



**PRICE**<sup>®</sup>

# **BCH** HORIZONTAL BLOWER COILS

## **INSTALLATION MANUAL**

Date: 10/11  
Reference #: F1-30

[www.price-hvac.com](http://www.price-hvac.com)



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## Safety Precautions

- A. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- B. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
- C. Use this unit only in the manner intended by the manufacturer. If you have any questions, contact the manufacturer:
 

in the United States PRICE INDUSTRIES 2975 Shawnee Ridge Court Suwanee, Georgia USA 30024 (770) 623-8050 Fax (770) 663-6404	in Canada E.H. PRICE LIMITED 638 Raleigh Street Winnipeg, Manitoba Canada R2K 3Z9 (204) 669-4220 Fax (204) 663-2715	International Export Sales Office PRICE INDUSTRIES 638 Raleigh Street Winnipeg, Manitoba Canada R2K 3Z9 204) 669-4220 Fax (204) 663-9810
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- D. Before servicing or cleaning unit, switch power off at service panel and lock service panel to prevent power from being switched on accidentally.
- E. Protect flammable materials nearby when brazing, Use flame and heat protection barriers where needed. Always have a fire extinguisher ready.
- F. The manufacturer assumes no responsibility for personal injury or property damage resulting from improper handling, installation, service or operation of the product.

## General



## Caution to Contractors

Blower Coil units are not intended for use as temporary heat or ventilation sources during building construction. The coil units are not designed nor equipped to operate in a dusty construction environment. Recirculating fan wheels can become coated in construction dust, resulting in an unbalanced wheel. This in turn can contribute to reduced motor life. Inlet air filters, if supplied, would provide little protection as they would quickly become plugged with construction dust.

## Receiving Inspection

All Price Blower Coil units are inspected before shipment. After unpacking the assembly, check it for damage. If any damage to the products is found, report it immediately to the delivery carrier. Ensure that all packing material is removed from the inside of the unit, especially around the blower wheel and coil section.

## Installation

### General

Price Blower Coils are designed to be durable and manufactured for sturdy construction. The units must still be handled with great care and no force or pressure applied to the coil or piping. When handled, the unit should be carried in an upright position holding onto the mounting points. Do not handle the unit using coil stubout connectors, as damage may occur at brazed joint(s). The blower coils are not suitable for outdoor installations. The units should never be stored or installed where it may be subjected to a hostile environment such as rain, snow, or extreme temperatures. Care must be taken during and after installation to prevent foreign material such as paint, drywall mud or dust from entering the drain pan or the motor or blower wheels. Failure to do so may have serious effects on the unit performance and may cause premature failure if foreign material is allowed to be deposited into the motor or blower. Some job conditions may require the unit to be covered temporarily until installation.

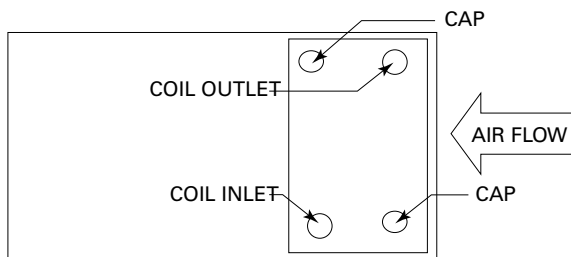
**WARNING: Do not tamper with control components.**

### Electrical Connection

**CAUTION:** Disconnect all incoming power before any electrical installation or service is performed on the unit(s). All field wiring is to be in accordance with the National Electrical Code ANSI/NFPA No. 70 or the Canadian Electrical Code, Part 1, CSA Standard C 22.1. Refer to the product identification label on each unit for information to determine the field wire size. Check voltage requirements prior to power supply connection. Refer to the electrical label located near the electrical control box and also refer to the schematic drawing provided on the underside of the electrical control box cover. If upon energizing the electric motor excessive noise is apparent, shut down the unit. Determine the cause by checking for packing materials, etc. and re-energize after corrective action has been taken.

### Cooling/Heating Pipe Connections

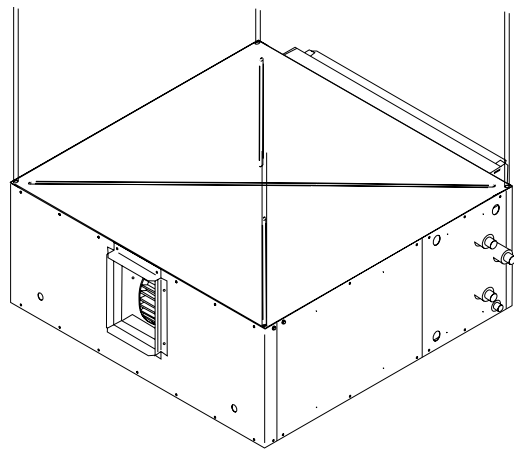
The piping must be installed in a counter flow configuration to achieve optimal performance; The water inlet should be located on the leaving air side of the coil and at the bottom of the coil and the outlet should be located in the top opposite corner to provide the necessary purging of air, as shown below.



The valve packages are easily damaged when introduced to excessive amounts of heat. Great caution must be made when the connections are made with "sweat" or solder joints. The valve must be in the open position during all soldering and brazing operations. Heat should be dissipated with a wet cloth wrapped around the valve body. Automatic valves must have the control cartridge removed for soldering.

### Mounting the Unit

Install ductwork to comply with ASHRAE Fundamentals Handbook, local building codes and the National Electric Code. Locate unit support in accordance with the mechanical and structural plans. Hanging rods should be securely attached to joists or to mounting anchors which are properly secured to slab construction with lugs or poured in place anchors. All units are equipped with 5/8" knockouts in each corner of top and bottom panels for suspensions rods to pass through as shown below. Do not use Hanger brackets to install unit. Ensure the unit is installed so there is sufficient clearance for normal servicing. The drain pan is sloped toward the outlet connection when the unit is installed level and plumb. Ensure main power to the unit has been disconnected prior to performing any electrical work or inspection of the circuitry.

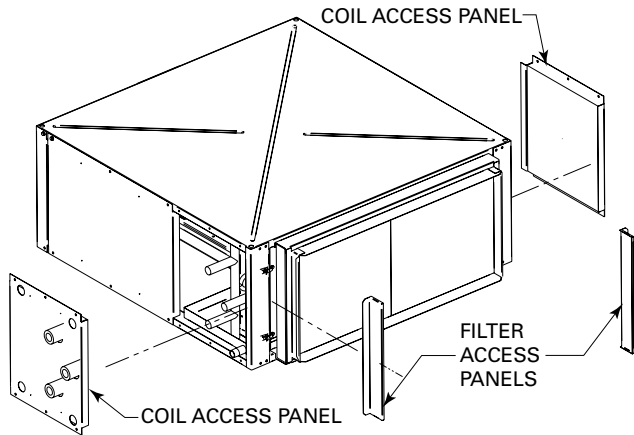


**WARNING: Ensure that the mechanical fastener used on the hanger rod forms a lock so that it is incapable of vibrating loose. Serious injury and/or property damage may occur if the unit is not properly mounted.**

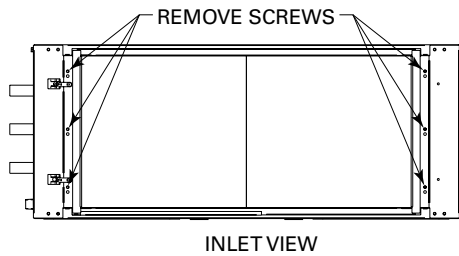
**BCH Field reversible coil instructions**

Price blower coils are equipped with Field reversible coils, meaning they can be changed from left hand to right hand arrangement. The example below details how to change the coil configuration from LH to RH.

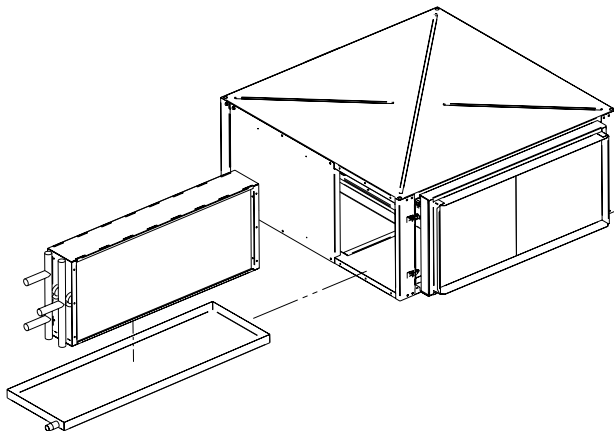
1. Remove the filter side access panels if equipped and both coil access panels.



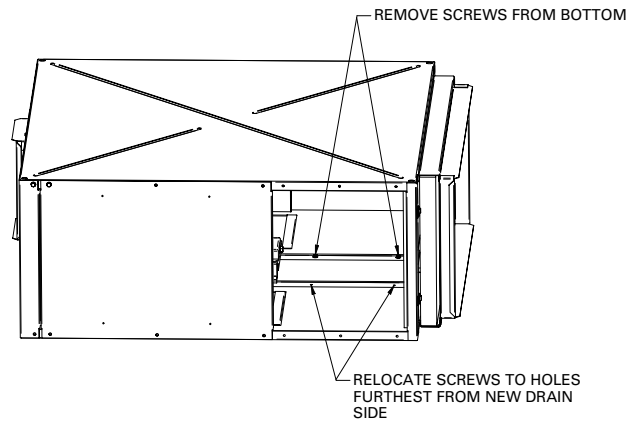
2. Remove the 6 screws on the inlet of the unit holding the coils in place.



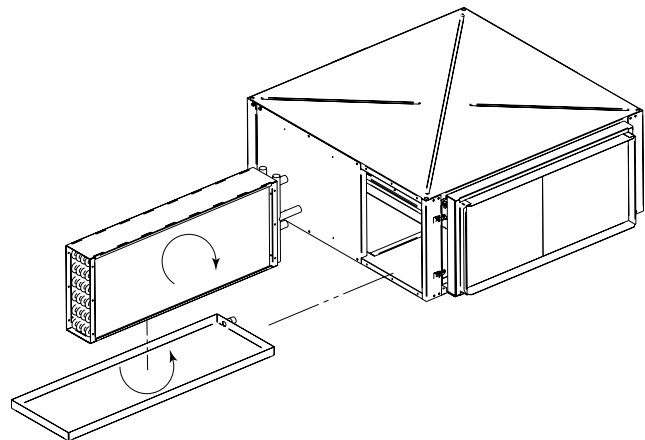
3. Slide the coil and drain pan out of the unit. Remove the coils from the drain pan.



4. Below where the drain pan was located, there will be 2 screws. Remove them from the bottom and relocate them to the side furthest from where the new drain will be located. THIS ENSURES THAT THE DRAIN PAN IS SLOPED PROPERLY.



5. Rotate the drain pan 180° so that the drain connection is on the desired side.
6. Flip the coils so that the connections are on the desired side. Note that the air will still enter the coil through the same face.



7. Re-attach the coil to the unit using the 6 screws removed in step 3.
8. Re-attach the coil and filter access panels.

## Drain Connection and Trap

Drain lines should be the same size as the drain connection and require a drain trap to allow proper drainage of the coil condensate. Failure to install a proper trap will cause excessive amounts of condensate to pool in the drain pan which can lead to condensate carryover.

## Drives, Belts and Bearings

Prior to starting the unit:

1. Remove the shipping screws (white-headed screws) from the blower/motor assembly.
2. Check the alignment of the belt sheaves by applying a straight edge. Adjust if necessary.
3. Tighten all set screws on the fans, sheaves and bearings.
4. Check the belt tension. The ideal belt tension is the lowest belt tension at which the belt drive will not slip. Over tensioning causes reduced belt and bearing life. Do not apply belt dressing.

## Start Up & Operation

### General

Before beginning start up operation, familiarize yourself with the unit, options, accessories, controls so you understand proper system operation. All personnel should have a good working knowledge of general start-up procedures and have the appropriate start-up and balancing guides available for consultation.

### Fan & Drive Assembly

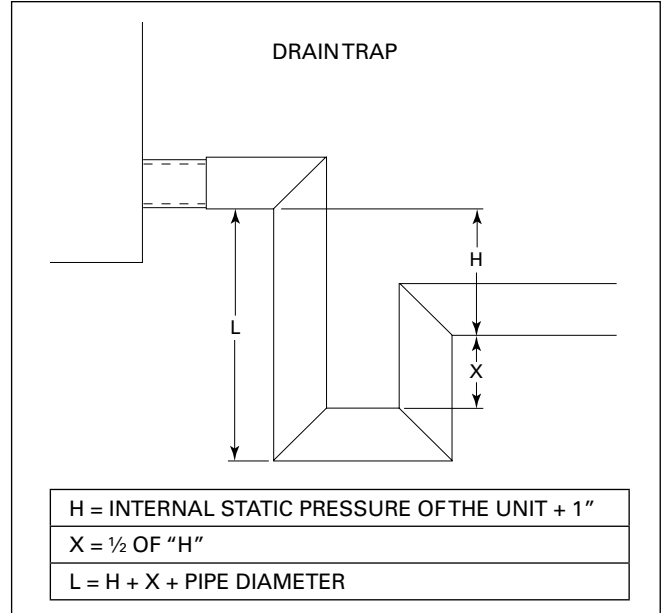
Prior to start up; ensure that all ductwork, grilles, filters and access panels are installed. The static pressure drop of the duct system components must meet the design conditions. Price blower coils are factory set to operate at the design pressure. If the pressure is too low the motor can overheat and if the pressure is too high the fan will not operate properly and generate excessive noise.

All units are equipped with a variable pitch drive pulley to allow for field adjustment of the fan speed. To reduce the fan speed, loosen the set screw on the drive pulley and turn the pulley so that the faces move further apart. To increase fan speed, turn the pulley so that the faces move closer together. When adjusting the fan speed, be sure to re-align the belt sheaves before resuming operation.

### Cooling/Heating

Prior to the water system start-up and balancing, the chilled/hot water systems should be flushed to clean out dirt and debris, which may have collected in the piping during construction. During this procedure, all unit service valves must be in the closed position. This prevents foreign matter from entering the unit and clogging the valves and metering devices. Filters should be installed in the piping mains to prevent this material from entering the units during normal operation. During system filling, air venting from the unit is accomplished by the use of the standard manual air vent fitting installed on the coil. The air vent screw should be turned counterclockwise no more than 1-1/2 turns to operate the air vent.

**CAUTION:** The air vent provided on the unit is not intended to replace the main system air vents and may not release air trapped in other parts of the system. Inspect the entire system for potential air traps and vent those areas as required, independently. In addition, some systems may require repeated venting over a period of time to properly eliminate air from the system.



### Air System Balancing

All duct-work must be complete and connected, and all grilles, filters, access doors and panels must be properly installed to establish actual system operating conditions BEFORE beginning air balancing operations. Each individual unit and attached duct-work is a unique system with its own operating characteristics. For this reason, air balancing is normally done by balance specialists who are familiar with all procedures required to properly establish air distribution and fan system operating conditions. These procedures should not be attempted by unqualified personnel. After the proper system operation is established, the actual unit air delivery and the actual fan motor amperage draw for each unit should be recorded in a convenient place for future reference.

The manufacturer assumes no responsibility for undesirable system operation due to improper design, equipment or component selection, and/or installation of ductwork, grilles, and other field supplied components.

### Water System Balancing

A complete knowledge of the hydronic system, its components, and controls is essential to proper water system balancing and this procedure should not be attempted by unqualified personnel. The system must be complete and all components must be in operating condition BEFORE beginning water system balancing operations. Each hydronic system has different operating characteristics depending on the devices and controls in the system. The actual balancing technique may vary from one system to another. After the proper system operation is established, the appropriate system operating conditions such as various water temperatures and flow rates should be recorded in a convenient place for future reference. Before and during water system balancing, conditions may exist which can result in noticeable water noise or undesired valve operation due to incorrect system pressures. After the entire system is balanced, these conditions will not exist on properly designed systems.

# Maintenance

## Fan and Drive Assembly

1. Disconnect all incoming power before servicing the unit.
2. Price blower coil units are supplied with permanently lubricated motors.
3. The blower and motor should be inspected annually for accumulation of dust and dirt. Clean as necessary.
4. Blower and motor can be accessed without disconnecting ductwork.

**CAUTION:** MOTOR MAY BE VERY HOT. ENSURE MOTOR HAS COOLED BEFORE SERVICE.

5. Motors are provided with thermal overload protection. If the motor overheats and trips the thermal overload, it will automatically reset after cooling down to a proper operating temperature. Should this occur, check that all ductwork, grilles, filters and access doors are properly installed.
6. Check belts regularly for proper tension and wear. Re-tension and replace as necessary.

1. Disconnect all incoming power before servicing the unit.
2. Coils can be inspected through either bottom or side access panels. To service the coils, remove the coil service door.
3. The coil should be inspected periodically for accumulation of dust and dirt. Clean as necessary. Cleaning can be done by brushing the coils in the direction of the fins as to not damage them. Compressed air can also be used to blow out the dust particles in the coil. Vacuum up all dust particles so they can not damage the blower and motor.
4. Clean drain pan as required. To remove the drain pan, disconnect and remove the coils.

## Filter(s)

1. Inspect return air filters on a regular basis to avoid excessive restriction of air flow. Clean or replace filters as required. Filter can be accessed from either side of unit or from the bottom.

**CAUTION:** DO NOT OPERATE UNIT WITHOUT FILTERS OR FILTER ACCESS PANELS INSTALLED.

2. Replacement filter sizes are listed below.

Coils		MOTOR FULL LOAD AMPS						
Phase	Voltage	Nominal Horsepower						
		1/2	3/4	1	1 1/2	2	3	5
1	115	9.8	13.8	16.0	-	-	-	-
	208	5.4	7.6	8.8	-	-	-	-
	230	4.9	6.9	8.0	-	-	-	-
	277	4.5	6.4	7.4	-	-	-	-
3	208	2.4	3.5	4.6	6.6	7.5	10.6	16.7
	230	2.2	3.2	4.2	6.0	6.8	9.6	15.2
	460	1.1	1.6	2.1	3.0	3.4	4.8	7.6

Unit	H (in)	W (in)	Quantity
BCH 08	14.375	10.875	2
BCH 12	14.375	14.875	2
BCH 16	16.875	17.875	2
BCH 20	16.875	20.875	2
BCH 30	23.875	21.375	2
BCH 40	23.875	27.875	2

Notes:

- All motors are equipped with automatic thermal overload protection.
- Motor full load amps refer to the National Electric Code (NFPA 70). Actual nameplate amps may vary. NEC data was extrapolated for 277V.
- Motors are 60Hz, open drip proof, ball bearing, single speed rated at continuous duty up to 104°F (40°C).
- For 50Hz motor applications, please contact your local Price representative

## Blower Coil Electric Coil Removal Instructions

**CAUTION:** DISCONNECT ALL INCOMING POWER BEFORE ANY ELECTRICAL INSTALLATION OR SERVICE IS PERFORMED ON THE UNIT(S).

Ensure line power is off to the Blower Coil Control Panel. The Control Panel contains hazardous voltages when energized; make certain that incoming line voltage has been disconnected. The Blower Coil Electric Coil assembly, seen in Illustration A, can be removed by following the steps listed below:

1. Open the Control Panel and disconnect any incoming wires that are not integrated in the enclosure; i.e. main supply and motor wires, as seen in Illustration B.
2. Disconnect the 90° wire conduit fitting from the control box and ensure the motor wires are pulled out of the control box.
3. Use a utility knife to cut the sealant between the perimeter of the control panel and the outlet ductwork.
4. Using a ¼" driver, remove the screws securing the control panel to the outlet ductwork. There will be 3-4 screws located near the inside corners of the control box. See Illustration C.
5. Once the sealant has been separated and the screws have been removed, the electric coil can slide out of the ductwork. Grab the control box securely and slide the coil out of the unit horizontally. See Illustration D. Be cautious when cutting the sealant and removing the screws as they are the only securing medium for the electric coil.

Note: See Electric Coils manual for troubleshooting.



Illustration A



Illustration B

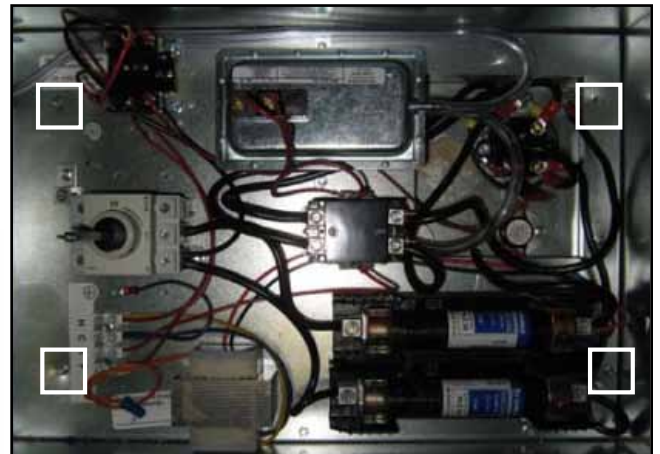


Illustration C

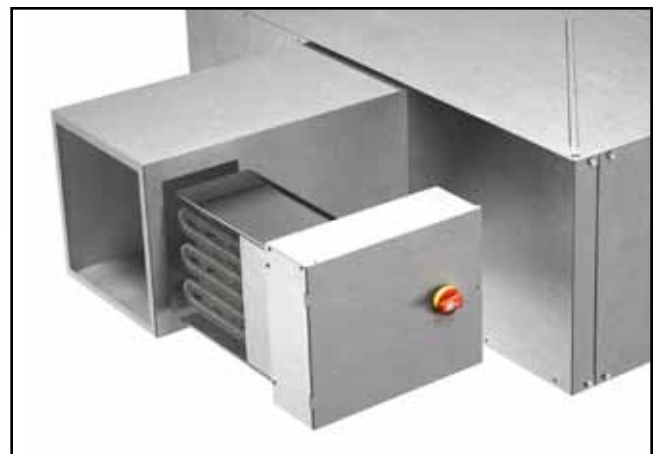


Illustration D

# Wiring Diagrams

Issued date

Blank qty

Part qty

Factory order no

Completion date

Sch date

Comment/Tag

Operator initials

**LINE LEGEND**

—— FACTORY ELECTRICAL WIRING

----- FIELD ELECTRICAL WIRINGS

**OPTIONAL EQUIPMENT**

DISCONNECT SWITCH (DSW)

MOTOR FUSE (MFUS)

TRANSFORMER (TR)

FAN RELAY (C)

115 OR 277V 1 $\phi$

24V HOT

24V COMMON

FAN START

**LEGEND**

DSW - DISCONNECT SWITCH

L1 - LINE CONNECTION

M - FAN MOTOR

MFUS - FAN MOTOR FUSE

OPT. - OPTIONAL

C - 24V FAN CONTROL RELAY

TB, TB1 - TERMINAL BLOCK

TR - TRANSFORMER

N - NEUTRAL

**ELECTRONIC CONTROLS**

**FUSES**

1. MFUS - REPLACE WITH BUSSMAN FNO RATED 600V, \_\_\_\_\_ AMP.

**WIRING NOTES**

1. USE COPPER 75 C MIN. RATED SUPPLY WIRE FOR FIELD CONNECTIONS.
2. FIELD LOW VOLTAGE WIRING INSULATION MUST HAVE 600V RATING.

ECN	
Date	
Revision	

<b>PRICE</b>	
Drawn by	Scale
CT	NTS
App'd	Date (mm/mm/yy)
	2009/10/28
Drawing no.	Revision
253360	0
	Sheet
	1 of 3

# Wiring Diagrams

Issued date	Blank qty	Part qty	Factory order no	Completion date	Sch date	Comment/Tag	Operator Initials
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LINE LEGEND

—— FACTORY ELECTRICAL WIRING  
 - - - - FIELD ELECTRICAL WIRINGS

OPTIONAL EQUIPMENT

DISCONNECT SWITCH (DSW)  
 MOTOR FUSE (MFUS)  
 TRANSFORMER (TR)  
 FAN RELAY (C)

LEGEND

DSW - DISCONNECT SWITCH  
 L1, L2 - LINE CONNECTIONS  
 M - FAN MOTOR  
 MFUS - FAN MOTOR FUSE  
 OPT. - OPTIONAL  
 C - 24V FAN CONTROL RELAY  
 TB, TB1 - TERMINAL BLOCK  
 TR - TRANSFORMER

FUSES

1. MFUS - REPLACE WITH BUSSMAN FNO RATED 600V, \_\_\_\_\_ AMP.

WIRING NOTES

1. USE COPPER 75 C MIN. RATED SUPPLY WIRE FOR FIELD CONNECTIONS.  
 2. FIELD LOW VOLTAGE WIRING INSULATION MUST HAVE 600V RATING.

ELECTRONIC CONTROLS

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Drawn by: CT  
 Scale: NTS  
 Date: 2009/10/28  
 Appr'd: \_\_\_\_\_

ECN: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Revision: \_\_\_\_\_

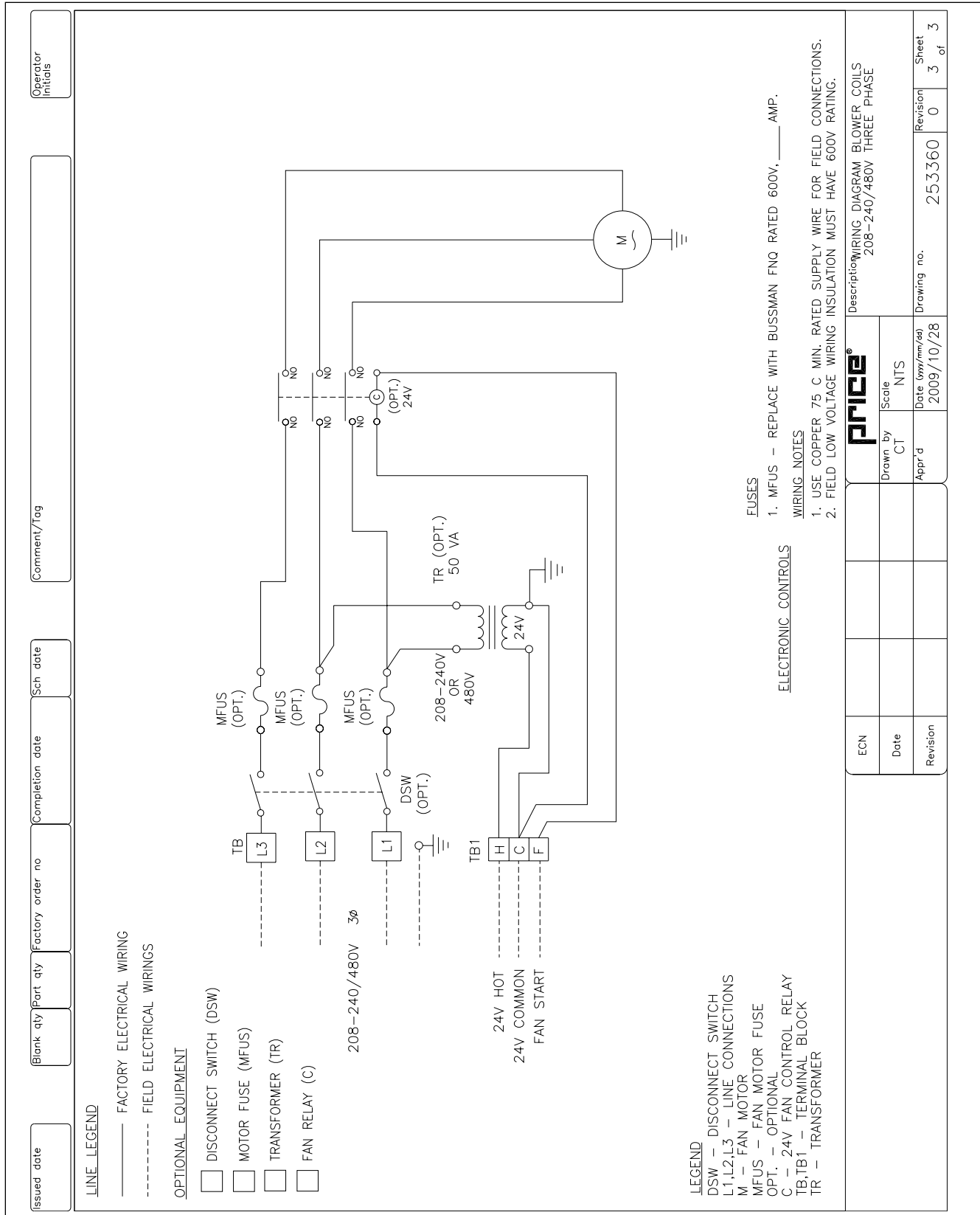
  

price®

Description: WIRING DIAGRAM BLOWER COILS  
 208/240V, SINGLE PHASE

Drawing no.: 253360  
 Revision: 0  
 Sheet 2 of 3

# Wiring Diagrams



## Installation Checklist

### Receiving & Inspection

- Receiving & Inspection
- Unit Received Undamaged
- All Parts Accounted For
- Unit Arrangement/Hand Correct

### Handling and Installation

- Unit mounted Level and Plumb
- Correct Electrical Service
- Proper Access Available for Unit and Components
- Correct Overcurrent Protection Provided
- Correct Service Switch/Disconnect Provided
- Code Compliance for All Components
- Shipping Screws and Hardware Removed
- Unit Protected from Dirt and Foreign Matter
- Set screws tightened
- Belt properly Tensioned

### Cooling/Heating Connections

- Unit mounted Level and Plumb
- Proper Access Available for Unit and Components
- Correct Chilled Water Line to the Unit
- Correct Hot Water Line to the Unit
- Code Compliance for All Components
- Drain pan sloped properly

### Ductwork Connections

- All ductwork, grilles, filters and access panels are installed
- Correct Supply and Return Grille type and size
- Insulate ductwork as required
- Control Outside Air to Protect from Heat/Cold

### Electrical Connections

- Refer to Unit Wiring Diagram
- Wiring in Code Compliance
- Connect Power Service

## Replacement Parts

Component	Part#	Description	
<b>Fan Motors</b>	019891-001	1/2 HP, 1PH, 115/230V, Cap start motor, 56 frame	
	019891-002	3/4 HP, 1PH, 115/230V, Cap start motor, 56 frame	
	019891-003	1 HP, 1PH, 115/230V, Cap start motor, 56 frame	
	019891-004	1/2 HP, 1PH, 277V, Cap start motor, 56 frame	
	019891-005	1/2 HP, 1PH, 277V, Cap start motor, 56 frame	
	019891-006	1/2 HP, 1PH, 277V, Cap start motor, 56 frame	
	019891-007	1/2 HP, 3PH, 208-230/460V, Motor, 56 frame	
	019891-008	3/4 HP, 3PH, 208-230/460V, Motor, 56 frame	
	019891-009	1 HP, 3PH, 208-230/460V, Motor, 56 frame	
	019891-010	1-1/2 HP, 3PH, 208-230/460V, Motor, 56 frame	
	019891-011	2 HP, 3PH, 208-230/460V, Motor, 56HZ frame	
	019891-012	3 HP, 3PH, 208-230/460V, Motor, 56HZ frame	
	019891-013	5 HP, 3PH, 208-230/460V, Motor, 184T frame	
	<b>Motor Base</b>	019073-001	Adjustable motor base for 56 Frame Motors
019073-002		Adjustable motor base for 184 Frame Motors	
<b>Blower Flex Connection</b>	042181-001	FLEX DUCT CONNECTOR, UL 214 LISTED	
<b>Filters</b>	042313-001	2in MERV 8 FILTER, 14.375x10.875	
	042313-002	2in MERV 8 FILTER, 14.375x14.875	
	042313-003	2in MERV 8 FILTER, 16.875x17.875	
	042313-004	2in MERV 8 FILTER, 16.875x20.875	
	042313-005	2in MERV 8 FILTER, 23.875x21.375	
	042313-006	2in MERV 8 FILTER, 23.875x27.875	
	042314-001	2in MERV 13 FILTER, 14.375x10.875	
	042314-002	2in MERV 13 FILTER, 14.375x14.875	
	042314-003	2in MERV 13 FILTER, 16.875x17.875	
	042314-004	2in MERV 13 FILTER, 16.875x20.875	
	042314-005	2in MERV 13 FILTER, 23.875x21.375	
	042314-006	2in MERV 13 FILTER, 23.875x27.875	
	<b>Disconnect Switch</b>	019011-001	1 Pole, 120-277V
		019903-003	2 pole, 204-240V
019011-002		3 pole, 208-600V	
<b>Control Components</b>	019416-001	24V MAGNETIC CONTACTOR, 1 POLE	
	019416-002	24V MAGNETIC CONTACTOR, 2 POLE	
	019418-001	24V MAGNETIC CONTACTOR, 3 POLE	
	019436-001	120/24V Transformer, 50VA	
	019436-011	208-240/24V Transformer, 50VA	
	019439-001	277/24V Transformer, 50VA	
	00-14050	480/24V Transformer, 50VA	
<b>Fuse Block</b>	019459-001	Fuse Block 600V 30A	





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INDUSTRIES

1290 Barrow Industrial Parkway  
Auburn, Georgia USA 30011



**PRICE**  
INDUSTRIES

999 North Thornton Road  
Casa Grande, Arizona USA 85222-3809



**e.h. price**  
LIMITED

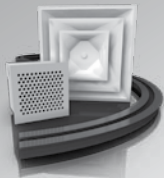
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The founding principles of our company have never changed - business integrity, first class service and a commitment to people. Price manufacturing endeavors arose from our belief that we could supply superior products and services at a reasonable price. Our mission is to become the world-wide supplier of preference for air distribution products and services. You can rely on Price – our products and services – with confidence.

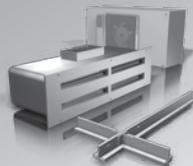
**Warranty:** The Company warrants and guarantees that all goods within this catalog that have been manufactured by the Company have been manufactured in accordance with the specifications published herein and will be free from defects in material and workmanship for a period of twelve (12) months from the date of Bill of Lading issued by the Company. The Company will replace defective product at its option, but will not be responsible for labor or material charges in replacing product or consequential damages. Any installation not conforming with the Company's specifications, manuals, bulletins or instructions or any misuse or any modification not authorized by the Company voids this warranty. This warranty is in lieu of all Provincial, State, and Federal statutory warranties and the conditions herein are in substitution and replacement of such warranties, statutory or otherwise.

Your Local Price Representative:

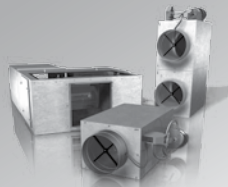
### Grilles & Diffusers



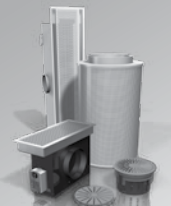
### Critical Environments



### Terminals



### Sustainable Building



### Noise Control

