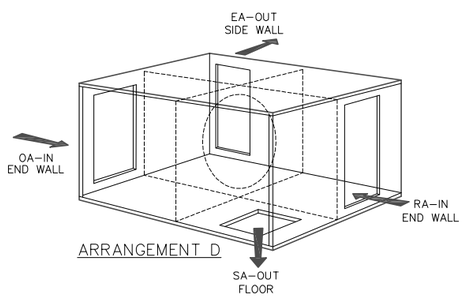

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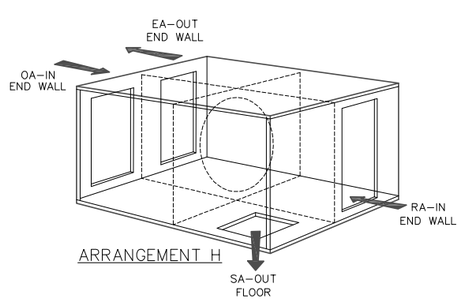
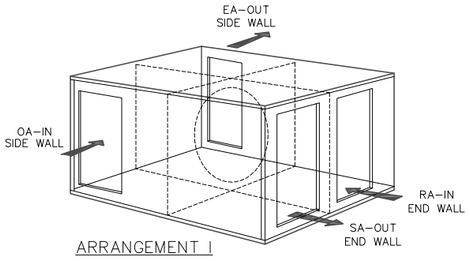


ARRANGEMENT H

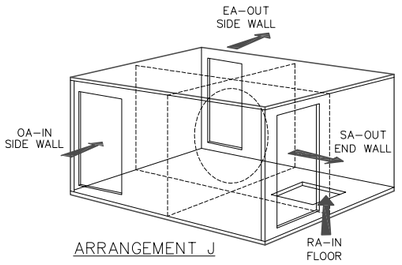
OPENING CONFIGURATION OPTIONS

ARRANGEMENTS I-L

ELT-C, ELT-H, ELT-CH, ELT-HC, ELT-CGB



ARRANGEMENT I



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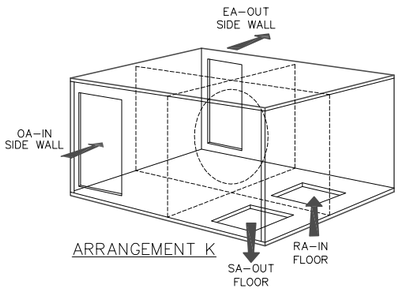
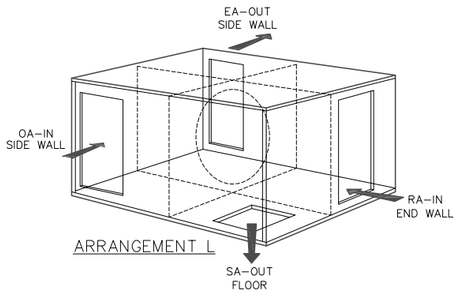


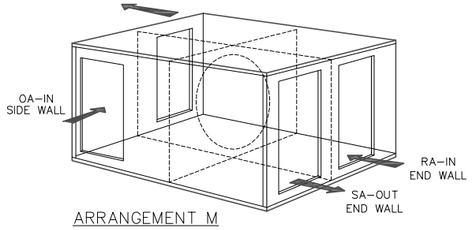
ARRANGEMENT K



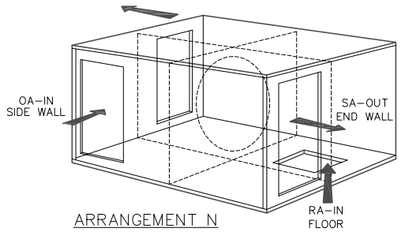
ARRANGEMENT L

ARRANGEMENTS M-P

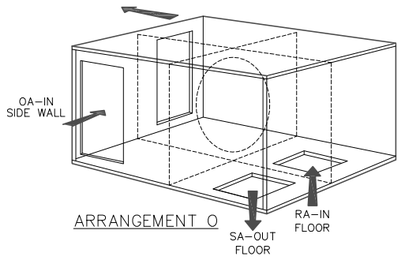
ELT-C, ELT-H, ELT-CH, ELT-HC, ELT-CGB



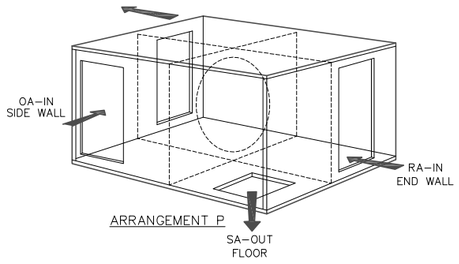
ARRANGEMENT M



ARRANGEMENT N



ARRANGEMENT O

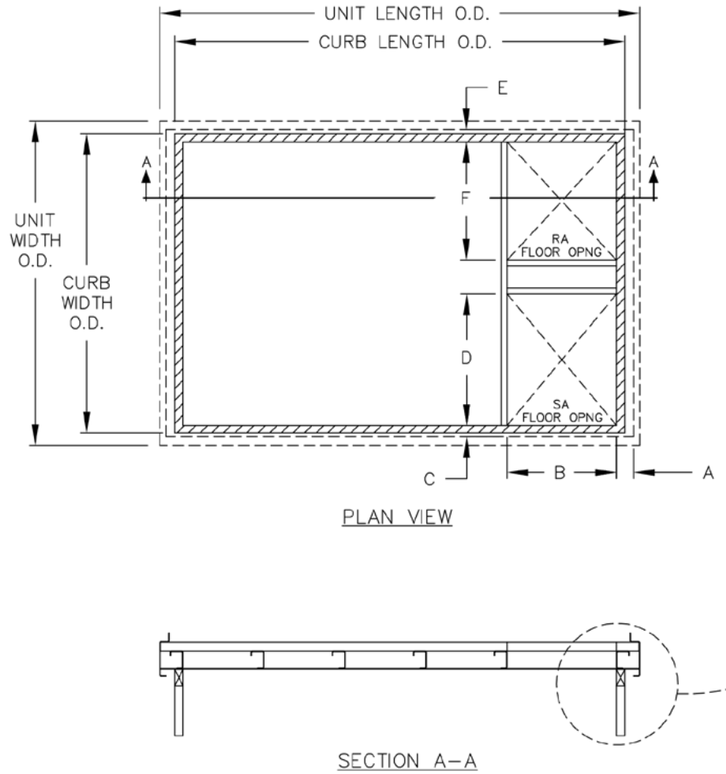


ARRANGEMENT P

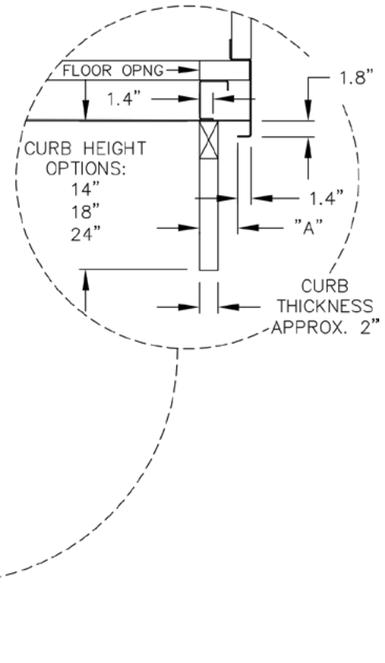
MOUNTING DETAILS

CURB SUPPORT

ELT-P



PLAN VIEW



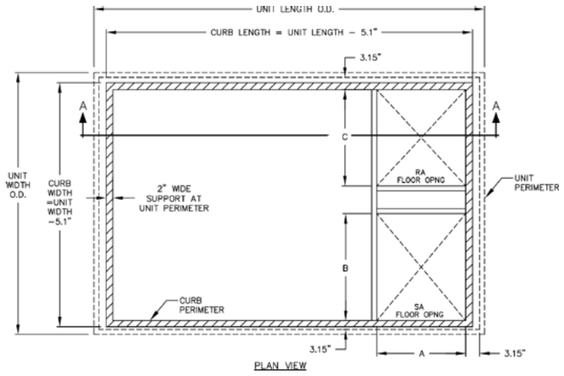
SECTION A–A

UNIT SIZE	MODEL	DIMENSION (INCHES)								
		UNIT O.D. (L x W)	CURB O.D. (L x W)	CURB HEIGHT	A	B	C	D	E	F
ELT-060	PRE-CONDITIONER	91.4 x 67.2	86.3 x 62.1	14, 18 or 24	4.0	25.0	2.6	27.0	6.7	22.0
ELT-075	PRE-CONDITIONER	109.7 x 73.4	104.6 x 68.3	14, 18 or 24	3.9	25.0	2.5	30.0	4.7	26.0
ELT-090	PRE-CONDITIONER	111.2 x 79.0	106.1 x 73.9	14, 18 or 24	3.9	27.0	3.0	32.0	5.0	30.0
ELT-110	PRE-CONDITIONER	123.1 x 83.0	118.0 x 77.9	14, 18 or 24	3.9	30.0	2.4	35.0	3.5	33.0
ELT-130	PRE-CONDITIONER	130.0 x 89.0	124.9 x 83.9	14, 18 or 24	3.9	33.0	3.9	35.1	3.9	35.1

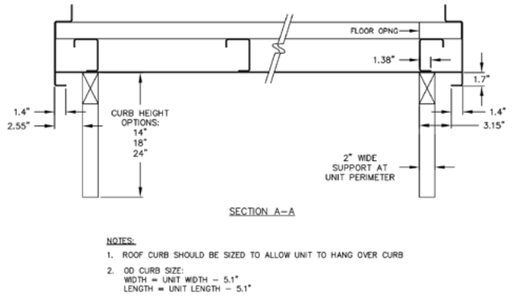
MOUNTING DETAILS

CURB SUPPORT

ELT-C, ELT-CR, ELT-H, ELT-HR, ELT-CH, ELT-CHR, ELT-HC, ELT-HCR, ELT-CGB, ELT-CGBR



PLAN VIEW



SECTION A–A

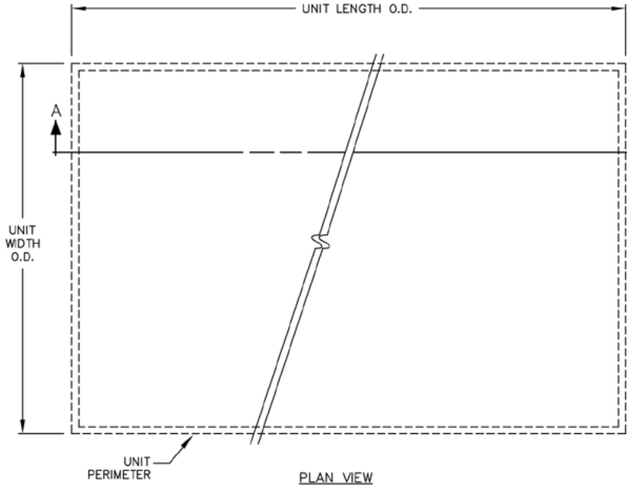
NOTES:

1. ROOF CURB SHOULD BE SIZED TO ALLOW UNIT TO HANG OVER CURB
2. OD CURB SIZE:
   WIDTH = UNIT WIDTH – 5.1"
   LENGTH = UNIT LENGTH – 5.1"

MOUNTING DETAILS

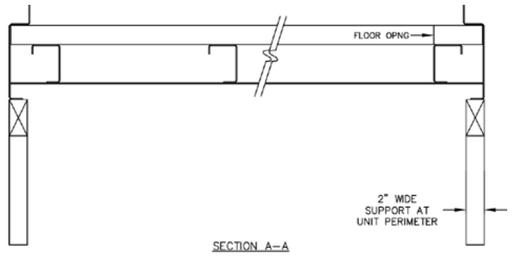
PAD INSTALLATION

ELT-C, ELT-CR, ELT-H, ELT-HR, ELT-CH, ELT-CHR, ELT-HC, ELT-HCR, ELT-CGB, ELT-CGBR



PLAN VIEW

TYPICAL UNIT WITH HOUSEKEEPING PAD OR STRUCTURAL GRID SUPPORT



SECTION A–A

UNIT BASE WHEN MOUNTING ON PAD OR STRUCTURAL GRID

UNIT SIZE	MODEL	DIMENSION (INCHES)					
		UNIT O.D. (L x W)	CURB O.D. (L x W)	CURB HEIGHT OPTIONS	A	B	C
ELT-053	ELT-C, ELT-CR	178.8 x 75.0	173.7 x 69.9	14, 18 or 24	22.0	32.8	23.5
	ELT-H, ELT-HR	154.5 x 75.0	149.4 x 69.9				
	ELT-CH, ELT-CHR	202.3 x 75.0	197.2 x 69.9				
	ELT-HC, ELT-HCR	178.8 x 75.0	173.7 x 69.9				
	ELT-CGB, ELT-CGBR	237.1 x 75.0	232.0 x 69.9				
ELT-085	ELT-C, ELT-CR	178.8 x 89.0	173.7 x 83.9	14, 18 or 24	22.0	39.6	30.6
	ELT-H, ELT-HR	154.5 x 89.0	149.4 x 83.9				
	ELT-CH, ELT-CHR	202.1 x 89.0	197.0 x 83.9				
	ELT-HC, ELT-HCR	178.8 x 89.0	173.7 x 83.9				
	ELT-CGB, ELT-CGBR	245.9 x 89.0	240.8 x 83.9				
ELT-120	ELT-C, ELT-CR	186.8 x 93.0	181.7 x 87.9	14, 18, 24	22.0	41.5	32.8
	ELT-H, ELT-HR	161.6 x 93.0	156.5 x 87.9				
	ELT-CH, ELT-CHR	210.1 x 93.0	205.0 x 87.9				
	ELT-HC, ELT-HCR	186.8 x 93.0	181.7 x 87.9				
	ELT-CGB, ELT-CGBR	254.2 x 93.0	249.1 x 87.9				
ELT-150	ELT-C, ELT-CR	190.8 x 102.0	185.7 x 96.9	14, 18, 24	26.0	45.1	38.1
	ELT-H, ELT-HR	166.4 x 102.0	161.3 x 96.9				
	ELT-CH, ELT-CHR	214.1 x 102.0	209.0 x 96.9				
	ELT-HC, ELT-HCR	190.8 x 102.0	185.7 x 96.9				
	ELT-CGB, ELT-CGBR	258.1 x 102.0	253.0 x 96.9				
ELT-175	ELT-C, ELT-CR	190.8 x 113.0	185.7 x 107.9	14, 18, 24	26.0	50.8	41.0
	ELT-H, ELT-HR	166.4 x 113.0	161.3 x 107.9				
	ELT-CH, ELT-CHR	214.1 x 113.0	209.0 x 107.9				
	ELT-HC, ELT-HCR	190.8 x 113.0	185.7 x 107.9				
	ELT-CGB, ELT-CGBR	263.0 x 113.0	257.9 x 107.9				
ELT-200	ELT-C, ELT-CR	190.8 x 113.0	185.7 x 107.9	14, 18, 24	26.0	50.8	41.0
	ELT-H, ELT-HR	166.4 x 113.0	161.3 x 107.9				
	ELT-CH, ELT-CHR	214.1 x 113.0	209.0 x 107.9				
	ELT-HC, ELT-HCR	190.8 x 113.0	185.7 x 107.9				
	ELT-CGB, ELT-CGBR	263.0 x 113.0	257.9 x 107.9				

INSTALLATION

LIFTING AND RIGGING

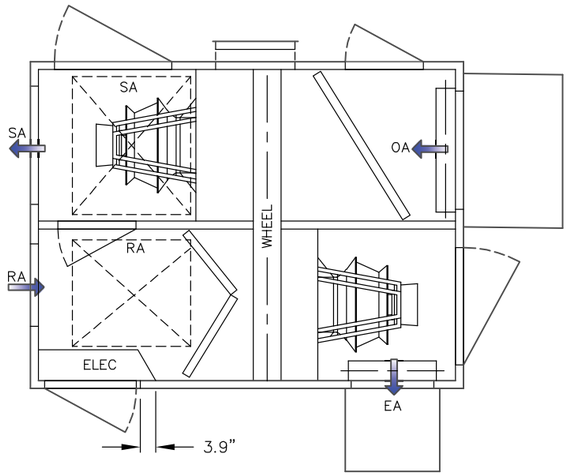
The ElitePro is designed to be lifted from the lifting eyes attached to the unit's base structure. Spreader bars must be used to hoist, to avoid damaging the enclosure and roof. Do not lift the unit with a forklift.

Chokers need to be adjustable, so that the unit is level when it is picked up, and more importantly, set down. Setting the unit down on one corner could cause the unit to rack. Lever chain pullers are useful for this purpose.

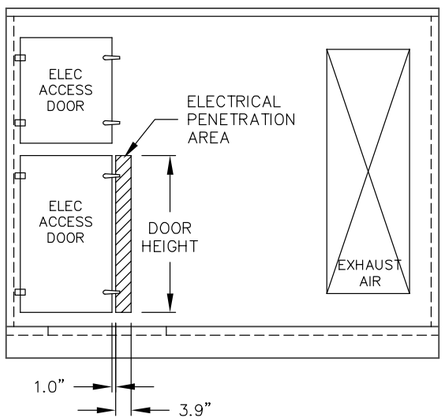
ELECTRICAL PENETRATION

ELT-P

For unit weights and dimensions please see **DIMENSIONAL DATA on **PAGES 10-13***



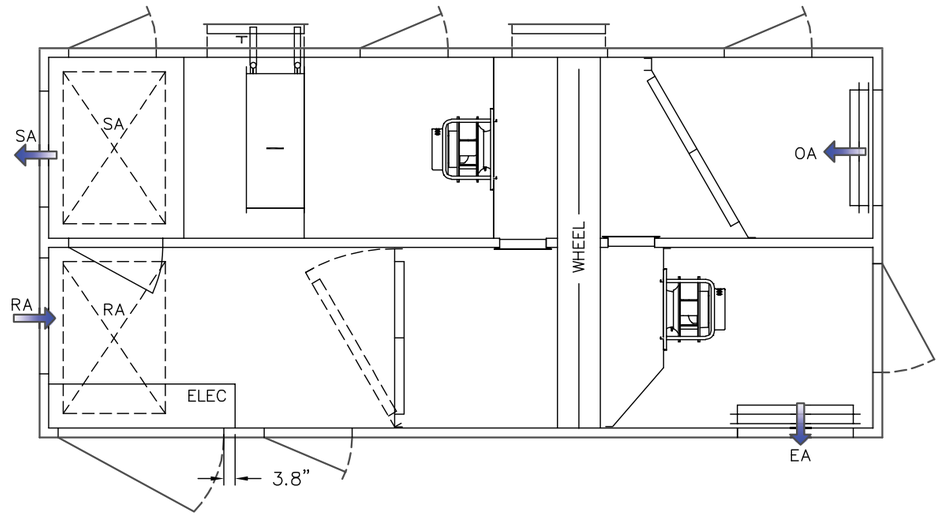
PLAN VIEW



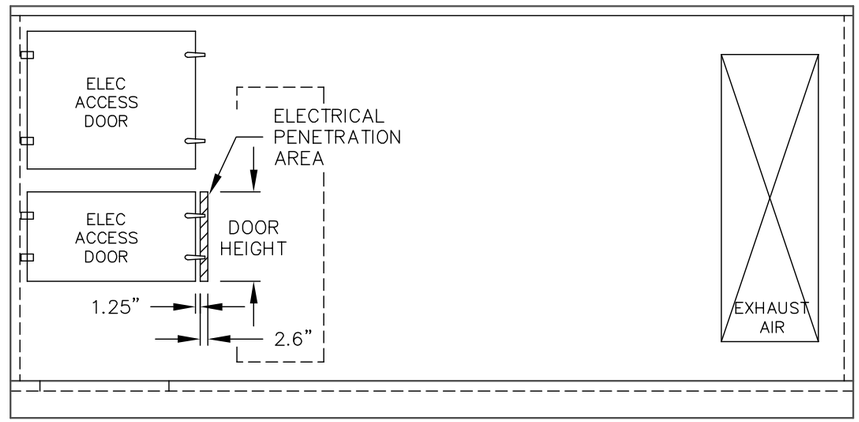
WALL ELEVATION

ELT-C, ELT-H, ELT-CH, ELT-HC, ELT-CGB

For unit weights and dimensions please see **DIMENSIONAL DATA on **PAGES 14-53***



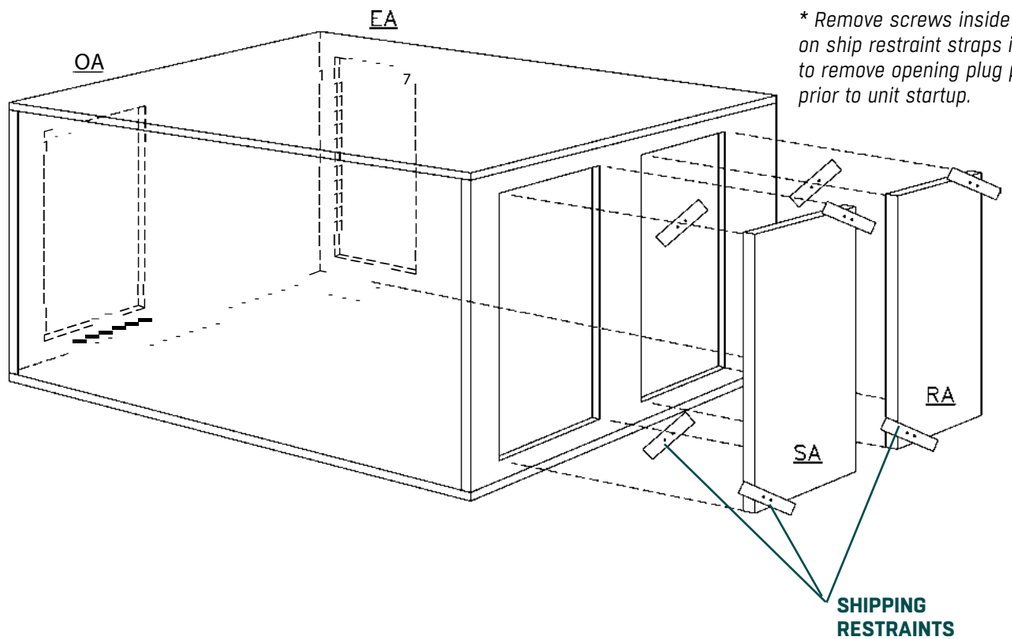
PLAN VIEW



WALL ELEVATION

ELITEPRO PLUG PANEL REMOVAL

ALL UNITS



** Remove screws inside unit on ship restraint straps in order to remove opening plug panels prior to unit startup.*

SHIPPING RESTRAINTS
(Only end wall openings)

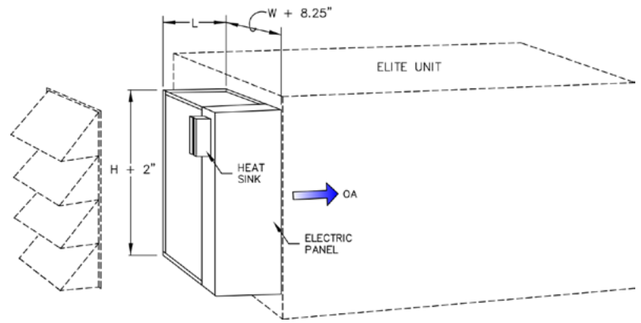
NO CONTROL DETAILS

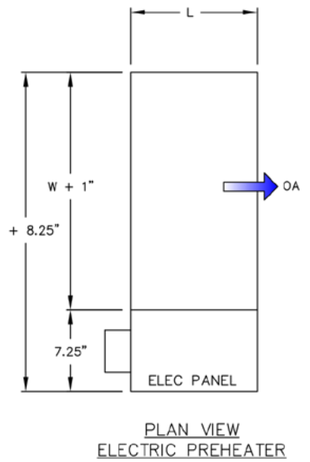
- Fans are driven by potentiometer to allow for speed variance
- Wheel motor is equipped with VFD

ELECTRIC PREHEAT LAYOUT

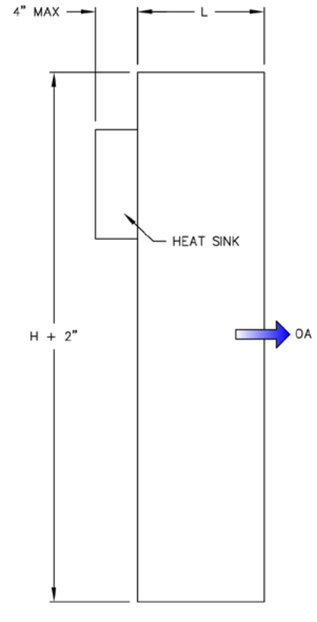
ALL UNITS

UNIT SIZE	DIMENSION (INCHES)		
	W	H	L
ELT-053	25.0	47.0	15.0
ELT-060	20.0	53.0	15.0
ELT-075	23.0	57.0	15.0
ELT-085	35.0	71.0	15.0
ELT-090	26.0	61.0	15.0
ELT-110	30.0	62.0	15.0
ELT-120	40.0	71.0	15.0
ELT-130	31.0	71.0	15.0
ELT-150	40.0	95.0	15.0
ELT-175	40.0	95.0	15.0
ELT-200	40.0	95.0	15.0

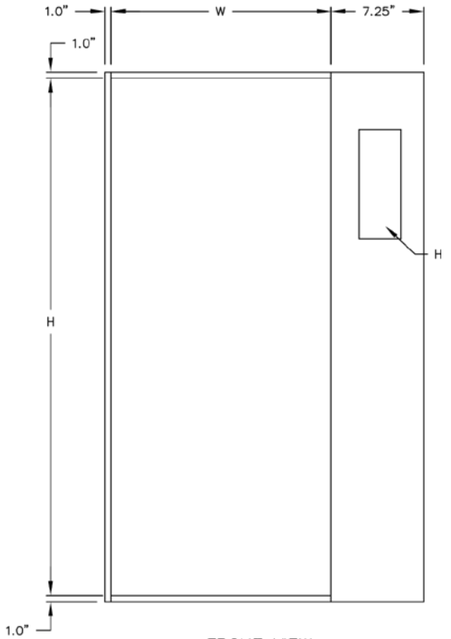




PLAN VIEW
ELECTRIC PREHEATER



SIDE VIEW



FRONT VIEW

PRE-CONDITIONER CONTROLS PACKAGE

STANDARD CONTROLS FEATURES

STANDARD EQUIPMENT

The ElitePro unit is equipped with supply and exhaust fans with EC motors, a variable speed enthalpy wheel with Yaskawa® V1000® VFD motorized 2-position outdoor and exhaust dampers, outdoor and return air filter banks, safety interlock relay, off-auto switch.

START SEQUENCE

The unit is started by placing the off-auto switch in the auto position, with either a dry contact closure across the auto s/s terminals and/or a binary parameter start command from the building automation system. If the safety relay is made then the unit receives a start command. If there are not any critical alarms, the outdoor and exhaust damper actuators are energized and the wheel VFD is enabled. When the dampers are proven open, the exhaust fan is started, followed 15 seconds later by the supply fan.

SAFETY INTERLOCK RELAY

Any external lockouts for the unit, such as external fire/smoke damper limit switches, fire alarms, or smoke detectors should be wired in series and connected to the unit using the provided safety relay terminals. If the safety relay is not energized, the unit will not run, the fans are prevented from starting, and the outdoor and exhaust dampers will close.

SETPOINTS

The temperature setpoint and other adjustable settings may be entered at the touchpad, or received from the BAS®. A BAS®/touchpad binary switch may be toggled either through the touchpad, or the BAS®.

CONSTANT VOLUME AIRFLOW CONTROL

The controller modulates the supply fan speed to maintain the supply CFM setpoint. The controller modulates the exhaust fan speed to maintain the pressurization CFM setpoint (supply CFM - exhaust CFM = pressurization CFM) or an exhaust CFM setpoint (selectable binary parameter). Integrated piezometer flow stations at the fans provide measurement of supply and exhaust airflows. Airflow control setpoints and the measurements can be viewed/adjusted at the unit touchpad, or over BAS® communications to the unit controller. Minimum airflow alarm setpoints (adjustable) are also provided which can be utilized to trigger a unit alarm when supply or exhaust airflows are too low.

ENTHALPY-BASED WHEEL CONTROL

On initial startup, the enthalpy wheel is forced to full speed. The speed override is gradually released over a 10 minute ramp. The enthalpy wheel modulates to maintain the supply temperature setpoint in heating mode. If the outdoor air enthalpy is greater than the return air enthalpy, or the outdoor temperature is greater than 75˚F, the wheel rotates at full speed in summer full recovery mode. When not in summer mode and with no heating demand, the wheel rotates at ¼ RPM in economizer mode. *Condensation/frost control: the wheel speed is limited to maintain an exhaust temperature no lower than setpoint (setpoint can be automatically calculated based on the outdoor temperature and return % RH, manually set, or the condensation control can be disabled).*

WHEEL ROTATION DETECTOR

The energy recovery wheel is equipped with a rotation detector. If there is a lack of wheel rotation for more than 10 minutes when a wheel is run, the controller generates an alarm. The alarm can be configured as critical or status only (default). An alarm configured as critical will shut down the unit when the alarm is generated.

AIR FILTER PRESSURE SWITCHES

Pressure switches are provided across the outdoor and return air filters, and wired to inputs on the controller. Status of the inputs are viewable from the unit touchpad/display, or over BAS® communications. The filter pressure switches are equipped with manually adjustable setpoints, and when the filter pressure differential exceeds the setpoint and a switch makes, a unit alarm is triggered to signal that the filters are dirty.

ALARMS

Most alarms are configurable (through the keypad or BAS® communications) as status only or critical. Alarms configured as "status only" would energize the alarm light when the alarm was generated, but the unit would continue to run. Alarms configured as "critical" would shut down the unit when generated, requiring the alarm to be cleared before the unit could restart. Standard alarms include: EC fan motor alarms, wheel rotation alarm, dirty filter alarms, low unit discharge temperature alarm.

DISPLAY

Unit inputs, outputs, status, setpoints, and configuration parameters may be viewed at the mounted unit display/touchpad. Values may be viewed/adjusted at the touchpad or through BAS® communications to the unit controller.

CONTROLLER AND DEVICES

The DDC control system consists of an Automated Logic® I/O Flex 6126 Controller®, and an EquipmentTouch® touchpad display.

COMMUNICATIONS

The controller can be field configured to communicate with the BAS via several integrated protocols including: Modbus®, or N2®.

OPTIONAL CONTROL FEATURES

VARIABLE AIRFLOW CONTROL (SUPPLY DUCT P)

The controller modulates the supply fan speed to maintain a supply duct pressure setpoint. A duct pressure transducer, to be mounted in the supply air duct, is provided loose with the unit for field installation and wiring by others. The controller modulates the exhaust fan speed to maintain the pressurization CFM setpoint. Integrated piezometer flow stations at the fans, provide measurement of supply and exhaust airflows. Airflow control setpoints and measurements can be viewed/adjusted at the unit keypad or over BAS® communications to the unit controller. Minimum airflow alarm setpoints (adjustable) are also provided which can be utilized to trigger a unit alarm when supply or exhaust airflows are too low.

ELECTRIC PREHEAT FOR ENTHALPY WHEEL

If the unit is running in ventilation mode, with the supply airflow proven, then pre-heating is enabled: pre-heating demand is generated by the controller to maintain the enthalpy wheel condensation control setpoint. The controller will modulate the output signal to the enthalpy wheel electric pre-heater SCR with pre-heating demand.

CONTROLS POINTS LIST

BINARY INPUTS

- Unit start switch
- Supply fan motor fault
- Exhaust fan motor fault
- Wheel rotation detector
- Outdoor & exhaust damper limit switch status (combined)
- Outdoor filter pressure switch status
- Return filter pressure switch status

ANALOG INPUTS

- Supply fan piezo flow station pressure
- Exhaust fan piezo flow station pressure
- Supply duct pressure (shipped loose) - *optional*

RNET NETWORK INPUTS

- Outdoor air temp
- Outdoor air RH
- Return air temperature
- Return air RH
- Exhaust air temperature
- Supply air temperature

BINARY OUTPUTS

- Damper enable
- Wheel VFD enable
- Unit alarm
- Supply & exhaust fan start

ANALOG OUTPUTS

- Enthalpy wheel VFD speed signal
- Supply fan EC motor speed signal
- Exhaust fan EC motor speed signal
- Wheel electric preheat control signal *optional*

KEY BINARY VALUES

- BAS® start command

KEY ANALOG VALUES

- BAS® temperature setpoint
- Supply CFM setpoint
- Pressurization CFM setpoint or exhaust CFM setpoint
- Supply duct pressure setpoint *optional*

SINGLE WHEEL CONTROLS PACKAGE

STANDARD CONTROLS FEATURES

STANDARD EQUIPMENT

The ElitePro unit is equipped with supply and exhaust fans with EC motors, a variable speed enthalpy wheel with Yaskawa® V1000® VFD motorized 2-position outdoor and exhaust dampers, outdoor and return air filter banks, safety interlock relay, off-auto switch.

START SEQUENCE

The unit is started by placing the off-auto switch in the auto position, with either a dry contact closure across the auto s/s terminals and/or a binary parameter start command from the building automation system. If the safety relay is made then the unit receives a start command. If there are not any critical alarms, the outdoor and exhaust damper actuators are energized and the wheel VFD is enabled. When the dampers are proven open, the exhaust fan is started, followed 15 seconds later by the supply fan.

SAFETY INTERLOCK RELAY

Any external lockouts for the unit, such as external fire/smoke damper limit switches, fire alarms, or smoke detectors should be wired in series and connected to the unit using the provided safety relay terminals. If the safety relay is not energized, the unit will not run, the fans are prevented from starting, and the outdoor and exhaust dampers will close.

SETPOINTS

The temperature setpoint and other adjustable settings may be entered at the touchpad, or received from the BAS®. A BAS®/touchpad binary switch may be toggled either through the touchpad, or the BAS®.

CONSTANT VOLUME AIRFLOW CONTROL

The controller modulates the supply fan speed to maintain the supply CFM setpoint. The controller modulates the exhaust fan speed to maintain the pressurization CFM setpoint (supply CFM - exhaust CFM = pressurization CFM) or an exhaust CFM setpoint (selectable binary parameter). Integrated piezometer flow stations at the fans provide measurement of supply and exhaust airflows. Airflow control setpoints and the measurements can be viewed/adjusted at the unit touchpad, or over BAS® communications to the unit controller. Minimum airflow alarm setpoints (adjustable) are also provided which can be utilized to trigger a unit alarm when supply or exhaust airflows are too low.

ENTHALPY-BASED WHEEL CONTROL

On initial startup, the enthalpy wheel is forced to full speed. The speed override is gradually released over a 10 minute ramp. The enthalpy wheel modulates to maintain the supply temperature setpoint in heating mode. If the outdoor air enthalpy is greater than the return air enthalpy, or the outdoor temperature is greater than 75˚F, the wheel rotates at full speed in summer full recovery mode. When not in summer mode and with no heating demand, the wheel rotates at ¼ RPM in economizer mode. *Condensation/frost control: the wheel speed is limited to maintain an exhaust temperature no lower than setpoint (setpoint can be automatically calculated based on the outdoor temperature and return % RH, manually set, or the condensation control can be disabled).*

WHEEL ROTATION DETECTOR

The energy recovery wheel is equipped with a rotation detector. If there is a lack of wheel rotation for more than 10 minutes when a wheel is run, the controller generates an alarm. The alarm can be configured as critical or status only (default). An alarm configured as critical will shut down the unit when the alarm is generated.

AIR FILTER PRESSURE SWITCHES

Pressure switches are provided across the outdoor and return air filters, and wired to inputs on the controller. Status of the inputs are viewable from the unit touchpad/display, or over BAS® communications. The filter pressure switches are equipped with manually adjustable setpoints, and when the filter pressure differential exceeds the setpoint and a switch makes, a unit alarm is triggered to signal that the filters are dirty.

ALARMS

Most alarms are configurable (through the keypad or BAS® communications) as status only or critical. Alarms configured as "status only" would energize the alarm light when the alarm was generated, but the unit would continue to run. Alarms configured as "critical" would shut down the unit when generated, requiring the alarm to be cleared before the unit could restart. Standard alarms include: EC fan motor alarms, wheel rotation alarm, dirty filter alarms, low unit discharge temperature alarm.

DISPLAY

Unit inputs, outputs, status, setpoints, and configuration parameters may be viewed at the mounted unit display/touchpad. Values may be viewed/adjusted at the touchpad or through BAS® communications to the unit controller.

CONTROLLER AND DEVICES

The DDC control system consists of an Automated Logic® I/O Flex 6126 Controller®, and an EquipmentTouch® touchpad display.

COMMUNICATIONS

The controller can be field configured to communicate with the BAS via several integrated protocols including: Modbus®, or N2®.

HEATING AND COOLING CONTROLS

** Configure at commissioning to match equipment and desired conditions.*

CHILLED WATER COOLING COIL CONTROL (IF EQUIPPED)

Chilled Water Cooling Coil Control (if equipped): If the unit is running, and the outdoor temp is above the cooling lockout temp, then dehumidification is enabled.: When there is also no heating demand, cooling is enabled: Cooling demand is generated by the controller to maintain the temperature setpoint. Dehumidification demand is generated by the controller to maintain the dew-point setpoint. The output signal to the chilled water valve actuator (provided, installed, and wired by others) will modulate as needed according to the maximum of the cooling and dh demands. A configuration parameter exists which can be used to set the cooling control to temp only (or temp & humidity). The control valve signal is configurable for a direct or reverse acting, 0-10vdc or 2-10vdc control signal.

DX COOLING COIL CONTROL (IF EQUIPPED)

If the unit is running, with the supply airflow proven, and the outdoor temp is above the cooling lockout temp, then dehumidification is enabled. When also not in heating mode, then cooling is enabled.: Cooling demand is generated by the controller to maintain the temperature setpoint. Dehumidification demand is generated by the controller to maintain the dew-point setpoint. The maximum of the cooling & dh demands drives the controller output. A configuration parameter exists which can be used to set the cooling control to temp only (or temp & humidity). DX STAGING CONTROL (as applicable): DX stages (4 maximum) will be called sequentially as needed in response to increasing demand . There are several DX configuration parameters including: DX stage minimum run time, DX stage minimum off time, and DX stage delay time (between stages). **ANALOG DX INTERFACE CONTROL** (as applicable): A DX enable dry contact will close when DX demand is above 1%, and an analog control signal (0-10vdc or 4-20ma) will modulate with demand.

HUMIDITY CONTROL CONFIGURATION (IF EQUIPPED)

The controller will control humidity on the basis of return air dew-point.

HOT WATER HEATING COIL CONTROL

If the unit is running, and not in cooling mode, and the outdoor temp is below the heating coil lockout setpoint, then heating is enabled: Heating demand is generated by the controller to maintain the temperature setpoint. The first stage of heat is to maximize the speed of the energy recovery wheel. Once the wheel recovery has been maximized, the next stage of heat is to modulate the output signal which opens the hot water valve actuator (provided, installed, and wired by others) as needed to maintain the temp setpoint. The control valve signal is configurable for a direct or reverse acting, 0-10vdc or 2-10vdc control signal. Selectable Reheating Mode (applicable only if heating coil is downsteam of a cooling coil): When reheat mode is enabled, the output signal to the valve actuator will also modulate as needed to maintain the temp setpoint when the cooling coil is on for dh control.

ELECTRIC HEATING COIL CONTROL

If the unit is running, with the supply airflow proven, and not in cooling mode, and the outdoor temp is below the heating coil lockout setpoint, then heating is enabled: Heating demand is generated by the controller to maintain the temperature setpoint. The first stage of heat is to maximize the speed of the energy recovery wheel. Once the wheel recovery has been maximized, the next stage of heat is to modulate the output signal to the electric heater SCR as needed to maintain the temp setpoint. Selectable Reheating Mode (binary parameter, applicable only if heating coil is downsteam of a cooling coil): When reheat mode is enabled, the output signal to the electric heater SCR will also modulate as needed to maintain the temp setpoint when the cooling coil is on for dh control.

INDIRECT GAS FURNACE CONTROL

If the unit is running, with the supply airflow proven, and not in cooling mode, and the outdoor temp is below the heating lockout setpoint, then heating is enabled: Heating demand is generated by the controller to maintain the temperature setpoint. The first stage of heat is to maximize the speed of the energy recovery wheel. Once the wheel recovery has been maximized, the next stage of heat is to modulate the output signal to the gas furnace as needed to maintain the temp setpoint. Selectable Reheating Mode (binary parameter, applicable only if gas furnace is downsteam of a

cooling coil): When reheat mode is enabled, the output signal to the gas furnace will also modulate as needed to maintain the temp setpoint when the cooling coil is on for dh control.

FREEZESTAT (IF EQUIPPED)

An auto-reset freezestat is provided on units equipped with a water coil. If the supply air leaving the enthalpy wheel enters a cooling coil first, the freezestat will be mounted on the upstream side of the coil bank, otherwise the freezestat is mounted on the downstream side of the coil bank. If the freezestat is tripped continuously for 1 minute (time delay adjustable), a freezestat alarm is generated, the water valves are forced to full flow, and the unit will shut down (factory configuration). The alarm can be configured as critical (default) or status.

OPTIONAL FEATURES

MOTORIZED 2-POSITION RECIRCULATION AIR DAMPER

The unit can operate either in Ventilation or Recirculation Mode, as called via a hard wired dry contact input or BAS commanded parameter. In Ventilation Mode, the 2-position outdoor & exhaust dampers are fully open and the 2-position recirculation damper is fully closed, the supply and exhaust fans are on, and the unit delivers 100% outdoor air. In Recirculation Mode, the outdoor & exhaust dampers are closed and the recirculation damper is open, the enthalpy wheel is at minimum speed, the exhaust fan is off, the supply fan is on, and the unit delivers 100% recirculated air.

VARIABLE AIRFLOW CONTROL (SUPPLY DUCT P)

The controller modulates the supply fan speed to maintain a supply duct pressure setpoint. A duct pressure transducer, to be mounted in the supply air duct, is provided loose with the unit for field installation & wiring by others. The controller modulates the exhaust fan speed to maintain the pressurization CFM setpoint. Integrated piezometer flow stations at the fans provide measurement of supply and exhaust airflows. Airflow control setpoints and measurements can be viewed/adjusted at the unit keypad or over BAS communications to the unit controller. Minimum airflow alarm setpoints (adjustable) are also provided which can be utilized to trigger a unit alarm when supply or exhaust airflows are too low.

ELECTRIC PRE-HEAT FOR ENTHALPY WHEEL

If the unit is running in ventilation mode, with the supply airflow proven, then preheating is enabled: Pre-heating demand is generated by the controller to maintain the enthalpy wheel condensation control setpoint. The controller will modulate the output signal to the enthalpy wheel electric pre-heater SCR with preheating demand.

CONTROLS POINTS LIST

BINARY INPUTS

- Unit start switch
- Supply fan motor fault
- Exhaust fan motor fault
- Wheel rotation detector
- Freezestat - *configuration dependent*
- Outdoor & exhaust damper limit switch status (combined)
- Recirculation damper limit switch status - *optional*
- Outdoor filter pressure switch status
- Return filter pressure switch status

ANALOG INPUTS

- Supply fan piezo flow station pressure
- Exhaust fan piezo flow station pressure
- Supply duct pressure (shipped loose) - *optional*

RNET NETWORK INPUTS

- Outdoor air temp
- Outdoor air RH
- Return air temperature
- Return air RH
- Exhaust air temperature
- Supply air temperature
- Air temperature entering gas furnace - *configuration dependent*

BINARY OUTPUTS

- Damper enable
- Wheel VFD enable
- Unit alarm
- Supply & exhaust fan start
- DX enabled relay - *configuration dependent*
- Gas furnace enabled relay - *configuration dependent*

ANALOG OUTPUTS

- Enthalpy wheel VFD speed signal
- Supply fan EC motor speed signal
- Exhaust fan EC motor speed signal
- Cooling control signal (chilled water, DX demand to sequencer) - *configuration dependent*
- Heating control signal (hot water, electric, gas furnace) - *configuration dependent*
- Wheel electric preheat control signal - *optional*

KEY BINARY VALUES

- BAS® start command
- BAS® recirculation command - *optional*

KEY ANALOG VALUES

- BAS® temperature setpoint
- BAS® dew-point setpoint - *configuration dependent*
- Supply CFM setpoint
- Pressurization CFM setpoint or exhaust CFM setpoint
- Supply duct pressure setpoint - *optional*

NO CONTROLS

STANDARD FEATURES

STANDARD EQUIPMENT

Unit is equipped with supply & exhaust fans with EC motors, enthalpy wheel with Yaskawa® V1000 VFD, motorized 2-position outdoor & exhaust dampers, outdoor & return air filter banks, safety interlock relay, off-auto switch. As shipped, the fans & wheel are set up for constant speed operation, but can be field set for variable speed control by others. All controls are by others, including control of any heating or cooling coils.

START SEQUENCE

Unit is equipped with supply & exhaust fans with EC motors, enthalpy wheel with Yaskawa® V1000 VFD, motorized 2-position outdoor & exhaust dampers, outdoor & return air filter banks, safety interlock relay, off-auto switch. As shipped, the fans & wheel are set up for constant speed operation, but can be field set for variable speed control by others. All controls are by others, including control of any heating or cooling coils.

SAFETY INTERLOCK RELAY

Any external lockouts for the unit such as external fire/smoke damper limit switches, fire alarms, or smoke detectors should be wired in series and connected to the unit using the provided safety relay terminals. If the safety relay is not energized, the unit will not run, the fans are prevented from starting, and the outdoor & exhaust dampers will close.

CONSTANT SPEED FANS

The supply and exhaust fan EC motors are preset (with a potentiometer or software) at the factory to run at specific (constant) speeds when enabled to achieve the design airflow for the application. The constant speed settings can be field adjusted during balancing. Field provided analog control signals can be used to variably control the fans if desired.

WHEEL VFD

The wheel VFD will be factory set to run at a constant speed when enabled. This can be field modified for variable speed control by others with an analog signal.

HEATING/COOLING COILS

All control of heating & cooling coils/devices is to be provided by others.

CONTROLS – OPTIONAL FEATURES

ELECTRIC PRE-HEAT FOR ENTHALPY WHEEL

100% SCR Preheating to be controlled with an analog control signal provided by others.

ELECTRICAL DATA

UNIT TAG	3 PHASE FULL LOAD AMPS							
	STANDARD UNIT ELECTRICAL DATA				STANDARD UNIT GAS BURNER FLA			
	480/3/60 FLA	MCA	MOCP	DISCONNECT SIZE	480/3/60 FLA	MCA	MOCP	DISCONNECT SIZE
ELT-053	22.2	28.0	30.0	30.0	25.4	32.0	35.0	30.0
ELT-060	22.2	28.0	30.0	30.0	—	—	—	—
ELT-075	31.0	38.0	40.0	60.0	—	—	—	—
ELT-085	45.0	56.0	60.0	60.0	48.0	60.0	60.0	60.0
ELT-090	32.0	40.0	45.0	60.0	—	—	—	—
ELT-110	45.0	56.0	60.0	60.0	—	—	—	—
ELT-120	59.0	74.0	80.0	100.0	62.2	77.0	80.0	100.0
ELT-130	48.0	60.0	60.0	60.0	—	—	—	—
ELT-150	76.0	96.0	100.0	125.0	79.0	98.0	100.0	125.0
ELT-175	76.0	96.0	100.0	125	79.0	106.7	100.0	125.0
ELT-200	76.0	96.0	100.0	125	79.0	106.7	100.0	125.0

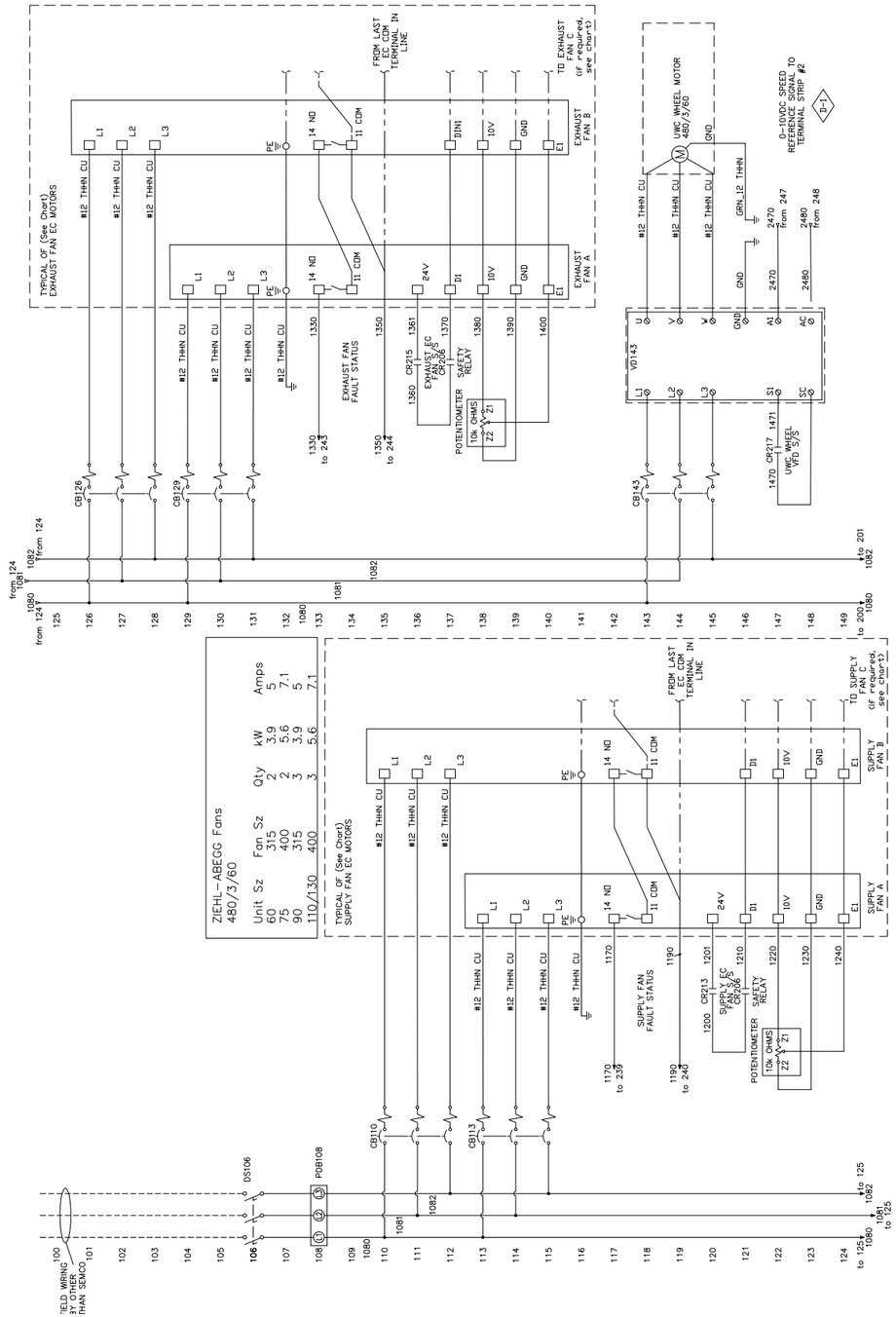
NOTE: All ElitePro units have SCCR 10K

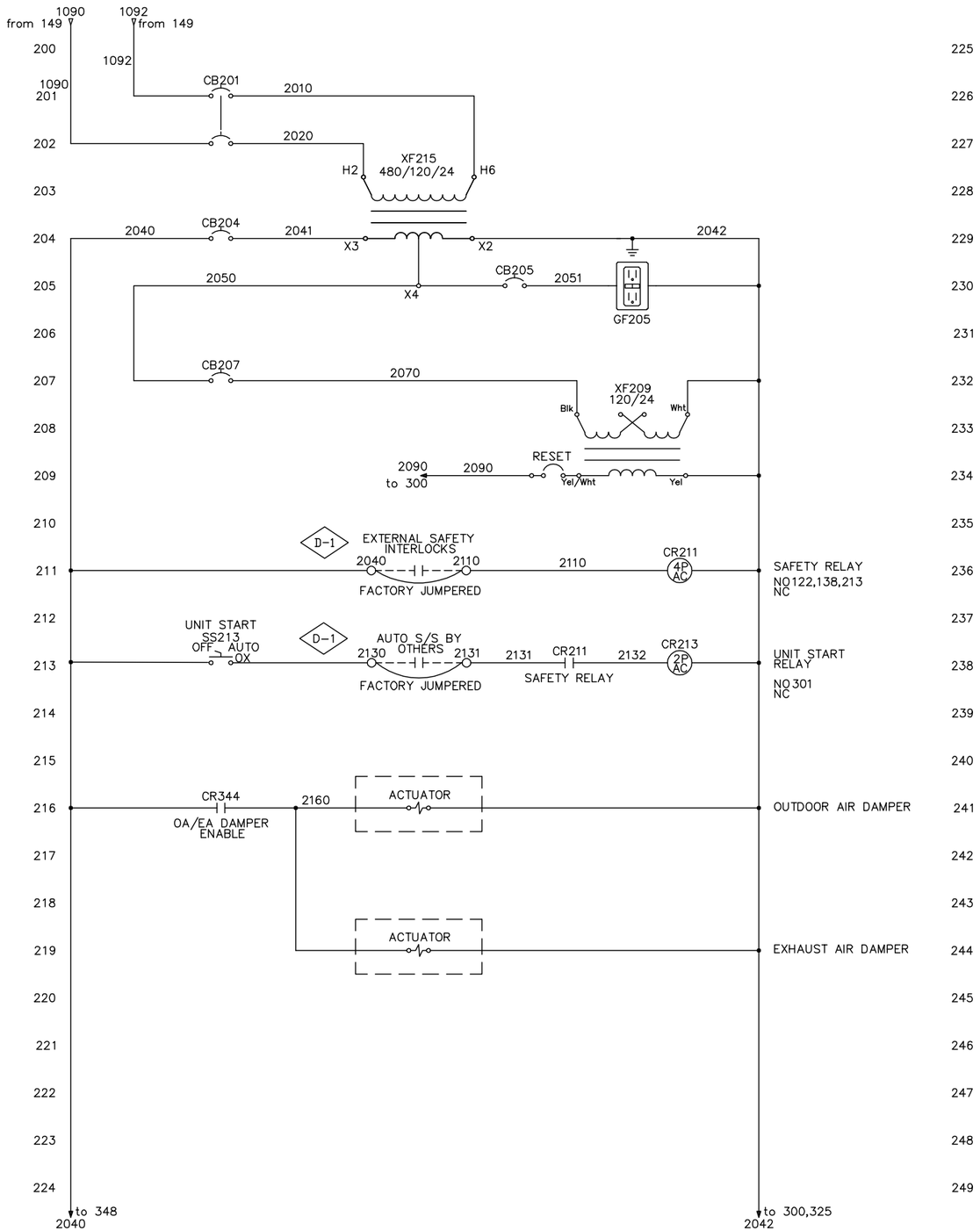
UNIT TAG	ZIEHL ABEGG EC FANS			PRE-HEAT	
	kW	HP	FAN QTY	SIZE (kW)	480/3/60 FLA
ELT-053	3.9	5.0	4	10.0	12.0
ELT-060	3.9	5.0	4	15.0	18.1
ELT-075	5.6	7.1	4	20.0	24.1
ELT-085	5.6	7.1	6	20.0	24.1
ELT-090	3.9	5.0	6	25.0	30.1
ELT-110	5.6	7.1	6	30.0	36.1
ELT-120	5.6	7.1	8	30.0	36.1
ELT-130	5.6	7.1	6	35.0	42.1
ELT-150	5.6	7.1	10	40.0	48.0
ELT-175	5.6	7.1	10	50.0	60.1
ELT-200	5.6	7.1	10	55.0	66.2

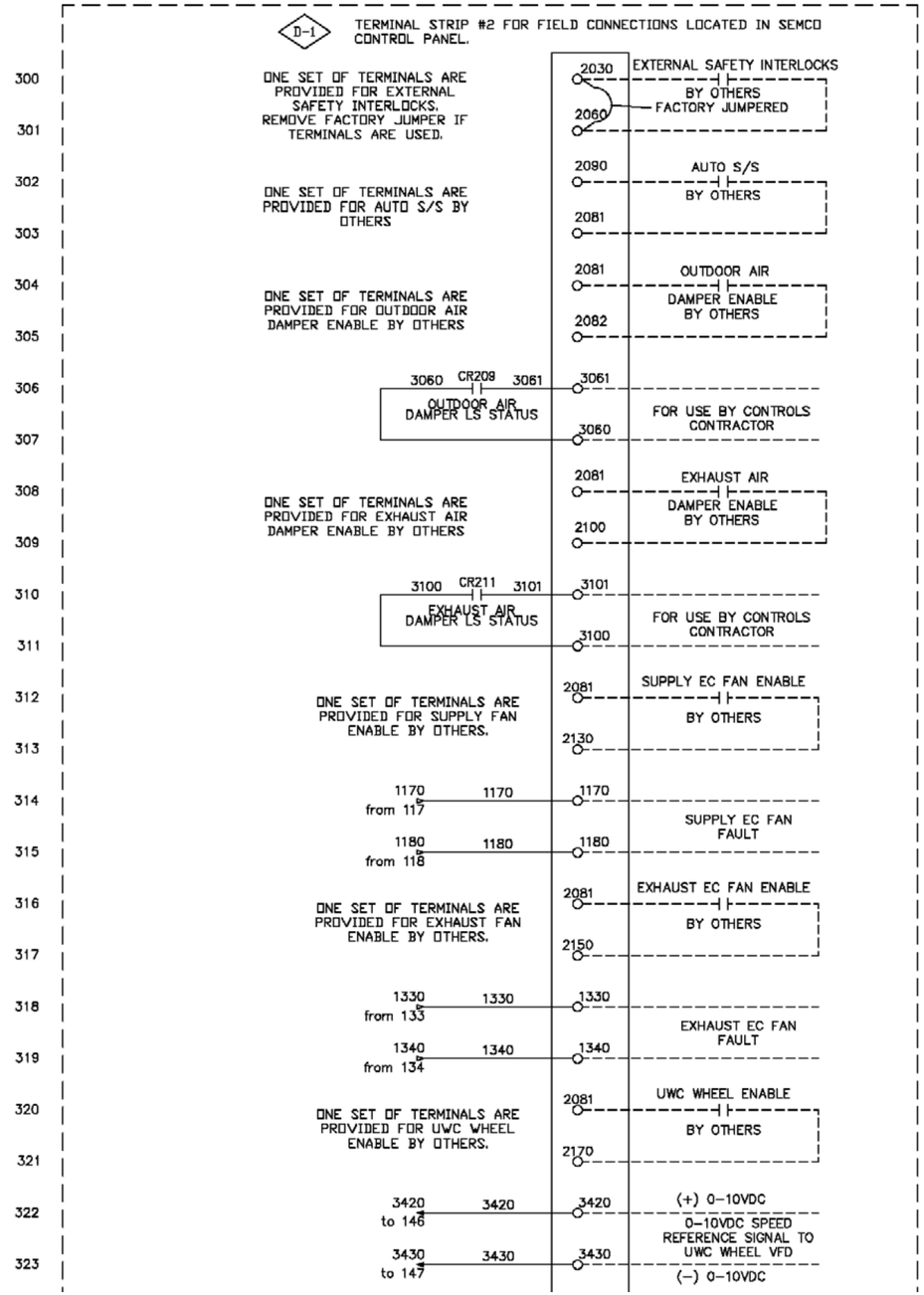
NOTE: Post-heat and pre-heat will have separate single point electrical hits. FLAs are not included in the standard unit electrical data.

ELECTRICAL SCHEMATIC

PRE-CONDITIONER NO CONTROLS

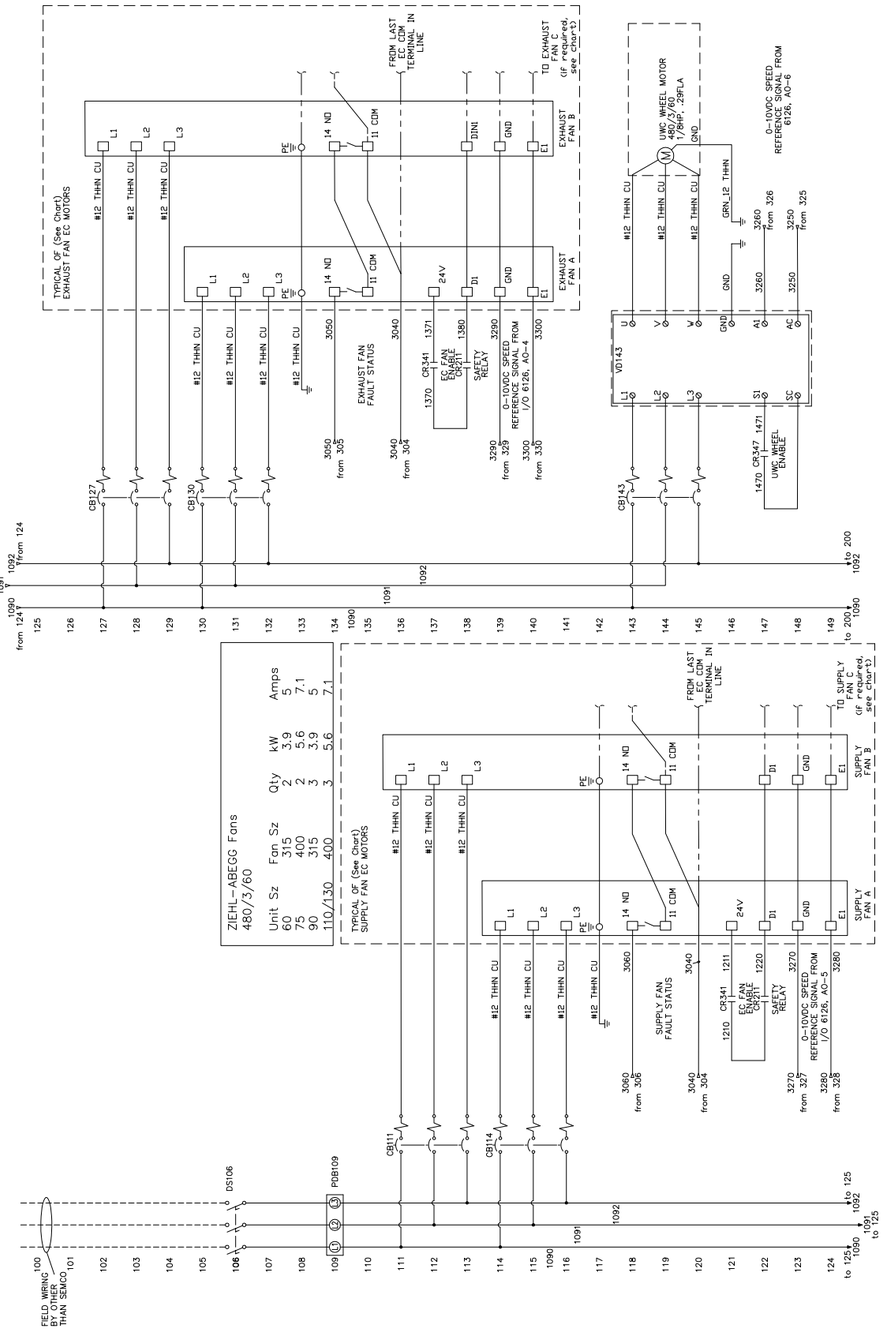


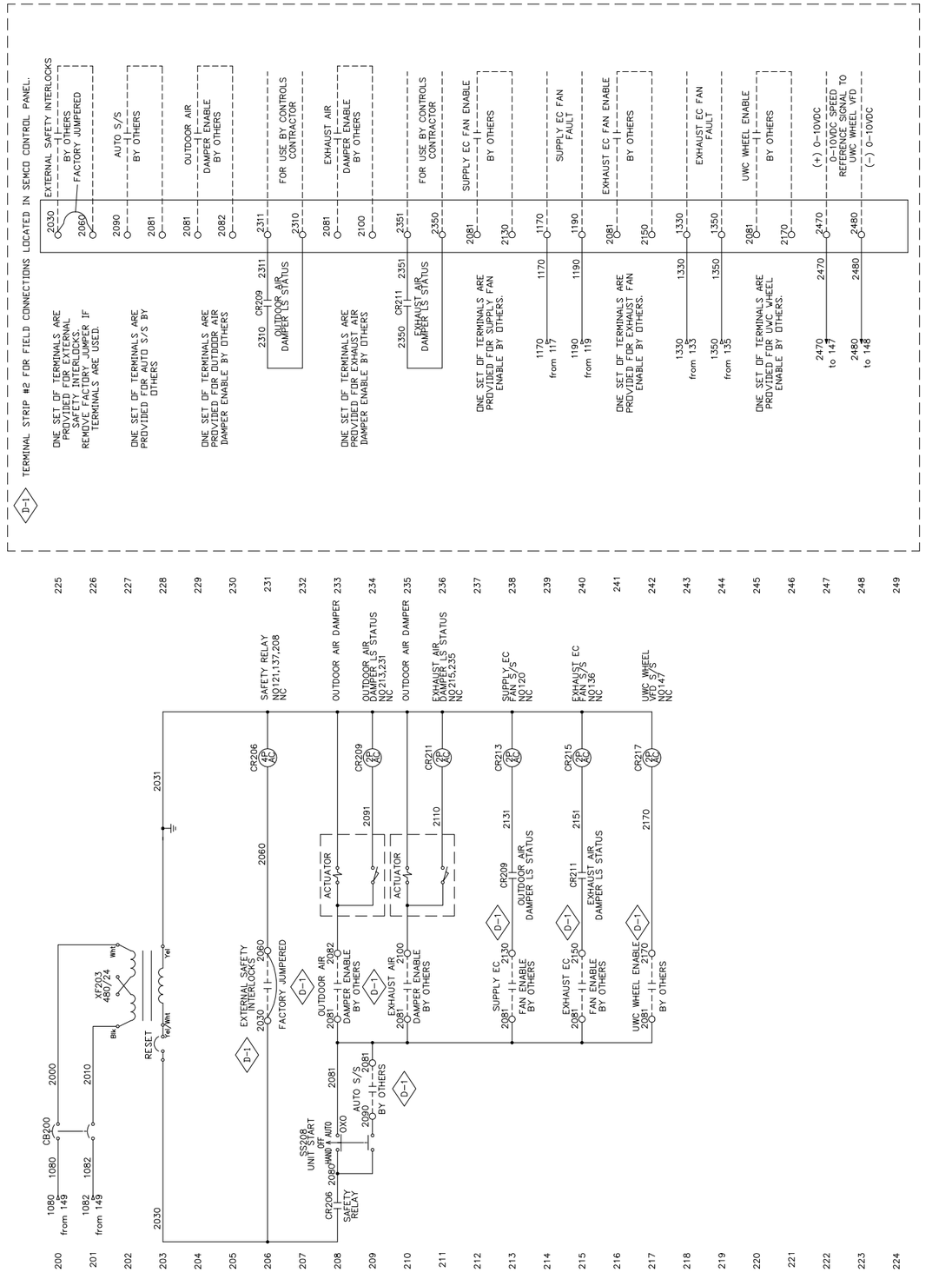

1090
from 149
1092
from 149
1092
1090
CB201
2010
2020
XF215
480/120/24
H2
H6
CB204
2040
2041
2042
X3
X2
X4
CB205
2050
2051
GF205
CB207
2070
XF209
120/24
Blk
Wht
RESET
2090
2090
to 300
Yel/Wht
Yel
D-1
EXTERNAL SAFETY INTERLOCKS
2040
2110
2110
CR211
4P
AC
FACTORY JUMPERED
SAFETY RELAY
NO 122,138,213
NC
UNIT START
SS213
OFF
AUTO
OX
D-1
AUTO S/S BY OTHERS
2130
2131
2131
CR211
2132
CR213
2P
AC
FACTORY JUMPERED
SAFETY RELAY
UNIT START RELAY
NO 301
NC
CR344
OA/EA DAMPER ENABLE
2160
ACTUATOR
OUTDOOR AIR DAMPER
ACTUATOR
EXHAUST AIR DAMPER
to 348
2040
to 300,325
2042

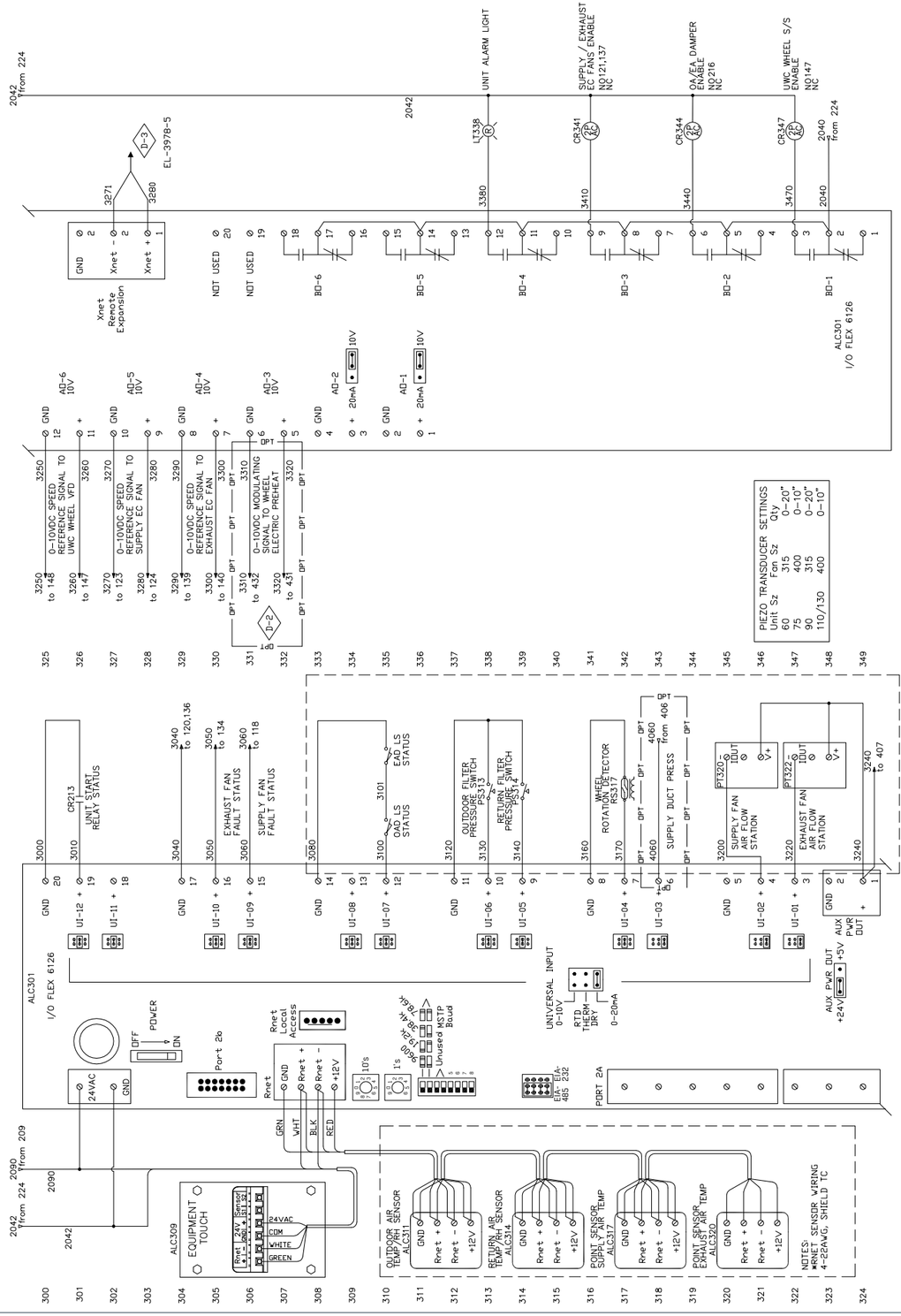

D-1
TERMINAL STRIP #2 FOR FIELD CONNECTIONS LOCATED IN SEMCO CONTROL PANEL.
ONE SET OF TERMINALS ARE PROVIDED FOR EXTERNAL SAFETY INTERLOCKS. REMOVE FACTORY JUMPER IF TERMINALS ARE USED.
2030
EXTERNAL SAFETY INTERLOCKS
BY OTHERS
FACTORY JUMPERED
2060
ONE SET OF TERMINALS ARE PROVIDED FOR AUTO S/S BY OTHERS
2090
AUTO S/S
BY OTHERS
2081
ONE SET OF TERMINALS ARE PROVIDED FOR OUTDOOR AIR DAMPER ENABLE BY OTHERS
2081
OUTDOOR AIR
DAMPER ENABLE
BY OTHERS
2082
3060
CR209
3061
OUTDOOR AIR
DAMPER LS STATUS
3061
FOR USE BY CONTROLS CONTRACTOR
3060
ONE SET OF TERMINALS ARE PROVIDED FOR EXHAUST AIR DAMPER ENABLE BY OTHERS
2081
EXHAUST AIR
DAMPER ENABLE
BY OTHERS
2100
3100
CR211
3101
EXHAUST AIR
DAMPER LS STATUS
3101
FOR USE BY CONTROLS CONTRACTOR
3100
ONE SET OF TERMINALS ARE PROVIDED FOR SUPPLY FAN ENABLE BY OTHERS.
2081
SUPPLY EC FAN ENABLE
BY OTHERS
2130
1170
1170
from 117
1170
SUPPLY EC FAN
FAULT
1180
1180
from 118
1180
ONE SET OF TERMINALS ARE PROVIDED FOR EXHAUST FAN ENABLE BY OTHERS.
2081
EXHAUST EC FAN ENABLE
BY OTHERS
2150
1330
1330
from 133
1330
EXHAUST EC FAN
FAULT
1340
1340
from 134
1340
ONE SET OF TERMINALS ARE PROVIDED FOR UWC WHEEL ENABLE BY OTHERS.
2081
UWC WHEEL ENABLE
BY OTHERS
2170
3420
3420
to 146
3420
(+) 0-10VDC
0-10VDC SPEED REFERENCE SIGNAL TO UWC WHEEL VFD
3430
3430
to 147
3430
(-) 0-10VDC

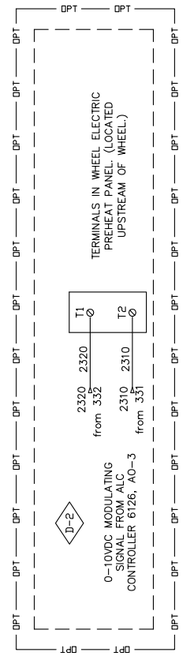
ELECTRICAL SCHEMATIC

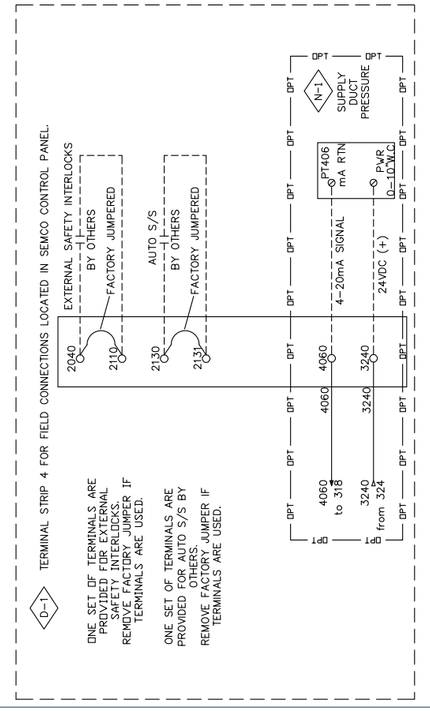
PRE-CONDITIONER FULL CONTROLS





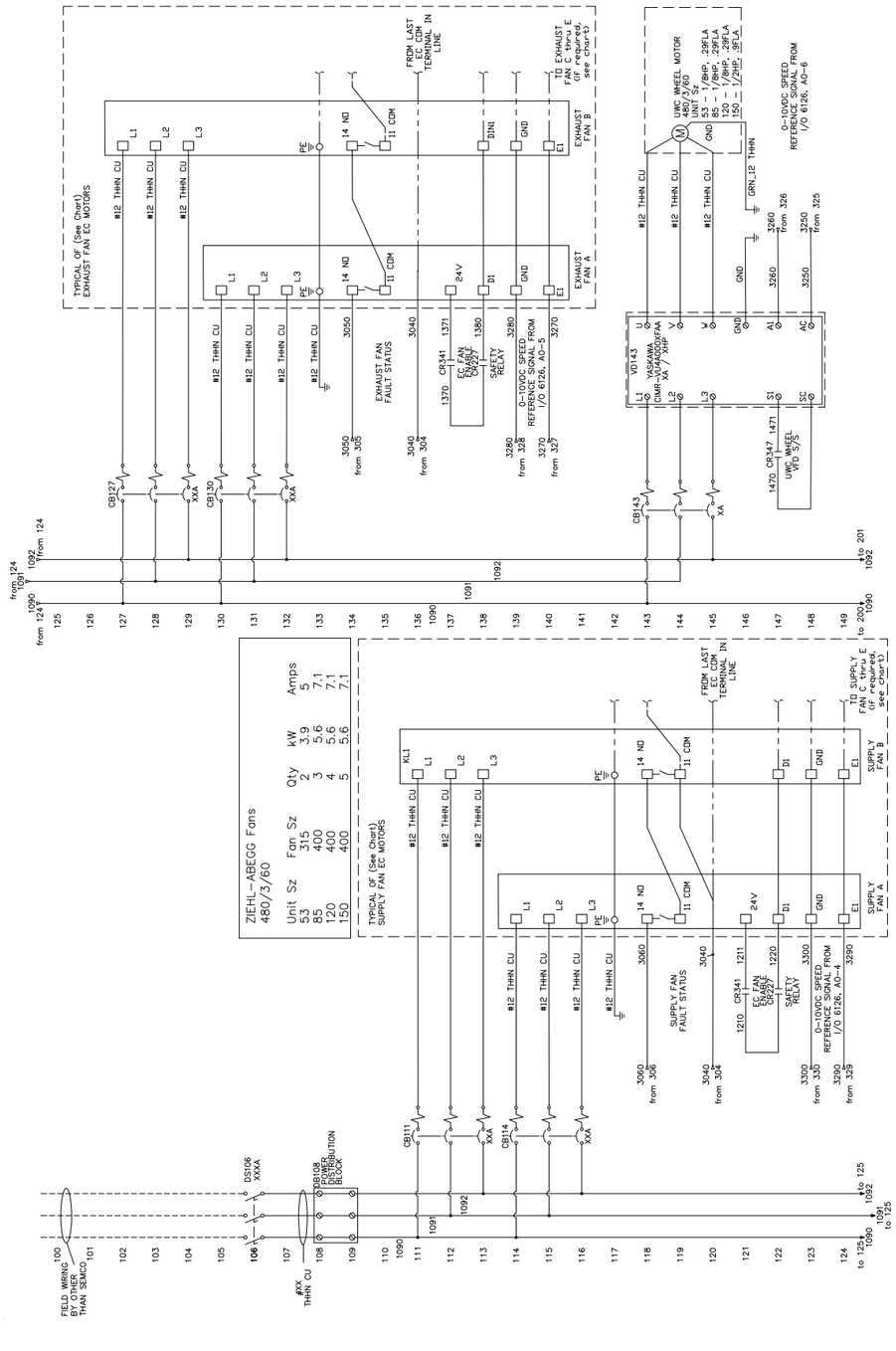

ALC301
I/O FLEX 6126
ALC309
EQUIPMENT TOUCH
Xnet Remote Expansion
EL-3978-5
UNIT ALARM LIGHT
SUPPLY / EXHAUST EC FANS ENABLE NO121,137 NC
OA/EA DAMPER ENABLE NO216 NC
UWC WHEEL S/S ENABLE NO147 NC
CR213 UNIT START RELAY STATUS
EXHAUST FAN FAULT STATUS
SUPPLY FAN FAULT STATUS
EAD LS STATUS
OAD LS STATUS
OUTDOOR FILTER PRESSURE SWITCH PS3,13
RETURN FILTER PRESSURE SWITCH PS4,14
WHEEL ROTATION DETECTOR RS37
SUPPLY DUCT PRESS from 406
SUPPLY FAN AIR FLOW STATION
EXHAUST FAN AIR FLOW STATION
NOT USED
BD-6
BD-5
BD-4
BD-3
BD-2
BD-1
AO-6 10V
AO-5 10V
AO-4 10V
AO-3 10V
AO-2 10V
AO-1 10V
0-10VDC SPEED REFERENCE SIGNAL TO UWC WHEEL VFD
0-10VDC SPEED REFERENCE SIGNAL TO SUPPLY EC FAN
0-10VDC SPEED REFERENCE SIGNAL TO EXHAUST EC FAN
0-10VDC MODULATING SIGNAL TO WHEEL ELECTRIC PREHEAT
UNIVERSAL INPUT 0-10V
RTD THERM DRY
0-20mA
AUX PWR OUT +24V
PORT 2A
Port 2b
Rnet Local Access
Rnet
Unused MSTP Baud
DIP
PDWR
DIFF
ON
24VAC
GND
GRN
WHT
BLK
RED
OUTDOOR AIR TEMP/RH SENSOR ALC311
RETURN AIR TEMP/RH SENSOR ALC314
POINT SENSOR SUPPLY AIR TEMP ALC317
POINT SENSOR EXHAUST AIR TEMP ALC320
NOTES:
*RNET SENSOR WIRING 4-22AWG, SHIELD TC
PIEZO TRANSDUCER SETTINGS
Unit Size For S2 Only
60 315 0-20"
75 400 0-10"
90 315 0-20"
110/130 400 0-10"
DPT
from 224
from 209

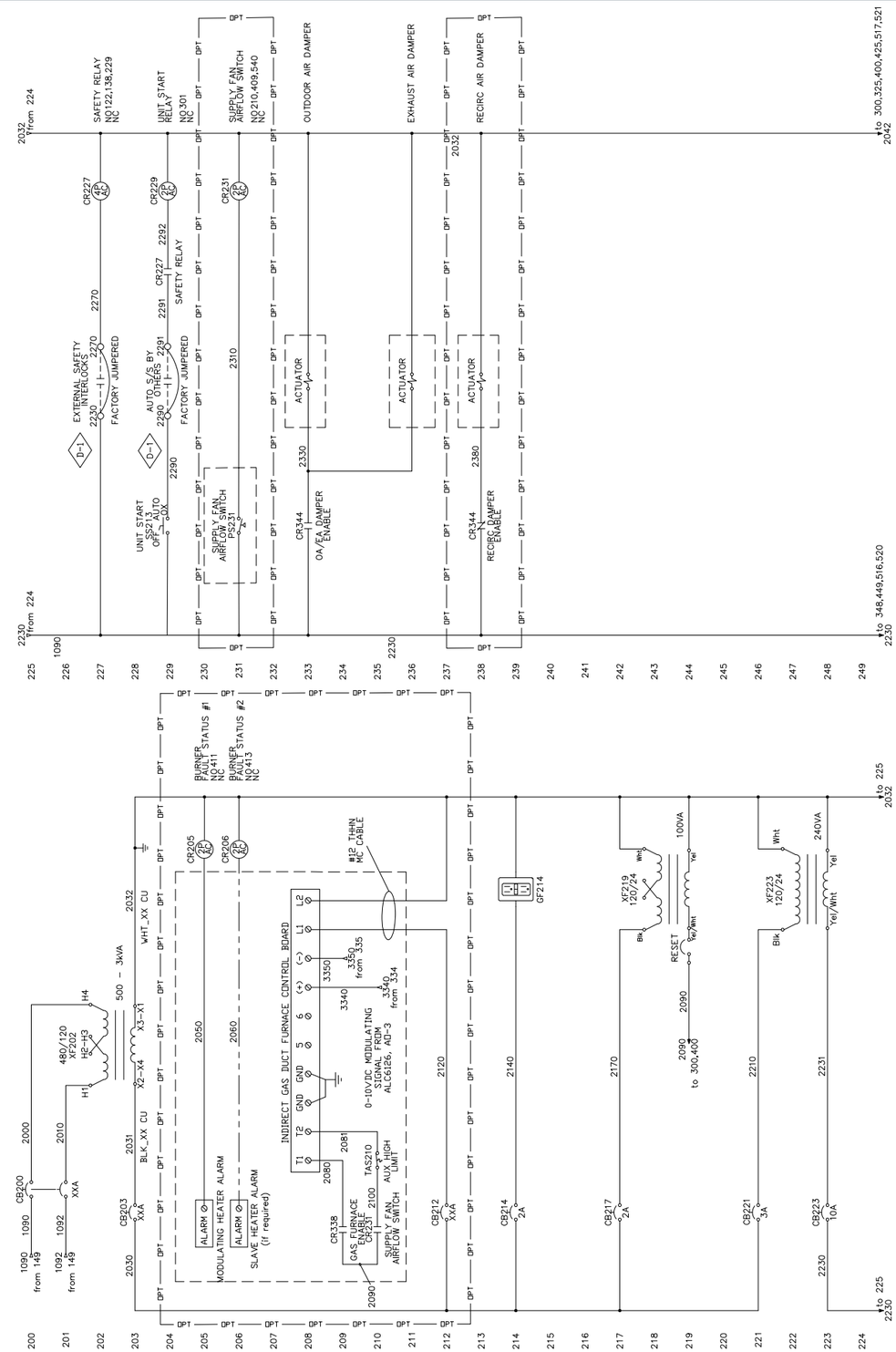

TERMINALS IN WHEEL ELECTRIC PREHEAT PANEL. (LOCATED UPSTREAM OF WHEEL.)
T1
T2
2320
2310
from 332
from 331
0-10VDC MODULATING SIGNAL FROM ALC CONTROLLER 6126, AO-3
DPT


TERMINAL STRIP 4 FOR FIELD CONNECTIONS LOCATED IN SEMCO CONTROL PANEL.
ONE SET OF TERMINALS ARE PROVIDED FOR EXTERNAL SAFETY INTERLOCKS. REMOVE FACTORY JUMPER IF TERMINALS ARE USED.
ONE SET OF TERMINALS ARE PROVIDED FOR AUTO S/S BY OTHERS. REMOVE FACTORY JUMPER IF TERMINALS ARE USED.
EXTERNAL SAFETY INTERLOCKS BY OTHERS
FACTORY JUMPERED
AUTO S/S BY OTHERS
FACTORY JUMPERED
SUPPLY DUCT PRESSURE
PT406
4-20mA SIGNAL
24VDC (+)
DPT
from 324
to 318

ELECTRICAL SCHEMATIC

SINGLE WHEEL UNITS FULL CONTROLS



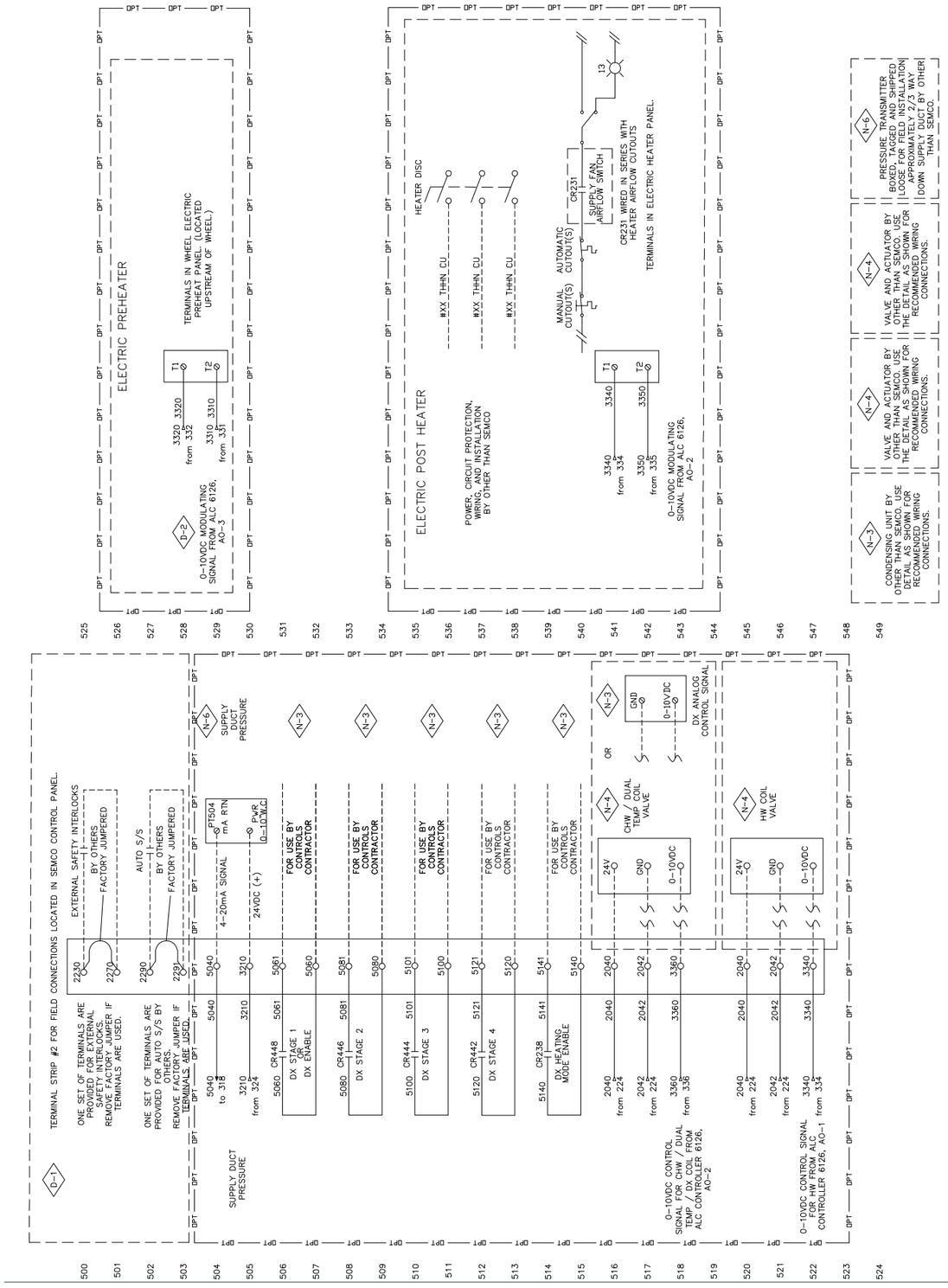


ALC301
I/O FLEX 6126
Xnet
Remote
Expansion
GND
Xnet -
Xnet +
3271
3281
2042
from 224
UNIT ALARM LIGHT
GAS FURNACE ENABLE
NO 209
NC
SUPPLY / EXHAUST
EC FANS ENABLE
NO 121,137
NC
GA/EL/RA DAMPER
ENABLE
NO 233
NC 238
UWC WHEEL S/S
ENABLE
NO
NC 147
NOT USED
BD-6
BD-5
BD-4
BD-3
BD-2
BD-1
LT335
CR138
CR241
CR244
CR247
3351
3380
3410
3440
3470
2040
from 224
RAIN WIRES FROM
R AND Y DELTAGF
NO
D-1
EL-3970-5
0-10VDC SPEED
REFERENCE SIGNAL TO
ENTHALPY WHEEL VFD
0-10VDC SPEED
REFERENCE SIGNAL TO
EXHAUST EC FANS
0-10VDC SPEED
REFERENCE SIGNAL TO
SUPPLY EC FANS
0-10VDC MODULATING
SIGNAL TO WHEEL
ELECTRIC PREHEAT
0-10VDC CONTROL SIGNAL
FOR HW / INDIRECT GAS
/ POST ELECTRIC HEAT
0-10VDC CONTROL
SIGNAL FOR CHW /
DUAL TEMP DX COIL
AO-6
AO-5
AO-4
AO-3
AO-2
AO-1
10V
20mA
3250
3260
3270
3280
3290
3300
3310
3320
3340
3350
3360
3250
to 148
3260
to 147
3270
to 140
3280
to 139
3290
to 124
3300
to 123
3310
to 524
3320
to 523
3340
to 210,522,541
3350
to 209,542
3360
to 518
D-2
D-1

ALC309
EQUIPMENT
TOUCH
Rnet 24V Sensor
24VAC
COM
WHITE
GREEN
ALC301
I/O FLEX 6126
UNIT START
RELAY STATUS
EXHAUST FAN
FAULT STATUS
SUPPLY FAN
FAULT STATUS
OUTDOOR FILTER
PRESSURE SWITCH
PS313
RETURN FILTER
PRESSURE SWITCH
PS314
WHEEL
ROTATION
DETECTOR
RS217
AUTO RESET
FREEZESTAT
FZ309
EAD LS
STATUS
OAD LS
STATUS
SUPPLY DUCT PRESS
SUPPLY FAN
AIR FLOW
STATION
EXHAUST FAN
AIR FLOW
STATION
AUX PWR
OUT
UNIVERSAL INPUT
0-10V
RTD
THERM
DRY
0-20mA
AUX PWR OUT
+24V
+5V
Rnet
Local
Access
Rnet
Unused MSTP
Baud
9600
19.2k
38.4k
76.8k
EIA-
485
EIA-
232
PORT 2A
Port 2b
OFF
POWER
ON
OUTDOOR AIR
TEMP/RH
ALC311
RETURN AIR
TEMP/RH
ALC315
POINT SENSOR
SUPPLY AIR TEMP
ALC317
POINT SENSOR
EXHAUST AIR TEMP
ALC320
POINT SENSOR
DUAL TEMP
ENTERING AIR
ALC323
GRN
WHT
BLK
RED
NOTES:
*RNET SENSOR WIRING
4-22AWG, SHIELD TC

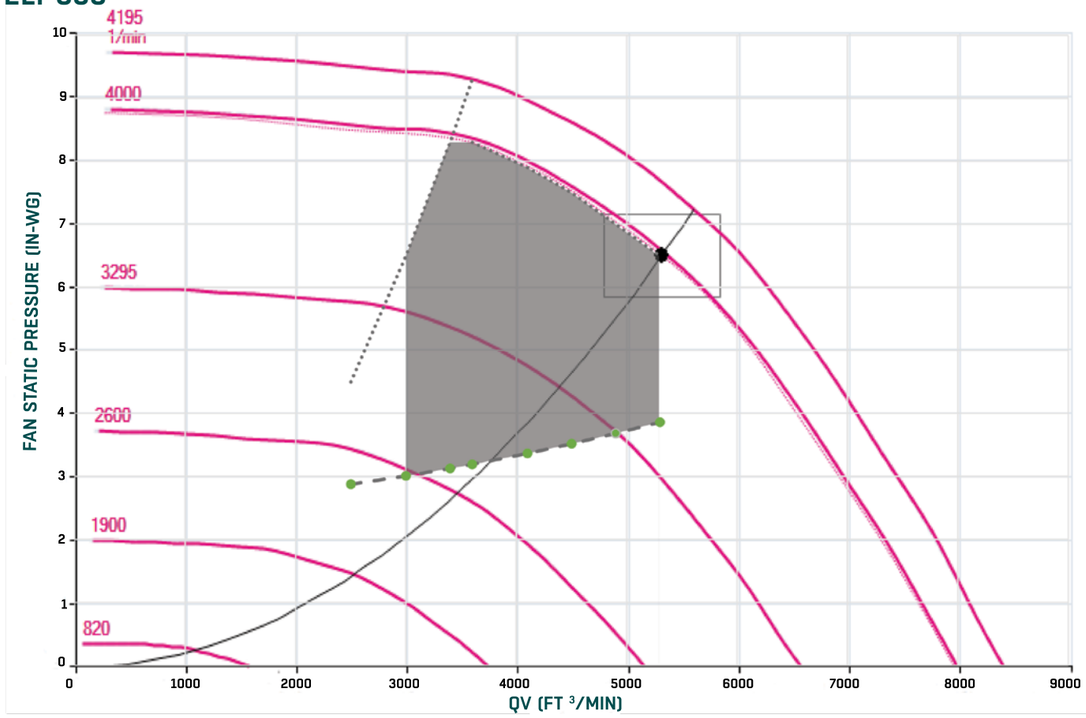
Xnet
Remote
Expansion
GND
Xnet -
Xnet +
3271
3281
2042
from 224
DIGITAL
INPUTS
1-8
BD-8
BD-7
BD-6
BD-5
BD-4
BD-3
BD-2
BD-1
DX STAGE 4
NO 512
NC
DX STAGE 3
NO 510
NC
DX STAGE 2
NO 508
NC
DX STAGE 1
DX ENABLE
NO 506
NC
CR442
CR444
CR446
CR448
4420
4440
4460
4480
2040
from 224
D-1

I/O FLEX EX8160
AL401
24VAC
GND
OFF
POWER
ON
62.5k
500k
Xnet
Baud
Expander
Address
Run
Error
2090
from 209
2042
from 224
CR231
SUPPLY FAN
AIRFLOW SWITCH
CR205
BURNER
FAULT STATUS #1
CR206
BURNER
FAULT STATUS #2
UNIVERSAL
INPUTS
9-16
0-5V
THERM/
DRY
0-5V
(NO TH)
THERM/
DRY

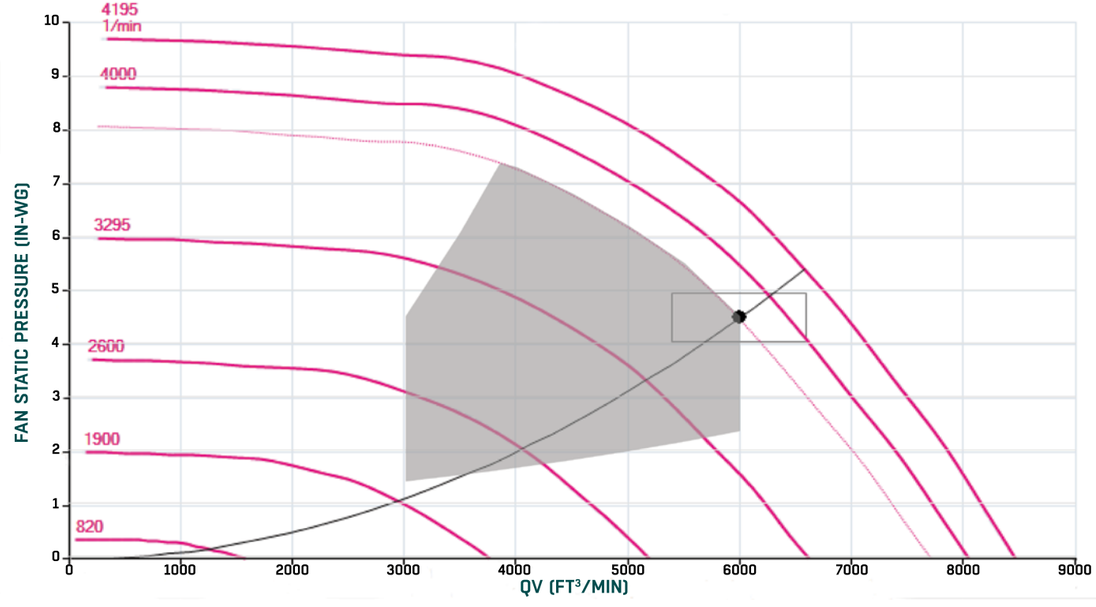


FAN CURVES

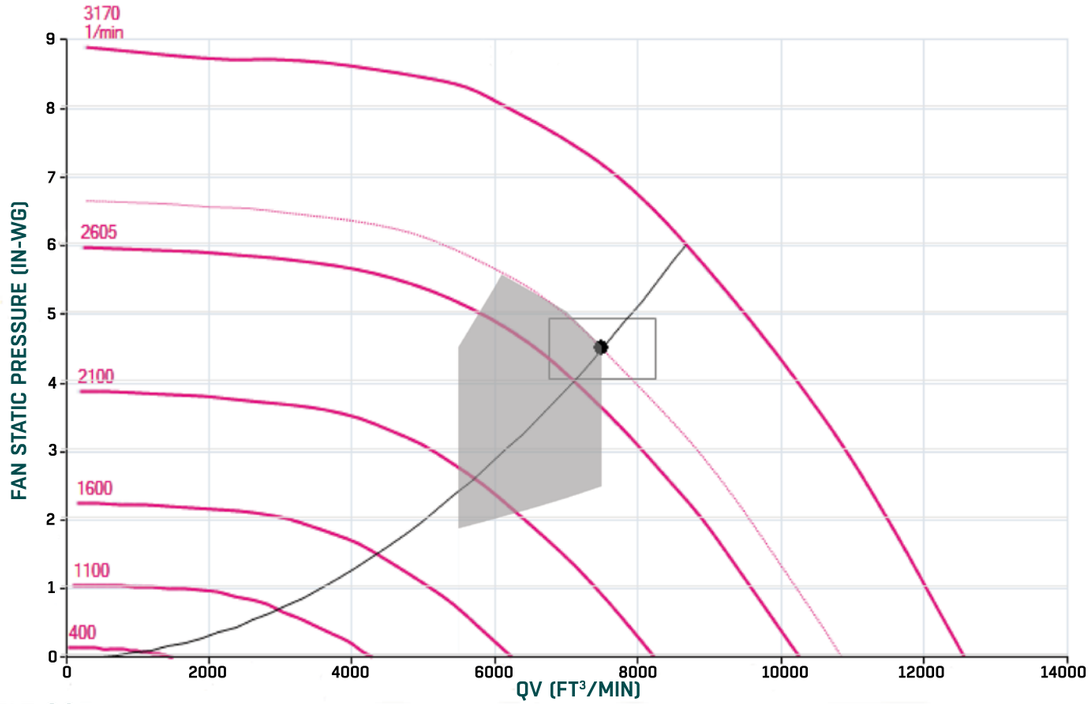
ELT-053



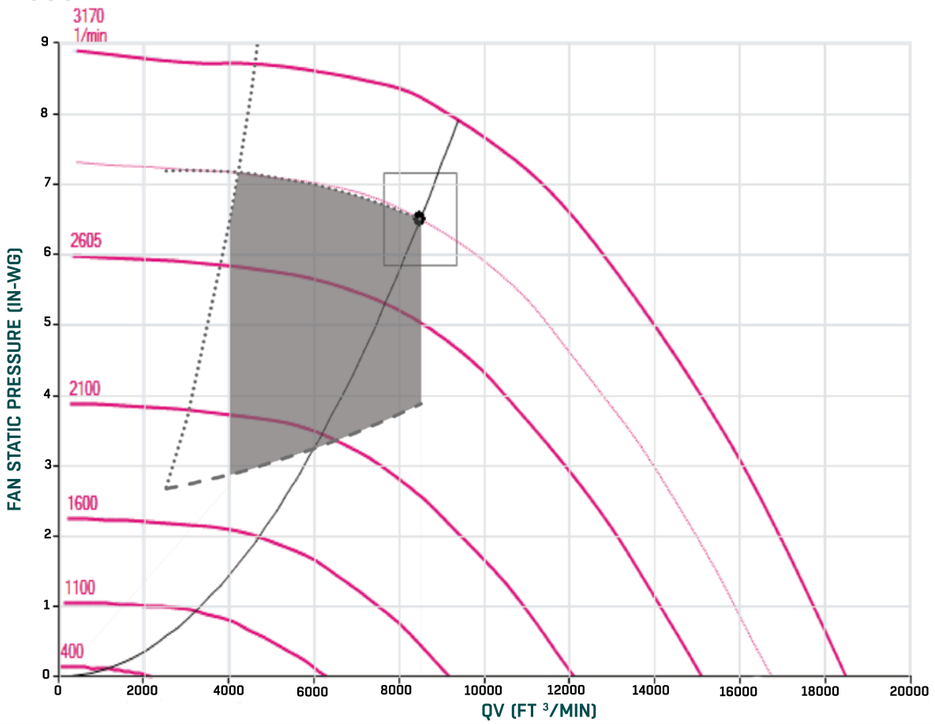
ELT-060



ELT-075



ELT-085



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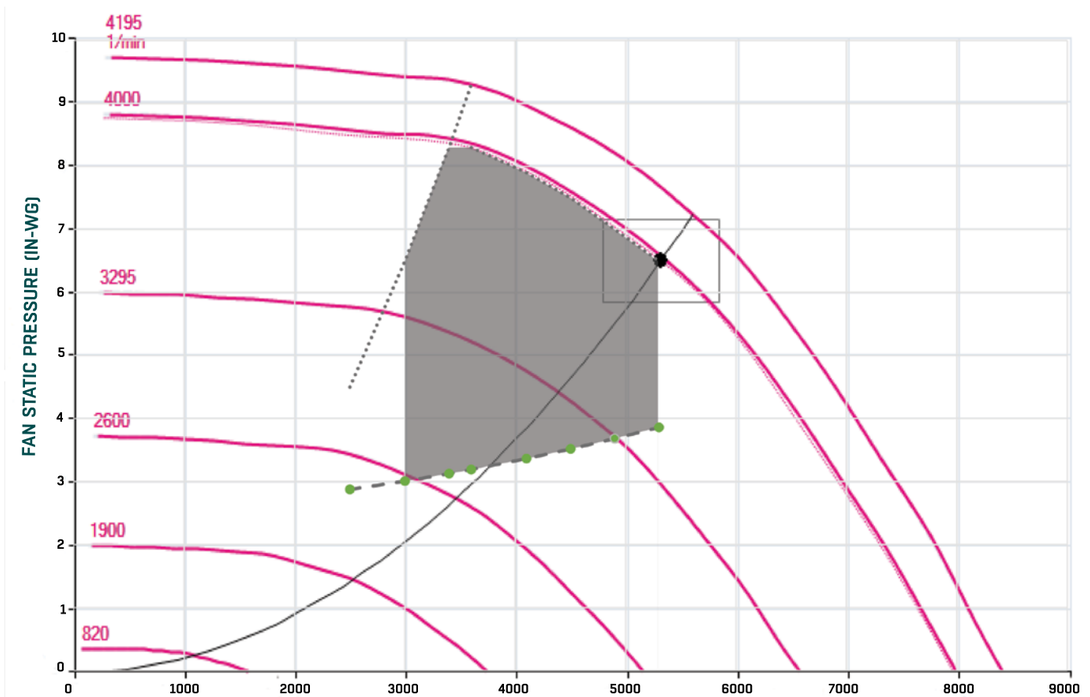
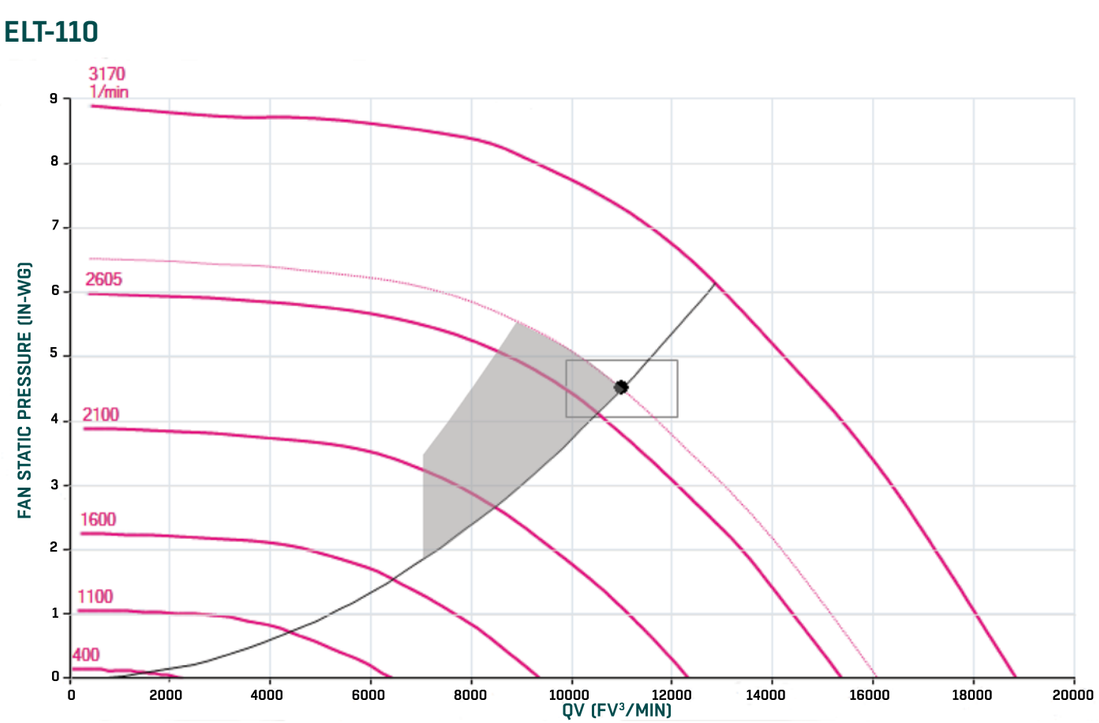


ELT-110



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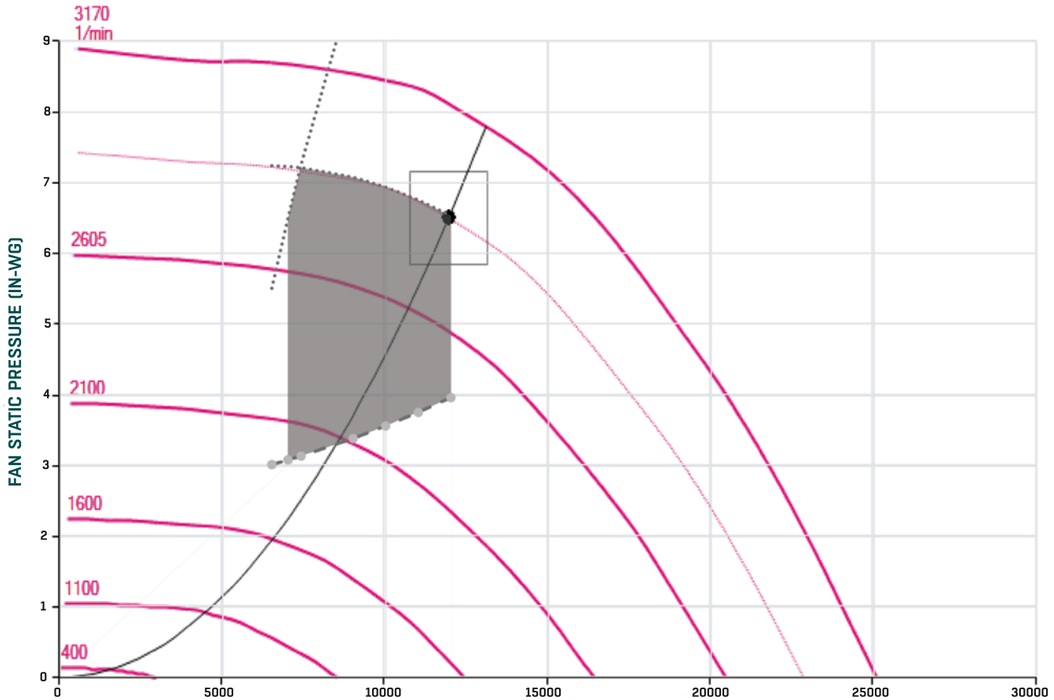
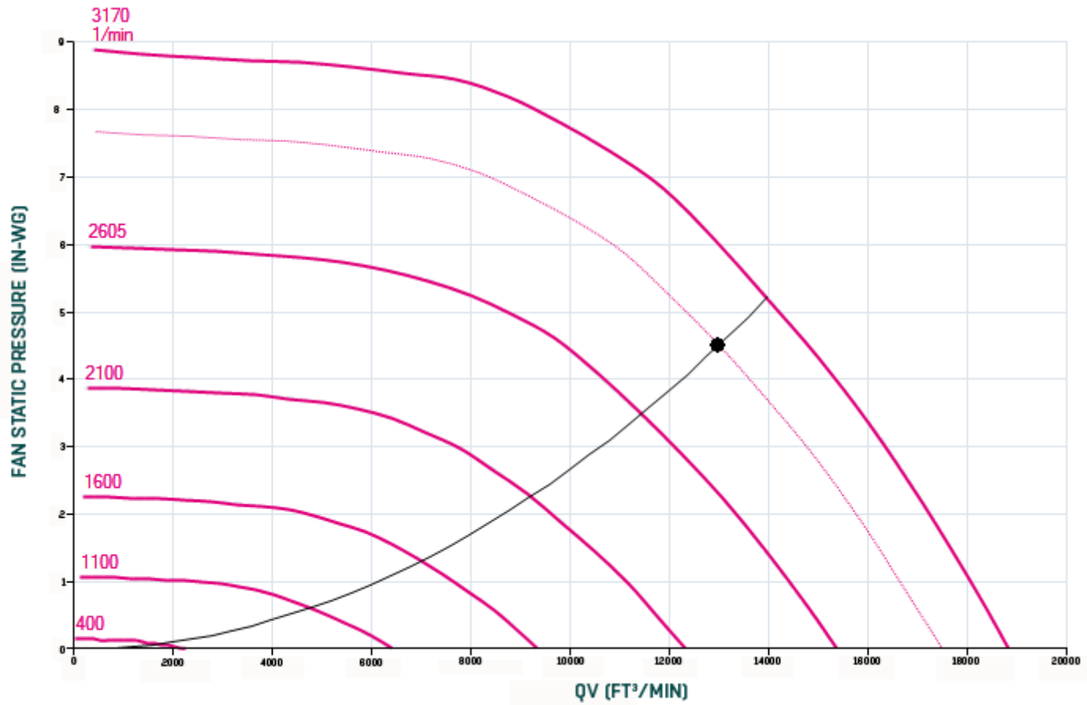
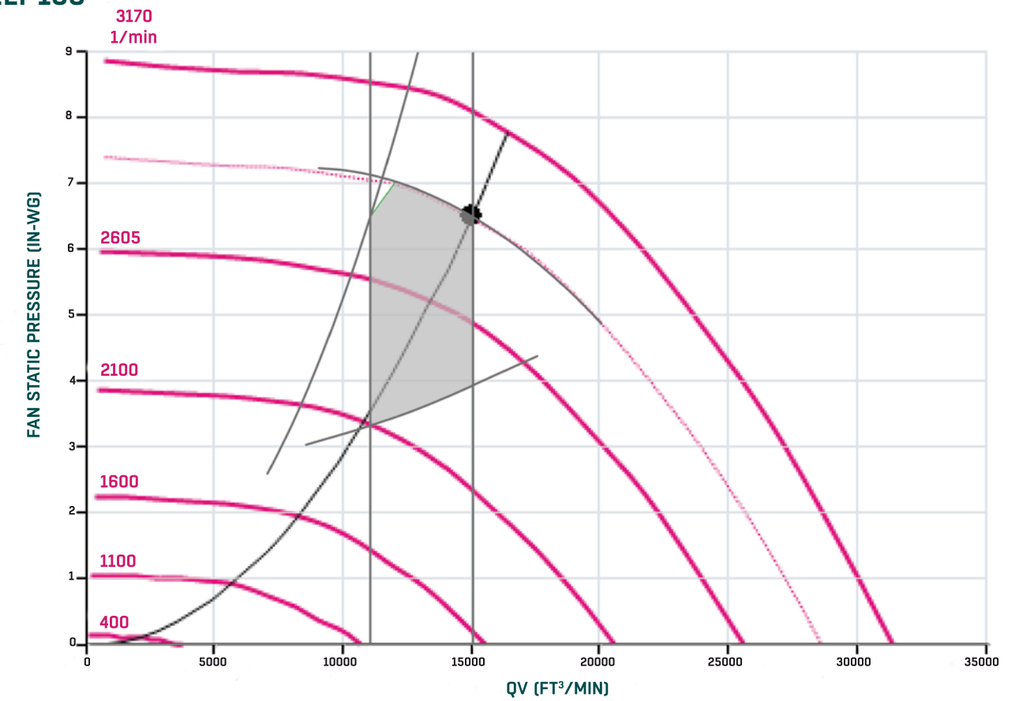


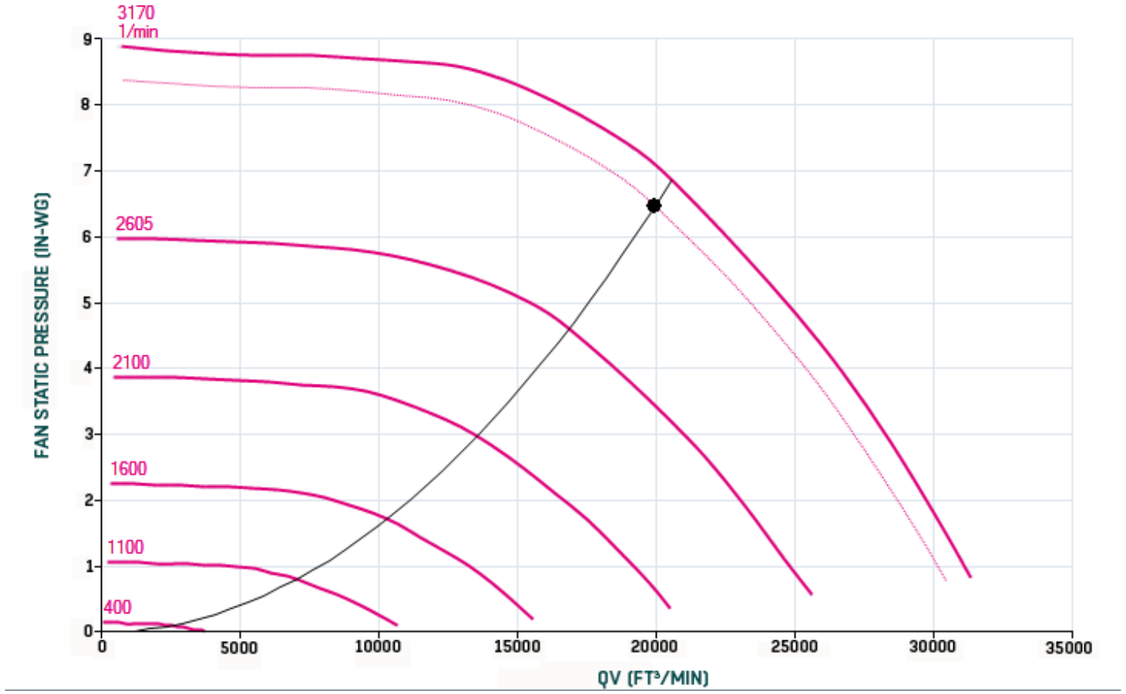
ELT-130



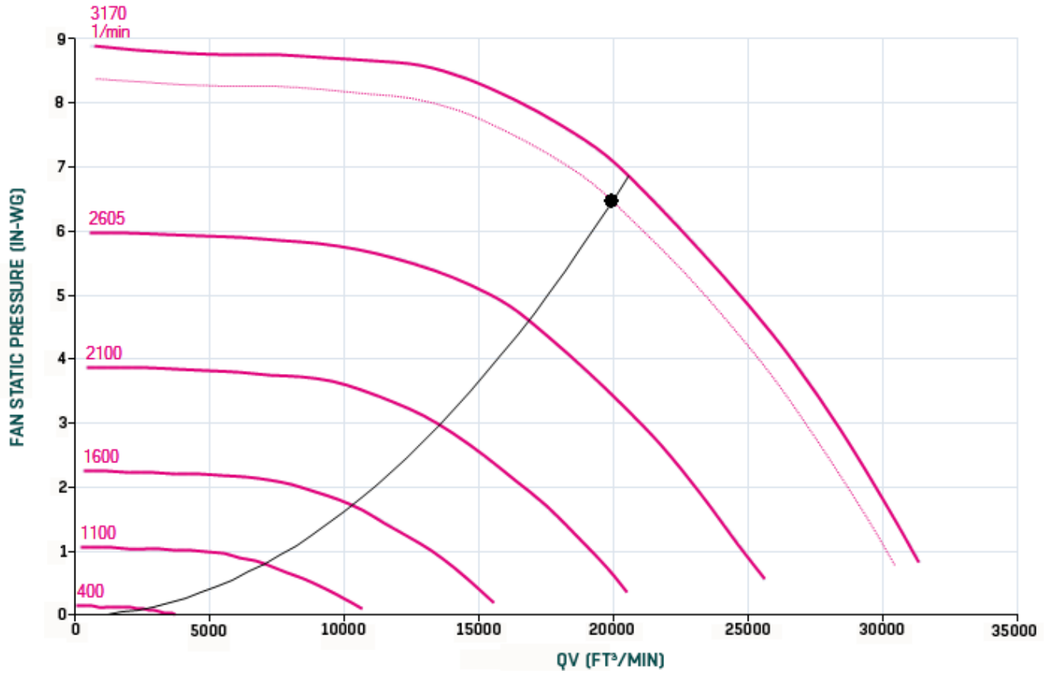
ELT-150



ELT-175



ELT-200



SAMPLE SPECIFICATIONS - 'ELITEPRO' SERIES ENERGY RECOVERY UNIT

Energy recovery units will be FLäktGroup SEMCO standard 'ElitePro' series with components as follows:

CASING

All panels shall be double wall construction, load-bearing and capable of forming the enclosure without additional structural members. All panel joints shall be sealed to provide a permanent air-tight seal.

Individual panels shall consist of a double-wall "sandwich" construction of an outer liner and an inner liner that are precision CNC cut and formed. The Inner liner is inserted into the outer liner, creating a completely enclosed void. This void is injected under pressure with a two-part polyurethane foam system in a temperature and pressure controlled press. No foam is exposed. All inner and outer panels' liners shall be 20 Ga. metal. All panels shall be 2" thick with a U-factor of 0.0777 BTU/(hr-sq.ft.-deg). The cabinet shall be air and water tight by individually sealing each panel joint with a sealant. The compression strips shall be mounted on the exterior of the units, the fasteners shall be exposed to the exterior of the unit. Standard units feature a galvanized finish. Exterior paint is available as an optional feature. When the paint option is selected, the exterior of the unit is coated with an epoxy primer and a polyurethane enamel painting system for added protection. The painting system is rated to meet a 1,000-hour salt spray test.

BASE FRAME

12Ga Galvanized channels are precision punched and formed. Assembly of 12 Ga channels is achieved with a nut and bolt fastening system. The unit floor is the same construction as the walls/roof panels (refer to **CASING** above). Panels are held 'captive' between the perimeter channels and the rigid panels complement each other to create a solid unified base frame assembly. Base height is variable – depending on requirements. Extra flashing for curb mount application is built into perimeter channels.

ACCESS

Access will be provided through large hinged, tightly sealed doors or easily removable access panels. Access doors will be constructed of the same materials as the unit casing and use SEMCO's standard hardware. Each door will be provided with two or three cam type handles, and two or three heavy duty hinges to achieve maximum sealing. Handles are to be internal and external for opening from the inside or outside of the unit, with the exception of the electrical cabinet. Each electrical cabinet will be equipped with just one handle. Those handles will be located on the outside of the unit.

EC FANS

Fans are wall-mounted centrifugal type, supplied with high efficiency (IE4) permanent magnet external rotor EC-motors. The high efficiency rating is due to a permanent magnet fitted into the motor. The magnet helps eliminate rotor losses, resulting in the use of less magnetic current. Motors are equipped with integrated fan speed control electronics. Fan speed can be controlled using the UNIcon Modbus® master field device.

MOTOR SPECIFICATION

- Single-sided intake, rear-curved motor impeller, energy optimized for operation without spiral housing through special blade design with a rotating, vaneless diffuser for high efficiency and with favorable acoustic behavior.
- Impeller Ø 250-630 mm in 9 frame sizes
- Centrifugal impeller made of high-strength ZAmid composite material, with external rotor motor statically and dynamically balanced according to ISO 21940 Part 1
- Fitting position: horizontal and vertical
- Impeller with rotating diffuser
- Admissible environmental temperature from -20°C up to + 60°C
- Design with integrated electronics
- Over-temperature protection of the device electronics through active temperature management
- Motor painted RAL 5002 (ultramarine blue); Impeller color: RAL 5002 (ultramarine blue)
- Degree of protection IP 55
- Thermal class 155
- The motor efficiency class complies with IE5
- Performance specifications comply with Precision Class 2 according to DIN 24166

FAN SPECIFICATION

- 7 rear curved, profile blades
- Galvanized inlet nozzle with volume flow rate measuring with volume flow rate measuring equipment.
- Fan characteristic curve refer to measurements made on an inlet-side chamber test rig according to DIN 24163 Part 2 or ISO 5801

ENTHALPY RECOVERY WHEEL

The enthalpy recovery wheel is optimized for wheel pressure loss to minimize fan energy while still providing a good total recovery efficiency. The rotor media is made of aluminum formed into a fluted honeycomb matrix, which is coated to prohibit corrosion. All surfaces are coated with a non-migrating zeolite desiccant composite designed to maximize latent recovery while reducing the transfer of airborne contaminants compared to silica gel or oxidized aluminum recovery wheels. The wheel media is a permanent component with an estimated 20 year life and not a "throw away" item. The component is compatible with all heating sources without damage and designed to accommodate operating conditions up to 180˚F. The product is AHRI certified. The recovery media has been independently tested by a recognized laboratory to show compliance with UL-900 requirements regarding smoke generation and combustibility.

Equal sensible and latent recovery efficiencies are documented through a certification program conducted in accordance with ASHRAE 84-78P, and the results presented in accordance with AHRI 1060 standards. The certification has been conducted by a qualified independent organization.

Independent wheel testing from a credible test laboratory, documents that the desiccant material utilized does not transfer pollutants typically encountered in the indoor air environment. The cross-contamination and performance certification reports will be provided upon written request for engineering review.

MEDIA CLEANING

The media shall be cleanable with low pressure steam (less than 5 PSI), hot water or light detergent, without degrading the latent recovery. Dry particles up to 800 microns will freely pass through the media.

PURGE SECTOR

The unit must be available with a purge sector designed to limit cross-contamination of the exhaust air stream concentration when operated under appropriate design conditions.

ROTOR SEALS

The rotor is supplied with pre-adjusted low leakage hybrid brush seals to separate the two air streams.

ROTOR SUPPORT SYSTEM

The rotor media is re-enforced with an aluminum structural spoke system, extruded central hub and shaft sized to limit deflection and to ensure long-term structural integrity.

ROTOR HOUSING

The rotor housing is designed to limit deflection of the rotor due to air pressure loss. The sheet metal panels are made of galvanized steel painted with polyurethane enamel to prevent corrosion. The rotor is supported by prevent corrosion. The rotor is supported by two pillow block bearings which can be maintained or replaced without the removal of the rotor from its casing or the media from its spoke system.

DRIVE SYSTEM

The rotor is driven by a V-belt system. A/C motors are utilized for both constant and variable speed applications.

WHEEL CONTROL SYSTEM

See the wiring schematic and **SEQUENCE OF OPERATION** for information on wheel control.

PRE-FILTERS (RETURN & OUTSIDE AIR)

Filters will be standard MERV 8 or (optional) MERV 13. Air filters will be 2" thick, pleated, disposable type. Each filter will consist of a non-woven cotton and synthetic fabric media, media support grid and enclosing frame. The filter media will have an average efficiency of 80% on ASHRAE test standards. The filter is listed by Underwriters' Laboratories as Class 2. A bank of galvanized holding frames will be arranged for upstream access.

Additional filters for outdoor applications will be mounted in the outside air hood, and shall be 1" thick permanent aluminum washable type.

OUTDOOR AIR & EXHAUST AIR DAMPERS

Dampers will have extruded aluminum frames and blades, with blade and jamb seals for low leakage performances. Dampers will have 24-Volt electric spring return actuators (two-position) with an integral limit switch.

ELECTRICAL

Unit will require a 480-Volt, 3-phase, 60-cycle field power connection at the main electrical panel. The electrical panel will be integrated into the unit construction. Access doors are provided separately for the low voltage and high voltage compartments. The electric panel will consist of a non-fused disconnect and HOA switch for the unit. Separate branch circuits, each with over-current protection, are provided for each fan, wheel, and transformer. IEC full voltage starters are provided for each non VFD controlled fan and wheel. All 120 and high volt wiring up through size #2 will be

run in MC cable. Plenum cable is used for low voltage wiring and is not run in conduit. All wire size #1 and larger wire is run in EMT. Fan motors requiring wire run in EMT will have less than 48" of flexible metal conduit between the EMT and motor junction box. Starter coils will be 24-Volt AC for contractors rated 75 amps or less and 120-Volt AC for contractors rated greater than 75 amps.

COILS

CHILLED WATER, DX AND HOT WATER COILS

Primary surface should be round, seamless 5/8-inch O.D. by 0.020 inch thick copper tube on 1.5 inch centers, staggered in the direction of airflow. All joints shall be brazed.

Secondary surface shall consist of 0.006 (0.0075 for heating coils) inch rippled aluminum plate fins for higher capacity and structural strength. Fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Bare copper tubes shall not be visible between fins and the fins shall have no openings punched in them to prevent the accumulation of lint and dirt. Tubes shall be mechanically expanded into the fins to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates.

Casings shall be constructed of continuous galvanized steel. Coil side plates shall be of reinforced flange type. Coils shall have equal pressure drop through all circuits. Coils shall be circuited for counter flow heat transfer to provide maximum heat transfer rates.

Headers on coils shall be seamless copper tubing. The headers shall have intruded tube holes to provide a large brazing surface for maximum strength and inherent flexibility. Supply and return connections on water coils shall be steel with male pipe threads. DX coils shall have copper sweat connections.

The complete coil core shall be tested with 315 psig air pressure under warm water and be suitable for operation at 250 psig working pressures.

Individual tube tests and core tests before installation of headers shall not be considered satisfactory. Water cooling coils shall be circuited for drainability. Use of internal restrictive devices to obtain turbulent flow shall not be acceptable. Vents and drains shall be furnished on all water coils. Coils shall be rated in accordance with ARI.

Coils shall be mounted in galvanized holding racks. Water coil supply and return connections shall be extended to the unit exterior. Water coil drain and vent connections are accessible from the interior of the unit and are not extended. Cooling coils shall be mounted in an insulated pitched 304 stainless steel condensate pan.

OPTIONAL INDIRECT GAS FURNACE

The duct furnace module will be indirect fired and comply with the current edition of the ANSI Z83.8 Standard for Gas-Fired Duct Furnaces and be recognized by Intertek Testing Services (ITS/ETL).

The duct furnace module will employ patented inshot gas burners with integral carryovers, a tubular heat exchanger assembly, a two speed draft inducer to provide for the positive venting of flue gases, air pressure switches to provide proof of air supply for combustion, direct spark ignition of the gas burners with remote flame sensor to prove carryover across all burners, an automatic reset type high limit switch to limit maximum outlet air temperature to less than, 250˚F, manual reset flame rollout switches and a two stage redundant safety shut-off gas valve which regulates gas pressure to burner supply manifold.

Duct furnace modules will be listed for application downstream of refrigeration and cooling systems and will provide means for removal of condensate that occurs in the tubes during cooling operation.

Heat exchanger tubes will have the dimpled restrictors formed to provide for an unobstructed drainage path and tubes will be formed to provide a positive pitch to promote condensate drainage. Drainage will be configured so that burners and burner surfaces are not exposed to condensate.

Duct furnace will incorporate a direct spark ignition control module which is design certified by a recognized national testing agency. The control will incorporate a 30 second minimum pre-purge period prior to trial for ignition and a 0.8 second flame failure response time. The control will provide for up to 3 ignition retrials, each preceded by an interpurge period. Control will provide for automatic reset after one hour, to initiate additional ignition trials if lockout occurs during a call for heat. The control will incorporate an LED indicator light to provide a flash code to identify the operating condition of the control and conditions preventing normal operation of the ignition system should they occur.

OPTIONAL ELECTRIC PRE-HEAT COIL

Coil shall be of the resistance coil type with elements enclosed in a steal sheath with fins and painted with a baked-on aluminum paint for long life in a 100% fresh air stream. Coil shall include thermal cutout protection and a secondary manual reset linear thermal cutout. Coil shall have magnetic safety and backup

contractors, main disconnect, fusing, control circuit transformer, air flow interlock switch and SCR controller. Coil shall be UL listed and constructed in accordance with NEC requirements. Coil shall require a separate power hit. A temperature controller located in the outdoor air section of the unit shall supply the signal to the SCR controller.

UNIT FIELD INSTALLATION

LOOSE SHIPPED ITEMS

Such as filters and outdoor and exhaust air hoods may require field installation. Other project specific items such as duct sensors, duct mounted air flow stations, and other items to be installed outside the unit will be boxed and tagged and shipped with the unit for field installation.

PACKING LIST & IOM MANUAL

Are included with the shipment and should be referenced before installation.

SOLE & EXCLUSIVE WARRANTY

FläktGroup SEMCO warrants to the buyer, that for a period of 18 months from the date of shipment by FläktGroup SEMCO the goods to be delivered to buyer will in all material respects be free from defects in material and workmanship when used in a proper and normal manner. Should any failure to conform to the above appear within eighteen months after the date of shipment by FläktGroup SEMCO (the "Limited Warranty Period"), SEMCO agrees upon prompt notification thereof during the Limited Warranty Period and confirmation to SEMCO's satisfaction that the goods have been stored, installed, operated, and maintained properly in accordance with standard industry practice, to correct the non-conformity at SEMCO's option either by repairing any defective part or parts by making available at SEMCO's plant a repaired or replacement part.

INSTALLED EQUIPMENT

FläktGroup SEMCO reserves the right to substitute installed components (i.e. fans, coils) that meet or exceed performance and construction as submitted. In the event of substitution, a final record copy submittal will incorporate all changes as built. Customers requests for specific component manufacturers may incur additional costs and impact delivery dates.

ELITEPRO EQUIPMENT SUMMARY - SINGLE WHEEL

MODEL SIZE	ELT-053	ELT-060	ELT-075	ELT-085	ELT - 090	ELT-110	ELT-120
WIDTH (INCHES)	75.0	67.5	73.4	89.0"	79.2	83.2	93.0
HEIGHT (INCHES)	75.0	76.3	82.6	89.0	88.1	91.3	110.0
LENGTH (INCHES)	VARIES DEPENDING ON UNIT TYPE	91.4	109.7	VARIES DEPENDING ON UNIT TYPE	111.2	123.1	VARIES DEPENDING ON TYPE
SUPPLY AIR CFM RANGE	3,000 CFM - 5,300 CFM	4,000 CFM - 6,000 CFM	5,500 CFM - 7,500 CFM	4,000 CFM - 8,500 CFM	7,000 CFM - 9,000 CFM	9,000 CFM - 11,000 CFM	7,000 CFM - 12,000 CFM
RETURN AIR CFM RANGE	3,000 CFM - 5,300 CFM	4,000 CFM - 6,000 CFM	5,500 CFM - 7,500 CFM	4,000 CFM - 8,500 CFM	7,000 CFM - 9,000 CFM	8,000 CFM - 11,000 CFM	7,000 CFM - 12,000 CFM
SUPPLY FILTER	16" x 25" (4)	15" x 20" (6)	16" x 20" (20), 16" x 24" (1), 18" x 20" (2), 18" x 24" (1)	20" x 20" (2), 20" x 24" (4)	16" x 24" (3), 20" x 24" (3)	20" x 24" (3), 24" x 24" (3)	20" x 20" (2), 20" x 24" (4), 24" x 24" (2)
RETURN FILTER	16" x 25" (1), 20" x 25" (2)	15" x 20" (6)	16" x 20" (20), 16" x 24" (1), 18" x 20" (2), 18" x 24" (1)	16" x 20" (2), 16" x 25" (4)	16" x 24" (3), 20" x 24" (3)	20" x 24" (3), 24" x 24" (3)	16" x 20" (6), 16" x 25" (2)

MODEL SIZE	ELT-130	ELT-150	ELT-175	ELT-200
WIDTH (INCHES)	90.0	102.0	113.0	113.0
HEIGHT (INCHES)	98.0	131.0	131.0	131.0
LENGTH (INCHES)	135.0	VARIES DEPENDING ON UNIT TYPE	VARIES DEPENDING ON UNIT TYPE	VARIES DEPENDING ON UNIT TYPE
SUPPLY AIR CFM RANGE	10,000 CFM - 13,000 CFM	11,000 CFM - 15,000 CFM	14,000 CFM - 17,500 CFM	16,000 CFM - 20,000 CFM
RETURN AIR CFM RANGE	10,000 CFM - 13,000 CFM	11,000 CFM - 15,000 CFM	14,000 CFM - 17,500 CFM	16,000 CFM - 20,000 CFM
SUPPLY FILTER	20" x 24" (8)	20" x 24" (5), 24" x 24" (5)	16" x 20" (10) 18" x 20" (5)	20" x 20" (15)
RETURN FILTER	20" x 24" (8)	20" x 20" (10)	20" x 24" (10)	18" x 20" (15)

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FläktGroup® SEMCO® delivers smart, energy-efficient, air-quality solutions to support every building application. We offer our customers innovative technologies, high-quality products and outstanding performance supported by more than fifty years of accumulated industry experience. The broadest offering on the market and a strong market presence in 65 countries worldwide guarantees that we are always by your side, ready to deliver.

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