



## Instructor Agenda

# Retrofit Installer Mechanical

## Day1

| Time  | Activities   | Slides or Props   |
|-------|--|---|
| 9:00  | <ul style="list-style-type: none"> <li>• Introductions</li> <li>• Sign-in and trainee information forms</li> <li>• Program requirements</li> <li>• Assessment methodology</li> <li>• Course overview</li> <li>• Class room safety               <ul style="list-style-type: none"> <li>○ fire extinguisher locations</li> <li>○ safety glasses</li> </ul> </li> <li>• Jobsite Safety Considerations               <ul style="list-style-type: none"> <li>○ OSHA</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Sign in sheet</li> <li>• Information form</li> <br/> <li>• RIM-Opening presentation</li> </ul>   |
| 10:30 | <p>Gas Furnace Fundamentals</p> <ul style="list-style-type: none"> <li>• Gas furnace components               <ul style="list-style-type: none"> <li>○ gas valves</li> <li>○ burners</li> <li>○ manifolds</li> <li>○ draft hoods</li> <li>○ inducers</li> </ul> </li> <li>• Cabinet function</li> <li>• Heat exchanger design</li> <li>• Blower and airflow basics</li> </ul>  | <ul style="list-style-type: none"> <li>• RIM GFF presentation</li> <li>• View various heat exchangers</li> <li>• View various components</li> <li>• Demonstrate blower amp draw test</li> </ul> |
| 12:00 | <b>Lunch</b>   |   |
| 1:00  | <ul style="list-style-type: none"> <li>• Gas control system</li> <li>• Gas delivery system               <ul style="list-style-type: none"> <li>○ Natural and L.P. gas characteristics</li> <li>○ Regulators</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>• RIM GFF presentation</li> <li>• View gas regulators</li> <li>• Handout- Gas characteristics</li> </ul>   |



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| 2:30 | <ul style="list-style-type: none"> <li>• Safety and operating controls               <ul style="list-style-type: none"> <li>○ Limit switch operation</li> <li>○ Fan switch operation</li> <li>○ Roll out and draft failure switch</li> </ul> </li> <li>• Thermostats               <ul style="list-style-type: none"> <li>○ Functional locations</li> <li>○ Heat anticipator definition</li> <li>○ Cycle rate settings</li> <li>○ Conventional vs. programmable</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• View various controls and control locations</li> <li>• Discuss programmable vs. standard Tstats</li> </ul> |
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## Retrofit Installer Mechanical

### Day 2

| Time  | Activities   | Slides or Props  |
|-------|--|--|
| 9:00  | Gas Appliance Inspection Procedure <ul style="list-style-type: none"> <li>• Inspection form responsibilities               <ul style="list-style-type: none"> <li>○ Client interview</li> <li>○ Job information</li> </ul> </li> <li>• Initial health and safety concerns               <ul style="list-style-type: none"> <li>○ Major gas leaks</li> <li>○ Fire hazards</li> </ul> </li> <li>• Testing electrical safety               <ul style="list-style-type: none"> <li>○ Check for proper polarity wiring condition and ground</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>• RIM GAI presentation</li> <li>• Gas Appliance Inspection form</li> <li>• Gas Appliance Inspection instruction doc.</li> <li>• Handout- Electric polarity</li> <li>• Demonstrate electric safety tests</li> </ul>  |
| 10:30 | <ul style="list-style-type: none"> <li>• Venting basics               <ul style="list-style-type: none"> <li>○ Chimney effect</li> <li>○ Draft hood equipment venting</li> <li>○ Induced draft equipment venting</li> </ul> </li> <li>• Vent system inspection               <ul style="list-style-type: none"> <li>○ Clearances</li> <li>○ Materials and installation</li> <li>○ Safety rules and guidelines</li> </ul> </li> <li>• Gas piping system inspection               <ul style="list-style-type: none"> <li>○ Leak checking</li> <li>○ Proper materials</li> <li>○ Proper installation</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• View various venting materials</li> <li>• Demonstrate gas leak detection</li> <li>• Handout- Gas Piping Inspection</li> <li>• Handout- Pipe fittings</li> <li>• Handout- Quick rules for combustion air</li> <li>• Handout- Gas meter clocking procedure</li> </ul> |
| 12:00 | <b>Lunch</b>   |  |

## Instructor Agenda

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|------|---|--|
| 1:00 | <p>Gas Appliance Inspection Procedure (Continued)</p> <ul style="list-style-type: none"> <li>• Heat exchanger inspection             <ul style="list-style-type: none"> <li>○ Failure modes</li> <li>○ Common weak spots</li> <li>○ Inspection tools and techniques</li> <li>○ Failed heat exchanger indicators</li> </ul> </li> <li>• Clean and tune requirements             <ul style="list-style-type: none"> <li>○ Servicing burners and ignition</li> <li>○ Servicing air delivery system</li> <li>○ Cleaning heat exchanger</li> <li>○ Cleaning condensate system</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• RIM GAI presentation</li> <li>• View failed heat exchangers</li> <li>• Demonstrate blower/burner removal</li> <li>• Demonstrate heat exchanger O2 test</li> </ul> |
| 2:30 | <ul style="list-style-type: none"> <li>• Furnace operation testing             <ul style="list-style-type: none"> <li>○ Measure temperature rise</li> <li>○ Measure and adjust fan off</li> <li>○ Test limit switch operation</li> <li>○ Measure Btuh input</li> <li>○ Adjust gas pressure</li> <li>○ Test 100% pilot shut-off system</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>• Training lab furnaces</li> <li>• Temperature analyzer</li> <li>• Monometer</li> <li>• Stop watch</li> <li>• Gas meter clocking card</li> </ul>                    |



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## Day 3

| Time  | Activities   | Slides or Props  |
|-------|--|--|
| 9:00  | Worst Case Draft Testing <ul style="list-style-type: none"> <li>• Basic venting properties</li> <li>• House pressure basics</li> </ul>   | <ul style="list-style-type: none"> <li>• CAZ Pressure Diagnostics presentation</li> <li>• CAZ Tool/Test Kit</li> <li>•</li> </ul>  |
| 10:30 | Worst Case Draft Testing <ul style="list-style-type: none"> <li>• House set-up</li> <li>• Determining worst case</li> <li>• Appliance testing</li> <li>• Pressure diagnostics</li> </ul> | <ul style="list-style-type: none"> <li>• CAZ Pressure Diagnostics presentation</li> <li>• Hand out- Worst case grid</li> <li>• Hand out- Pressure table</li> <li>• Handout- DSTO form</li> </ul>                             |
| 12:00 | <b>Lunch</b>   |  |
| 1:00  | Carbon Monoxide Mitigation <ul style="list-style-type: none"> <li>• Discuss CO Standards</li> <li>• Test CO on equipment</li> </ul>  | <ul style="list-style-type: none"> <li>• Handouts:               <ul style="list-style-type: none"> <li>○ CO Standards</li> <li>○ Gas Range form</li> <li>○ CO analyzer</li> <li>○ CO Probe locations</li> </ul> </li> </ul> |
| 2:30  | Course review <ul style="list-style-type: none"> <li>• Review material from the previous training sections</li> </ul>  |  |
| 3:00  | Test   | RIM Written Test   |