

Commissioning Worksheets

(Part A-General)

(W 1)



**Wallet card
photocopy**

Inspection Authority: _____
Signature: _____
Date: _____

Commissioner: _____
Phone: _____ Fax _____
Date: _____/_____/_____

Submitted For: (Owner)

Name _____
Address _____
City _____ Prov _____
Postal Code _____
Phone: _____ Fax _____

By: (Contractor)

Name _____
Address _____
City _____ Prov _____
Postal Code _____
Phone: _____ Fax _____

A.1 Worksheets required

- W.1 Worksheet 1, Part A: General: Required for all jobs
- W.2 a, b, c Worksheet 2, Part B: Forced Air Heating: For jobs with forced air heating systems
- W.3 a, b Worksheet 3, Part C: Hot Water Heating: For jobs with hot water heating systems
- W.4 Worksheet 4, Part D: Forced Air Cooling: For jobs with forced air cooling systems
- W.5 a or b Worksheet 5, Part E: Ventilation System: Required for all jobs.
- W.6 Worksheet 6, Part F: Depressurization: Required for most part 6 and F326 jobs.

A.2 Certification

I certify that the HVAC systems have been commissioned according to the requirements of the manufacturer's commissioning instructions, the worksheets checked below, and all applicable codes.

- W.1 W.2 a, b, c W.3 a, b W.4 W. 5 a or b W.6

HRAI Certification #: _____

Expiry Date: _____ Signature: _____

Commissioning

(Part B-Forced Air Heating)

(W 2a)

B.1 Heating unit (Designed)

make: _____
model: : _____
fuel type: ng lp oil ele hp w other
output: _____ Btu/h
fan speed or RPM: _____
fan control settings: on _____ °F off _____ °F
heat anticipator setting manufacturer _____ A

B.2 Heating unit (Installed)

make: _____
model: : _____
fuel type: ng lp oil ele hp w other
output: _____ Btu/h
fan speed or RPM: _____
fan control settings: on _____ °F off _____ °F
heat anticipator setting _____ A

B.3 Before start-up

- electrical polarity correct
- unit electrically grounded
- fuel lines connected and tested
- drain lines connected and trapped
- all shipping bracing (packaging) removed
- duct system complete
- registers and grills installed
- duct system dampers open
- filter install (clean)

B.4 At Start -Up

- Fuel pressure correct
- Limit switch(s) operation correct
- Unit venting properly
- Circulation fan rotation correct
- Refrigerant pressures and levels correct
- Combustion efficiency test

B.5 Temperature rise (Designed)

Designed: _____ °F (RASD C.5)
Manufacturers range: _____ °F to _____ °F

B.6 Temperature rise (Operating)

_____ °F (SA temp. – RA temp.)
 within manufacturers range

This work sheet has been designed to be generic in nature. Depending on the system being commissioned other information or procedures may be required to ensure the safe and efficient operation of the system. Always consult and follow the equipment manufacturers installation instructions.

| Commissioning | | (Part B-Forced Air Heating) | (W 2b) |
|---|---|------------------------------------|---------------|
| <p>B.7 External Static Pressure (Designed)</p> <p>a) ESP: _____ in.W.C. (RASD B.3)</p> <p>b) Filter PD: _____ in.W.C. (RASD C.6)</p> <p>c) Coil PD: _____ in.W.C. (RASD C.7)</p> <p>d) Total PD: _____ in.W.C. (RASD C.8)</p> <p>Available press. _____ in.W.C. (RASD C.9)</p> <p style="text-align: center;">(a – d)</p> | <p>B.8 External Static Pressure (Operating)</p> <p>a) supply SP _____ in. W.C (averaged)</p> <p>b) return SP _____ in. W.C (averaged)</p> <p>c) ESP _____ in. W.C. (a + b)</p> <p>d) Filter press. drop _____ in. W.C. (averaged)</p> <p>e) Coil press. drop _____ in. W.C. (averaged)</p> <p>f) Total PD: _____ in.W.C. (d + e)</p> <p>Available press. _____ in.W.C. (c – f)</p> | | |
| <p>B.9 System Air Flow (Temperature Rise method)</p> <p>a) Heating output: _____ Btu/h(from B.2)</p> <p>b) Operating temp. rise: _____ °F (from B.6)</p> <p>Estimated system air flow _____ CFM</p> <p style="text-align: center;">a ÷ (b x 1.08) = CFM</p> | <p>B.10 System Air Flow (ESP method)</p> <p>Operating ESP _____ in. W.C. (From B.8 c)</p> <p>CFM @ closest ESP (from manufacture blower data)</p> <p style="text-align: center;">_____ CFM @ _____ ESP</p> <p style="text-align: center;">_____ CFM @ _____ ESP</p> <p>Interpolated CFM at operating ESP</p> <p style="text-align: center;">_____ CFM</p> | | |
| <p>B.11 System Air Flow (velocity press. method)</p> <p>a) Supply air velocity pressure _____ in.W.C.</p> <p style="text-align: center;">or</p> <p>b) Return air velocity pressure _____ in.W.C.</p> <p>System CFM = $\frac{4005 \times \sqrt{VP} \times \text{area}}{144}$ = _____ CFM</p> <p>(area = duct cross sectional area in square inches)</p> | <p>B.12 Conversion Factor for Operating CFM</p> <p>a) Design CFM _____ CFM (RASD B.4)</p> <p>b) Operating CFM _____ CFM (B.9, B.10 or B.11)</p> <p>c) Conversion factor _____ (4 decimals)</p> <p style="text-align: center;">(a ÷ b)</p> | | |
| <p>This work sheet has been designed to be generic in nature. Depending on the system being commissioned other information or procedures may be required to ensure the safe and efficient operation of the system. Always consult and follow the equipment manufacturer’s installation instructions.</p> | | | |

Commissioning

(Part C-Hot Water Heating)

(W 3a)

C.1 Heating unit (Designed)

make: _____
model: : _____
fuel type: ng lp oil ele hp w other
output: _____ Btu/h
burner temp settings: on _____ °F off _____ °F
circ. pump settings: on _____ °F off _____ °F
heat anticipator setting manufacturer _____ A
system design operating water pressure _____ psi

C.2 Heating unit (Installed)

make: _____
model: : _____
fuel type: ng lp oil ele hp w other
output: _____ Btu/h
burner temp settings: on _____ °F off _____ °F
circ. pump settings: on _____ °F off _____ °F
heat anticipator setting _____ A
system operating water pressure _____ psi

C.3 Before start-up

- electrical polarity correct
- unit electrically grounded
- fuel lines connected and tested
- drain lines connected and trapped
- all shipping bracing (packaging) removed
- expansion tank pressure correct
- water piping complete and tested
- all distribution system valves open
- water pressure regulator and relief valve set
- air purged from system
- drain (purge) hose connection capped

C.4 Operating in steady state condition

- fuel pressure correct
- limit switch(s) operation verified
- unit venting properly
- circulation pump rotation correct
- water pressures correct
- operating supply water temperature limit or minimum boiler temperature control set
- control system operating as designed
- system pressure when unit at high limit temperature is less than PRV setting

C.5 System Water Flow

(for use with Method B balancing only)

a) Design water flow (from design worksheet)
_____ USGPM

b) Reading from installed flow meter(s)
_____ USGPM

Note: b must be equal to or greater than **a**

This work sheet has been designed to be generic in nature. Depending on the system being commissioned other information or procedures may be required to ensure the safe and efficient operation of the system. Always consult and follow the equipment manufacturer's installation instructions.

Commissioning

(Part D-Forced Air Cooling)

(W 4)

| | |
|--|--|
| D.1 Cooling unit (Designed) make: _____ model: : _____ output: _____ Btu/h fan speed or RPM: _____ | D.2 Cooling unit (Installed) make: _____ model: : _____ output: _____ Btu/h fan speed or RPM: _____ |
| D.3 External Static Pressure (Designed) a) ESP: _____ in.W.C. (RASD B.3) | D.4 External static pressure (Operating) a) supply SP _____ in. W.C b) return SP _____ in. W.C c) ESP (a + b) _____ in. W.C. |
| D.5 System air flow (ESP method) Operating ESP _____ in. W.C. (From D.4 c) CFM @ closest ESP (from manufacture blower data) _____ CFM @ _____ ESP _____ CFM @ _____ ESP Interpolated CFM at operating ESP _____CFM | D.6 System air flow (velocity press. method) a) Supply Air Velocity pressure _____ in.W.C. or b) Return Air Velocity pressure _____ in.W.C. System CFM = $\frac{4005 \times \sqrt{VP \times \text{area}}}{144}$ = _____CFM |
| D.7 Airflow acceptability a) manufacturer minimum CFM/ton _____CFM b) tons of cooling (output ÷ 12,000) _____ tons c) minimum CFM (a x b) _____ CFM d) Operating CFM _____ CFM (D.5 or D.6) <input type="checkbox"/> d equal to or greater than c | This work sheet has been designed to be generic in nature. Depending on the system being commissioned other information or procedures may be required to ensure the safe and efficient operation of the system. Always consult and follow the equipment manufacturer's installation instructions. |

Commissioning

(Part F-Depressurization)

(W 6)

| | |
|--|---|
| <p>F.1 Combustion equipment: (List combustion equip. & depressurization limits)</p> <p>1. _____ depressurization limit _____ Pa</p> <p>2. _____ depressurization limit _____ Pa</p> <p>3. _____ depressurization limit _____ Pa</p> <p>4. _____ depressurization limit _____ Pa</p> <p>5. _____ depressurization limit _____ Pa</p> | <p>F.3 Depressurization test instrument</p> <p>Make: _____</p> <p>Model: _____</p> <p>Test must be performed using an instrument capable of measuring 0 to 60 Pa with a sensitivity of 2 Pa.</p> <hr/> <p>F.4 Depressurization test conditions</p> <p>Date of test: _____ mm/dd/yy</p> <p>Test to be carried out at time of Final Inspection or when house substantially complete.</p> <p>Wind Condition _____ km/hr (maximum wind of 12 km/hr (9 mph))</p> |
| <p>F.2 Exhaust equipment (List all exhaust equipment and relevant data)</p> <p>1. _____ CFM: _____ on at TVCC <input type="checkbox"/> on at CEC <input type="checkbox"/></p> <p>2. _____ CFM: _____ on at TVCC <input type="checkbox"/> on at CEC <input type="checkbox"/></p> <p>3. _____ CFM: _____ on at TVCC <input type="checkbox"/> on at CEC <input type="checkbox"/></p> <p>4. _____ CFM: _____ on at TVCC <input type="checkbox"/> on at CEC <input type="checkbox"/></p> <p>5. _____ CFM: _____ on at TVCC <input type="checkbox"/> on at CEC <input type="checkbox"/></p> | <p>F.5 House depressurization measurements</p> <p>a) Starting (rest) pressure _____ Pa</p> <p>b) Pressure at TVCC _____ Pa</p> <p>c) Pressure at CEC _____ Pa</p> <p>d) Ending (rest) pressure _____ Pa</p> <p>Depressurization at TVCC _____ Pa (greater of (b - a) or (b - d))</p> <p>Depressurization at CEC _____ Pa (greater of (c - a) or (c - d))</p> <p><input type="checkbox"/> System conforms to CSA F326 M91</p> |

| Exhaust / Make-Up Fan Air Flows | | | | | | | |
|---------------------------------|-----|-------|--|--|--|--|--|
| F.6 Fan | HRV | Dryer | | | | | |
| F.7 Room or area | | | | | | | |
| F.8 Design exhaust | | | | | | | |
| F.8 Design make-up | | | | | | | |
| F.10 Measured exhaust | | | | | | | |
| F.11 Measured make-up | | | | | | | |

| Pa | 1 | 2 | 3 | 4 | 5 | 10 | 25 | 50 | 75 | 100 | 150 |
|----------|------|------|------|------|-----|-----|----|----|----|-----|-----|
| In. W.C. | .004 | .008 | .012 | .016 | .02 | .04 | .1 | .2 | .3 | .4 | .6 |