

PIPING LEGEND

HOSE END BALL VALVE WITH CAP AND CHAIN

2-WAY MODULATING PRESSURE INDEPENDENT ACV

AUTOMATIC FLOW LIMITING VALVE (PRESSURE INDEPENDENT)

COMBINATION FLOW METER/SHUT-OFF/BALANCING VALVE (CIRCUIT SE

———I → PLUG VALVE

**BLIND FLANGE** 

PIPE - CAPPED

PRESSURE/THERMOMETER WELL

CLEANOUT FOR CONDENSATE DRAIN

AIR VENT - AUTOMATIC

AIR VENT - MANUAL

DIRECTION OF FLOW

PIPE - DOWN

PIPE - UP

BALL VALVE

FLEXIBLE CONNECTOR

PIPE BREAK (SINGLE LINE)

<del>-----</del>

\_\_\_\_\_

PSLD 2016-0336

CITY OF EDMONDS BUILDING DEPARTMENT 23/07 (COM AUC Ce) TRIKE STUP APPROVED DATE: 4/6/16 BLDG OFFICIAL: Ellips Grade PERMIT NUMBER 2012

CITY COPY

RECEIVED

M-1.0 MAR 18 2016

DEVELOPMENT SERVICES
COUNTER

WSEC/

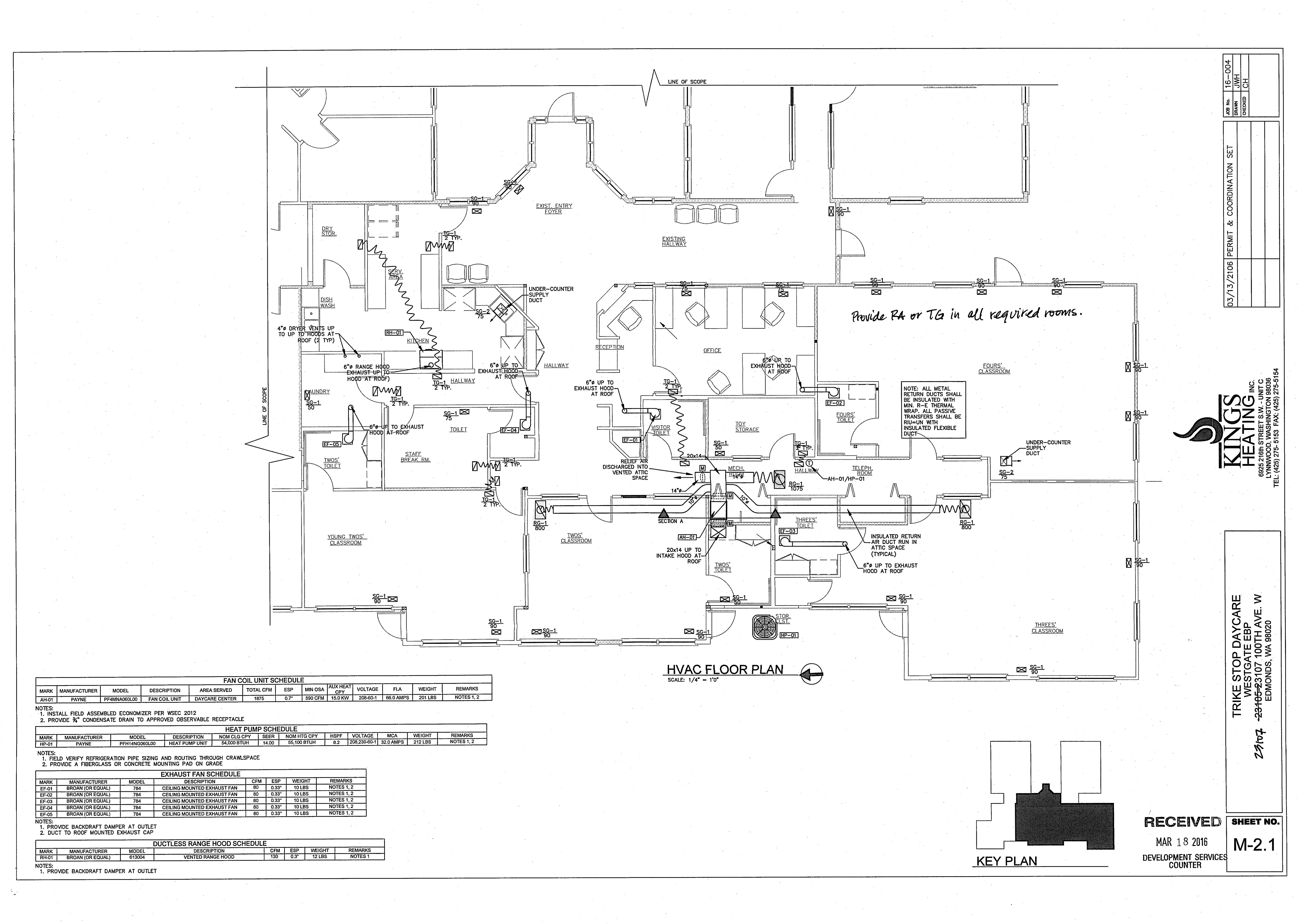
City of Edmonds Building Department

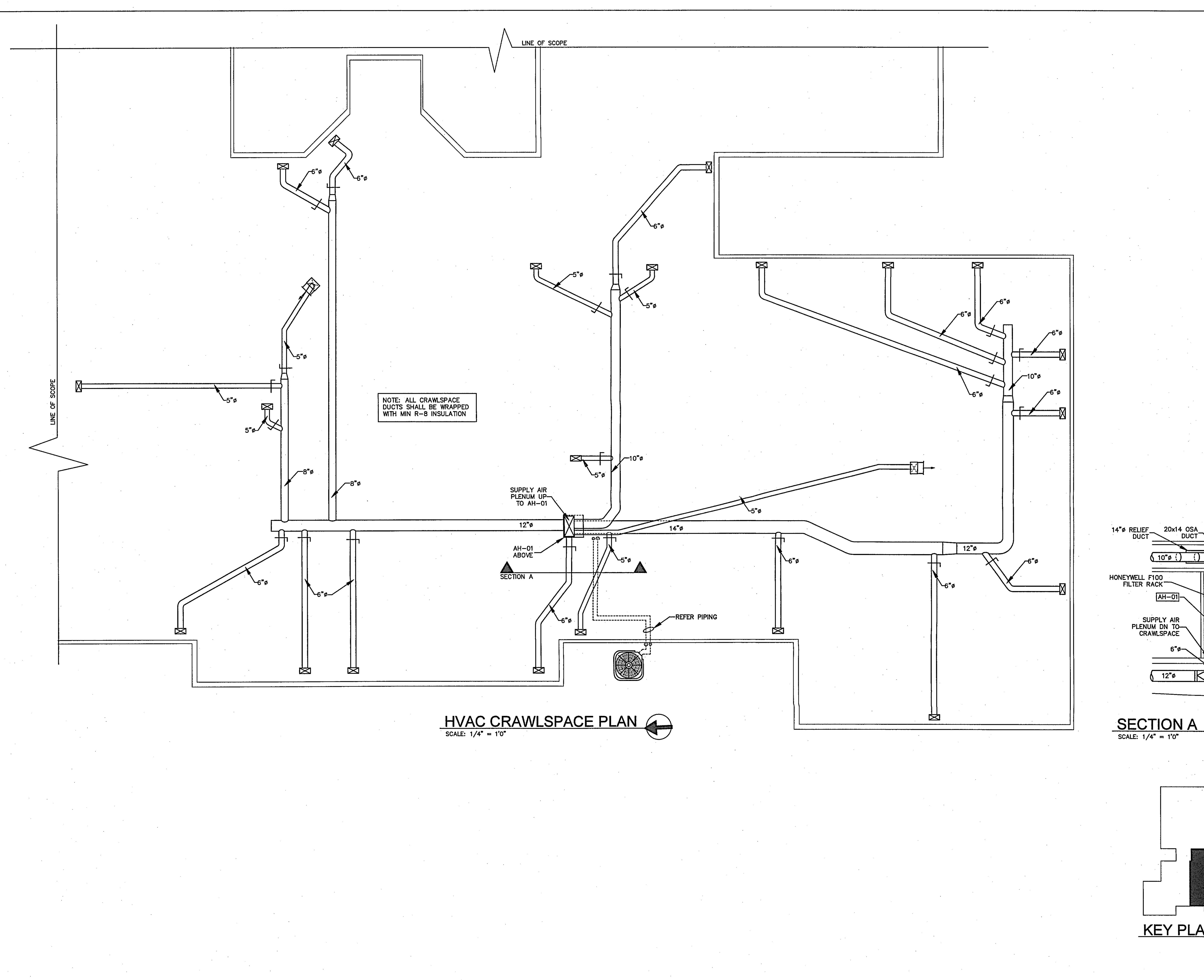
ADDRESS

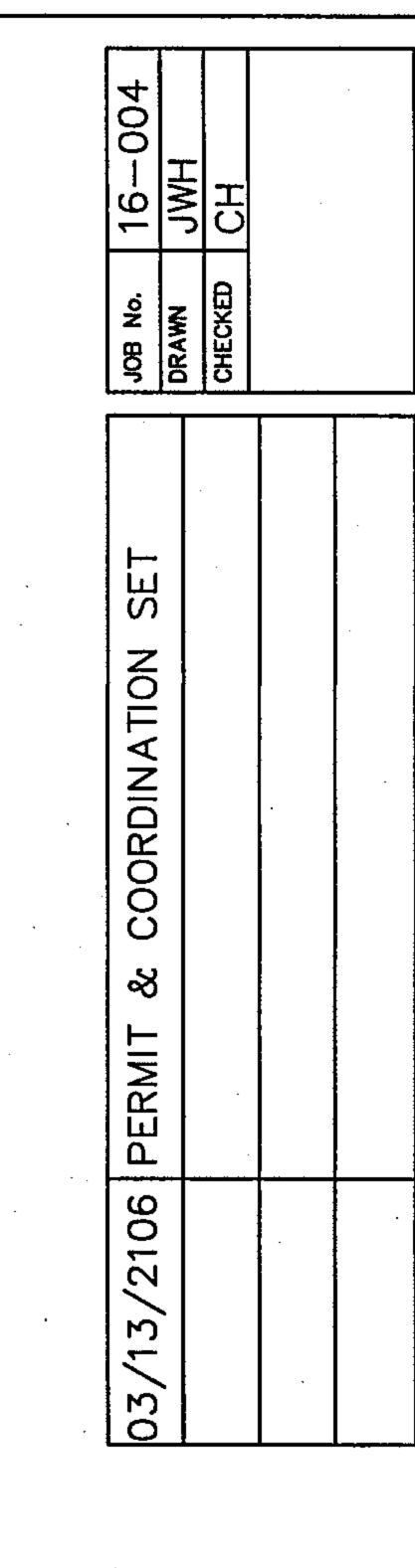
OWNER

STOP DA STGATE EL 3107 100TF ONDS, WA 98 RIKE WES

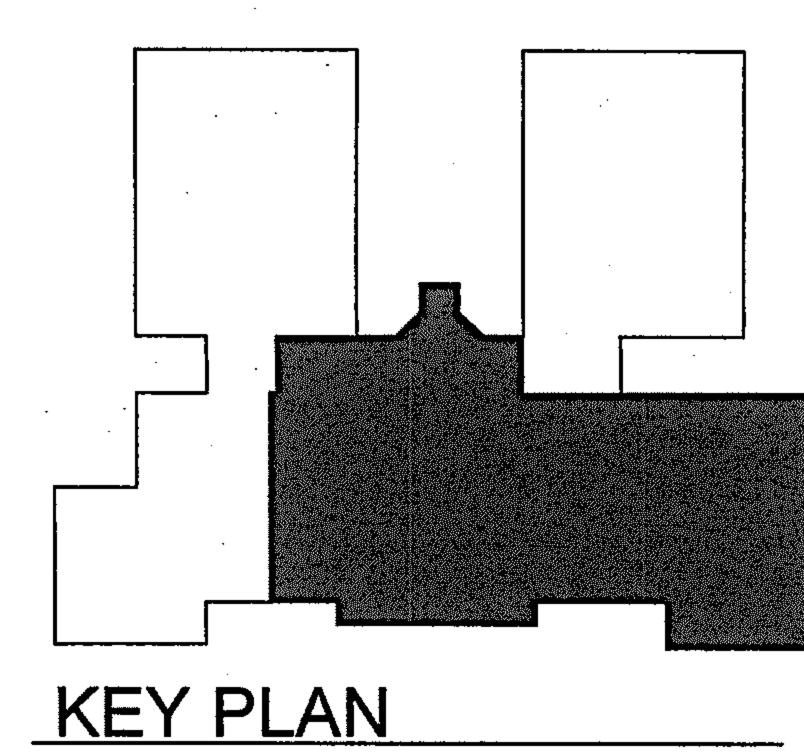
SHEET NO.







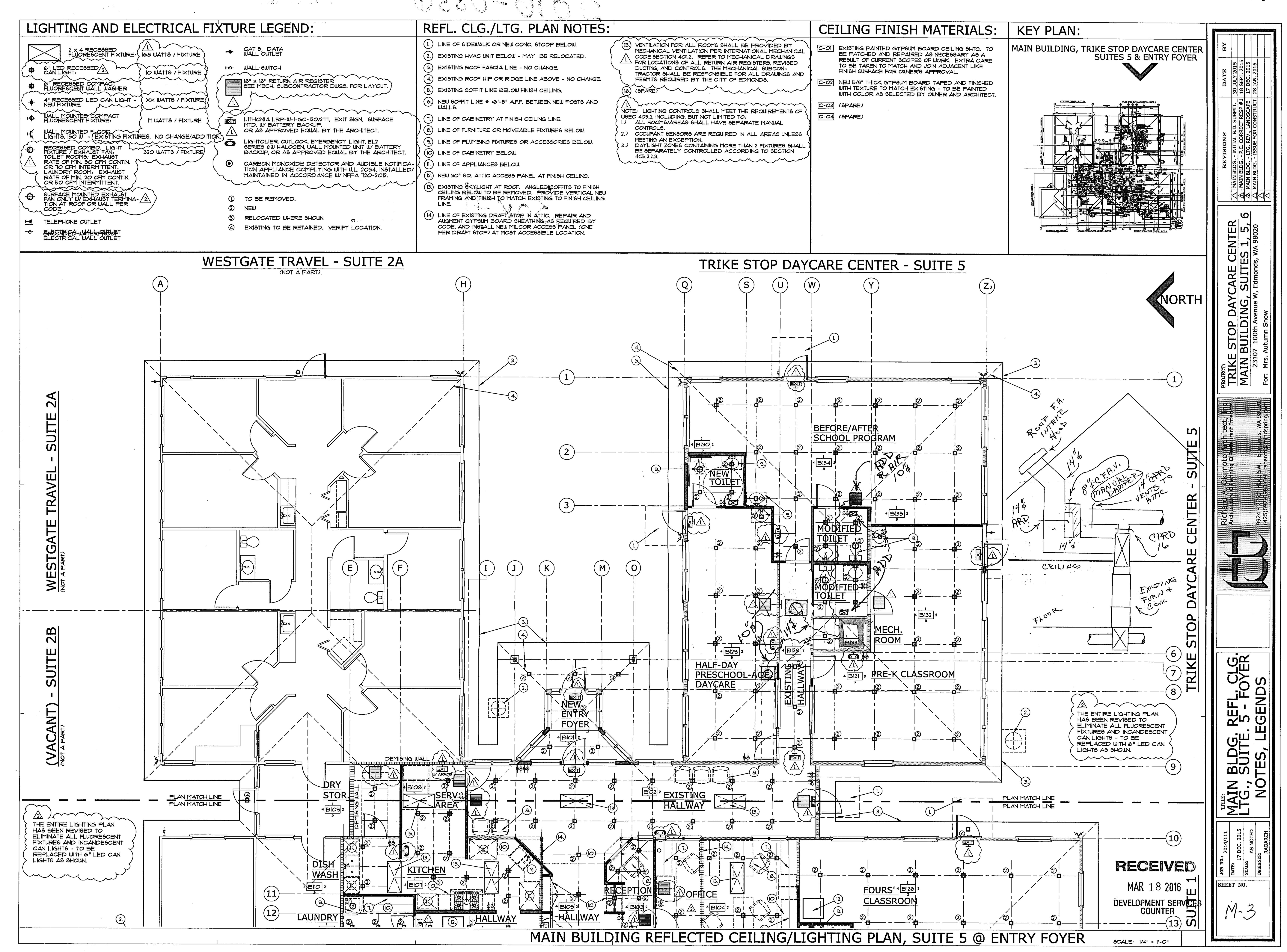




RECEIVED

MAR 18 2016 DEVELOPMENT SERVICES M-2.2 COUNTER

SHEET NO.



Ded 2016-0336



SPLUI SYSTIEM HEAT PUMP WITH R-410A REFRIGERANT 1-1/2 TO 5 NOMINAL TONS

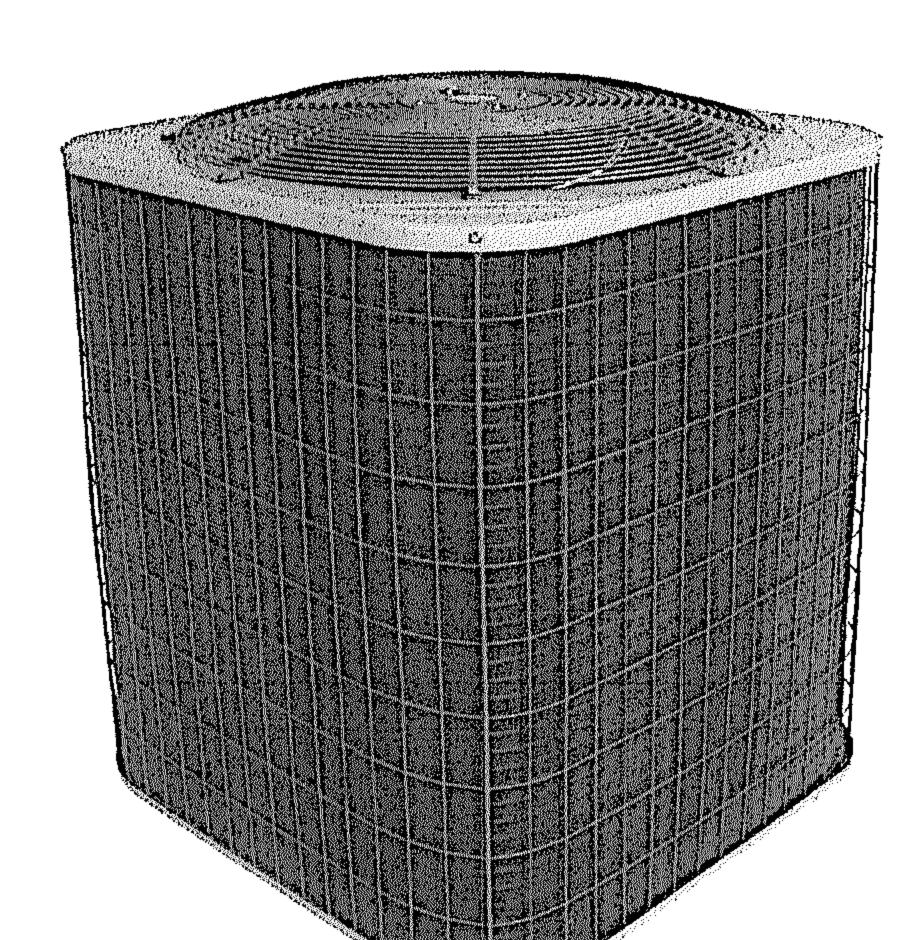
## Product Data

## RECEIVED

# CITY COPY

MAR 18 2016

DEVELOPMENT SERVICES COUNTER



### INDUSTRY LEADING FEATURES / BENEFITS

#### Efficiency

- 14 SEER / 11.5 11.7 EER / 8.2 HSPF
- Microtube Technology<sup>™</sup> refrigeration system
- Indoor air quality accessories available

#### Sound

- Sound level as low as 69 dBA
- Sound levels as low as 68 dBA with accessory sound blanket

#### Comfort

• System supports programmable or standard thermostat controls

#### Reliability

- R-410A refrigerant
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- High pressure switch
- Loss of charge switch
- Filter drier
- Balanced refrigeration system for maximum reliability

#### Durability

- Solid, durable sheet metal construction
- Wide or dense wire coil guard

#### **Applications**

- Long-line up to 250 feet (76.20 m) total equivalent length, up to 200 feet (60.96 m) condenser above evaporator, or up to 80 ft. (24.38 m) evaporator above condenser (See Longline Guide for more information.)
- Low ambient (down to -20°F/-28.9°C) with accessory kit

NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.

#### PHYSICAL DATA

UNIT SIZE SERIES	18-A	24-A	30-A	36-B	42-A	48-A	60-A				
Compressor Type			<u> </u>	Scroll		•					
REFRIGERANT		<u>-</u>		R-410A	<u>-</u> .		· · · · · · · · · · · · · · · · · · ·				
Control			TXV	(R-410A Hard S	Shutoff)						
Outdoor Heating Piston #	42	46	49	57	61	65	73				
Charge Ib (kg)	5.3 (2.4)	5,6 (2.5)	6.4 (2.9)	7.67 (3.48)	8.25 (3.74)	8.68 (3.94)	10.6 (4.81)				
COND FAN	Forwrard Swept or Propeller Type, Direct Drive										
Air Discharge	Vertical										
Motor HP	1/12	1/10	1/4	1/5	1/4	1/4	1/4				
Motor RPM	1100	1100	1100	1100	1100	1100	800				
VALVE CONNECT. (In. ID)											
Vapor	5/8	5/8	3/4	3/4	7/8	7/8	7/8				
Liquid				3/8							
REFRIGERANT TUBES* (In. OD)				-			·				
Rated Vapor	5/8	5/8	3/4	3/4	7/8	7/8	1-1/8				
Max Liquid Line				3/8	<del> </del>	·					

<sup>\*</sup>Units are rated with 25 ft (7.6 m) of lineset length. See Vapor Line Sizing and Cooling Capacity Loss table when using other sizes and lengths of lineset.

Note: See unit Installation Instruction for proper installation.

#### VAPOR LINE SIZING AND COOLING CAPACITY LOSS

Acceptable vapor line diameters provide adequate oil return to the compressor while avoiding excessive capacity loss. The suction line diameters shown in the chart below are acceptable for HP systems with R-410A refrigerant:

Vapor Line Sizing and Cooling Capacity Losses - R-410A Refrigerant 1- Stage Heat Pump Applications

	Acceptable								)	Cooling Capacity Loss (%) Total Equivalent Line Length (ft)													
Unit Nominal Size (Btuh)	Vapor Line Diameters	Standard Application				Long Line Application Requires Accessories																	
(Lotari)	(In. OD)	25 (7.62)	50 (15.2)	80 (24.4)	80+ (24.4+)	100 (30.48)	125 (38.10)	150 (45.72)	175 (63.34)	200 (60,96)	225 (88.58)	250 (78.20)											
18000	1/2	1	2	3	3	4 .	8	7	- 8	9	.10	12											
1-Stage HP	5/8	0	0	1	1	1	1	2	2	3	3	3											
24000	5/8	0	1	1	1	2	3	. 3	4	4	5	6											
1-Stage HP	3/4	0	0	0	0.	0	1	1	***** <b>*1</b>	1	1	2											
00000	5/8	1	2	3	3	3	4	. 5	6	7	8	. 9											
30000 1 – Stage HP	3/4	0	0	1	1	1.000	1	2	2	2	3	3											
( Clayorii	7/8	0	0	0	. 0	0	1	1	1	1	11	1											
00000	5/8	1	2	4	4	5	6	7	9	10	11	13											
36000 1-Stage HP	3/4	0	0	1		1	, 2	2	3	. 3	4	4											
	7/8	0	0	0	0	0	1	1	1	1	2.	2											
42000	3/4	0	1	2	2	. 2	3	4	4	5	6	- 6											
1-Stage HP	7/8	0	0	1	1.	1	1.1	2	2	2	3	3											
48000	3/4	0	1	2	2	3	4	5	5	. 6	7	- 8											
1-Stage HP	7/8	0	0	1	1	1	2	2	. 2.	3	3	4											
60000	3/4	1	2	4	. 4	5	- 6	7	9	10	11	12											
60000 1-Stage HP	7/8	0	1	2	2	2	. 3	4	4	5	5	. 6											
· Jugarii	1 1/8	0	0	0	70.	. 1.	1	1	1,7	1.5	1	- :2::											

Standard Length = 80 ft. (24.4 m) or less total equivalent length

Applications in this area are long line. Accessories are required as shown recommended on Long Line Application Guidelines

Applications in this area may have height restrictions that limit allowable total equivalent length, when outdoor unit is below indoor unit. See Long Line Application Guidelines

#### REFRIGERANT PIPING LENGTH LIMITATIONS

#### Maximum Line Lengths:

The maximum allowable total equivalent length for heat pumps varies depending on the vertical separation. See the tables below for allowable lengths depending on whether the outdoor unit is on the same level, above or below the outdoor unit.

#### Maximum Line Lengths for Heat Pump Applications

	MAXIMUM ACTUAL LENGTH ft (m)	MAXIMUM EQUIVALENT LENGTH† ft (m)	MAXIMUM VERTICAL SEPARATION ft (m)
Units on equal level	200 (61)	250 (76.2)	N/A
Outdoor unit ABOVE indoor unit	200 (61)	250 (76.2)	200 (61)
Outdoor unit BELOW indoor unit	See Table ' <i>Maximu</i>	ım Total Equivalent Length: Outdoor Unit BELOW I	ndoor Unit'

<sup>†</sup> Total equivalent length accounts for losses due to elbows or fitting. See the Long Line Guideline for details.

#### Maximum Total Equivalent Length<sup>†</sup> - Outdoor Unit BELOW Indoor Unit

Si	Liquid Line	· · · · · · · · · · · · · · · · · · ·	<del></del>	P with R-410A R	efrigerant – Maxir	num Total Equivalent r unit BELOW indoor	Length†	· · · · · · · · · · · · · · · · · · ·
Size	Diameter w/ TXV	0-20 (0 - 6.1)	21-30 (6.4 - 9.1)	31-40 (9.4 - 12.2)	41-50 (12.5 - 15.2)	51-60 (15.5 - 18.3)	6170 (18.6 21.3)	71-80 (21.6 - 24.4)
18000 HP with R-410A	3/8	250*	250*	250*	250*	250*	250*	250*
24000 HP with R-410A	3/8	3/8 250* 250* 250* 250*					250*	250*
30000 HP with R-410A	3/8	3/8 250* 250* 250*		250*	250*	250*		
36000 HP with R-410A	3/8	250*	250*	250*	250*	250*	250*	250*
42000 HP with R-410A	3/8	250*	250*	250*	250*	250*	250*	150
48000 HP with R-410A	3/8	250*	250*	250*	250*	230	160	
60000 HP with R-410A	3/8	250*	225*	190	150	110		

<sup>\*</sup> Maximum actual length not to exceed 200 ft (61 m)

#### LONG LINE APPLICATIONS

An application is considered Long Line when the refrigerant level in the system requires the use of accessories to maintain acceptable refrigerant management for systems reliability. Defining a system as long line depends on the liquid line diameter, actual length of the tubing, and vertical separation between the indoor and outdoor units.

For Heat Pump systems, the chart below shows when an application is considered Long Line. Beyond these lengths, long line accessories are required:

#### HP WITH R-410A REFRIGERANT LONG LINE DESCRIPTION ft (m)

Beyond these lengths, long line accessories are required

Liquid Line Size	Units On Same Level	Outdoor Below Indoor	Outdoor Above Indoor
3/8	80 (24.4)	20 (6.1) vertical or 80 (24.4) total	80 (24.4)

Note: See Long Line Guideline for details

<sup>†</sup> Total equivalent length accounts for losses due to elbows or fitting. See the Long Line Guideline for details.

<sup>-- =</sup> outside acceptable range

#### **ELECTRICAL DATA**

UNIT SIZE	V/PH	OPER V	OLTS*	COI	<b>IPR</b>	FAN	MCA	MAX FUSE** or
OMIT SIZE	V/2-11	MAX MIN		LRA	RLA	FLA	WICA	CKT BRK AMPS
18				48.0	9.0	0.50	11.8	20
24	7 !		•	62.9	10.9	0.60	14.2	25
30	] [			72.5	13.5	1,40	18.3	30
36	208/230/1	253	197	75.0	15.1	1.10	20.0	30
42				105.5	15.5	1.40	24.0	40
48	] [			108.0	19.0	1.40	25.2	40
60	]			144.2	24.4	1.52	32.0	50

<sup>\*</sup> Permissible limits of the voltage range at which the unit will operate satisfactorily

FLA - Full Load Amps

LRA - Locked Rotor Amps

MCA - Minimum Circuit Amps

RLA - Rated Load Amps

NOTE: Control circuit is 24-V on all units and requires external power source. Copper wire must be used from service disconnect to unit.

All motors/compressors contain internal overload protection.

Complies with 2007 requirements of ASHRAE Standards 90.1

#### A-WEIGHTED SOUND POWER

	STANDARD	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)												
UNIT SIZE	RATING (dBA)	125	250	500	1000	2000	4000	8000						
18	69	45	48	56	62	55	53	47						
24	76	46	56	59	63	63	60	55						
30	77	52	62	67	68	65	62	55						
36	77	51	62	66	69	64	61	53						
42	76	49	61	63	65	62	60	52						
48	79	53	66	69	71	67	64	57						
60	73	50	63	62	63	60	58	52						

NOTE: Tested in accordance with AHRI Standard 270-08 (not listed in AHRI).

### A-WEIGHTED SOUND POWER WITH SOUND HOOD

UNITOITE	STANDARD	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)											
UNIT SIZE	RATING	125 250 500 1000 2					4000	8000					
18	68	47	48	56	61	55	52	46					
24	74	47	57	59	62	61	58	51					
30	77	52	62	67	67	65	62	54					
36	76	52	62	66	67	64	60	52					
42	74	50	61	63	64	61	58	49					
48	79	54	66	69	70	67	64	56					
60	73	51	64	62	63	59	56	49					

NOTE: Tested in accordance with AHRI Standard 270-08 (not listed in AHRI).

### CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE-SERIES	REQUIRED SUBCOOLING °F (°C)
18	11 (6.1)
24	11 (6.1)
30	10 (5.6)
36	10 (5.6)
42	10 (5.6)
48	14 (7.8)
60	15 (8.3)

#### HP ONLY REPLACEMENT WITH PISTON INDOORS

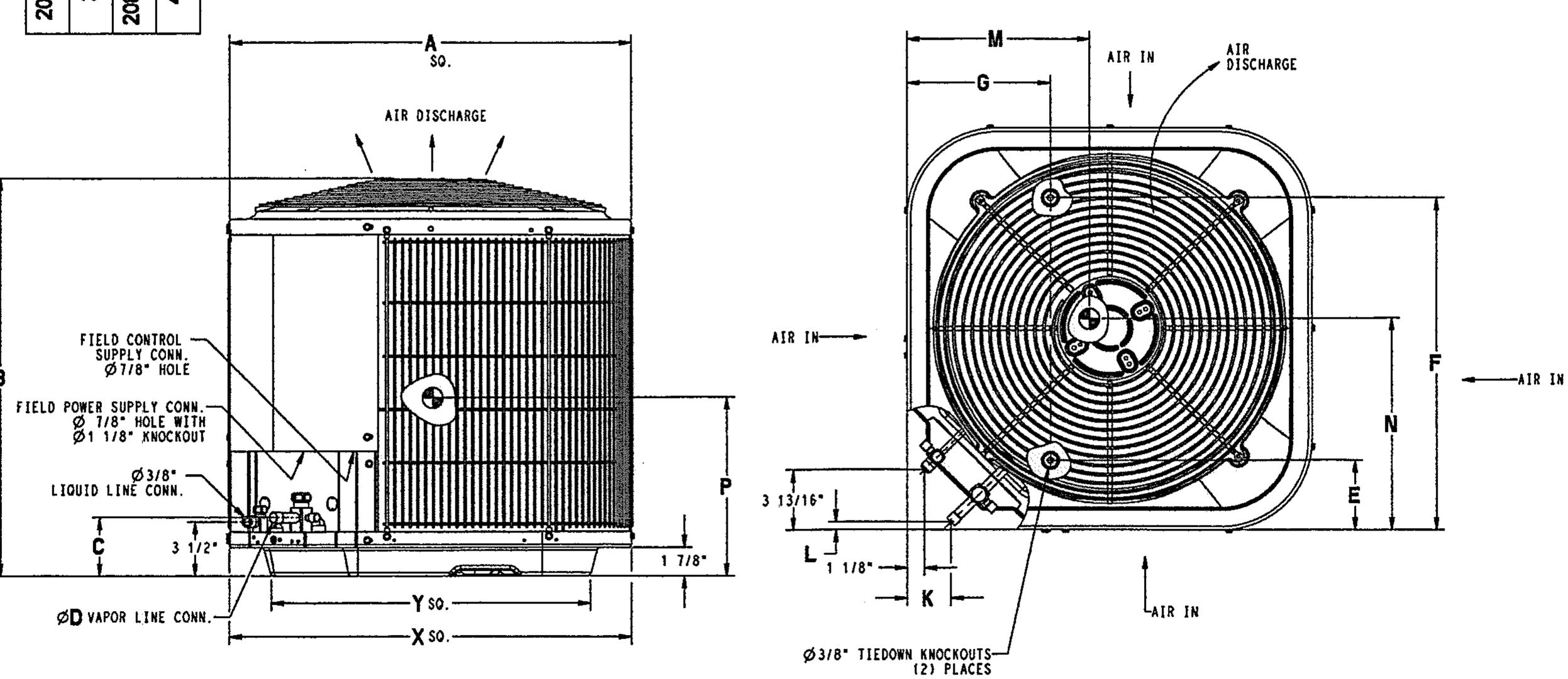
When the PH14NB is used as a replacement component in a system with a piston fan coil, use the indoor piston size specified below:

UNIT SIZE	PISTON SIZE										
UNII SIZE	FB4CNF	FFM	FPMA								
18	0.052	0.050	0.050								
24	0.057	0.057	0.056								
30	0.067	0.070	0.067								
36	0.070	0.072	0.069								
42	0.078										
48	0.084										
60											

<sup>\*\*</sup> Time-Delay fuse.

#### **DIMENSIONS - ENGLISH**

UNIT	SERIES	F	LECT			A	В	C	D	E	F	G	K	L	M	N	P	OPERATING WEIGHT (bs)	SHIPPING WEIGHT (lbs)	SHIPPING DIMENSIONS (L x W x H)
PH14NB018	A	X	0	0	0	23 1/8	35 1/4"	3 3/4*	5/8"	4 7/16"	18 1/16"	7 13/16"	2 13/16"	1/2*	11*	15 3/4"	12"	136	166	25 1/4" X 25 1/4" X 40"
PH14NB024	A	X	0	0	0	25 3/4	35 1/4"	3 3/4"	5/8*	4 7/16*	21 1/4"	9 1/8"	2 13/16"	1/2"	12*	13 1/4"	13 1/2*	144	175	27 7/8" X 27 7/8" X 40"
PH14NB030	A	X	0	0	0	31 3/1	6" 31 13/16	3 3/4"	3/4"	6 9/16"	24 11/16"	9 1/8"	2 15/16"	5/8"	15*	11"	16"	158	180	33 3/8" X 33 3/8" X 36 5/8"
PH14NB036	В	X	0	0	0	31 3/1	6" 28 7/16"	3 3/4"	3/4"	6 9/16"	24 11/16"	9 1/8"	2 15/16"	5/8*	15 3/4"	14"	10 3/4"	170	201	33 3/8" X 33 3/8" X 33 1/4"
PH14NB042	A	X	0	0	0	31 3/1	6* 39 1/8*	3 7/8"	7/8*	6 9/16*	24 11/16"	9 1/8"	2 15/16"	5/8*	15 1/2"	13 1/2*	14"	201	235	33 3/8" X 33 3/8" X 43 1/2"
PH14NB048	٨	X	0	0	0	31 3/1	6" 28 7/16"	3 7/8*	7/8"	6 9/16"	24 11/16"	9 1/8"	2 15/16"	5/8*	16 1/2"	11 1/2"	15"	197	232	33 3/8" X 33 3/8" X 33 1/4"
PH14NB060	A	X	0	0	0	31 3/1	6" 31 13/16	3 7/8"	7/8*	6 9/16*	24 11/16"	9 1/8"	2 15/16"	5/8"	14 3/4"	15 3/4"	16 1/4"	212	248	33 3/8" X 33 3/8" X 36 5/8"
	<del>-1</del>		1	0		1						····								



UNIT SIZE	"X" NEW GROUND MOUNTING PAD APPLICATION DEVENSIONS	Y" MEN ROOF-TOP MOUNTING PAD APPLICATION DELENSIONS
18	23 1/8*	17 3/4"
24	25 3/4"	20 7/16"
30,37,42,48,60	31 3/16"	23*
	35*	26 3/4"

When installing, allow sufficient space for airflow clearance, wiring, refrigerant piping, and service. Allow 24 in. (609.6 mm) clearance to service end of unit and 48 in. (1219.2 mm) (above unit. For proper airflow, a 6-in. (152.4 mm) clearance on 1 side of unit and 12-in. (304.8 mm) on all remaining sides must be maintained. Maintain a distance of 24 in. (609.6 mm) between units or 18 in. (457.2 mm) if no overhang within 12 ft. (3.66 m) Position so water, snow, or ice from roof or eaves cannot fall directly on unit.

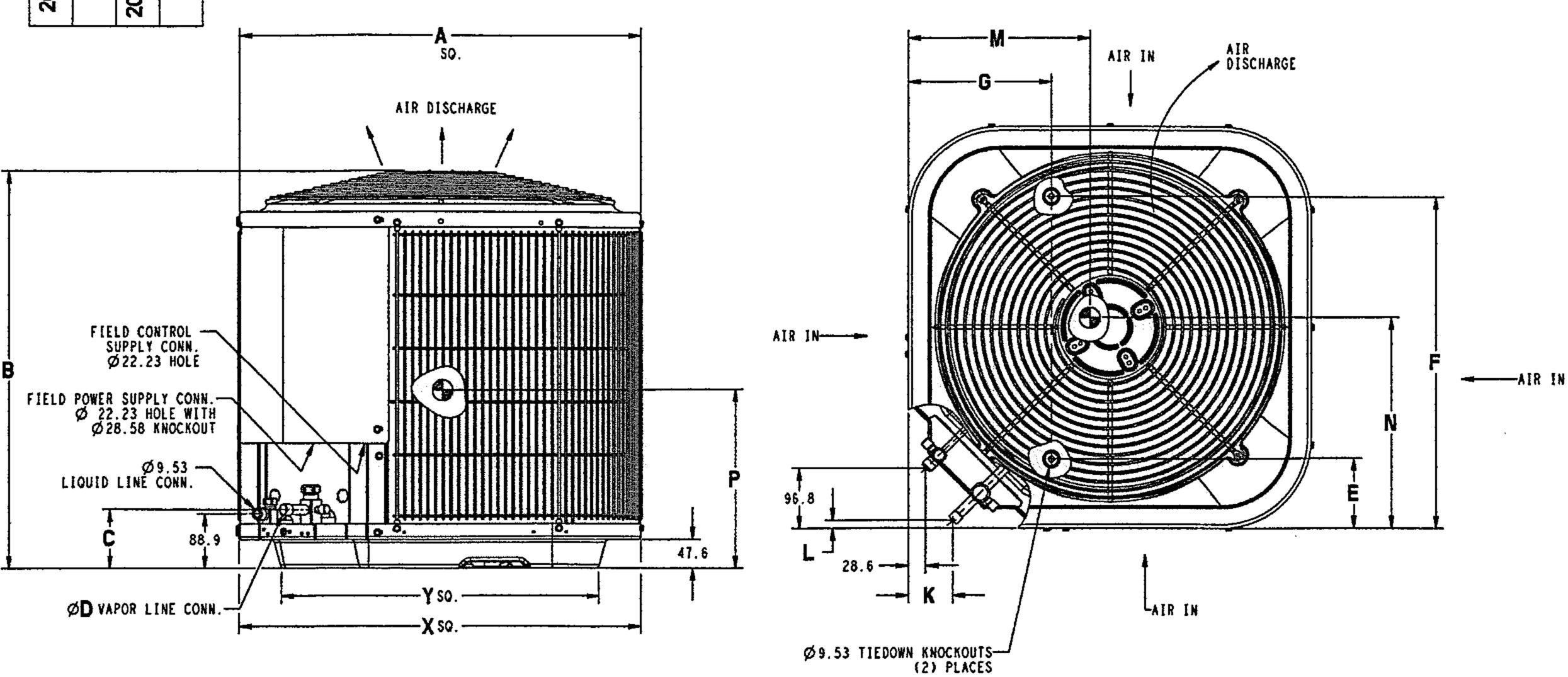
NOTE: 18" (457.2 mm) clearance option described above is approved for outdoor units with wire grille coil guard only. Units with louver panels require 24" (609.6 mm) between units.

On rooftop applications, locate unit at least 6 in. (152.4 mm) above roof surface.

UNIT	SERIES		LECT RACT			A	В	С	D	E	F	G	K	L	М	N	P	OPERATING WEIGHT (Kgs)	SHIPPING WEIGHT (Kgs)	SHIPPING DIMENSIONS (L x W x H)
PH14NB018	A	X	0	0	0	587.4	895.4	95.2	15.9	112.7	458.8	198.4	71.4	12.7	279.4	400.1	304.8	61.7	75.3	641.5 X 641.5 X 1016.9
PH14NB024	A	X	0	0	0	654.0	895.4	95.2	15.9	112.7	539.8	231.8	71.4	12.7	304.8	336.6	342.9	65.3	79.4	708.0 X 708.0 X 1016.9
PH14NB030	A	X	0	0	0	792.2	808.0	95.2	19.0	166.7	627.1	231.8	74.6	15.9	381.0	279.4	406.4	71.7	81.6	846.6 X 846.6 X 930.6
PH14NB036	В	X	0	0	0	792.2	722.3	95.2	19.0	166.7	627.1	231.8	74.6	15.9	400.1	355.6	273.1	77.1	91.2	846.6 X 846.6 X 844.2
PH14NB042	A	X	0	0	0	792.2	993.8	98.4	22.2	166.7	627.1	231.8	74.6	15.9	393.7	342.9	355.6	91.2	106.6	846.6 X 846.6 X 1103.3
PH14NB048	A	X	0	0	0	792.2	722.3	98.4	22.2	166.7	627.1	231.8	74.6	15.9	419.1	292.1	381.0	89.4	105.2	846.6 X 846.6 X 844.2
PH14NB060	A	X	0	0	0	792.2	808.0	98.4	22.2	166.7	627.1	231.8	74.6	15.9	374.7	400.1	412.8	95.2	112.5	846.6 X 846.6 X 930.6

208-230-160 230-160 208/230-3-60 460-3-60

X = YES O = NO



UNIT SIZE	TAT MEN GROUND MOUNTING PAID APPLICATION DIMENSIONS	MOUNTING PAD APPLICATION DIMENSIONS
18	587.4	451.3
24	654.0	518.5
30,37,42,48,60	792.2	583.2
-	889.0	679.7

When installing, allow sufficient space for airflow clearance, wiring, refrigerant piping, and service. Allow 24 in. (609.6 mm) clearance to service end of unit and 48 in. (1219.2 mm) (above unit. For proper airflow, a 6-in. (152.4 mm) clearance on 1 side of unit and 12-in. (304.8 mm) on all remaining sides must be maintained. Maintain a distance of 24 in. (609.6 mm) between units or 18 in. (457.2 mm) if no overhang within 12 ft. (3.66 m) Position so water, snow, or ice from roof or eaves cannot fall directly on unit.

NOTE: 18" (457.2 mm) clearance option described above is approved for outdoor units with wire grille coil guard only. Units with louver panels require 24" (609.6 mm) between units.

On rooftop applications, locate unit at least 6 in. (152.4 mm) above roof surface.

WD 2016-0336

## Honeywell

# TrueZONE® Bypass (CPRD) ECEIVED

mark 18 2016

CITY COPY

VELOPMENT SERVICES
COUNTER

## INSTALLATION INSTRUCTIONS

## **APPLICATION**

The TrueZONE® Bypass constant pressure regulating damper (CPRD) is a round static pressure relief damper. It is used in forced-air bypass applications to relieve excess static pressure when some of the zone dampers are closed. The damper is installed in a duct that delivers air to the return or a dump zone. The damper automatically opens and closes to maintain a desired static pressure.

The CPRD uses a calibrated spring to regulate the bypass air accurately when any number or combination of zones is calling. Conventional, weighted arm, bypass dampers may operate properly when one zone is calling; however, when different combinations of zones are calling, they bypass too much or too little. This can cause callbacks when homeowners complain of air noise.

## Selecting the Correct CPRD

- 1. Size the bypass damper by subtracting the cfm of the smallest zone from the cfm of the system.
- 2. Consult Table 1 to determine the CPRD to use.
- 3. Example:
  Bypass CFM = Total System CFM Smallest Zone CFM

## **SPECIFICATIONS**

#### Construction:

Galvanized steel, see Table 2

#### **Temperature Range:**

Ambient: 0F-165F (-17C-73C) Storage: 30F-150F (-1C-65C)

Table 1. Damper Sizing

Bypass Damper	Replacement Regulator	Maximum Airflow
CPRD8	CPR8	600 CFM
CPRD10	CPR10	1000 CFM
CPRD12	CPR12	1400 CFM
CPRD14	CPR14	1700 CFM

## DIMENSIONS

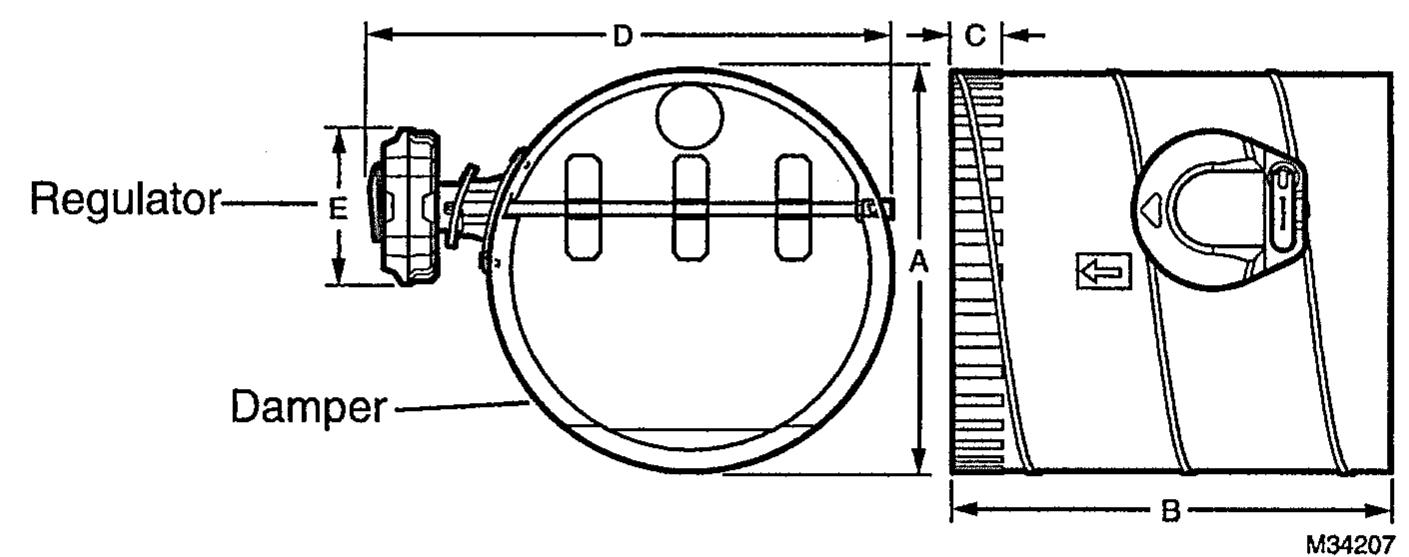
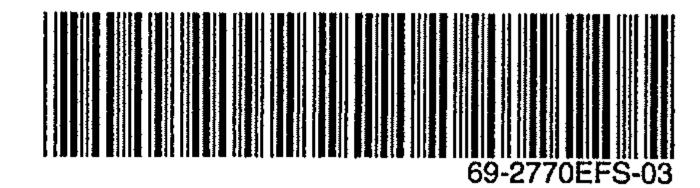


Table 2. CPRD Dimensions.

		A	В		С		D		E		
Model	in	mm	in	mm	in	mm	in	mm	in	mm	Gauge
CPRD8	8	203.2	9.65	245	1.50	38	11.54	292.84	4.65	118	26
CPRD10	10	254	11.42	290	1.50	38	13.50	343	4.65	118	26
CPRD12	12	305	13.18	235	1.50	38	15.47	392.84	4.65	118	24
CPRD14	14	355	14.96	380	1.50	38	17.36	441	4.65	118	22



## INSTALLATION

## **Select Damper Location**

Install the CPRD onto a starting collar or in duct that loops from supply to return. The supply side take-off must be before any zone dampers. It is best to install the return side of this loop as far a practical from the air handler.

The CPRD can be mounted in vertical or horizontal ductwork, or at any angle. The damper may also be rotated to be installed with the regulator on either side, top or at any angle between.

Secure the damper to sheet metal ductwork with screws or to flex-duct with tape. If ducting with flex-duct, the outer layer of plastic can be taped to the damper mounting flange to fully insulate the damper.

Alternatively, the CPRD can dump air from the supply to a non-critical temperature area such as a hallway, basement, or false ceiling.

## **Attach Regulator to Damper**

- Align the regulator with the "D" shaft on the damper (see Fig. 1).
- 2. Slide the regulator onto the "D" shaft and push down while turning counterclockwise until it snaps into place (see Fig. 2).



The CPRD is factory set to open at approximately .5"WC." This setting is satisfactory for most installations. Some systems have higher static pressure. Test this by:

- 1. Make all zones call fan, heat, or cool; whichever has the highest CFM.
- 2. Verify that the damper position indicator points to closed.
- 3. If it does not point to closed:
  - Flip the adjustment crank out (see Fig. 3)
  - Push down on the adjustment crank with gentle pressure. Caution: Do not rotate the adjustment crank without first pushing it down
  - Turn the adjustment crank clockwise until the indicator points to closed
  - When done, flip the adjustment crank back into the locked position
- 4. Make only the smallest zone call for fan, heat, or cool.
- 5. Verify that the airflow into that zone is not objectionable.
  If it is, then set the regulator to a lower pressure.

## Removing the Regulator

If you need to remove the regulator from the damper, do so by pressing the red release button. See Fig. 4. It is easier to remove the regulator after turning the pressure down to a lower setting.

#### **Automation and Control Solutions**

Honeywell International Inc. 1985 Douglas Drive North Golden Valley, MN 55422 customer.honeywell.com

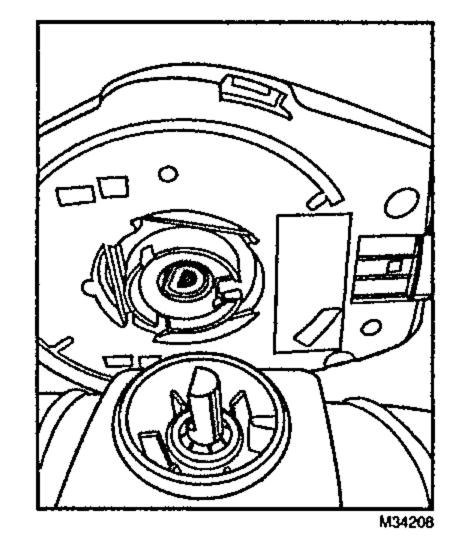


Fig. 1.

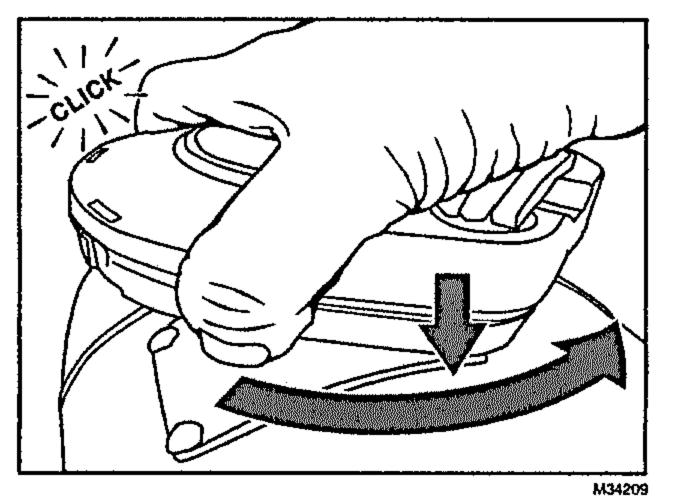


Fig. 2.

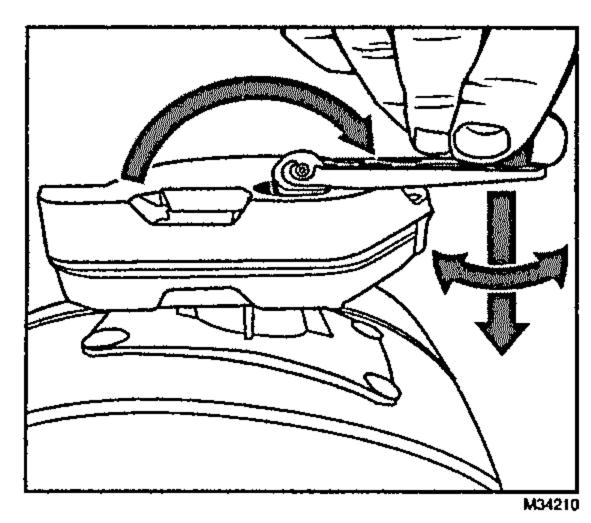


Fig. 3.

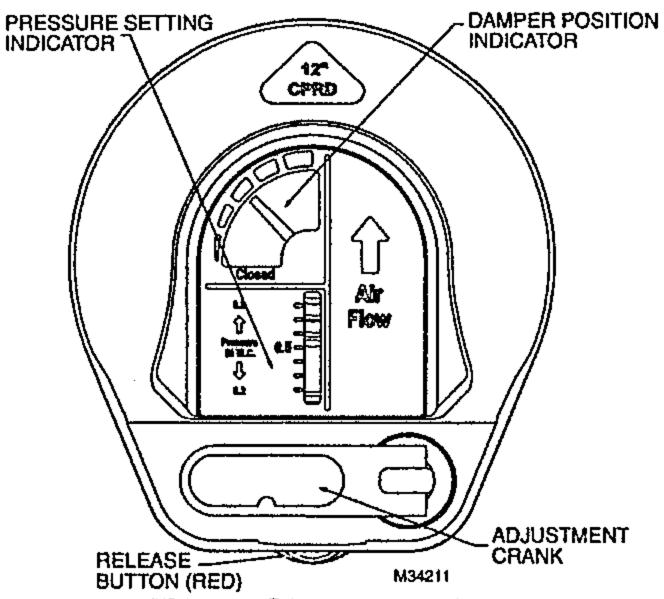


Fig. 4. CPRD regulator



DUD 2016-0336

## Honeywell

# TrueZONE® Bypass (CPRD)

RECEIVED

minut 1 3 2016

EVELOPMENT SERVICES COUNTER

## INSTALLATION INSTRUCTIONS

## **APPLICATION**

The TrueZONE® Bypass constant pressure regulating damper (CPRD) is a round static pressure relief damper. It is used in forced-air bypass applications to relieve excess static pressure when some of the zone dampers are closed. The damper is installed in a duct that delivers air to the return or a dump zone. The damper automatically opens and closes to maintain a desired static pressure.

The CPRD uses a calibrated spring to regulate the bypass air accurately when any number or combination of zones is calling. Conventional, weighted arm, bypass dampers may operate properly when one zone is calling; however, when different combinations of zones are calling, they bypass too much or too little. This can cause callbacks when homeowners complain of air noise.

## Selecting the Correct CPRD

- 1. Size the bypass damper by subtracting the cfm of the smallest zone from the cfm of the system.
- 2. Consult Table 1 to determine the CPRD to use.
- 3. Example:
  Bypass CFM = Total System CFM Smallest Zone CFM

## **SPECIFICATIONS**

Construction:

Galvanized steel, see Table 2

**Temperature Range:** 

Ambient: 0F-165F (-17C-73C) Storage: 30F-150F (-1C-65C)

**Table 1. Damper Sizing** 

Bypass Damper	Replacement Regulator	Maximum Airflow
CPRD8	CPR8	600 CFM
CPRD10	CPR10	1000 CFM
CPRD12	CPR12	1400 CFM
CPRD14	CPR14	1700 CFM

## **DIMENSIONS**

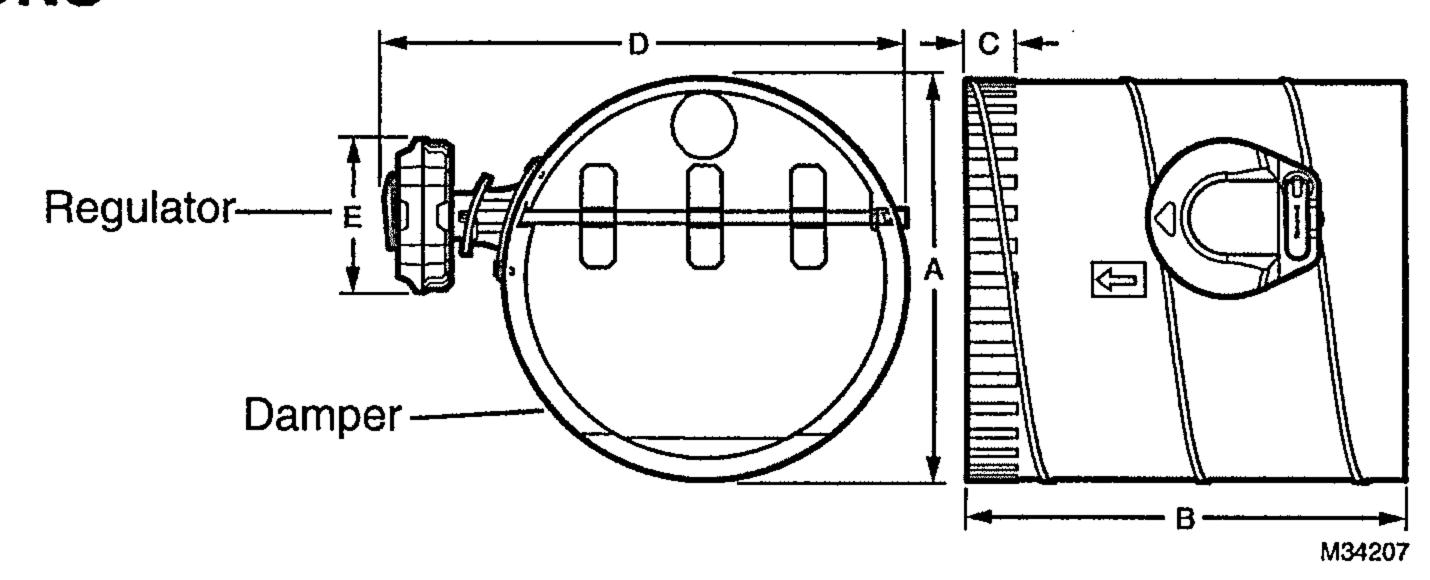
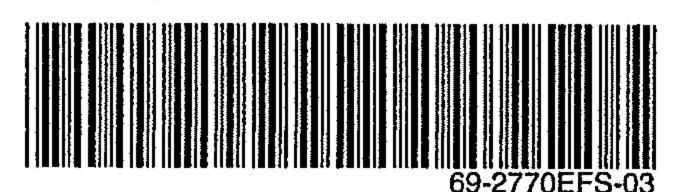


Table 2. CPRD Dimensions.

		Α	В		С		D		E		<u> </u>
Model	in	mm	in	mm	in	mm	in	mm	in	mm	Gauge
CPRD8	8	203.2	9.65	245	1.50	38	11.54	292.84	4.65	118	26
CPRD10	10	254	11.42	290	1.50	38	13.50	343	4.65	118	26
CPRD12	12	305	13.18	235	1.50	38	15.47	392.84	4.65	118	24
CPRD14	14	355	14.96	380	1.50	38	17.36	441	4.65	118	22



## INSTALLATION

## **Select Damper Location**

Install the CPRD onto a starting collar or in duct that loops from supply to return. The supply side take-off must be before any zone dampers. It is best to install the return side of this loop as far a practical from the air handler.

The CPRD can be mounted in vertical or horizontal ductwork, or at any angle. The damper may also be rotated to be installed with the regulator on either side, top or at any angle between.

Secure the damper to sheet metal ductwork with screws or to flex-duct with tape. If ducting with flex-duct, the outer layer of plastic can be taped to the damper mounting flange to fully insulate the damper.

Alternatively, the CPRD can dump air from the supply to a non-critical temperature area such as a hallway, basement, or false ceiling.

## **Attach Regulator to Damper**

- 1. Align the regulator with the "D" shaft on the damper (see Fig. 1).
- 2. Slide the regulator onto the "D" shaft and push down while turning counterclockwise until it snaps into place (see Fig. 2).



The CPRD is factory set to open at approximately .5"WC." This setting is satisfactory for most installations. Some systems have higher static pressure. Test this by:

- 1. Make all zones call fan, heat, or cool; whichever has the highest CFM.
- 2. Verify that the damper position indicator points to closed.
- 3. If it does not point to closed:
  - Flip the adjustment crank out (see Fig. 3)
  - Push down on the adjustment crank with gentle pressure. Caution: Do not rotate the adjustment crank without first pushing it down
  - Turn the adjustment crank clockwise until the indicator points to closed
  - When done, flip the adjustment crank back into the locked position
- 4. Make only the smallest zone call for fan, heat, or cool.
- 5. Verify that the airflow into that zone is not objectionable.
  If it is, then set the regulator to a lower pressure.

## **Removing the Regulator**

If you need to remove the regulator from the damper, do so by pressing the red release button. See Fig. 4. It is easier to remove the regulator after turning the pressure down to a lower setting.

#### **Automation and Control Solutions**

Honeywell International Inc. 1985 Douglas Drive North Golden Valley, MN 55422 customer.honeywell.com

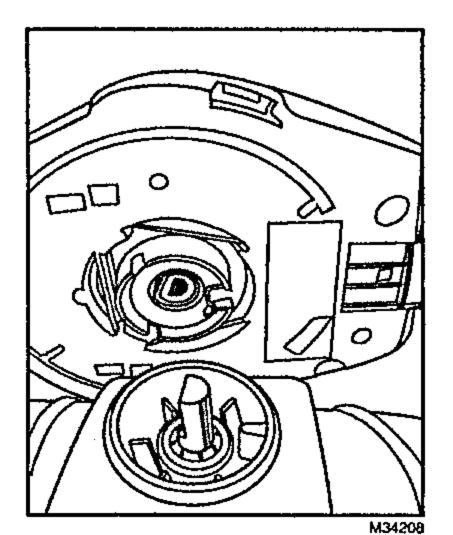


Fig. 1.

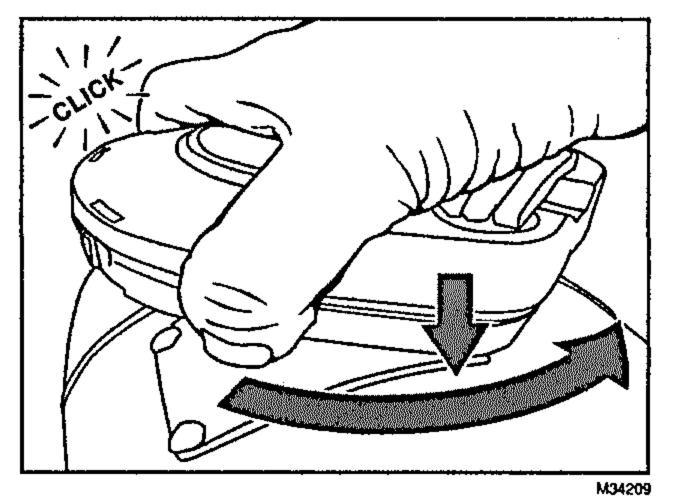


Fig. 2.

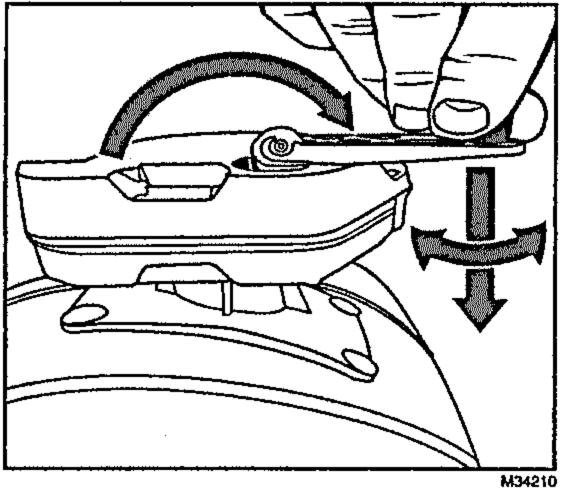


Fig. 3.

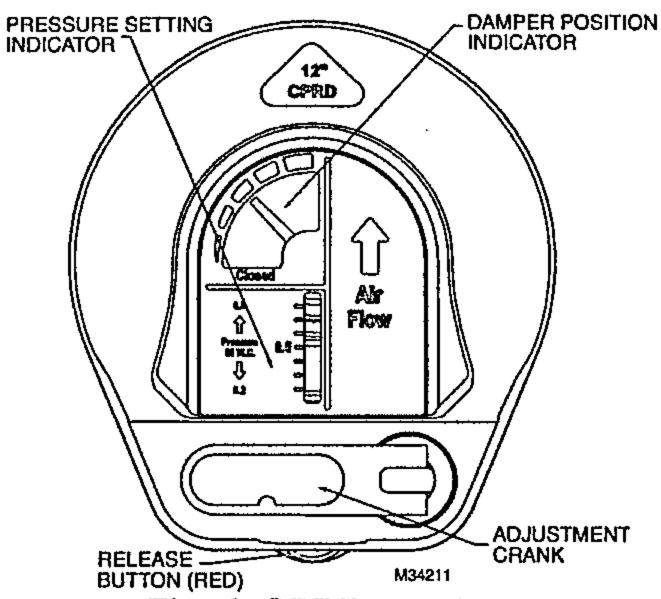


Fig. 4. CPRD regulator



## CITY COPY

## Honeywell

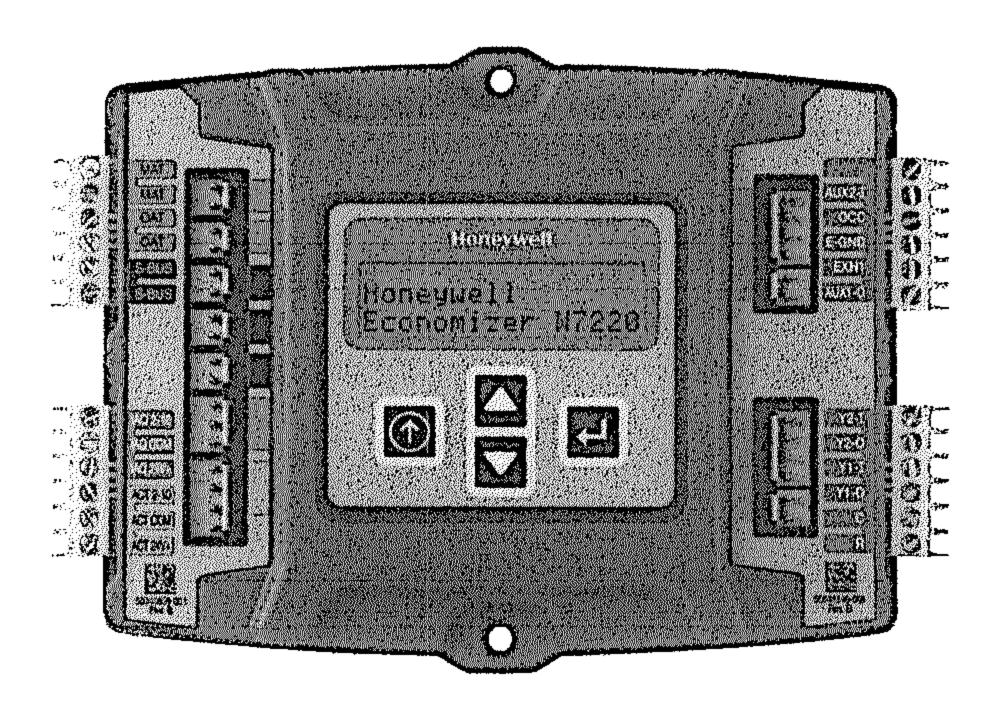
# JADETM Economizer Modulereceived

(MODEL W7220)

MAR 18 2016

DEVELOPMENT SERVICES
COUNTER

#### **PRODUCT DATA**



## PRODUCT DESCRIPTION

The JADE<sup>TM</sup> Economizer System is an expandable economizer control system, which includes a W7220 Economizer Module (controller) with an LCD and keypad. The W7220 can be configured with optional sensors.

The W7220 Economizer Module can be used as a standalone economizer module wired directly to a commercial set back space thermostat and sensors to provide Outdoor Air dry-bulb economizer control.

The W7220 Economizer Module can be connected to optional Sylk Bus sensors for single or differential enthalpy control. The W7220 Economizer Module provides power and communications on the Sylk Bus for the Sylk Bus sensors.

The W7220 Economizer Module automatically detects sensors by polling to determine which sensors are present. If a sensor loses communications after it has been detected, the W7220 Economizer indicates a device fail error on its LCD.

## **System Components**

The JADE™ Economizer System includes an Economizer Module, 20k mixed air sensor, damper actuator, an optional CO<sub>2</sub> sensor, and either a 20k outdoor air temperature sensor or Sylk Bus sensors for measuring Outdoor Air and return air enthalpy, temperature, and humidity.

#### **Economizer Module**

This is the core of the JADE™ Economizer System and includes the user interface for the system. The W7220 Economizer Module provides the basic inputs and outputs to provide simple economizer control. When used with the optional Sylk Bus sensors, the Economizer Module provides more advanced economizer functionality.

### Sylk Bus Sensors (optional)

The Sylk Bus Sensor is a combination temperature and humidity sensor which is powered by and communicates on the Sylk Bus. Up to three sensors may be configured with the JADE<sup>TM</sup> Economizer Module. See page 2 for details.

## CO<sub>2</sub> Sensor (optional)

A CO<sub>2</sub> sensor can be added for Demand Control Ventilation (DCV). Either an analog (2-10 Vdc) or a wall-mount Sylk bus TR40 CO<sub>2</sub> sensor can be used with the Jade economizer.

### PC MOD Tool (optional)

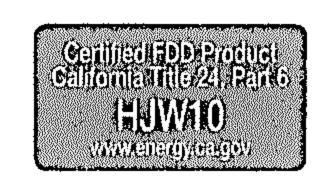
The PC MOD tool is connected to a personal computer and communicates with the Jade economizer controller via the Sylk bus. The W7220 PCMOD tool software is free and can be downloaded from the url in the Accessories section.

Some features on the Jade controller can only be enabled or disabled using the W7220 PC MOD tool. See the PC MOD tool options section in Table 5.

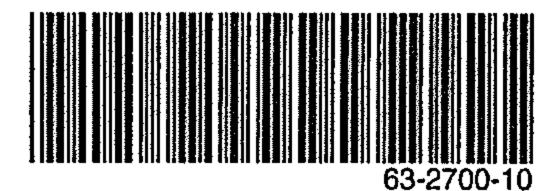
#### Contents

Product Description	1
Specifications	2
Before Installation	
Installation and Setup	
Mounting	
Wiring	
Wiring Application Examples	
Interface Overview	
Setup and Configuration	
Checkout	
Troubleshooting	
	_









## **SPECIFICATIONS**

#### **W7220A Economizer Module**

The module is designed for use with any Honeywell 2 to 10 Vdc or Honeywell Sylkbus communicating actuator. The module includes terminals for a CO<sub>2</sub> sensor, Mixed Air sensor, and an Outdoor Dry Bulb sensor. Enthalpy and other options are available with Sylk Bus sensors.

User Interface: Provides status for normal operation, setup parameters, checkout tests, and alarms and error conditions with a 2-line 16 character LCD display and a four button keypad.

#### Electrical

Rated Voltage: 20 to 30 Vac RMS; 50/60 Hz Transformer: 100 VA maximum system input

Nominal Power Consumption (at 24 Vac, 60 Hz): 11.5 VA

without sensors or actuators

Relay Digital Output Rating at 30 Vac (maximum power from Class 2 input only): 1.5A run;

3.5A inrush @ 0.45PF (200,000 cycles) or 7.5A inrush @ 0.45PF (100,000 cycles)

External Sensors Power Output: 21 Vdc +/- 5% @ 48mA

#### **IMPORTANT**

All inputs and outputs must be Class 2 wiring.

#### Inputs

#### **SENSORS:**

NOTE: A Mixed Air (MA) analog sensor is required on all W7220 units; either an Outdoor Air (OA) sensor for dry bulb change over or an OA Sylkbus sensor for outdoor enthalpy change over is required in addition to the MA sensor. An additional Return Air (RA) Sylkbus sensor can be added to the system for differential enthalpy or dry bulb changeover. For differential dry bulb changeover a 20k ohm sensor is required in the OA and a Sylkbus sensor in the RA. Dip switch on RA Sylkbus sensor must be set in the RA

Dry Bulb Temperature (optional) and Mixed Air (required), C7250A:

2-wire (18 to 22 AWG);

Temperature range -40 to 150 °F (-40 to 65 °C).

Temperature accuracy -0°F/+2°F

Temperature and Humidity, C7400S1000 (optional):

Sylk Bus; 2-wire (18 to 22 AWG)

Temperature: range -40 to 150 °F (-40 to 65 °C)

Temperature accuracy -0°F/+2°F

Humidity: range 0 to 100% RH with 5% accuracy.

NOTE: Up to three (3) SYLK Bus sensors may be connected to the JADE™ Economizer module. For outdoor air (OA), return air (RA) and discharge (supply) air (DA).

DCV (CO<sub>2</sub>) Sensor (C7232 or C7632):

2-10 Vdc control signal; minimum impedance >50k ohm.

#### 4 Binary inputs:

1-wire 24 Vac + common GND (see page 6 for wiring details). 24 Vac power supply: 20 to 30 Vac 50/60Hz; 100 VA Class 2 transformer.

#### **Outputs**

Actuator signal: 2-10 Vdc; minimum actuator impedance is 2k ohm; Sylkbus two-wire output for Honeywell Sylkbus communicating actuators.

#### Exhaust fan, Y1, Y2 and AUX1 O:

All Relay Outputs (at 30 Vac):
Running: 1.5A maximum
Inrush: 7.5A maximum

#### Environmental

Operating Temperature: -40 to 150 °F (-40 to 65 °C). Exception of display operation down to -4 °F with full recovery at -4 °F from exposure to -40 °F

Storage Temperature: -40 to 150 °F (-40 to 65 °C)

Shipping Temperature: -40 to 150 °F (-40 to 65 °C)

Relative Humidity: 5% to 95% RH non-condensing

Dimensions (See Fig. 1 on page 3): Height: 4.98 inches (126.4 mm) Width: 6.3 inches (160 mm) Depth: 1.34 inches (34 mm)

Weight: 0.58 lb. (0.265 kg)

## ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number. If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

- 1. Your local Honeywell Environmental and Combustion Controls Sales Office (check white pages of your phone directory).
- 2. Honeywell Customer Care 1985 Douglas Drive North Minneapolis, Minnesota 55422-4386

position.

http://customer.honeywell.com or http://customer.honeywell.ca

International Sales and Service Offices in all principal cities of the world. Manufacturing in Belgium, Canada, China, Czech Republic, Germany, Hungary, Italy, Mexico, Netherlands, United Kingdom, and United States.

Approvals: UL listed (XAPX) for USA and Canada; California Energy Commission (CEC) FDD ID number HJW10.

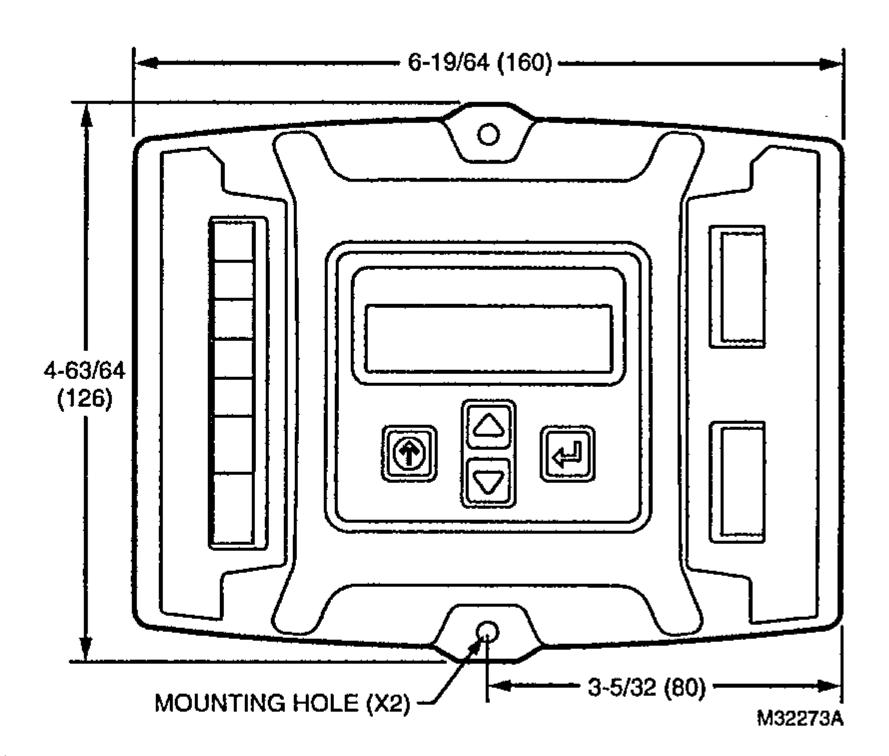


Fig. 1. Dimensions in inches (mm) showing mounting holes.

#### Accessories

- 50048926-001 2-pin edge connector for sensors (20 pieces per bag)
- 50048926-002 6-pin edge connector for field wiring (20 pieces per bag)
- C7250A 20k sensor for MA or OA (dry bulb changeover)
- C7400S Sylkbus sensor for enthalpy control in OA and/ or RA and RA for differential dry bulb changeover
- W7220 PCMOD interface tool for JADE controller and Personal Computer. For the software, go to www.customer.honeywell.com/economizertools
- 50053060-001 Duct mounting kit for sensors
- C7632 or C7232 CO<sub>2</sub> analog sensors OR one TR40
   Sylk bus CO<sub>2</sub> sensor

## BEFORE INSTALLATION

Review the "Specifications" on page 2 before installing the The JADE™ Economizer System.

## When Installing This Product

- Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
- 2. Check ratings given in instructions and on the product to ensure the product is suitable for your application.
- 3. Installer must be a trained, experienced service technician.
- 4. After installation is complete, check out product operation as provided in these instructions.

NOTE: Jade will be in the "set up" mode for the first 60 minutes after powered. If a sensor for OA air or Sylkbus device (sensor, actuator) is disconnected during the set up mode, the Jade will not alarm that failure. The MA sensor is a system "critical" sensor, if the MA sensor is removed during the set up mode, the Jade will alarm. After 60 minutes the Jade controller will change to operation mode and all components removed or failed will alarm in the operation mode.

## INSTALLATION AND SETUP

The following installation procedures should be performed in the order listed:

- Mounting see page 3.
- 2. Wiring see page 4.
- 3. Interface and Programming overview see page 18.
- 4. Setup and Configuration see page 18
- 5. Checkout see page 30.

Troubleshooting and Alarms—see page 31.

## MOUNTING

This section describes the mounting procedures for the JADE™ Economizer module and the sensors.

# **Economizer Module Location and Mounting**

#### **IMPORTANT**

Avoid mounting in areas where acid fumes or other deteriorating vapors can attack the metal parts of the module's circuit board, or in areas where escaping gas or other explosive vapors are present.

#### **IMPORTANT**

The module must be mounted in a position that allows clearance for wiring, servicing, and removal.

Mount the Economizer module on any convenient interior location using the two mounting holes provided on the enclosure using #6 or #8 screws (screws are not provided and must be obtained separately). Use the dimensions in Fig. 1 on page 3 as a guide.

The Economizer module may be mounted in any orientation. However, mounting in the orientation shown in Fig. 1 on page 3 permits proper viewing of the LCD display and use of the keypad.

## **Sensor Location and Mounting**

The JADE<sup>TM</sup> Economizer W7220 uses digital and communicating sensors for control. The C7250 temperature sensors (MA<sup>a</sup> and OA<sup>b</sup>) are 20k NTC. A MA sensor is required for all applications and is mounted in the mixed air section of a rooftop unit either directly to the sheet metal using self tapping sheet metal screws or in the air stream using the duct mounting kit. Duct mount kit is part number 50053060-001.

Optional OA, RA<sup>c</sup> and DA<sup>d</sup> Sylkbus sensors communicate with the W7220 on the two-wire communication bus and can either be wired using a two pin header or using a side connector. Each Sylkbus sensor includes a two pin side connector with the packaging. The SKU number of the Sylkbus sensor is C7400S. All OA, RA and DA sensors are the same SKU

a MA = Mixed Air

b OA = Outdoor Air

c RA = Return Air

d DA = Discharge Air

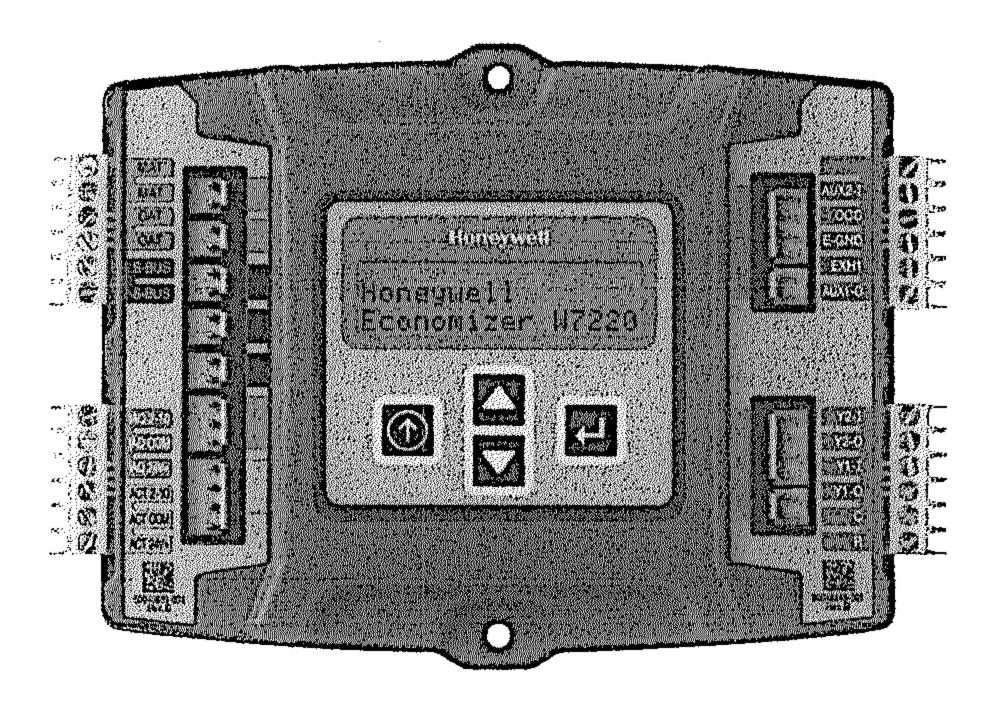
# JADETM Economizer Module

(MODEL W7220)

RECEIVED

MAR 18 2016

DEVELOPMENT SERVICES
COUNTRY DATA



## PRODUCT DESCRIPTION

The JADE™ Economizer System is an expandable economizer control system, which includes a W7220 Economizer Module (controller) with an LCD and keypad. The W7220 can be configured with optional sensors.

The W7220 Economizer Module can be used as a standalone economizer module wired directly to a commercial set back space thermostat and sensors to provide Outdoor Air dry-bulb economizer control.

The W7220 Economizer Module can be connected to optional Sylk Bus sensors for single or differential enthalpy control. The W7220 Economizer Module provides power and communications on the Sylk Bus for the Sylk Bus sensors.

The W7220 Economizer Module automatically detects sensors by polling to determine which sensors are present. If a sensor loses communications after it has been detected, the W7220 Economizer indicates a device fail error on its LCD.

## **System Components**

The JADE<sup>TM</sup> Economizer System includes an Economizer Module, 20k mixed air sensor, damper actuator, an optional CO<sub>2</sub> sensor, and either a 20k outdoor air temperature sensor or Sylk Bus sensors for measuring Outdoor Air and return air enthalpy, temperature, and humidity.

#### **Economizer Module**

This is the core of the JADE™ Economizer System and includes the user interface for the system. The W7220 Economizer Module provides the basic inputs and outputs to provide simple economizer control. When used with the optional Sylk Bus sensors, the Economizer Module provides more advanced economizer functionality.

## Sylk Bus Sensors (optional)

The Sylk Bus Sensor is a combination temperature and humidity sensor which is powered by and communicates on the Sylk Bus. Up to three sensors may be configured with the JADE™ Economizer Module. See page 2 for details.

## CO<sub>2</sub> Sensor (optional)

A CO<sub>2</sub> sensor can be added for Demand Control Ventilation (DCV). Either an analog (2-10 Vdc) or a wall-mount Sylk bus TR40 CO<sub>2</sub> sensor can be used with the Jade economizer.

## PC MOD Tool (optional)

The PC MOD tool is connected to a personal computer and communicates with the Jade economizer controller via the Sylk bus. The W7220 PCMOD tool software is free and can be downloaded from the url in the Accessories section.

Some features on the Jade controller can only be enabled or disabled using the W7220 PC MOD tool. See the PC MOD tool options section in Table 5.

#### Contents

Product Description	-
Specifications	
Before Installation	
Installation and Setup	
Mounting	
Wiring	
Wiring Application Examples	
Interface Overview1	
Setup and Configuration1	
Checkout	
Troubleshooting	









## SPECIFICATIONS

#### W7220A Economizer Module

The module is designed for use with any Honeywell 2 to 10 Vdc or Honeywell Sylkbus communicating actuator. The module includes terminals for a CO<sub>2</sub> sensor, Mixed Air sensor, and an Outdoor Dry Bulb sensor. Enthalpy and other options are available with Sylk Bus sensors.

**User Interface:** Provides status for normal operation, setup parameters, checkout tests, and alarms and error conditions with a 2-line 16 character LCD display and a four button keypad.

### **Electrical**

Rated Voltage: 20 to 30 Vac RMS; 50/60 Hz Transformer: 100 VA maximum system input

Nominal Power Consumption (at 24 Vac, 60 Hz): 11.5 VA

without sensors or actuators

Relay Digital Output Rating at 30 Vac (maximum power from Class 2 input only): 1.5A run;

3.5A inrush @ 0.45PF (200,000 cycles) or 7.5A inrush @ 0.45PF (100,000 cycles)

External Sensors Power Output: 21 Vdc +/- 5% @ 48mA

#### **IMPORTANT**

All inputs and outputs must be Class 2 wiring.

#### inputs

#### SENSORS:

NOTE: A Mixed Air (MA) analog sensor is required on all W7220 units; either an Outdoor Air (OA) sensor for dry bulb change over or an OA Sylkbus sensor for outdoor enthalpy change over is required in addition to the MA sensor. An additional Return Air (RA) Sylkbus sensor can be added to the system for differential enthalpy or dry bulb changeover. For differential dry bulb changeover a 20k ohm sensor is required in the OA and a Sylkbus sensor in the RA. Dip switch on RA Sylkbus sensor must be set in the RA position.

#### Dry Bulb Temperature (optional) and Mixed Air (required), C7250A:

2-wire (18 to 22 AWG);

Temperature range -40 to  $150 \, ^{\circ}$ F (-40 to  $65 \, ^{\circ}$ C).

Temperature accuracy -0°F/+2°F

#### Temperature and Humidity, C7400S1000 (optional):

Sylk Bus; 2-wire (18 to 22 AWG)

Temperature: range -40 to 150 °F (-40 to 65 °C)

Temperature accuracy -0°F/+2°F

Humidity: range 0 to 100% RH with 5% accuracy.

NOTE: Up to three (3) SYLK Bus sensors may be connected to the JADE™ Economizer module. For outdoor air (OA), return air (RA) and discharge (supply) air (DA).

DCV (CO<sub>2</sub>) Sensor (C7232 or C7632):

2-10 Vdc control signal; minimum impedance >50k ohm.

#### 4 Binary inputs:

1-wire 24 Vac + common GND (see page 6 for wiring details). 24 Vac power supply: 20 to 30 Vac 50/60Hz; 100 VA Class 2 transformer.

#### Outputs

Actuator signal: 2-10 Vdc; minimum actuator impedance is 2k ohm; Sylkbus two-wire output for Honeywell Sylkbus communicating actuators.

#### Exhaust fan, Y1, Y2 and AUX1 O:

All Relay Outputs (at 30 Vac): Running: 1.5A maximum Inrush: 7.5A maximum

#### **Environmental**

Operating Temperature: -40 to 150 °F (-40 to 65 °C). Exception of display operation down to -4 °F with full recovery at -4 °F from exposure to -40 °F

Storage Temperature: -40 to 150 °F (-40 to 65 °C)

Shipping Temperature: -40 to 150 °F (-40 to 65 °C)

Relative Humidity: 5% to 95% RH non-condensing

Dimensions (See Fig. 1 on page 3): Height: 4.98 inches (126.4 mm) Width: 6.3 inches (160 mm) Depth: 1.34 inches (34 mm)

Weight: 0.58 lb. (0.265 kg)

## ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number. If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

- Your local Honeywell Environmental and Combustion Controls Sales Office (check white pages of your phone directory).
- 2. Honeywell Customer Care 1985 Douglas Drive North Minneapolis, Minnesota 55422-4386

3. http://customer.honeywell.com or http://customer.honeywell.ca International Sales and Service Offices in all principal cities of the world. Manufacturing in Belgium, Canada, China, Czech Republic, Germany, Hungary, Italy, Mexico, Netherlands, United Kingdom, and United States.

63-2700-10

Approvals: UL listed (XAPX) for USA and Canada; California Energy Commission (CEC) FDD ID number HJW10.

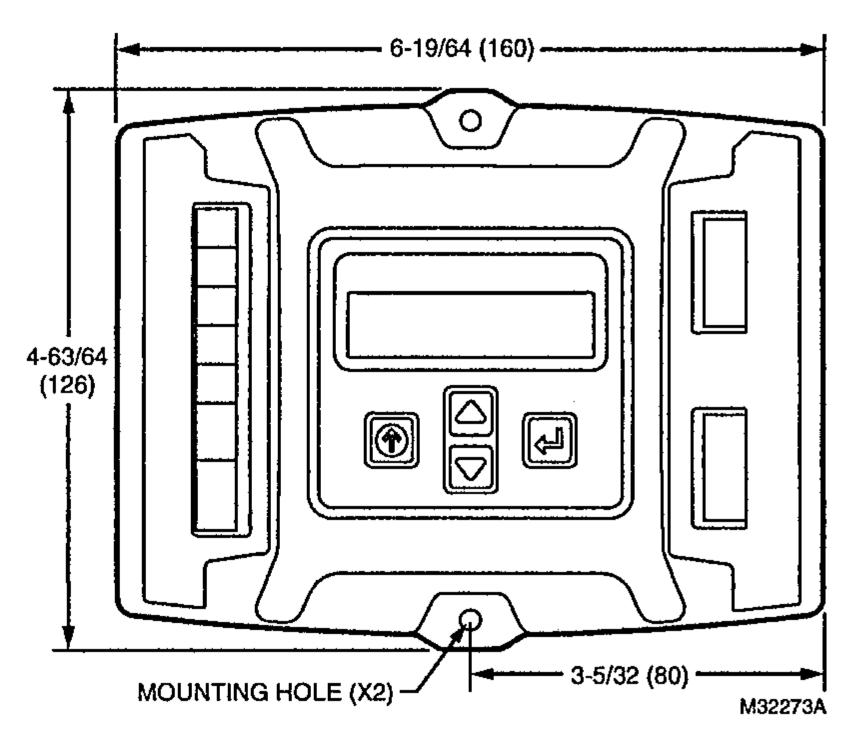


Fig. 1. Dimensions in inches (mm) showing mounting holes.

#### Accessories

- 50048926-001 2-pin edge connector for sensors (20 pieces per bag)
- 50048926-002 6-pin edge connector for field wiring (20 pieces per bag)
- C7250A 20k sensor for MA or OA (dry bulb changeover)
- C7400S Sylkbus sensor for enthalpy control in OA and/ or RA and RA for differential dry bulb changeover
- W7220 PCMOD interface tool for JADE controller and Personal Computer. For the software, go to www.customer.honeywell.com/economizertools
- 50053060-001 Duct mounting kit for sensors
- C7632 or C7232 CO<sub>2</sub> analog sensors OR one TR40
   Sylk bus CO<sub>2</sub> sensor

## **BEFORE INSTALLATION**

Review the "Specifications" on page 2 before installing the The JADE™ Economizer System.

## When Installing This Product

- Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
- 2. Check ratings given in instructions and on the product to ensure the product is suitable for your application.
- 3. Installer must be a trained, experienced service technician.
- 4. After installation is complete, check out product operation as provided in these instructions.

NOTE: Jade will be in the "set up" mode for the first 60 minutes after powered. If a sensor for OA air or Sylkbus device (sensor, actuator) is disconnected during the set up mode, the Jade will not alarm that failure. The MA sensor is a system "critical" sensor, if the MA sensor is removed during the set up mode, the Jade will alarm. After 60 minutes the Jade controller will change to operation mode and all components removed or failed will alarm in the operation mode.

## INSTALLATION AND SETUP

The following installation procedures should be performed in the order listed:

- 1. Mounting see page 3.
- 2. Wiring see page 4.
- 3. Interface and Programming overview see page 18.
- 4. Setup and Configuration see page 18
- 5. Checkout see page 30.

Troubleshooting and Alarms—see page 31.

### MOUNTING

This section describes the mounting procedures for the JADE™ Economizer module and the sensors.

# **Economizer Module Location and Mounting**

#### **IMPORTANT**

Avoid mounting in areas where acid fumes or other deteriorating vapors can attack the metal parts of the module's circuit board, or in areas where escaping gas or other explosive vapors are present.

#### **IMPORTANT**

The module must be mounted in a position that allows clearance for wiring, servicing, and removal.

Mount the Economizer module on any convenient interior location using the two mounting holes provided on the enclosure using #6 or #8 screws (screws are not provided and must be obtained separately). Use the dimensions in Fig. 1 on page 3 as a guide.

The Economizer module may be mounted in any orientation. However, mounting in the orientation shown in Fig. 1 on page 3 permits proper viewing of the LCD display and use of the keypad.

## **Sensor Location and Mounting**

The JADE™ Economizer W7220 uses digital and communicating sensors for control. The C7250 temperature sensors (MA<sup>a</sup> and OA<sup>b</sup>) are 20k NTC. A MA sensor is required for all applications and is mounted in the mixed air section of a rooftop unit either directly to the sheet metal using self tapping sheet metal screws or in the air stream using the duct mounting kit. Duct mount kit is part number 50053060-001.

Optional OA, RA<sup>c</sup> and DA<sup>d</sup> Sylkbus sensors communicate with the W7220 on the two-wire communication bus and can either be wired using a two pin header or using a side connector. Each Sylkbus sensor includes a two pin side connector with the packaging. The SKU number of the Sylkbus sensor is C7400S. All OA, RA and DA sensors are the same SKU

a MA = Mixed Air

b OA = Outdoor Air

c RA = Return Air

<sup>&</sup>lt;sup>d</sup> DA = Discharge Air