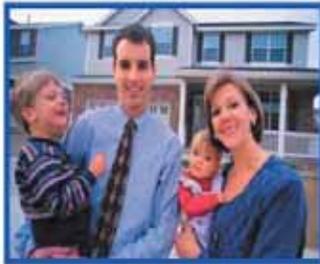




Heating & Cooling Systems

Fix-Right[®]



Repair Guide

The Best Heating & Air

Anywhere USA, ST 00000

***The areas leading comfort experts for all your
Heating and Air Conditioning needs***

Price Book Set Up Instructions

BSI's **Fix-Right Price Book Program** is designed to help our client contractors outperform the competition with a "customized-to-your-business" flat rate *Fix-Right Service Repair Price Book*.

We designed the *Fix-Right Service Repair Price Book* to be used by Service Technicians on service calls.

Easy 1-Page Price Book Set-up:

Your *Fix-Right Service Repair Price Book*'s flat rate pricing is set up via a 1-page set-up form located at end of this demo price book. We provide you service repair price for 99.9% of all common residential HVAC repairs.

Your flat rate prices will be based on your company's unique:

Cost-of-Goods-Sold:

- Actual "built-in" by Corken Steel cost-of-goods-sold for service repair parts.
- Total "built-in" installation labor hours for each repair task for a Service Technician which we multiply by your unique labor cost set up rate to find your service repair labor cost.

Your Service Repair Flat Rate Sell Price:

- We will make your pricing accurate to your business and based on your unique local area labor costs, parts mark-up scales, unique overhead and net profit set-up requirements.

Prices Shown are Illustrative Only

- This "demo" price book was designed for demonstration purposes only.
- **The pricing shown is for a fictitious contractor, and is not meant to be representative to local area pricing.**
- **You are NOT authorized to use this demo price guide for pricing work.**
- We will make your pricing accurate to your business and based on your unique local area labor costs, parts/materials costs, parts/materials local sales tax rate (if applicable), unique overhead and net profit set-up requirements.

Questions?

Call our Price Book Hot Line at 800-240-2823 24/7 or email us at customer@GrowMyHVAC.com



This repair guide
contains 99% of all
common heating and
cooling system
failures.

Each includes their:

- ☑ Causes of failure
- ☑ ***Fix-Right[®] Solution***
- ☑ How best to ***prevent***
them from happening
again.

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Cooling Systems

Fix-Right[®] Repair Guide

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Failure Prevention

- ☑ Have annual system maintenance done one month before the air conditioning season.
- ☑ Keep the condensing unit free of debris.
- ☑ Starting January 1, 2015 U.S. Dept. of Energy mandates equipment replacement minimum SEER rating.



Zones	DOE's Proposed New Federal Minimums (January 1, 2015)	
	Air Conditioning	Heat Pump
North	13 SEER	14 SEER 8.2 HSPF
South	14 SEER	14 SEER 8.2 HSPF
Southwest	14 SEER 12.2 / 11.7 EER <45K / >45K	14 SEER 8.2 HSPF

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Loose/Burned Wiring

1

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
0101 0050	Replace fuseable link	\$ 141.51	\$ 183.18	\$ 120.28	\$ 155.70
0102 0050	Replace ionizing wires	\$ 117.36	\$ 159.03	\$ 99.76	\$ 135.18
0103 0050	Repair minor connection	\$ 150.14	\$ 191.81	\$ 127.62	\$ 163.04
0104 0075	Repair or replace electrical harness	\$ 383.88	\$ 446.38	\$ 326.30	\$ 379.42
0105 0050	Troubleshoot shorted electrical/wires	\$ 83.33	\$ 125.00	\$ 70.83	\$ 106.25
0106 0050	Install thermostat/low voltage per 10 foot	\$ 109.50	\$ 151.17	\$ 93.07	\$ 128.49
0107 0005	Replace wire nut/twist-on wire connector	\$ 9.10	\$ 13.27	\$ 7.73	\$ 11.28
0108 0005	Install romex per foot	\$ 14.81	\$ 18.97	\$ 12.58	\$ 16.13
0109 0020	Install split bolt connector	\$ 61.03	\$ 77.70	\$ 51.88	\$ 66.04
0110 0100	Install Surge protector	\$ 351.42	\$ 434.76	\$ 298.71	\$ 369.54
0111 0050	Replace AC compressor terminal	\$ 268.09	\$ 309.76	\$ 227.88	\$ 263.29
0112 0050	Replace 120V receptacle	\$ 132.05	\$ 173.71	\$ 112.24	\$ 147.66
0113 0050	Repair connector/terminal - (Labor Only)	\$ 83.33	\$ 125.00	\$ 70.83	\$ 106.25
0114 0075	Repair connection/harness - (Labor Only)	\$ 125.00	\$ 187.50	\$ 106.25	\$ 159.38
0115 0050	Replace toggle switch 1 pole, 2 position	\$ 101.81	\$ 143.48	\$ 86.54	\$ 121.95
0116 0050	Replace toggle switch 2 pole, 2 position	\$ 120.28	\$ 161.95	\$ 102.24	\$ 137.66
0117 0050	Replace relay/contacter (1.5 pole- 2 pole)	\$ 142.45	\$ 184.12	\$ 121.09	\$ 156.50
0118 0050	Replace furnace disconnect switch	\$ 138.06	\$ 179.73	\$ 117.35	\$ 152.77
0119 0033	Replace furnace pigtail cord	\$ 101.97	\$ 129.47	\$ 86.68	\$ 110.05
0120 0005	Install romex/BX/UF per foot	\$ 14.81	\$ 18.97	\$ 12.58	\$ 16.13
0121 0020	Replace electric / AC wire whip	\$ 188.10	\$ 204.77	\$ 159.89	\$ 174.05
0122 0050	Install fused disconnect	\$ 231.14	\$ 272.80	\$ 196.47	\$ 231.88
0123 0050	Install non-fused disconnect	\$ 181.87	\$ 223.54	\$ 154.59	\$ 190.01
0124 0100	Replace 3 phase switch disconnect 30-60 AMP	\$ 358.74	\$ 442.07	\$ 304.93	\$ 375.76
0125 0100	Replace circuit breaker switch disconnect 30-60 AMP	\$ 358.74	\$ 442.07	\$ 304.93	\$ 375.76
0126 0050	Replace furnace disconnect switch - (Labor Only)	\$ 83.33	\$ 125.00	\$ 70.83	\$ 106.25
0127 0050	Replace 4x4 1900 box w/switch/receptacle	\$ 140.89	\$ 182.55	\$ 119.75	\$ 155.17
0128 0050	Parts Acquisition	\$ 83.33	\$ 125.00	\$ 70.83	\$ 106.25
0129 0025	Access/Ladder Set-up Fee	\$ 41.67	\$ 62.50	\$ 35.42	\$ 53.13

Technician Notes

CAUTION check for loose wires since they will turn into burned or brittle wires because of bad connections. Always use the special compressor terminal when repairing burned wires at compressor terminals/connectors.
 If a flame roll out - check for burned wires in the furnace vestibule.
 Check for fusible links they are sometimes hard to find.
 A fuse or circuit breaker switch cannot have a higher amp rating than the wire connected to it. Fuses and circuit breaker switches trip and blow for over amperage conditions. Be thorough to identify the cause, including operating equipment through its normal run and start sequences.
Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.
Always mention how to receive a 15% discount off today's repairs

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1

Loose/Burned Wiring

CAUSES OF FAILURE

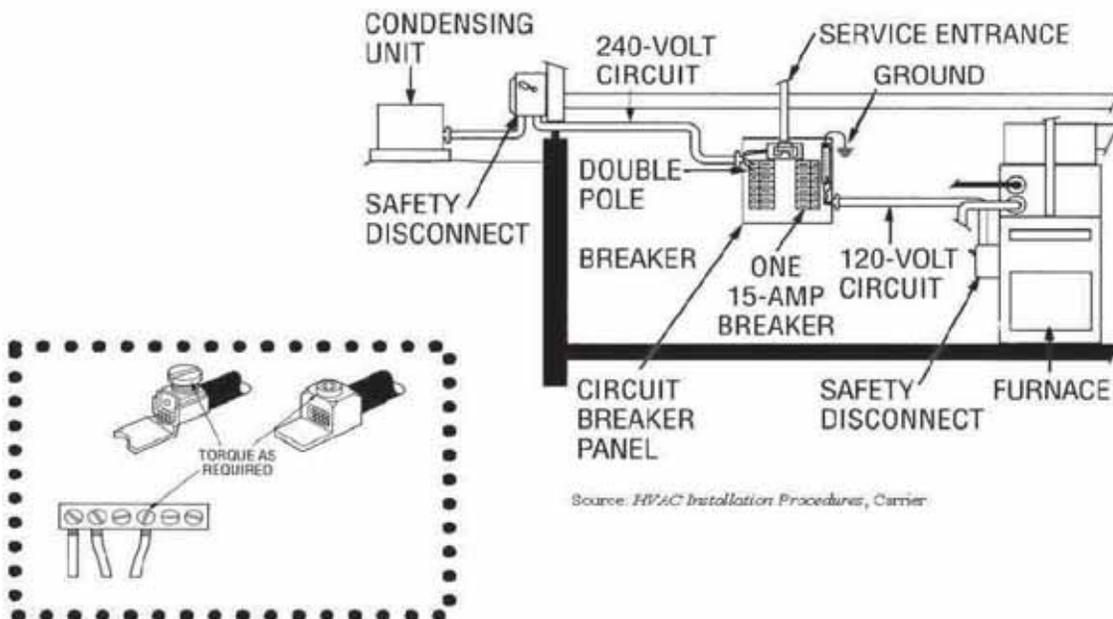
- Defective connections
- Electrical shorts
- Power surges
- Wrong size wiring

FIX-RIGHT SOLUTION

- Repair connection
- Repair electrical short
- Repair/install power surge protection

PREVENTION – PROPER PERIODIC MAINTENANCE

- Loose or dirty connections often overheat.
- Normal equipment vibration requires electrical connections to be periodically cleaned and tightened.



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Failed Contactor

2

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
0201 0050	Replace relay/contactor (1.5 pole- 2 pole)	\$ -	\$ -	\$ -	\$ -
0202 0050	Replace relay/contactor - (3 pole)	\$ -	\$ -	\$ -	\$ -
0203 0050	Replace time delay relay - 2 wire	\$ -	\$ -	\$ -	\$ -
0204 0075	Replace time delay relay - 3 wire	\$ -	\$ -	\$ -	\$ -
0205 0025	Remove insects/debris	\$ -	\$ -	\$ -	\$ -
0206 0050	Replace warranty relay/contactor (Labor Only)	\$ -	\$ -	\$ -	\$ -
0207 0050	White Roger Sealed Contactor 2-pole 40 amp	\$ -	\$ -	\$ -	\$ -
0208 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
0209 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 220V price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION you are doing your customer a disservice if you leave a contactor in the unit with pitted and/or burned points. Saving the customer this repair money NOW will / could cost him/her a compressor replacement and / or contactor repair LATER.

A contactor must have a higher amp rating than the equipment AMP draw.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Small parts like contactors can sometimes cause an expensive part to fail like compressors because it's not working properly. Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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Failed Contactor

2

Failed Contactor

CAUSES OF FAILURE

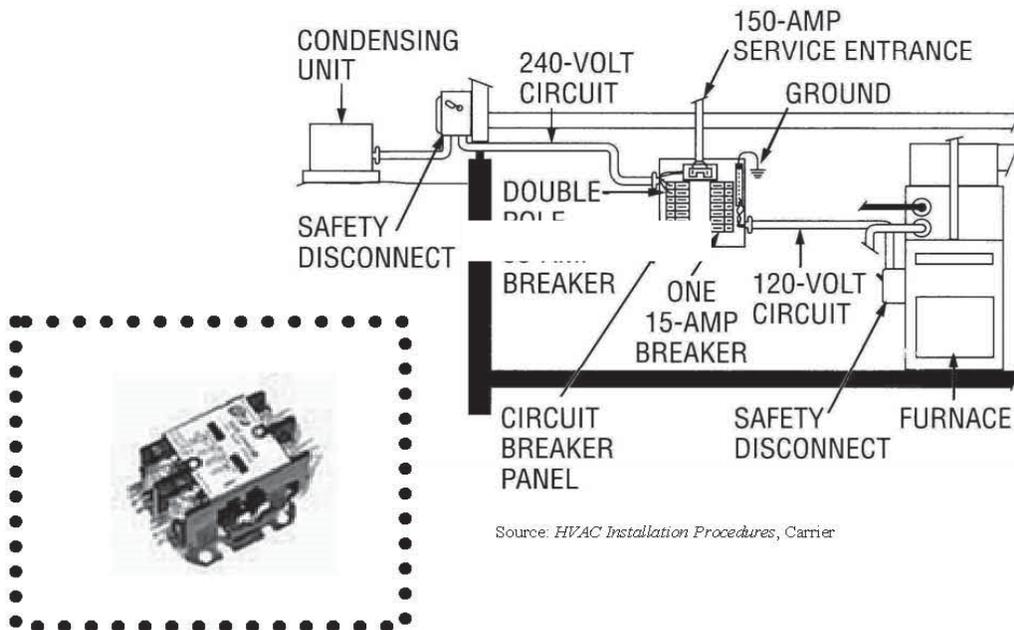
- ☑ Over/under line voltage
- ☑ Loose connection or mounting plate
- ☑ Deterioration and corrosion
- ☑ Excessive short cycling
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Correct over/under voltage problem
- ☑ Clean and tighten connections and mounting plate
- ☑ Replace contactor
- ☑ Correct short cycling problem
- ☑ Recommended to replace outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Capacitor

CAUSES OF FAILURE

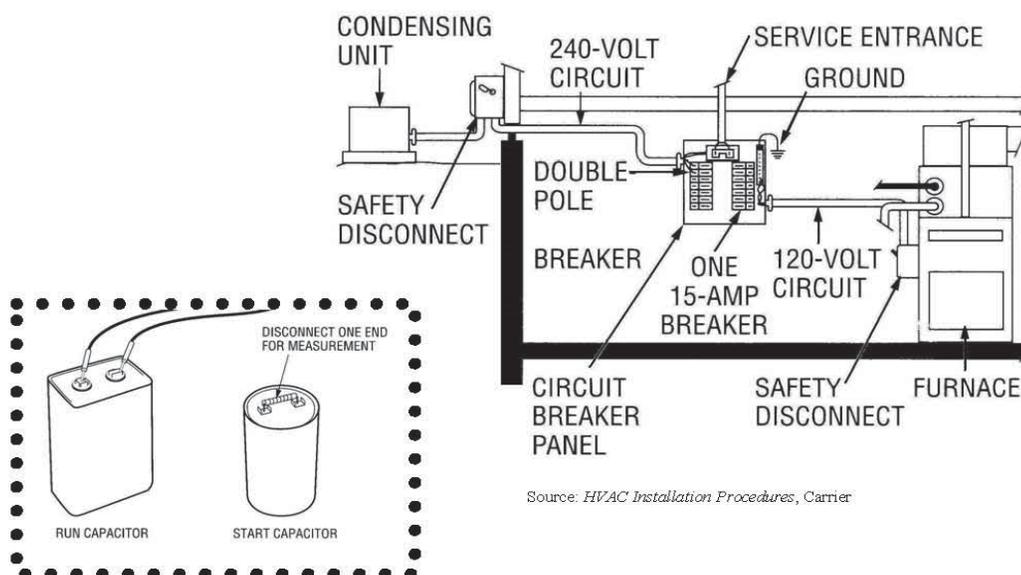
- Relay failure
- Starting load too high
- Excessive short cycling
- Excessive high voltage
- Improper capacitor
- Power surge
- Age fatigue

FIX-RIGHT SOLUTION

- Repair relay
- Correct high voltage problem
- Correct short cycling problem
- Replace Capacitor
- Repair/install power surge protection
- Recommended to replace outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Defrost Control

4

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
0401 0050	Replace defrost control relay	\$ -	\$ -	\$ -	\$ -
0402 0050	Replace defrost control thermostat/switch	\$ -	\$ -	\$ -	\$ -
0403 0100	Replace defrost control circuit board - universal	\$ -	\$ -	\$ -	\$ -
0404 0100	Replace defrost control circuit board - OEM	\$ -	\$ -	\$ -	\$ -
0405 0066	De ice single indoor/outdoor coil	\$ -	\$ -	\$ -	\$ -
0406 0050	Replace warranty defrost control relay (Labor Only)	\$ -	\$ -	\$ -	\$ -
0407 0050	Replace warranty defrost circuit board (Labor Only)	\$ -	\$ -	\$ -	\$ -
0408 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
0409 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 5 ton price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

Caution when replacing a defrost control board, always check the Replace defrost control thermostat for accuracy to make sure it is opening and closing at the right temperature. Run the system through a complete defrost control cycle.

Replace defrost control sensors, thermistors and relays should be checked during a defrost control repair.

Uneven frosting or ice coverage can also mean trouble in the refrigerant circuit.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Small parts like the defrost control board can sometimes cause excessive energy use and or equipment failure, because it's not working properly. Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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Failed Defrost Control

4

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 Call For Next Update Due 6 months from
 9/28/2017

Failed Defrost Control

4

CAUSES OF FAILURE

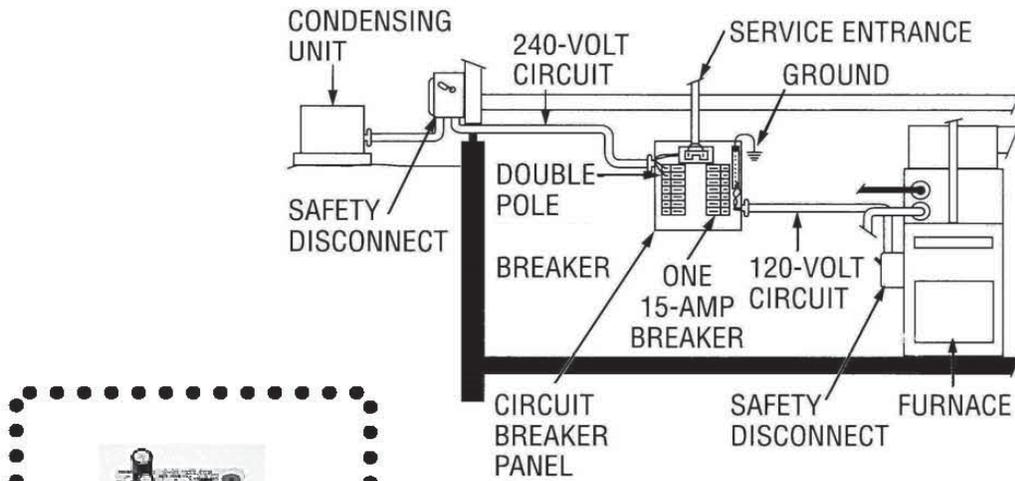
- ☑ Relay failure
- ☑ High moisture
- ☑ Deterioration and corrosion
- ☑ Power surge
- ☑ Age fatigue

FIX-RIGHT SOLUTION

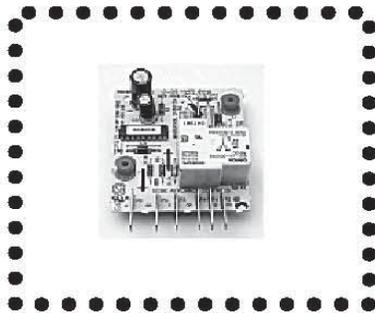
- ☑ Replace defrost control board
- ☑ Correct short cycling problem
- ☑ Repair/install power surge protection
- ☑ Recommended to replace outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



Source: *HVAC Installation Procedures*, Carrier



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Failed Defrost Control

4

Failed Start Kit

5

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
0501 0050	Replace start kit- high torque 3 wire 1.5-3 ton	\$ -	\$ -	\$ -	\$ -
0502 0050	Replace start kit- universal 3 wire 3.5-5 ton	\$ -	\$ -	\$ -	\$ -
0503 0050	Replace hard start kit	\$ -	\$ -	\$ -	\$ -
0504 0050	Replace soft start kit	\$ -	\$ -	\$ -	\$ -
0505 0050	Replace warranty start kit- high torque 2 wire	\$ -	\$ -	\$ -	\$ -
0506 0050	Replace warranty hard start kit- universal 3 wire	\$ -	\$ -	\$ -	\$ -
0507 0050	Replace warranty soft start kit	\$ -	\$ -	\$ -	\$ -
0508 0050	Replace warranty start kit (Labor Only)	\$ -	\$ -	\$ -	\$ -
0509 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
0510 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 5 ton price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT-BLANK

Technician Notes

CAUTION capacitors don't have to be open or shorted to be considered bad. Do not rely only on an open/short test of a capacitor. Use a capacitor meter to take a microfarad reading to verify strength of capacitors. **Safety:** Short out capacitor terminals before pulling wire to avoid an unexpected shock.

A weak Replace start capacitor could cause hard start conditions and or compressor failure.

Start kits help reduce start load amperage to protect and extended the compressors life.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Small parts like the start-kit can sometimes cause excessive energy use and or equipment failure, because it's not working properly. Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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5

Failed Start Kit

CAUSES OF FAILURE

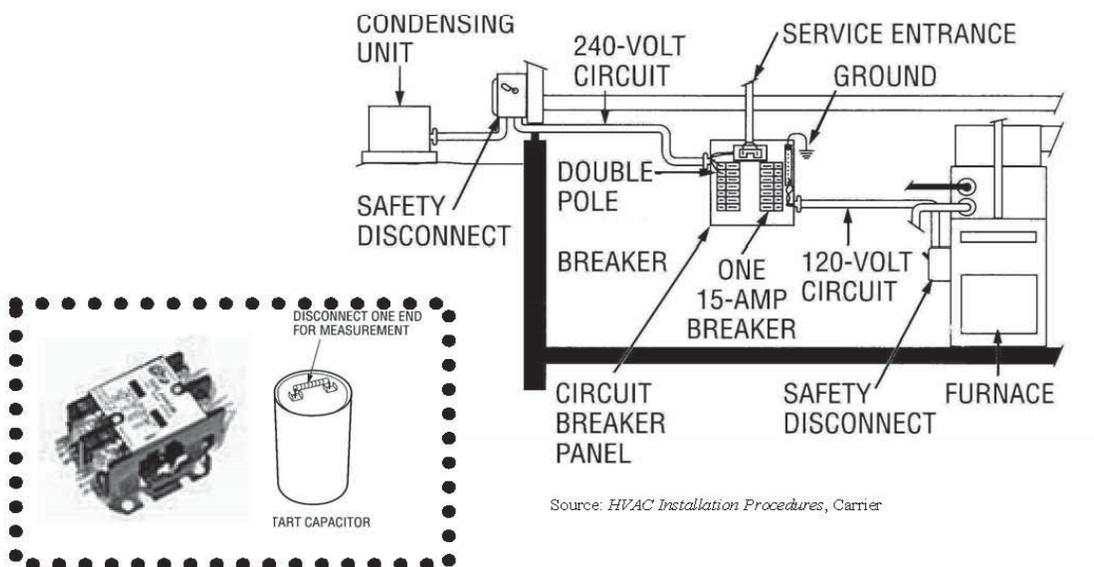
- ☑ Relay failure
- ☑ Failed capacitor
- ☑ Low line voltage
- ☑ Deterioration and corrosion
- ☑ Power surge
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Replace start kit
- ☑ Correct low voltage problem
- ☑ Repair/install power surge protection
- ☑ Recommended to replace outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Transformer

6

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
0601 0075	Replace multi-tap transformer 40VA	\$ -	\$ -	\$ -	\$ -
0602 0075	Replace multi-tap transformer 50-60VA	\$ -	\$ -	\$ -	\$ -
0603 0075	Replace transformer 75VA	\$ -	\$ -	\$ -	\$ -
0604 0075	Replace/add in-line fuse	\$ -	\$ -	\$ -	\$ -
0605 0075	Replace warranty transformer (Labor Only)	\$ -	\$ -	\$ -	\$ -
0606 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
0607 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 220V price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION If a transformer is bad, always check for shorts in the control wiring, heat anticipators or coils in relays before replacing the transformer. Always replace with the same VA (Volt Amperage) rating transformer as the transformer you are replacing.

As a best practice - always install in-line fuse when replacing transformer.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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6

Failed Transformer

CAUSES OF FAILURE

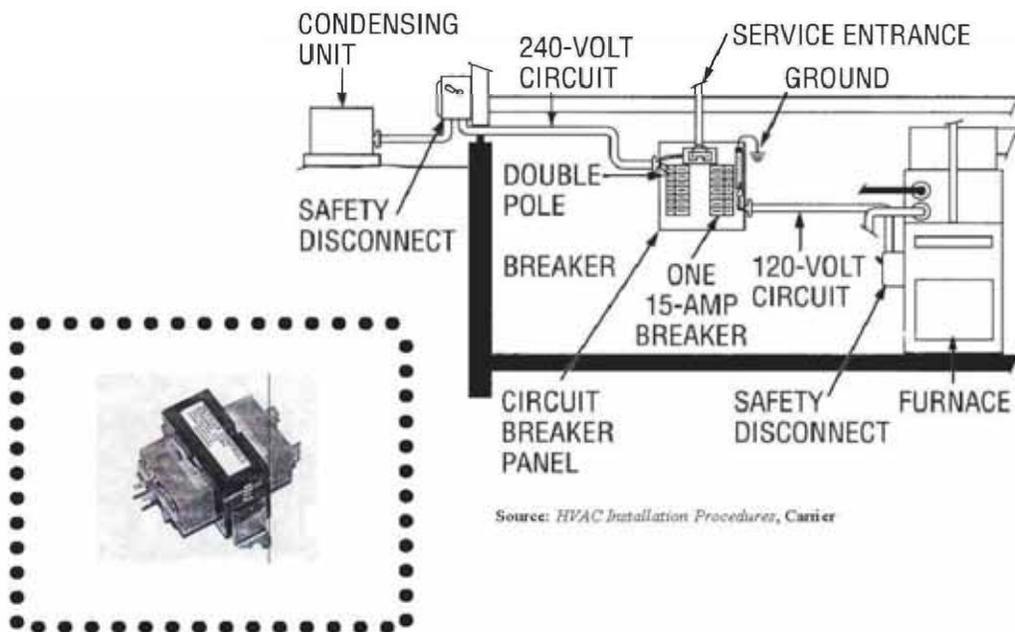
- ☑ High line voltage
- ☑ Power surge
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Replace transformer
- ☑ Correct high voltage problem
- ☑ Repair/install power surge protection
- ☑ Recommended to replace outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

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Failed Breaker or Fuse

7

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
0701 0025	Reset and test circuit breaker switch	\$ -	\$ -	\$ -	\$ -
0702 0075	Identify source of power surge	\$ -	\$ -	\$ -	\$ -
0703 0005	Replace low voltage control fuse up to 5 amp	\$ -	\$ -	\$ -	\$ -
0704 0050	Replace high voltage control fuse	\$ -	\$ -	\$ -	\$ -
0705 0005	In-line fuse holder	\$ -	\$ -	\$ -	\$ -
0706 0020	Replace electric / AC wire whip	\$ -	\$ -	\$ -	\$ -
0707 0005	Replace fuse - (Labor Only)	\$ -	\$ -	\$ -	\$ -
0708 0005	Replace Li'l Popper 3 amp	\$ -	\$ -	\$ -	\$ -
0709 0005	Replace Li'l Popper 5 amp	\$ -	\$ -	\$ -	\$ -
0710 0005	Replace 3 amp fuse	\$ -	\$ -	\$ -	\$ -
0711 0005	Replace 5 amp fuse	\$ -	\$ -	\$ -	\$ -
0712 0025	Replace 15 -60 amp fuse	\$ -	\$ -	\$ -	\$ -
0713 0050	Replace breaker	\$ -	\$ -	\$ -	\$ -
0714 0050	Replace breaker Zensco	\$ -	\$ -	\$ -	\$ -
0715 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
0716 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 220V price labor materials using Miscellaneous Unclassified Section 54				

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Technician Notes

Caution a fuse or circuit breaker switch cannot have a higher amp rating than the wire connected to it. Fuses blow and circuit breaker switches trip for a over amperage reason, be thorough to identify the cause, including operating equipment through its normal run and start sequences. Visually inspect all connections including circuit breaker switches, disconnects, contactors and compressors.

Check the UL plate on the equipment for the maximum circuit breaker switch or fuse size.

A fuse or circuit breaker switch cannot have a higher AMP rating than the wire connected to it.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

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Failed Breaker or Fuse

7

Failed Breaker or Fuse

7

CAUSES OF FAILURE

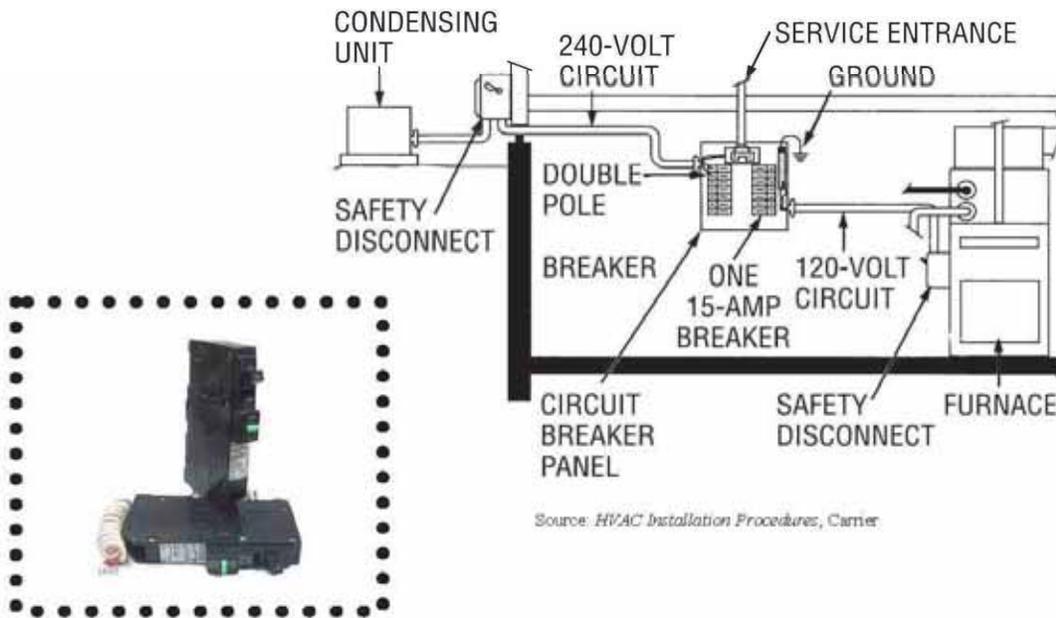
- ☑ High line voltage
- ☑ Power surge
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Replace breaker fuse
- ☑ Correct high voltage problem
- ☑ Repair/install power surge protection
- ☑ Recommended to replace outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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7

Failed Condenser Fan Motor

8

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
0801 0100	Replace condenser fan motor 1/3-1/6 1075	\$ -	\$ -	\$ -	\$ -
0802 0100	Replace condenser fan motor 1/4 1075	\$ -	\$ -	\$ -	\$ -
0803 0100	Replace condenser fan motor 1/2 1075	\$ -	\$ -	\$ -	\$ -
0804 0100	Replace condenser fan motor 1/4 875	\$ -	\$ -	\$ -	\$ -
0805 0100	Replace motor with fan blade universal *	\$ -	\$ -	\$ -	\$ -
0806 0150	Replace motor ECM OEM*	\$ -	\$ -	\$ -	\$ -
0807 0100	Replace motor with fan blade OEM*	\$ -	\$ -	\$ -	\$ -
0808 0050	Replace rain shield only	\$ -	\$ -	\$ -	\$ -
0808 0100	Replace rain shield with motor change	\$ -	\$ -	\$ -	\$ -
0810 0002	Motor lubrication	\$ -	\$ -	\$ -	\$ -
0811 0100	Install warranty cond. fan motor (Labor Only)	\$ -	\$ -	\$ -	\$ -
0812 0100	Replace failed variable/2 speed motor	\$ -	\$ -	\$ -	\$ -
0813 0100	Install low ambient kit	\$ -	\$ -	\$ -	\$ -
0814 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
0815 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 5 ton price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

Insure that the fan blade can be removed from the shaft without damaging the fan before you determine the amount of work that needs to be performed.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

*If the air conditioner or heat pump is over ten years old, and a fan motor failure is found - replacing the entire system is usually the best option for the customer.

Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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Failed Condenser Fan Motor

8

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 Building Services Institute, Inc.
 Call For Next Update Due 6 months from
 9/28/2017

Failed Condenser Fan Motor

8

CAUSES OF FAILURE

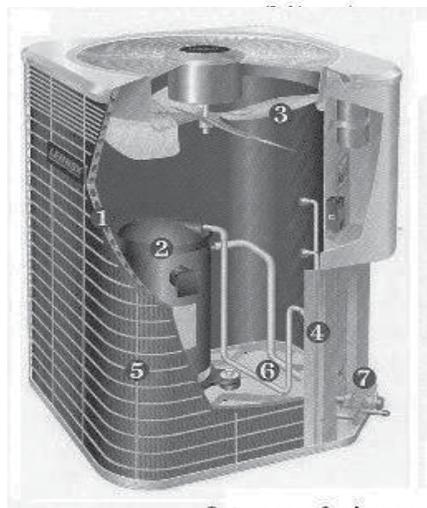
- ☑ Warped or broken blade
- ☑ Operating vibration
- ☑ Worn bearings
- ☑ Deterioration and corrosion
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Replace fan motor
- ☑ Correct vibration problem
- ☑ Replace wear possible motor bearings
- ☑ Recommended to replace outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



- ① Outdoor Coil
- ② Scroll Compressor
- ③ Direct-Drive Fan
- ④ Corrosion-Resistant Cabinet
- ⑤ Coil Guard
- ⑥ Drainage Holes
- ⑦ High Pressure Safety Switch

Cut-away of a Lennox Condensing Unit
Typical components of most brands of air conditioners

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Failed Condenser Fan Motor

8

Failed Compressor

9

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
0901 0250	Replace compressor scroll 1.5-3*	\$ -	\$ -	\$ -	\$ -
0902 0250	Replace compressor recip 1.5-3 tons *	\$ -	\$ -	\$ -	\$ -
0903 0250	Replace compressor scroll 3.5-5 tons *	\$ -	\$ -	\$ -	\$ -
0904 0250	Replace compressor recip 3.5-5 tons *	\$ -	\$ -	\$ -	\$ -
0905 0250	Replace compressor scroll 1.5-3 tons 410a*	\$ -	\$ -	\$ -	\$ -
0906 0250	Replace compressor scroll 3.5-5 tons 410a*	\$ -	\$ -	\$ -	\$ -
0907 0250	Replace warranty compressor 1.5-2.5 <small>Labor Only</small>	\$ -	\$ -	\$ -	\$ -
0908 0250	Replace warranty compressor 3-5tons <small>Labor Only</small>	\$ -	\$ -	\$ -	\$ -
0909 0050	Add for heat pump compressor	\$ -	\$ -	\$ -	\$ -
0910 0075	Refresh Kit - new wiring, contactor and capacitor	\$ -	\$ -	\$ -	\$ -
0911 0075	Cool down high temp compressor inside control	\$ -	\$ -	\$ -	\$ -
0912 0010	Perform compressor acid test	\$ -	\$ -	\$ -	\$ -
0913 0050	Replace compressor crank case heater	\$ -	\$ -	\$ -	\$ -
0914 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
0915 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	These repairs do not include refrigeration service - See section 12 for appropriate charges				
	Over 5 ton price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes
<p>CAUTION all compressor replacements require refrigerant service and driers replacement.</p> <p>Compressors fail for a reason. Verify proper equipment operation sequence after the compressor is replaced. Use proper recovery, evacuation and filter drier procedures to protect your customers investment. Pressure ratio- High pressure + 15 divided by low pressure = below 2 compressor is weak; 2.5 compressor is questionable; 2.6-3.5 compressor is ok; above 3.6 something is wrong in the system.</p> <p>*Best repair on out of warranty R-22 compressor failure is to replace entire condenser and coil.</p> <p>*If compressor failure due to a motor burnout, perform an acid test to verify if another refrigerant change is required. Replace liquid and suction driers if another refrigerant charge is required.</p> <p>Price service ticket retail or retail overtime and calculate/present total service agreement discount option.</p>

Customer Notice
<p>*If the air conditioner or heat pump is over ten years old, and a fan motor failure is found - replacing the entire system is usually the best option for the customer.</p> <p>Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.</p> <p>Always mention how to receive a 15% discount off today's repairs</p>

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9

Failed Compressor

CAUSES OF FAILURE

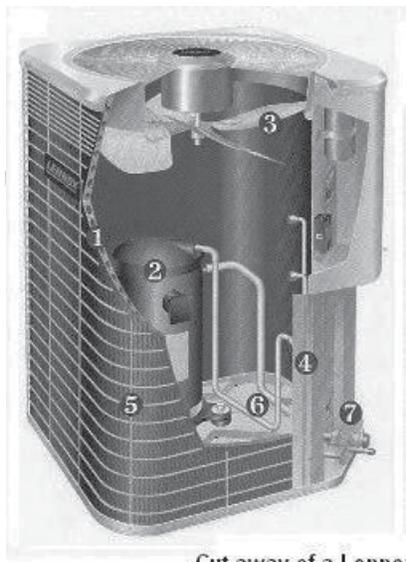
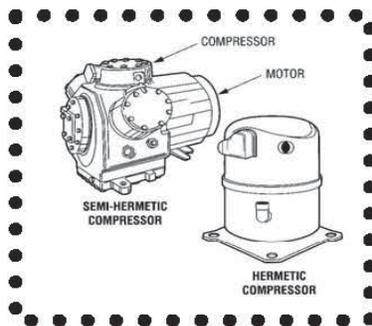
- ☑ Over/Under voltage
- ☑ Refrigerant slugging or high discharge pressure
- ☑ Relay failure
- ☑ Excessive short cycling
- ☑ Power surge
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Repair over/under voltage problem
- ☑ Clean heat transfer surfaces
- ☑ Replace compressor
- ☑ Repair/install power surge protection
- ☑ Recommended to replace indoor/outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



- ① Outdoor Coil
- ② Scroll Compressor
- ③ Direct-Drive Fan
- ④ Corrosion-Resistant Cabinet
- ⑤ Coil Guard
- ⑥ Drainage Holes
- ⑦ High Pressure Safety Switch

Cut-away of a Lennox Condensing Unit
Typical components of most brands of air conditioners

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Failed Expansion Valve or Metering Device

10

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
1001 0075	Replace TXV -1.5-3tons R-410	\$ -	\$ -	\$ -	\$ -
1002 0125	Replace TXV -3.5-5 tons R-410	\$ -	\$ -	\$ -	\$ -
1003 0075	Replace TXV -1.5-3 tons R-22	\$ -	\$ -	\$ -	\$ -
1004 0125	Replace TXV -3.5-5 tons R-22	\$ -	\$ -	\$ -	\$ -
1005 0033	Replace piston control - <i>see notes</i>	\$ -	\$ -	\$ -	\$ -
1006 0050	Replace piston weld install - <i>see notes</i>	\$ -	\$ -	\$ -	\$ -
1007 0050	Clean metering device - <i>see notes</i>	\$ -	\$ -	\$ -	\$ -
1008 0075	Replace warranty TXV - (Labor Only)	\$ -	\$ -	\$ -	\$ -
1009 0050	Relocate expansion valve sensing element	\$ -	\$ -	\$ -	\$ -
1010 0100	Electronic expansion valves	\$ -	\$ -	\$ -	\$ -
1011 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
1012 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	These repairs do not include refrigeration service - See section 12 for appropriate charges				
	Over 5 ton price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION when mounting the expansion bulb, make sure it is in the correct location and insulate the bulb. Recheck superheat or sub cool settings after installation. Use a heat absorbing compound (**not a wet rag**) when welding an expansion valve.

Use proper recovery, evacuation and filter drier procedures to protect the customers investment.

This repair **DOES NOT INCLUDE** refrigerant service - SEE SECTION 12 and SECTION 13 for appropriate charges.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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Failed Expansion Valve or Metering Device

10

Failed Expansion Valve or Metering Device

10

CAUSES OF FAILURE

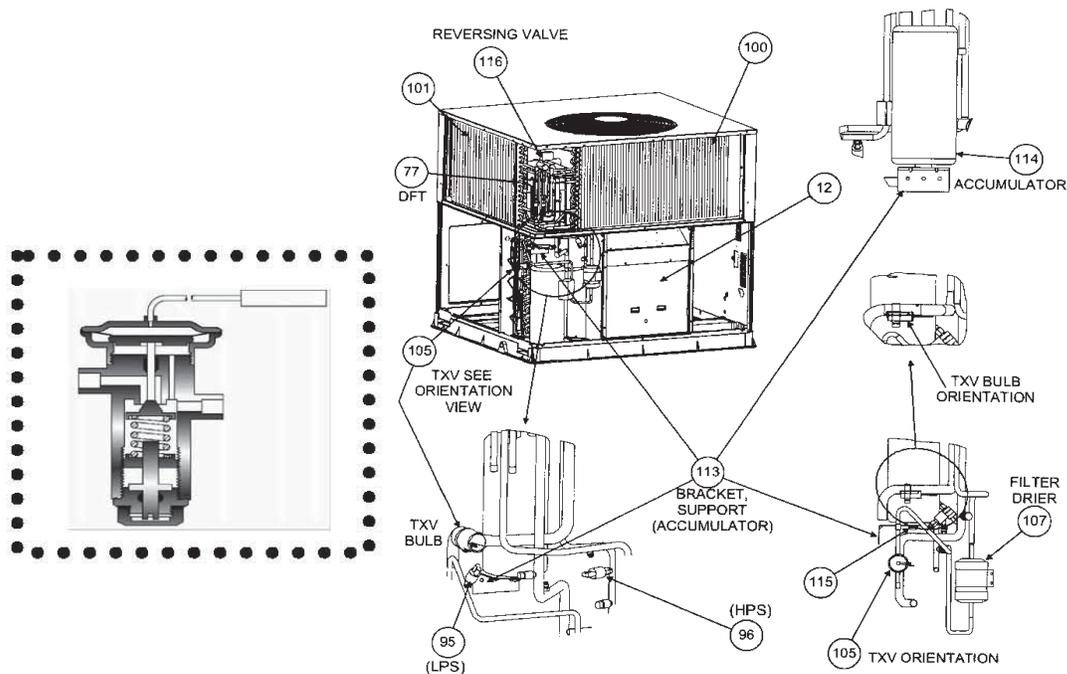
- ☑ Operating vibration
- ☑ Plugged with debris or contaminated
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Replace expansion valve or metering device
- ☑ Correct vibration problem
- ☑ Flush refrigerant system where appropriate
- ☑ Recommended to replace indoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspection cleaning and tuning help eliminate many contributing causes of failure



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Failed Expansion Valve or Metering Device

10

Heating Systems

Fix-Right[®] Repair Guide

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Failure Prevention

- ☑ **Set humidistat to setting that reflects outdoor temperature to maintain proper indoor humidity.**
- ☑ **Furnaces: Check filters every month.**
- ☑ **Have annual system maintenance done one month before the heating season begins.**

WARNING

- ☑ **If gas odors can be detected, call the gas company immediately. Do not turn on any electrical equipment or use anything with an open flame.**
- ☑ **Soot on the front of the furnace or boiler may indicate a draft or combustion problem. A technician should be contacted.**

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Loose/Burned Wiring Heating Section

19

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
1901 0050	Replace fuseable link	\$ -	\$ -	\$ -	\$ -
1902 0050	Replace ionizing wires	\$ -	\$ -	\$ -	\$ -
1903 0050	Repair minor connection	\$ -	\$ -	\$ -	\$ -
1904 0050	Repair or replace electrical harness	\$ -	\$ -	\$ -	\$ -
1905 0050	Troubleshoot shorted electrical/wires	\$ -	\$ -	\$ -	\$ -
1906 0050	Install thermostat/low voltage per 10 foot	\$ -	\$ -	\$ -	\$ -
1907 0050	Replace wire nut/twist-on wire connector	\$ -	\$ -	\$ -	\$ -
1908 0050	Install romex per foot	\$ -	\$ -	\$ -	\$ -
1909 0050	Install split bolt connector	\$ -	\$ -	\$ -	\$ -
1910 0050	Install Surge protector	\$ -	\$ -	\$ -	\$ -
1911 0050	Replace AC compressor terminal	\$ -	\$ -	\$ -	\$ -
1912 0050	Replace 120V receptacle	\$ -	\$ -	\$ -	\$ -
1913 0050	Repair connector/terminal - (Labor Only)	\$ -	\$ -	\$ -	\$ -
1914 0050	Repair connection/harness - (Labor Only)	\$ -	\$ -	\$ -	\$ -
1915 0050	Replace toggle switch 1 pole, 2 position	\$ -	\$ -	\$ -	\$ -
1916 0050	Replace toggle switch 2 pole, 2 position	\$ -	\$ -	\$ -	\$ -
1917 0050	Replace relay/contacter (1.5 pole- 2 pole)	\$ -	\$ -	\$ -	\$ -
1918 0050	Replace furnace disconnect switch	\$ -	\$ -	\$ -	\$ -
1919 0050	Replace furnace pigtail cord	\$ -	\$ -	\$ -	\$ -
1920 0050	Install romex/BX/UF per foot	\$ -	\$ -	\$ -	\$ -
1921 0050	Replace electric / AC wire whip	\$ -	\$ -	\$ -	\$ -
1922 0050	Install fused disconnect	\$ -	\$ -	\$ -	\$ -
1923 0050	Install non-fused disconnect	\$ -	\$ -	\$ -	\$ -
1924 0050	Replace 3 phase switch disconnect 30-60 AMP	\$ -	\$ -	\$ -	\$ -
1925 0050	Replace circuit breaker switch disconnect 30-60 AMP	\$ -	\$ -	\$ -	\$ -
1926 0050	Replace furnace disconnect switch - (Labor Only)	\$ -	\$ -	\$ -	\$ -
1927 0050	Replace 4x4 1900 box w/switch/receptacle	\$ -	\$ -	\$ -	\$ -
1928 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
1929 0050	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -

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Technician Notes

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If a flame roll out - check for burned wires in the furnace vestibule.
Check for fusible links they are sometimes hard to find.
A fuse or circuit breaker switch cannot have a higher amp rating than the wire connected to it. Fuses and circuit breaker switches trip and blow for over amperage conditions. Be thorough to identify the cause, including operating equipment through its normal run and start sequences.
Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.
Always mention how to receive a 15% discount off today's repairs

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Loose/Burned Wiring Heating Section

19

Loose/Burned Wiring Heating Section

19

CAUSES OF FAILURE

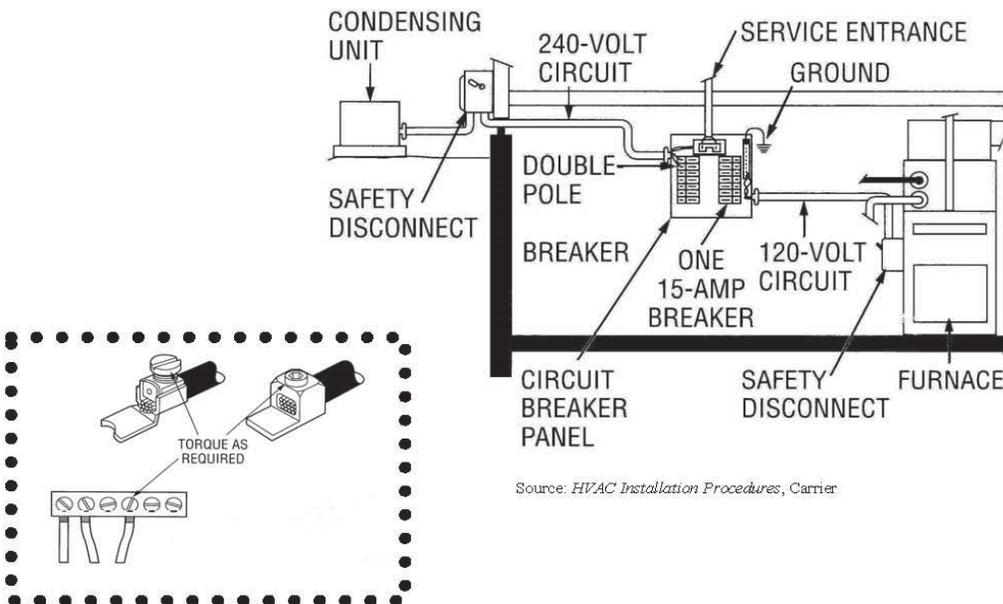
- ☑ Defective connections
- ☑ Electrical short
- ☑ Power surge
- ☑ Flame roll-out
- ☑ Wrong size wiring

FIX-RIGHT SOLUTION

- ☑ Repair connection
- ☑ Repair electrical short
- ☑ Replace wiring
- ☑ Repair/install power surge protection

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Loose or dirty connections often overheat.
- ☑ Normal equipment vibration requires electrical connections to be periodically cleaned and tightened.



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Loose/Burned Wiring Heating Section

19

Failed Relay

20

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
2001 0050	Replace relay/contactor (1.5 pole- 2 pole)	\$ -	\$ -	\$ -	\$ -
2002 0050	Replace relay/contactor - (3 pole)	\$ -	\$ -	\$ -	\$ -
2003 0050	Replace time delay relay - 2 wire	\$ -	\$ -	\$ -	\$ -
2004 0075	Replace time delay relay - 3 wire	\$ -	\$ -	\$ -	\$ -
2005 0050	Remove insects/debris	\$ -	\$ -	\$ -	\$ -
2006 0050	Replace warranty relay/contactor (Labor Only)	\$ -	\$ -	\$ -	\$ -
2007 0050	Replace relay- OEM (Labor Only)	\$ -	\$ -	\$ -	\$ -
2008 0050	Replace overload relay	\$ -	\$ -	\$ -	\$ -
2009 0050	Fan center control	\$ -	\$ -	\$ -	\$ -
2010 0100	Replace 2-zone circulator relay	\$ -	\$ -	\$ -	\$ -
2011 0125	Replace 3-zone circulator relay	\$ -	\$ -	\$ -	\$ -
2012 0150	Replace 4-zone circulator relay	\$ -	\$ -	\$ -	\$ -
2013 0150	Replace outdoor boiler reset control (Tekmar)	\$ -	\$ -	\$ -	\$ -
2014 0075	Install single zone relay	\$ -	\$ -	\$ -	\$ -
2015 0025	Replace switching relay	\$ -	\$ -	\$ -	\$ -
2016 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
2017 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 220V price labor materials using Miscellaneous Unclassified Section 54				

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Technician Notes

CAUTION A relay must have a higher amp rating than the equipment AMP draw.

When adding or replacing a relay, always recheck the heat anticipator.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Small parts like relay can sometimes cause an expensive part to fail like compressors because it's not working properly. Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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CAUSES OF FAILURE

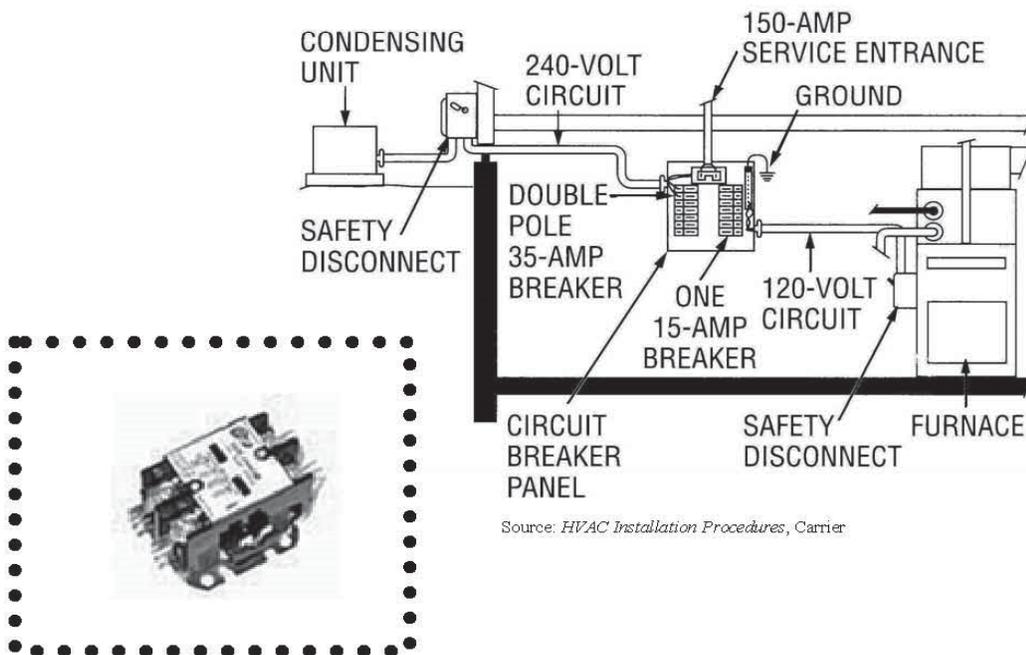
- ☑ Over/under line voltage
- ☑ Loose connection or mounting plate
- ☑ Deterioration and corrosion
- ☑ Excessive short cycling
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Correct over/under voltage problem
- ☑ Clean and tighten connections and mounting plate
- ☑ Replace Contactor
- ☑ Correct short cycling problem
- ☑ Recommended to replace furnace unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Furnace/AHU Capacitor

21

CAUSES OF FAILURE

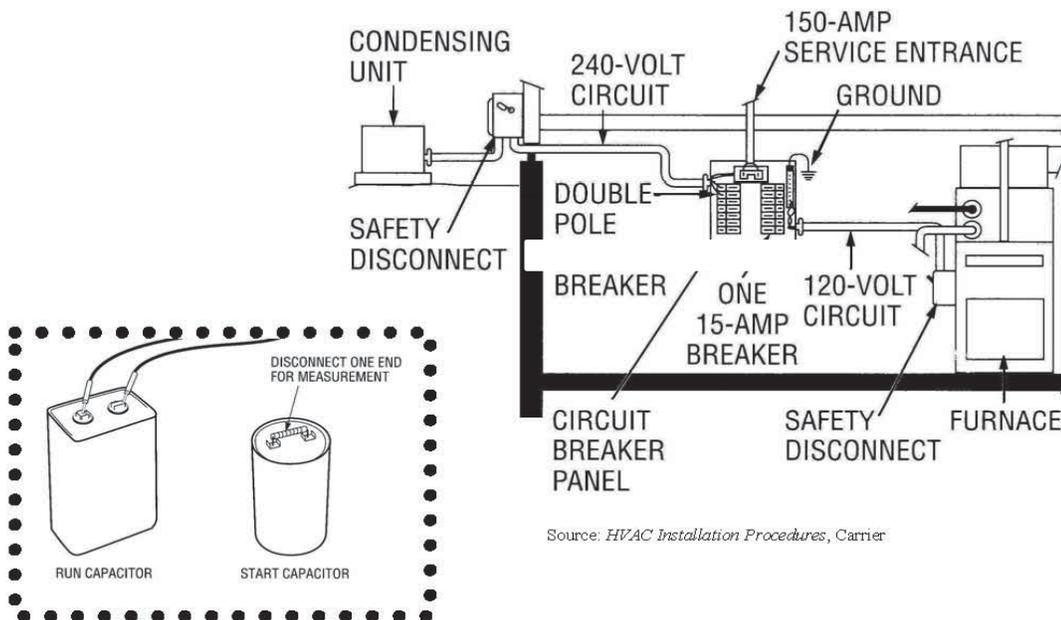
- ☑ Relay failure
- ☑ Starting load too high
- ☑ Excessive short cycling
- ☑ Excessive high voltage
- ☑ Improper capacitor
- ☑ Power surge
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Repair relay
- ☑ Correct high voltage problem
- ☑ Correct short cycling problem
- ☑ Replace Capacitor
- ☑ Repair/install power surge protection
- ☑ Recommended to replace furnace if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Furnace/AHU Capacitor

21

Failed Circuit Board

22

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
2201 0050	Single purpose fan or ignition - universal	\$ -	\$ -	\$ -	\$ -
2202 0050	Multi-purpose fan or ignition - universal board	\$ -	\$ -	\$ -	\$ -
2203 0100	Inducer draft board OEM - (Labor Only)	\$ -	\$ -	\$ -	\$ -
2204 0033	Remount sensor	\$ -	\$ -	\$ -	\$ -
2205 0100	Variable speed boards-universal board	\$ -	\$ -	\$ -	\$ -
2206 0100	Warranty circuit board (Labor Only)	\$ -	\$ -	\$ -	\$ -
2207 0100	Circuit board OEM (Labor Only)	\$ -	\$ -	\$ -	\$ -
2208 0075	First Company circuit board	\$ -	\$ -	\$ -	\$ -
2209 0050	White Rogers universal hot surface ignitor board	\$ -	\$ -	\$ -	\$ -
2210 0100	Replace Amana circuit board PCBBF132S	\$ -	\$ -	\$ -	\$ -
2211 0100	Replace Amana circuit board 50T35-743	\$ -	\$ -	\$ -	\$ -
2212 0100	Replace Amana circuit board 50A55-743	\$ -	\$ -	\$ -	\$ -
2213 0100	Replace Lennox circuit board 21D83M-843	\$ -	\$ -	\$ -	\$ -
2214 0100	Replace Lennox circuit board 50A55-3797	\$ -	\$ -	\$ -	\$ -
2215 0100	Replace York circuit board 50A56-956	\$ -	\$ -	\$ -	\$ -
2216 0100	Replace Trane circuit board 50A65-5165	\$ -	\$ -	\$ -	\$ -
2217 0100	Replace Carrier circuit board 50M56U-751	\$ -	\$ -	\$ -	\$ -
2218 0100	Replace single stage control kit	\$ -	\$ -	\$ -	\$ -
2219 0100	Replace single two stage control kit	\$ -	\$ -	\$ -	\$ -
2220 0100	Replace single two stage variable control kit	\$ -	\$ -	\$ -	\$ -
2221 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
2222 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Circuit board repairs vary by manufacturer see Unclassified Repair section to estimate the replacement labor and the purchased circuit board material charges				
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 5 ton or 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

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Technician Notes

CAUTION make sure to check all safety controls after replacing a circuit board.

Circuit board failure is often caused by external to the board. Inspect circuit board for moisture contamination, wiring integrity and connections.

Check all functions of thermostat and equipment operating sequence when replacing a control board.

OEM board not included - call for price.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Small parts like the circuit board can sometimes cause excessive energy use and or equipment failure, because it's not working properly. Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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Failed Circuit Board

22

Failed Circuit Board

22

CAUSES OF FAILURE

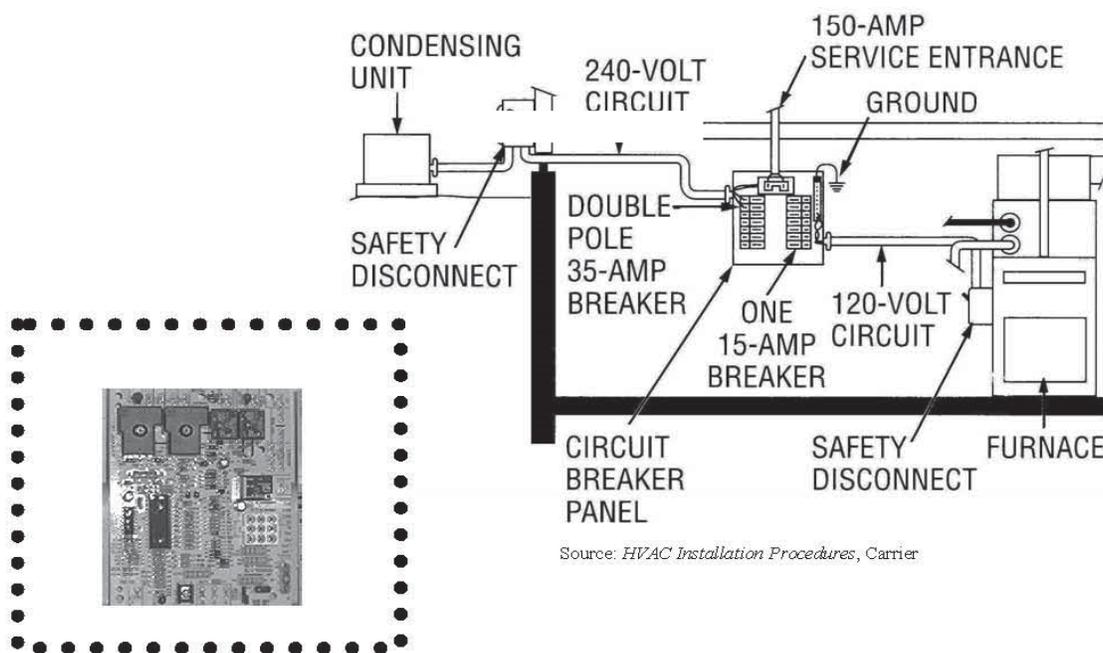
- ☑ Over/under line voltage
- ☑ Loose connection or mounting plate
- ☑ Deterioration and corrosion
- ☑ Excessive short cycling
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Correct over/under voltage problem
- ☑ Clean and tighten connections and mounting plate
- ☑ Replace circuit board
- ☑ Correct short cycling problem
- ☑ Recommended to replace furnace if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Circuit Board

22

Failed Fan Limit Switch

23

CAUSES OF FAILURE

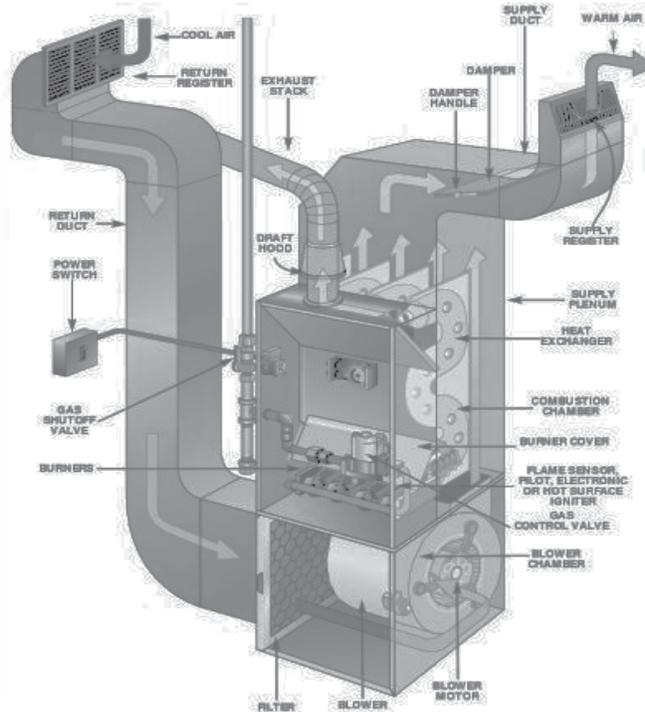
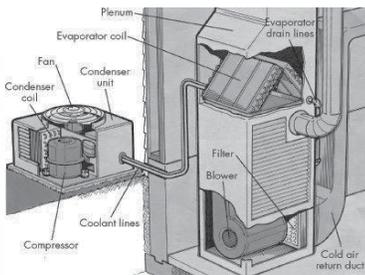
- ☑ Over/under line voltage
- ☑ Loose connection or mounting plate
- ☑ Deterioration and corrosion
- ☑ Restricted flue
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Correct over/under voltage problem
- ☑ Clean and tighten connections and mounting plate
- ☑ Replace fan limit switch
- ☑ Correct flue restriction
- ☑ Recommend to replace outdoor unit if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Fan Limit Switch

23

Failed Safety Pressure Switch

24

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
2401 0024	Clean and test switch	\$ -	\$ -	\$ -	\$ -
2402 0050	Replace pressure switch (single)	\$ -	\$ -	\$ -	\$ -
2403 0050	Replace pressure switch (dual)	\$ -	\$ -	\$ -	\$ -
2404 0050	Replace pressure switch OEM labor only	\$ -	\$ -	\$ -	\$ -
2405 0024	Replace door interlock switch	\$ -	\$ -	\$ -	\$ -
2406 0020	Pressure switch hose	\$ -	\$ -	\$ -	\$ -
2407 0100	Replace warranty pressure switch (Labor Only)	\$ -	\$ -	\$ -	\$ -
2408 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
2409 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION check flue pipe for any obstructions. Check for any soot buildup in the fan housing. Check actual pressure. Look for LED display on ignition control module to check if flashing code for failure present.

Kinked tubing, condensation, rust and insect nests can distort pressure switch diagnosis. Check tubing integrity and for deterioration that could contribute to improper pressure diagnostics.

Verify to replace with same static pressure rating as replacement safety pressure switch.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

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Failed Safety Pressure Switch

24

Copyright
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 Call For Next Update Due 6 months from
 9/28/2017

Failed Safety Pressure Switch

24

CAUSES OF FAILURE

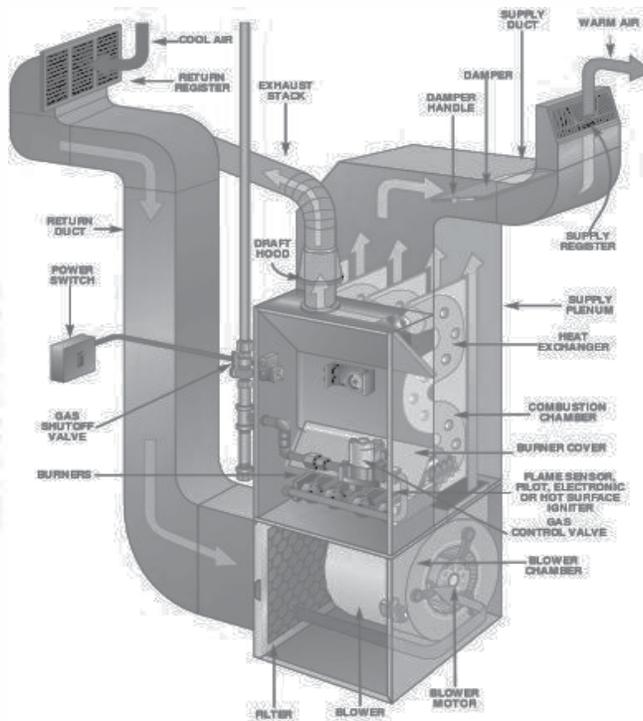
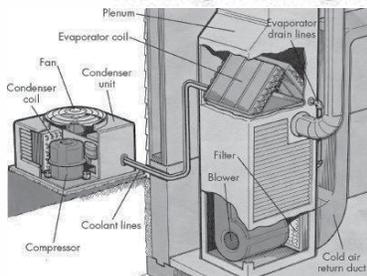
- ☑ Loose connection or mounting plate
- ☑ Deterioration and corrosion
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Clean and tighten connections and mounting plate
- ☑ Replace safety pressure switch
- ☑ Recommended to replace furnace if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Safety Pressure Switch

24

Failed Igniter Probe

25

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
2501 0025	Check electrical connections	\$ -	\$ -	\$ -	\$ -
2502 0110	Install pilot retrofit kit	\$ -	\$ -	\$ -	\$ -
2503 0050	Single purpose fan or ignition - universal	\$ -	\$ -	\$ -	\$ -
2504 0050	Replace hot surface igniter	\$ -	\$ -	\$ -	\$ -
2505 0075	Replace 24 volt spark igniter & relight control	\$ -	\$ -	\$ -	\$ -
2506 0075	Silicon nitride hot surface igniter - universal	\$ -	\$ -	\$ -	\$ -
2507 0100	Replace gas pilot ignition control module	\$ -	\$ -	\$ -	\$ -
2508 0025	Replace flame sensor	\$ -	\$ -	\$ -	\$ -
2509 0100	Replace warranty igniter (Labor Only)	\$ -	\$ -	\$ -	\$ -
2510 0125	Replace warranty fan and ignition board (Labor Only)	\$ -	\$ -	\$ -	\$ -
2511 0050	Ignitor for Smart Valve	\$ -	\$ -	\$ -	\$ -
2512 0035	Clean flame sensor	\$ -	\$ -	\$ -	\$ -
2513 0050	Replace spark ignitor	\$ -	\$ -	\$ -	\$ -
2513 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
2514 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

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Technician Notes

CAUTION check for bright hot spots on igniter for apparent hairline cracks. Check electrical continuity, ground & polarity.

Flame sensors must be clean, touching the flame properly and not touching a ground.

Flame sensors must have reading of .04+ DC microamperes (if less replace).

Hot surface ingnitors must read 80 ohms or less (if greater replace).

Do not grip igniter directly with your hands to prevent oil contamination transfer to igniter which often results in potential igniter hot spots which can cause igniter failure.

Check ignition system wires integrity and connections secured firmly.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Small parts like the igniter can sometimes cause equipment failure, because it's not working properly. Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.

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Failed Igniter Probe

25

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Failed Igniter Probe

25

CAUSES OF FAILURE

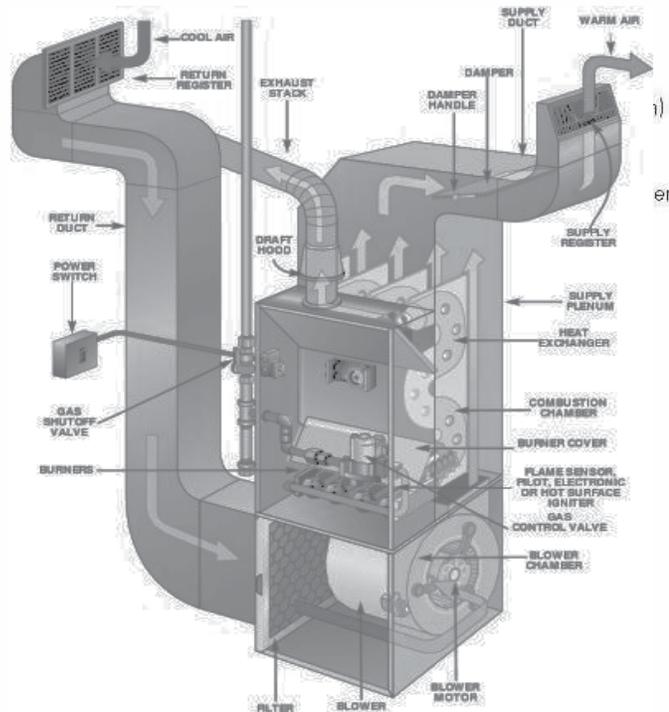
- ☑ Loose connection or mounting plate
- ☑ Wrong ignitor
- ☑ Deterioration and corrosion
- ☑ Power Surge
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Clean and tighten connections and mounting plate
- ☑ Replace ignitor probe
- ☑ Repair/install power surge protection

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Igniter Probe

25

Failed Igniter Transformer

26

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
2601 0050	Replace ignition transformer- universal oil	\$ -	\$ -	\$ -	\$ -
2602 0050	Replace electrode/porcelain kit	\$ -	\$ -	\$ -	\$ -
2603 0050	Replace warranty ignition transfmr (Labor Only)	\$ -	\$ -	\$ -	\$ -
2604 0125	Install retrofit ignition kit	\$ -	\$ -	\$ -	\$ -
2605 0050	Wayne Transformer	\$ -	\$ -	\$ -	\$ -
2606 0050	QB Transformer	\$ -	\$ -	\$ -	\$ -
2607 0050	Turbo universal replacement capacitors up to 65 mfd	\$ -	\$ -	\$ -	\$ -
2608 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
2609 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT-BLANK

Technician Notes

CAUTION the ignition transformers operates at 10,000 volt DC output. To check voltage you must use a special amp probe.
Safety: do not check voltage with a screwdriver due to severe electrical shock hazard that could lead to life threatening injury and damaged tools.

If no ignition, verify high voltage transformer operation. If transformer OK, then verify proper electrode gap, then verify proper oil pump pressure and oil nozzle orifice.

All above repairs are for oil furnaces.

OEM ignition transformer not included - call for price.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

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Failed Igniter Transformer

26

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Failed Igniter Transformer

26

CAUSES OF FAILURE

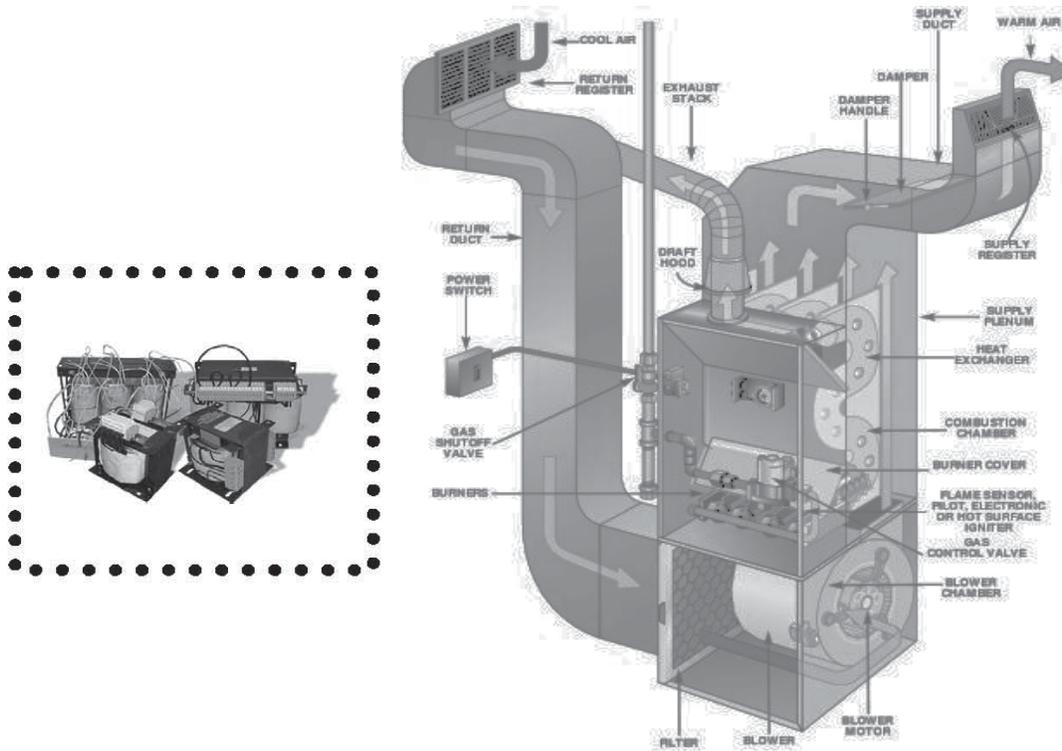
- ☑ Loose connection or mounting plate
- ☑ Deterioration and corrosion
- ☑ Transformer winding failure
- ☑ Power Surge
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Clean and tighten connections and mounting plate
- ☑ Replace igniter transformer
- ☑ Repair/install power surge protection
- ☑ Recommended to replace furnace if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



Source: *American heating website*

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Failed Igniter Transformer

26

Failed Oil Burner

32

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
3201 0075	Realign and clean burner assembly	\$ -	\$ -	\$ -	\$ -
3202 0050	Replace burner - see OEM notes	\$ -	\$ -	\$ -	\$ -
3203 0050	Replace warranty burner (Labor Only)	\$ -	\$ -	\$ -	\$ -
3204 0050	Adjust electrodes	\$ -	\$ -	\$ -	\$ -
3205 0050	Adjust air shutter	\$ -	\$ -	\$ -	\$ -
3206 0050	Replace electrode	\$ -	\$ -	\$ -	\$ -
3207 0050	Replace nozzle	\$ -	\$ -	\$ -	\$ -
3208 0025	Replace oil filter cartridge replacement	\$ -	\$ -	\$ -	\$ -
3209 0100	Testo flue gas analysis	\$ -	\$ -	\$ -	\$ -
3210 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
3211 0125	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	For heavy soot situations obtain additional cleaning labor in miscellaneous section to estimate.				
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes
<p>OEM burner not included - call for price.</p> <p>Price service ticket retail or retail overtime and calculate/present total service agreement discount option.</p>
Customer Notice
<p>Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.</p> <p>Always mention how to receive a 15% discount off today's repairs</p>

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Failed Oil Burner

32

Failed Oil Burner

CAUSES OF FAILURE

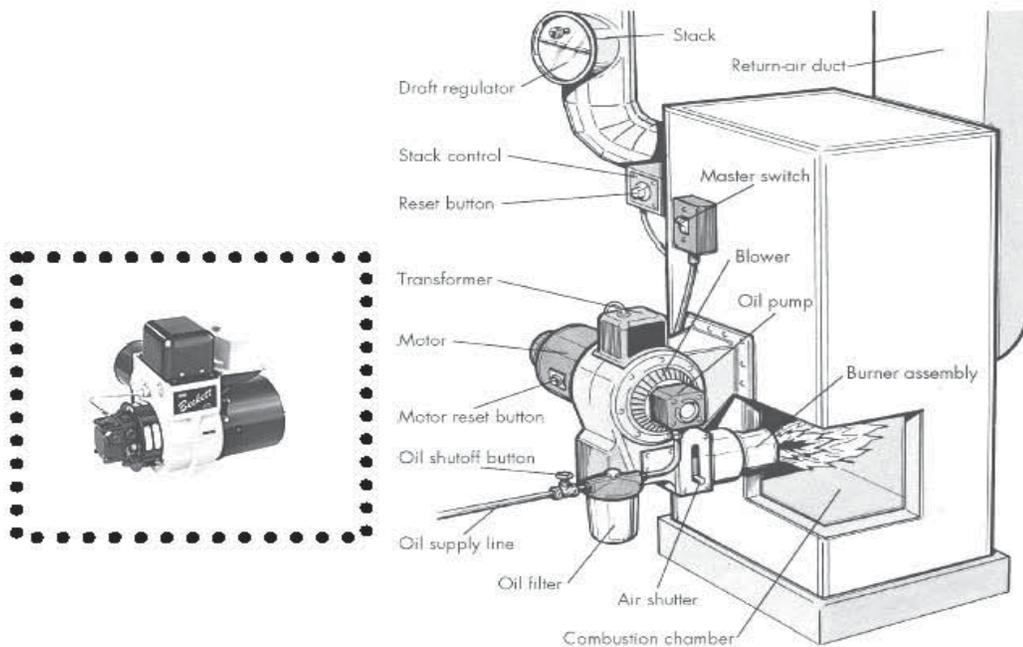
- ☑ Plugged with debris or contaminated
- ☑ Improper air/gas calibration
- ☑ Dirty oil filter
- ☑ Improper alignment
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Correct restrictions
- ☑ Calibrate and tune combustion
- ☑ Correct alignment
- ☑ Replace burner
- ☑ Recommended to replace furnace if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



Source: *American heating website*

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Failed Fan Belt

33

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
3301 0025	Adjust belt/pulley	\$ -	\$ -	\$ -	\$ -
3302 0020	Replace belt	\$ -	\$ -	\$ -	\$ -
3303 0005	Replace belt with repair	\$ -	\$ -	\$ -	\$ -
3304 0050	Replace blower pulley with no motor change	\$ -	\$ -	\$ -	\$ -
3305 0050	Replace motor pulley with no motor change	\$ -	\$ -	\$ -	\$ -
3306 0050	Replace pulley OEM	\$ -	\$ -	\$ -	\$ -
3307 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
3308 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 5 ton price or 5 hp motor labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION make sure both the fan pulley and the motor pulley are in line with each other when installing a new belt.

Make sure motor and fan pulleys are in good condition. A worn pulley can ruin a new belt in a short amount of time.

Check and verify proper AMP draw of a motor after a belt replacement/ adjustment. Proper tension important for long bearing and belt life.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

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Failed Fan Belt

33

Failed Fan Belt

33

CAUSES OF FAILURE

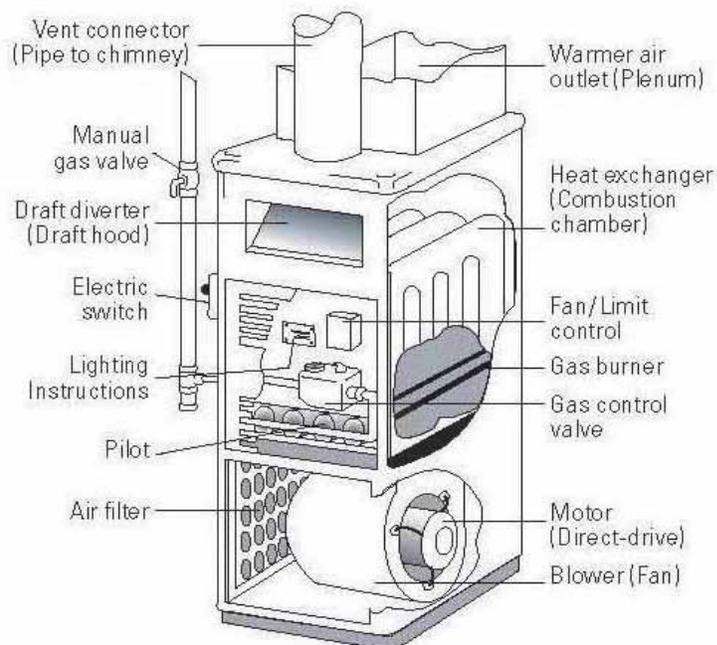
- ☑ Improper alignment or tension
- ☑ Glazing, cracking or fraying
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Correct alignment or tension
- ☑ Replace belt

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Fan Belt

33

Failed Blower Wheel

34

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
3401 0060	Clean blower	\$ -	\$ -	\$ -	\$ -
3402 0025	Clean blower-(with motor Replace)	\$ -	\$ -	\$ -	\$ -
3403 0033	Adjust alignment	\$ -	\$ -	\$ -	\$ -
3404 0100	Replace blower wheel-universal (without motor)	\$ -	\$ -	\$ -	\$ -
3405 0120	Replace blower wheel-universal (with motor)	\$ -	\$ -	\$ -	\$ -
3406 0100	Replace blower wheel -OEM (without motor)	\$ -	\$ -	\$ -	\$ -
3407 0120	Replace blower wheel-OEM (with motor)	\$ -	\$ -	\$ -	\$ -
3408 0050	Replace blower door safety switch	\$ -	\$ -	\$ -	\$ -
3409 0250	Replace bearings, bushings, shaft	\$ -	\$ -	\$ -	\$ -
3410 0100	Replace warranty blower wheel (Labor Only)	\$ -	\$ -	\$ -	\$ -
3411 0120	Replace warranty blower wheel w/motor (Labor Only)	\$ -	\$ -	\$ -	\$ -
3412 0100	Replace blower motor EcoTech	\$ -	\$ -	\$ -	\$ -
3413 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
3414 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 5 ton or 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION clean the housing any time a blower wheel is changed.

If blower wheel is still out of balance after cleaning, replace wheel and check for balancing weights on blower wheel.

If blower wheel bearings are defective, the cost of repair should be considered against the investment in a new furnace.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

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Failed Blower Wheel

34

Failed Blower Wheel

CAUSES OF FAILURE

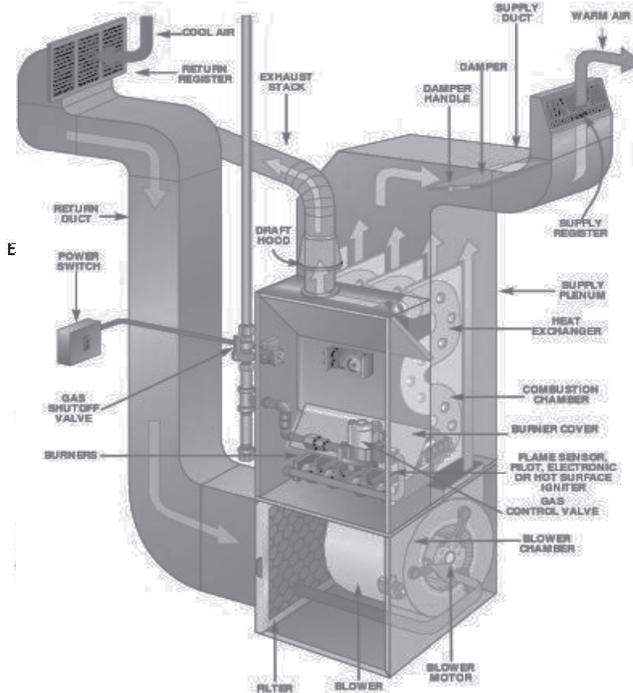
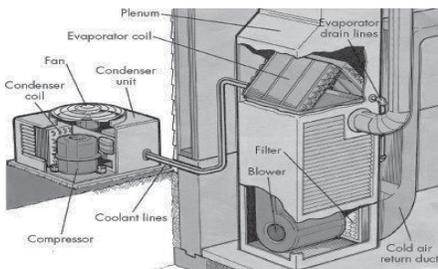
- ☑ Warped or broken squirrel fan
- ☑ Operating vibration
- ☑ Worn bearings
- ☑ Deterioration and corrosion
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Replace fan blower
- ☑ Correct vibration problem
- ☑ Replace wear possible motor bearings
- ☑ Recommended to replace furnace if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Inducer Fan Motor

38

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
3801 0040	Clean/remove obstructions	\$ 66.67	\$ 100.00	\$ 56.67	\$ 85.00
3802 0050	Adjust alignment & lubricate	\$ 118.13	\$ 159.80	\$ 100.41	\$ 135.83
3803 0066	Replace inducer wheel	\$ 249.18	\$ 304.18	\$ 211.80	\$ 258.55
3804 0100	Replace warranty inducer assembly (Labor Only)	\$ 370.75	\$ 454.09	\$ 315.14	\$ 385.97
3805 0100	Replace inducer assembly	\$ 532.73	\$ 616.06	\$ 452.82	\$ 523.65
3806 0125	Replace inducer assembly OEM (Labor Only)	\$ 208.33	\$ 312.50	\$ 177.08	\$ 265.63
3807 0050	Replace hall effect sensor	\$ 222.52	\$ 264.18	\$ 189.14	\$ 224.55
3808 0125	Replace spill switch	\$ 411.56	\$ 515.73	\$ 349.83	\$ 438.37
3809 0050	Replace rollout switch	\$ 118.74	\$ 160.41	\$ 100.93	\$ 136.35
3810 0100	Replace Amana furnace draft inducer 0171M000s	\$ 480.75	\$ 564.08	\$ 408.64	\$ 479.47
3811 0050	Turbo universal replacement capacitors 65+ up to 90 mfd	\$ -	\$ -	\$ -	\$ -
3812 0100	Testo flue gas analysis	\$ 166.67	\$ 250.00	\$ 141.67	\$ 212.50
3813 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
3814 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

Technician Notes

CAUTION verify pressure hose from motor housing to pressure switch is not restricted. Check for possible leaks and cracks on hose. verify air flow or centrifugal switches are properly wired and operating.

For proper flue drafting to occur system panels have to be put back in place on some systems.

Always recommend that any gas fired appliances be tested for carbon monoxide. Cigarette smoking can cause erroneous CO readings, so be sure to " air out " the house with fresh outside air before testing if you have a concern.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

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Failed Inducer Fan Motor

38

Failed Inducer Fan Motor

38

CAUSES OF FAILURE

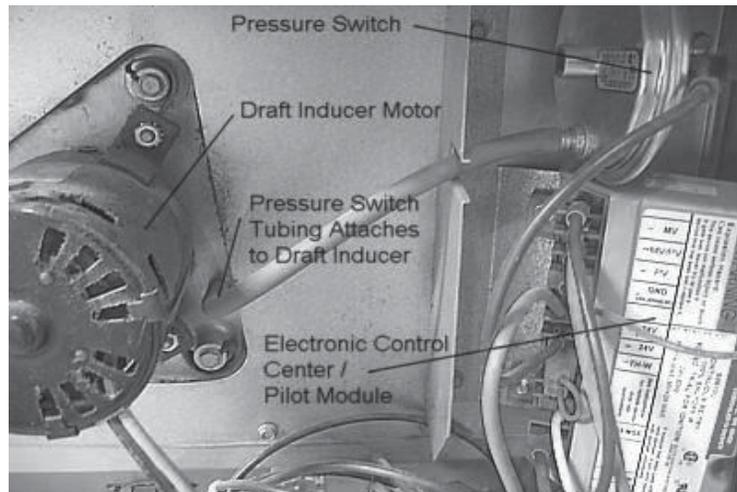
- ☑ Warped or broken squirrel fan
- ☑ Operating vibration
- ☑ Worn bearings
- ☑ Poor lubrication
- ☑ Deterioration and corrosion
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Replace inducer fan motor
- ☑ Correct vibration problem
- ☑ Replace wear possible motor bearings
- ☑ Lubricate motor
- ☑ Recommended to replace furnace if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic electrical integrity and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Failed Inducer Fan Motor

38

Failed Gas Valve

40

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
4001 0025	Adjust gas pressure	\$ -	\$ -	\$ -	\$ -
4002 0075	Replace gas valve-universal	\$ -	\$ -	\$ -	\$ -
4003 0075	Replace gas valve-OEM (Labor Only)	\$ -	\$ -	\$ -	\$ -
4004 0050	Replace gas flex connector	\$ -	\$ -	\$ -	\$ -
4005 0100	Replace gas pipe per 10 feet and misc. fittings	\$ -	\$ -	\$ -	\$ -
4006 0033	Replace gas cock	\$ -	\$ -	\$ -	\$ -
4007 0025	Replace single gas fitting	\$ -	\$ -	\$ -	\$ -
4008 0010	Additional gas fitting	\$ -	\$ -	\$ -	\$ -
4009 0150	Gas leak test	\$ -	\$ -	\$ -	\$ -
4010 0020	Tighten accessible fitting	\$ -	\$ -	\$ -	\$ -
4011 0075	Replace warranty gas valve (Labor Only)	\$ -	\$ -	\$ -	\$ -
4012 0100	Replace 2-stage gas valve	\$ -	\$ -	\$ -	\$ -
4013 0100	Replace smart valve	\$ -	\$ -	\$ -	\$ -
4014 0100	Standing pilot conversion to spark ignition	\$ -	\$ -	\$ -	\$ -
4015 0075	Honeywell SV9541Q2561 Two Stage Pilot Ignition	\$ -	\$ -	\$ -	\$ -
4016 0075	Honeywell SV9520H8513 1/2-inch Hot Surface Ignition	\$ -	\$ -	\$ -	\$ -
4017 0075	Honeywell SV9501M2528 Gas Valve Standard Opening	\$ -	\$ -	\$ -	\$ -
4018 0075	Honeywell SV9502H2522 Gas Valve - Slow Opening	\$ -	\$ -	\$ -	\$ -
4019 0075	Honeywell VR8200A2132 1/2" Standing Pilot Gas Valve	\$ -	\$ -	\$ -	\$ -
4020 0075	Honeywell VR8204A2076 Standard Dual Pilot Gas Valve	\$ -	\$ -	\$ -	\$ -
4021 0075	Honeywell VR8345M4302 Std Dual Ign Pilot Gas Valve	\$ -	\$ -	\$ -	\$ -
4022 0075	York S17956336P Gas Valve Controls	\$ -	\$ -	\$ -	\$ -
4023 0025	Safety check CO and Nat gas leaks	\$ -	\$ -	\$ -	\$ -
4024 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
4025 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 1" price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION always check gas pressure with a magnehelic or manometer when replacing burners and recommended to customer to perform a safety CO test after cleaning or replacing burners.

Leak check any fittings replaced or adjusted during a repair. Verify which type of gas is supplied to the furnace.

Remember, any pilot tube hooked up to a main gas line can leak gas into the home if the pilot ever goes out. For customer safety, consider upgrading (replacing) the gas valve so you can remove the pilot tube out of the main gas line.

Always recommend for any gas fired appliances be tested for carbon monoxide. Cigarette smoking can cause erroneous CO readings, so be sure to " air out " the house with fresh outside air before testing if you have a concern.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

If your furnace is over ten years old, and a gas valve failure is found - due to better reliability and higher energy efficiency, replacing the entire system is usually the best option for the customer.

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Failed Gas Valve

40

Failed Gas Valve

40

CAUSES OF FAILURE

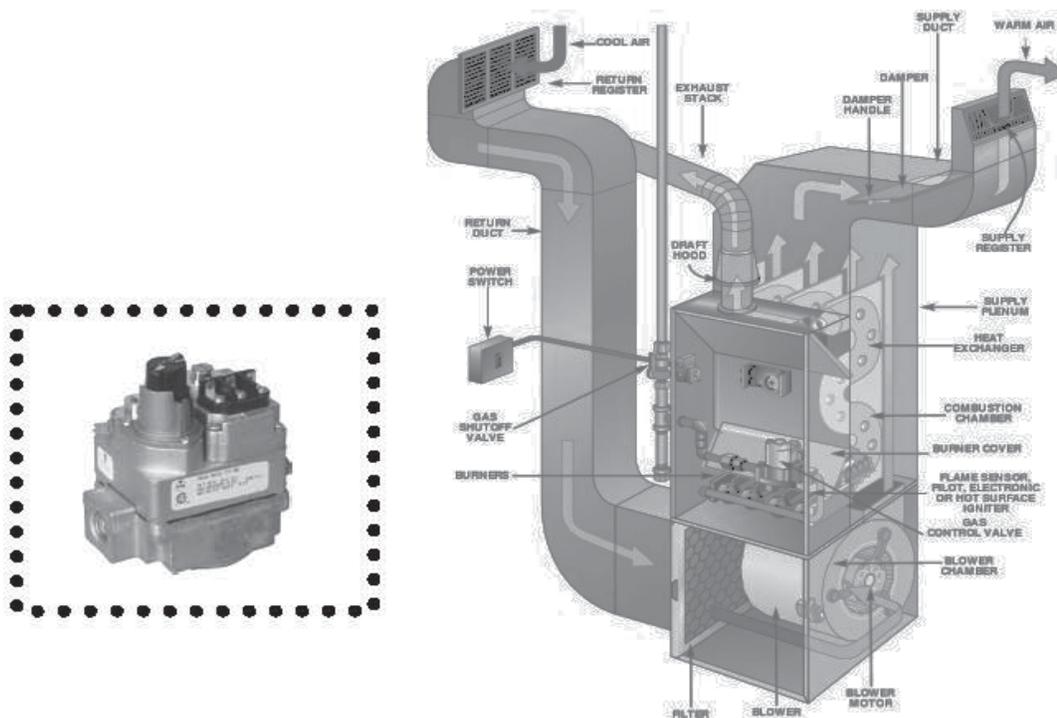
- ☑ Restricted gas-way
- ☑ Improper gas pressure
- ☑ Failed gas regulator
- ☑ Deterioration and corrosion
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Correct restrictions
- ☑ Correct gas pressure
- ☑ Replace gas valve
- ☑ Recommended to replace furnace if 10 years and older

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic cleaning and tuning help eliminate many contributing causes of premature deterioration and failure.



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Failed Gas Valve

40

Failed Circulator Pump

41

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
4101 0100	Replace bearing assembly (iron) series 100	\$ -	\$ -	\$ -	\$ -
4102 0075	Replace coupling	\$ -	\$ -	\$ -	\$ -
4103 0075	Replace circulator pump 1/25 HP flanged	\$ -	\$ -	\$ -	\$ -
4104 0100	Replace direct drive pump (system lubricated)	\$ -	\$ -	\$ -	\$ -
4105 0100	Replace B&G motor mounts	\$ -	\$ -	\$ -	\$ -
4106 0100	Drain down and refill with repair	\$ -	\$ -	\$ -	\$ -
4107 0075	Replace 1/8 hp stainless steel circulator pump	\$ -	\$ -	\$ -	\$ -
4108 0075	Upgrade or replace Grundfos Alpha pump	\$ -	\$ -	\$ -	\$ -
4109 0075	Replace gasket	\$ -	\$ -	\$ -	\$ -
4110 0075	Replace flange 1/2" - 1 1/4" bearing replacement	\$ -	\$ -	\$ -	\$ -
4111 0025	Minor repair with pump replacement	\$ -	\$ -	\$ -	\$ -
4112 0075	Replace pump OEM (Labor Only)	\$ -	\$ -	\$ -	\$ -
4113 0100	Standing pilot conversion to spark ignition	\$ -	\$ -	\$ -	\$ -
4015 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
4114 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	OEM = LABOR ONLY. Use Section 54 to price part price to be added to the OEM LABOR ONLY price..				
	Over 1 hp price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION always keep pump and bearing assembly lubricated. Always inspect coupling for metal fragments- it's a good sign that coupling is about to fly apart or bearing assembly is going bad.

Repair prices do not include drain down and refill systems.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

If your boiler is over fifteen years old, and a circulator pump failure is found - due to better reliability and higher energy efficiency, replacing the entire system is usually the best option for the customer.

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Failed Circulator Pump

41

Failed Circulator Pump

41

CAUSES OF FAILURE

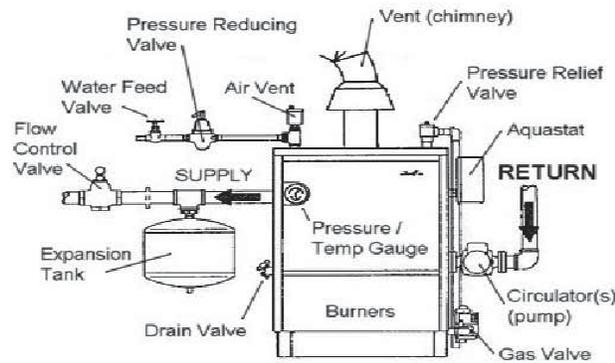
- ☑ Over/under line voltage
- ☑ Failed coupling
- ☑ Deterioration and corrosion
- ☑ Age fatigue

FIX-RIGHT SOLUTION

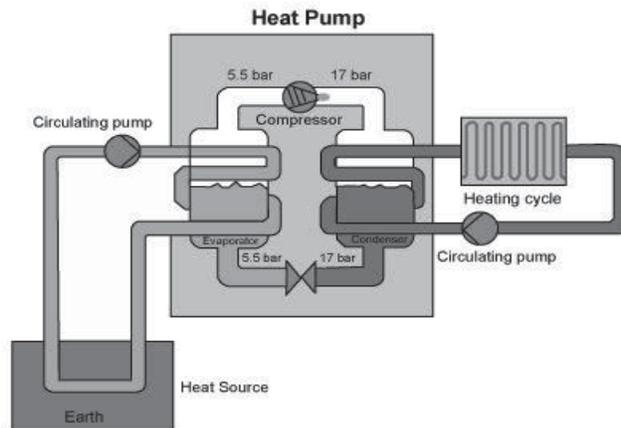
- ☑ Correct over/under voltage problem
- ☑ Correct coupling
- ☑ Replace circulator pump

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic maintenance and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



Source: About.com



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Failed Circulator Pump

41

Failed Extrol Expansion Tank

44

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
4401 0050	Replace pressure temperature gauge	\$ -	\$ -	\$ -	\$ -
4402 0050	Replace extrol tank 15# & 30#	\$ -	\$ -	\$ -	\$ -
4403 0050	Replace bleed and drain tank	\$ -	\$ -	\$ -	\$ -
4404 0030	Verify/refill expansion tank	\$ -	\$ -	\$ -	\$ -
4405 0100	Auto fill with expansion tank	\$ -	\$ -	\$ -	\$ -
4406 0050	Bleed expansion tank	\$ -	\$ -	\$ -	\$ -
4407 0075	Replace tank valve	\$ -	\$ -	\$ -	\$ -
4408 0100	Replace extrol tank 60 LBS	\$ -	\$ -	\$ -	\$ -
4409 0050	Check and fill expansion tank with proper pressure	\$ -	\$ -	\$ -	\$ -
4410 0075	Replace ST12 expansion tank	\$ -	\$ -	\$ -	\$ -
4411 0100	Anit-freeze glycol to hydro system -first 5 GAL	\$ -	\$ -	\$ -	\$ -
4412 0025	Anit-freeze glycol to hydro system -each 1 GAL	\$ -	\$ -	\$ -	\$ -
4413 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
4414 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

INTENTIONAL LEFT BLANK

Technician Notes

CAUTION check for leaks after installation by applying correct pressure on tank at 12 psi on first floor and 18 psi for a second and third floor installation.

Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

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Failed Extrol Expansion Tank

44

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Failed Extrol Expansion Tank

44

CAUSES OF FAILURE

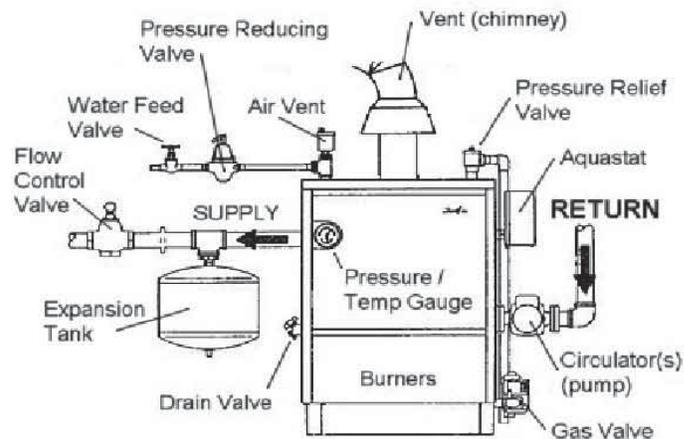
- Deterioration and corrosion
- Bladder failure
- Age fatigue

FIX-RIGHT SOLUTION

- Replace extrol tank

PREVENTION – PROPER PERIODIC MAINTENANCE

- Periodic maintenance and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



Source: *About.com*

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Failed Extrol Expansion Tank

44

Oil Pump Line/Filters/Controls

46

Code	Repair Description	Retail	Retail OT	MA Retail	MA OT
4601 0100	Replace single stage oil pump	\$ -	\$ -	\$ -	\$ -
4602 0050	Replace oil pump coupling only	\$ -	\$ -	\$ -	\$ -
4603 0150	Replace 1/6 hp burner motor	\$ -	\$ -	\$ -	\$ -
4604 0025	Replace oil filter cartridge replacement	\$ -	\$ -	\$ -	\$ -
4605 0050	Replace primary control (heat only relay)	\$ -	\$ -	\$ -	\$ -
4606 0050	Replace primary control (heat and cool)	\$ -	\$ -	\$ -	\$ -
4607 0050	Replace stack control (heat only) (Labor Only)	\$ -	\$ -	\$ -	\$ -
4608 0050	Replace cad cell assembly	\$ -	\$ -	\$ -	\$ -
4609 0025	Replace cad cell eye only	\$ -	\$ -	\$ -	\$ -
4610 0050	Replace complete fuel filter assembly	\$ -	\$ -	\$ -	\$ -
4611 0025	Inspect and test for water in oil	\$ -	\$ -	\$ -	\$ -
4612 0030	Prime and start oil burner only	\$ -	\$ -	\$ -	\$ -
4613 0075	Clean electrodes & Replace nozzle	\$ -	\$ -	\$ -	\$ -
4614 0050	Combustion efficiency test & adjust	\$ -	\$ -	\$ -	\$ -
4615 0075	Replace line filter	\$ -	\$ -	\$ -	\$ -
4616 0075	Clean pump strainer	\$ -	\$ -	\$ -	\$ -
4617 0050	Replace or adjust electrodes	\$ -	\$ -	\$ -	\$ -
4618 0050	Replace oil deaerator	\$ -	\$ -	\$ -	\$ -
4619 0050	Purge oil line	\$ -	\$ -	\$ -	\$ -
4620 0075	Convert pump from 2 line to 1 line	\$ -	\$ -	\$ -	\$ -
4621 0100	Flush oil line with solvent	\$ -	\$ -	\$ -	\$ -
4622 0100	Clean plugged boiler up to 1.25 GPH	\$ -	\$ -	\$ -	\$ -
4623 0150	Clean plugged boiler 1.35 to 2.0 GPH	\$ -	\$ -	\$ -	\$ -
4624 0200	Clean plugged boiler 2.1 to 2.5 GPH	\$ -	\$ -	\$ -	\$ -
4625 0100	Replace 2-Stage Oil Pump	\$ -	\$ -	\$ -	\$ -
4626 0100	Blow Out Oil Line	\$ -	\$ -	\$ -	\$ -
4627 0075	Nozzle, filter, pump strainer change outs	\$ -	\$ -	\$ -	\$ -
4628 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
4629 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 200K BTU price labor materials using Miscellaneous Unclassified Section 54				

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Technician Notes

CAUTION check all safety controls after any repairs.
Price service ticket retail or retail overtime and calculate/present total service agreement discount option.

Customer Notice

Keep oil tank 100% full in summer months. This will cut down on condensation in tank. Keep water off the oil.
 Regular maintenance saves money on your utility bills and reduces the chance of expensive repairs.
Always mention how to receive a 15% discount off today's repairs

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Oil Pump Line/Filters/Controls

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Oil Pump Line/Filters/Controls

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CAUSES OF FAILURE

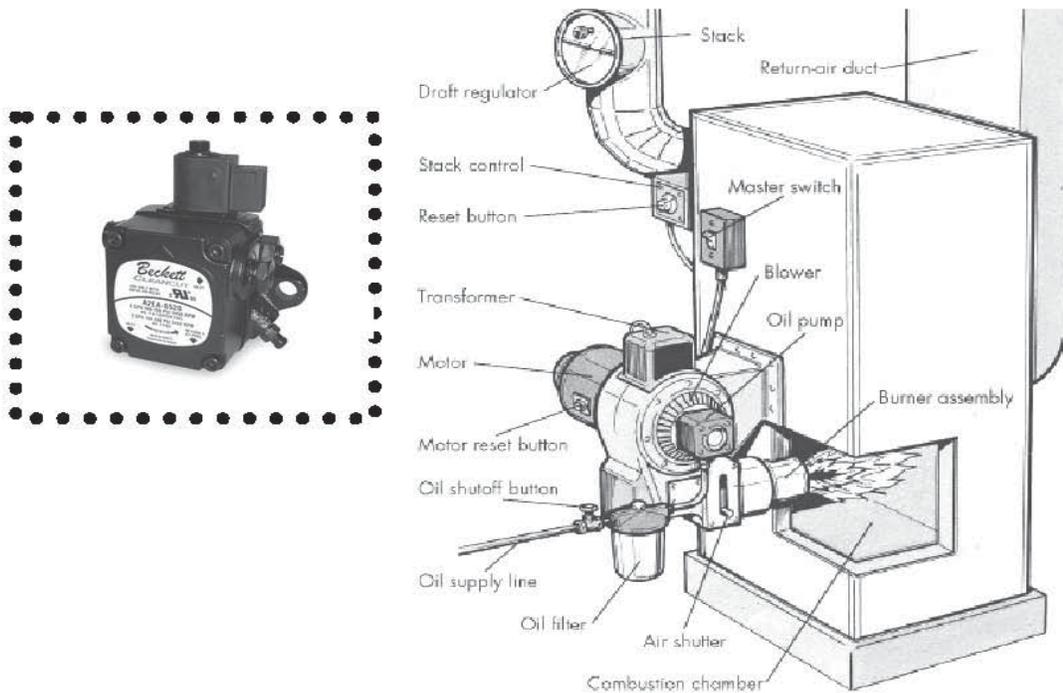
- ☑ Restriction contamination
- ☑ Shaft seal failure
- ☑ Deterioration and corrosion
- ☑ Age fatigue

FIX-RIGHT SOLUTION

- ☑ Correct restriction
- ☑ Replace oil pump

PREVENTION – PROPER PERIODIC MAINTENANCE

- ☑ Periodic maintenance and proper operating verification inspections, cleaning and tuning help eliminate many contributing causes of failure.



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Oil Pump Line/Filters/Controls

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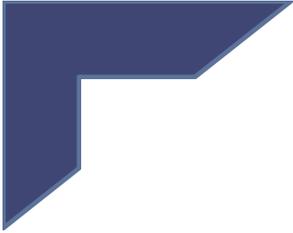
Geothermal Heat Pumps

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Code	Enhancement Description	Retail	Retail OT	MA Retail	MA OT
5001 0050	Pressurize loop	\$ -	\$ -	\$ -	\$ -
5002 0100	Pressurize loop - difficult	\$ -	\$ -	\$ -	\$ -
5003 0150	Replace desuperheater pump	\$ -	\$ -	\$ -	\$ -
5004 0100	Replace 2-stage contactor	\$ -	\$ -	\$ -	\$ -
5005 0125	Replace flow center pump	\$ -	\$ -	\$ -	\$ -
5006 0100	Replace power head brass water valve	\$ -	\$ -	\$ -	\$ -
5007 0100	Replace fast acting plastic water valve	\$ -	\$ -	\$ -	\$ -
5008 0050	Replace rubber gasket - hot water	\$ -	\$ -	\$ -	\$ -
5009 0050	Replace freeze protection sensor	\$ -	\$ -	\$ -	\$ -
5010 0150	Replace ECM blower motor	\$ -	\$ -	\$ -	\$ -
5011 0300	Flush Geo Loop	\$ -	\$ -	\$ -	\$ -
5012 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -
5013 0025	Access/Ladder Set-up Fee	\$ -	\$ -	\$ -	\$ -
	Over 5 ton price labor materials using Miscellaneous Unclassified Section 54				
Customer Notice					
Always mention how to receive a 15% discount off today's repairs					

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Accessories

Fix-Right[®] Repair Guide

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Failure Prevention

- ☑ **Humidifiers: Filters and water levels in humidifiers should be checked and adjusted monthly.**

- ☑ **On systems with air conditioning or a heat pump, the damper in the humidifier ductwork should be closed during the cooling season.**

- ☑ **Have annual system maintenance done one month before the heating season begins.**

- ☑ **Electronic Air Cleaners: Replace the main filter every six months to enable device to regain its effectiveness.**

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System Enhancements

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Code	Enhancement Description	Retail	Retail OT	MA Retail	MA OT
5301 0300	Pro-1 T805 1-heat 1-cool programmable	\$ -	\$ -	\$ -	\$ -
5302 0300	Pro-1 T855 2-heat 2-cool programmable	\$ -	\$ -	\$ -	\$ -
5303 0300	Pro-1 T855i Wi-Fi 2-heat 2-cool programmable	\$ -	\$ -	\$ -	\$ -
5305 0300	Honeywell remote temperature sensors	\$ -	\$ -	\$ -	\$ -
5306 0300	Nest Pro with additional 5 year warranty	\$ -	\$ -	\$ -	\$ -
5307 0050	Nest S3000BWES - Smoke + CO Alarm, Batt Pwr, Wht	\$ -	\$ -	\$ -	\$ -
5308 0050	Nest NC1103US - HD Indoor Camera - 2nd Gen	\$ -	\$ -	\$ -	\$ -
5309 0050	ECOBEE EB-STATS530-2 Wi-Fi	\$ -	\$ -	\$ -	\$ -
5310 0050	ECOBEE sensor Pack - 2	\$ -	\$ -	\$ -	\$ -
5311 0050	Aprilaire M#700M power humidifier manual	\$ -	\$ -	\$ -	\$ -
5312 0050	Honeywell 3000-4000-5000 non-programmable	\$ -	\$ -	\$ -	\$ -
5313 0050	Honeywell 6000 programmable multi-stage	\$ -	\$ -	\$ -	\$ -
5314 0050	Honeywell 8000 touchscreen programmable multi-stage	\$ -	\$ -	\$ -	\$ -
5315 0050	Honeywell 9000 Wi-Fi programmable	\$ -	\$ -	\$ -	\$ -
5316 0050	Install Honeywell Vision Pro wireless programmable	\$ -	\$ -	\$ -	\$ -
5317 0050	Install Honeywell Prestige IAQ wireless outdoor & 2 duct Sensors	\$ -	\$ -	\$ -	\$ -
5318 0050	Install Honeywell redlink enabled internet gateway	\$ -	\$ -	\$ -	\$ -
5319 0050	Prestige wireless outdoor sensor	\$ -	\$ -	\$ -	\$ -
5320 0050	Prestige wireless temp/humidity indoor sensor	\$ -	\$ -	\$ -	\$ -
5321 0050	Install UV light single lamp	\$ -	\$ -	\$ -	\$ -
5322 0050	Whole house duct cleaning/w/sanitizer system	\$ -	\$ -	\$ -	\$ -
5323 0050	Dryer vent cleaning	\$ -	\$ -	\$ -	\$ -
5324 0050	Dryer vent cleaning w/duct cleaning	\$ -	\$ -	\$ -	\$ -
5325 0050	HVAC duct mounted smoke detector	\$ -	\$ -	\$ -	\$ -
5326 0050	EZ trap drain w/out switch	\$ -	\$ -	\$ -	\$ -
5327 0050	EZ trap drain switch	\$ -	\$ -	\$ -	\$ -
5328 0050	Install Air Knight 5" Air Purification System	\$ -	\$ -	\$ -	\$ -
5329 0050	Install Air Knight 9" Air Purification System	\$ -	\$ -	\$ -	\$ -
5330 0050	Install Air Knight 14" Air Purification System	\$ -	\$ -	\$ -	\$ -
5331 0050	Carbon monoxide C0 detector	\$ -	\$ -	\$ -	\$ -
5332 0050	Respicaire 1" electronic filter	\$ -	\$ -	\$ -	\$ -
5333 0050	Phenomenal Air cold plasma generator	\$ -	\$ -	\$ -	\$ -
5334 0050	Respicaire UVC light and activation carbon air purifier	\$ -	\$ -	\$ -	\$ -
5335 0050	Install surge protector	\$ -	\$ -	\$ -	\$ -
5336 0050	Install compressor saver hard start kit	\$ -	\$ -	\$ -	\$ -
5337 0050	White Rogers 80 Series Programmable, 1H/1C, Digital Thermostat	\$ -	\$ -	\$ -	\$ -
5338 0150	PROTECT Maintenance 1ST UNIT - 1 INSP - Monthly Rate	\$ 8.95			
5339 0150	PROTECT Maintenance 2ND UNIT - 1 INSP - Monthly Rate	\$ 6.95			
5340 0300	PROTECT Maintenance 1ST UNIT - 2 INSP - Monthly Rate	\$ 14.95			
5341 0300	PROTECT Maintenance 2ND UNIT - 2 INSP - Monthly Rate	\$ 10.95			
5342 0150	PROTECT Maintenance 1ST UNIT - 1 INSP - Annual Rate	\$ 109.00			
5343 0150	PROTECT Maintenance 2ND UNIT - 1 INSP - Annual Rate	\$ 89.00			
5344 0300	PROTECT Maintenance 1ST UNIT - 2 INSP - Annual Rate	\$ 179.00			
5345 0300	PROTECT Maintenance 2ND UNIT - 2 INSP - Annual Rate	\$ 129.00			
5346 0050	Parts Acquisition	\$ -	\$ -	\$ -	\$ -

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PLEASE VERIFY THESE RATES WITH MANAGEMENT PRIOR TO PRICING SERVICE AGREEMENTS. PRICES REFLECT 1.5 HOURS PER TRAVEL/INSPECTION VISIT, MAINT MATERIALS, INCENTIVE & ALREADY PRICED AT 15% DISCOUNTED

Customer Notice
Always mention how to receive a 15% discount off today's repairs

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System Enhancements

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