

## AG1 Series - Tube Heater Specification Sheet

**⚠ WARNING:** This heater must be installed and serviced by trained gas installation and service personnel only! Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment. Protect yourself and others by observing all safety information. Retain instructions for future reference.



# AG1 SERIES TUBE HEATERS

ENGINEERING SUBMITTAL DATA - SINGLE STAGE LOW INTENSITY  
GAS FIRED INFRA-RED TUBE HEATERS & ACCESSORIES.

Qty.	Model #	Gas Type (circle one)	BTU's	Length	U-Tube Length	Weight - Pieces	Suggested Height Above Animals	Qty. Alum. Add On	Field use only	
									"Type" Tube Pkg #1 *	"Type" Tube Pkg. #2 *
	AG1-20-50	N or LP	50,000	21'-7"	13'-0"	120 # - 2	6' - 9'	Qty. 1	20-4 Alum-HRT	N/A
	AG1-20-60	N or LP	60,000	21'-7"	13'-0"	120 # - 2	6' - 9'	Qty. 1	20-4 Alum-HRT	N/A
	AG1-20-75	N or LP	75,000	21'-7"	13'-0"	120 # - 2	6' - 9'	Qty. 1	20-4 Alum-HRT	N/A
	AG1-30-50	N or LP	50,000	31'-3"	**17'-8"	160 # - 2	7' - 10'	Qty. 2	30-4 Alum-HRT	N/A
	AG1-30-60	N or LP	60,000	31'-3"	**17'-8"	160 # - 2	7' - 10'	Qty. 2	30-4 Alum-HRT	N/A
	AG1-30-75	N or LP	75,000	31'-3"	**17'-8"	160 # - 2	7' - 10'	Qty. 2	30-4 Alum-HRT	N/A
	AG1-30-100	N or LP	100,000	31'-3"	**17'-8"	160 # - 2	8' - 14'	Qty. 2	30-4 Alum-HRT	N/A
	AG1-40-60	N or LP	60,000	40'-11"	22'-8"	190 # - 2	7' - 10'	Qty. 3	40-4 Alum-HRT	N/A
	AG1-40-75	N or LP	75,000	40'-11"	22'-8"	190 # - 2	7' - 10'	Qty. 3	40-4 Alum-HRT	N/A
	AG1-40-100	N or LP	100,000	40'-11"	22'-8"	190 # - 2	7' - 11'	Qty. 3	40-4 Alum-HRT	N/A
	AG1-40-125	N or LP	125,000	40'-11"	22'-8"	190 # - 2	9' - 14'	Qty. 3	40-4 Alum-HRT	N/A
	AG1-40-150	N or LP	150,000	40'-11"	22'-8"	190 # - 2	10' - 14'	Qty. 3	40-4 Titan-HRT	N/A
	AG1-50-100	N or LP	100,000	50'-7"	**27'-4"	235 # - 2	8' - 11'	Qty. 4	40-4 Alum-HRT	10-4-HRT
	AG1-50-150	N or LP	150,000	50'-7"	**27'-4"	235 # - 2	10' - 14'	Qty. 4	40-4 Titan-HRT	10-4-HRT
	AG1-60-150	N or LP	150,000	60'-3"	32'-4"	270 # - 3	10' - 14'	Qty. 5	40-4 Titan-HRT	20-4-HRT

\* - Type packages refer to the tube package that will ship with models (length, diameter, combustion tube type and radiant tube).

\*\* - Model requires 5EA-SUB accessory package.

N/A - This model is not available with this feature.

**Project:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location:** \_\_\_\_\_  
**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip:** \_\_\_\_\_  
**Contractor:** \_\_\_\_\_  
**Engineer:** \_\_\_\_\_  
**Local Representative:** \_\_\_\_\_  
**Customer Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip:** \_\_\_\_\_ **Phone #:** \_\_\_\_\_  
**Model:** \_\_\_\_\_ **Serial #:** \_\_\_\_\_  
**Notes:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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Form# LSAG1-0M-07/03 (DRP)



# Specifications & Clearances

## Product Features

### APPROVALS

- IAS, CSA.
- Indoor approval.
- Commercial approval.

### BURNER SIGHT GLASS

- For burner inspection.

### COMBUSTION AIR INLET & VENT

- 4" Male duct.

### WATERPROOFED CONTROL BOX

- Outside air collar (4") attached.
- Totally enclosed components.

### POWER SUPPLY

- 120 V.A.C., 60 Hz GRD, 3-wire.
- Ignition current-4.8 amps.
- Running current-1.1 amps.
- 24V control voltage.

### CONTROLS

- 100% safety shut off.
- Moisture and corrosion resistant ignition module.
- Differential pressure switch.
- Stainless steel flame swirl burner.
- Silicon carbide hot surface igniter.
- Flame rod sensing.
- Pre-purge controls.
- Indicator lights.

### GAS CONNECTION

- 7/8" flare-M FPT Connection to 1/2"x2" SS (304) flex connector provided.
- 1/2" F NPT gas cock included.

### GAS SUPPLY-W.C.P.

- Manifold pressure
- Min. Inlet pressure
- Max. Inlet pressure

### NAT

- 3.5"
- 5.0"
- 14.0"

### LP

- 10.0"
- 11.0"
- 14.0"

### EMMITER & COMBUSTION TUBES

- 16ga. 4" O.D. hot rolled steel.
- Slip fit connection.
- Aluminized combustion chamber (50-125 MBTU/H models).
- Titanium alloy treated combustion chamber (150 MBTU/H models).

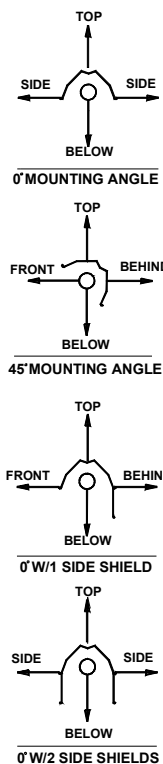
### WARRANTY

- 1 year - Burner box components.
- 3 years - Combustion and radiant tubes.
- 5 years - Burner.

### OTHER

- One reflector center support per heater.
- Turbulator baffle included.
- Made in U.S.A.
- Visit [www.detroitradiant.com](http://www.detroitradiant.com) for more information including parts.

CLEARANCES TO COMBUSTIBLES (IN.)					
MODEL NO.	MOUNTING ANGLE	SIDE		TOP	BELOW
		FRONT	BEHIND		
AG1 (20,30)-50 [N,P]	0°	9	9	6	47
	45°	39	8	10	47
W/1 side shield	0°	29	8	6	47
W/2 side shields	0°	9	9	6	47
20 ft from burner	0°	7	7	6	30
AG1 (20,30,40)-60 [N,P]	0°	9	9	6	47
	45°	39	8	10	47
W/1 side shield	0°	29	8	6	47
W/2 side shields	0°	9	9	6	47
20 ft from burner	0°	7	7	6	30
AG1 (20,30,40)-75 [N,P]	0°	9	9	6	60
	45°	39	8	10	60
W/1 side shield	0°	29	8	6	60
W/2 side shields	0°	9	9	6	60
20 ft from burner	0°	7	7	6	30
AG1 (30,40,50)-100 [N,P]	0°	14	14	6	66
	45°	39	8	10	66
W/1 side shield	0°	29	8	6	66
W/2 side shields	0°	16	16	6	66
20 ft from burner	0°	7	7	6	30
AG1 40-125 [N,P]	0°	20	20	6	76
	45°	58	8	10	76
W/1 side shield	0°	42	8	6	76
W/2 side shields	0°	20	20	6	76
20 ft from burner	0°	7	7	6	30
AG1 (40,50,60)-150 [N,P]	0°	24	24	6	81
	45°	58	8	10	81
W/1 side shield	0°	42	8	6	81
W/2 side shields	0°	23	23	6	81
20 ft from burner	0°	11	11	6	44



### OPTIONAL ACCESSORIES

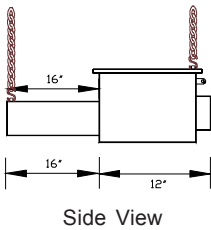
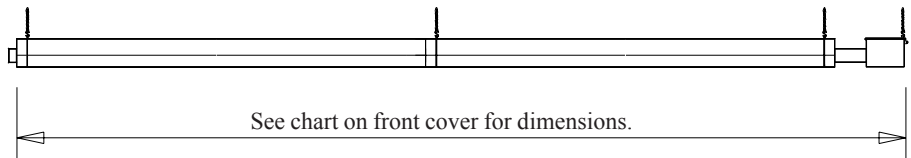
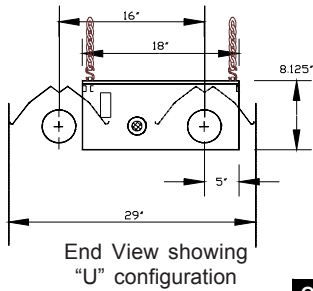
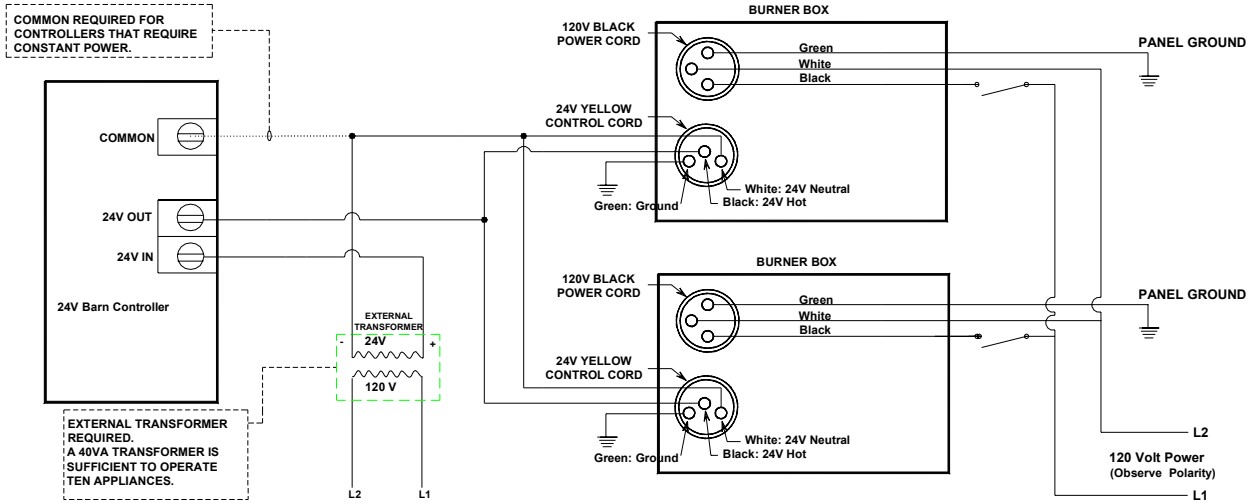
- SSCBAO.** Burner box is fully upgradeable to 304 series stainless steel with sealed construction.
- HLRB.** Relay board, required on heaters sharing a common thermostat or a single vent.
- PC-36.** Three prong power cord set. Allows heater to be plugged into 120V grounded outlet.
- SEA-SUB.** Substitute one 10' radiant tube and reflector for two 5' pieces. This is ideal for making "U" heaters from 30' and 50' models. Maximum of one per heater.



# Field Data & Accessories

## AG1 FIELD WIRING WITH INTERNAL RELAY

THE INTERNAL RELAY ALLOWS FOR LOW VOLTAGE T-STAT OPERATION OF LINE VOLTAGE HEATERS



QTY.	PART#	DESCRIPTION	NOTES
	WIV-4	4" combustion air intake - sidewall cap	Used to duct fresh (cold) air 0-20ft. to a heater. Sidewall only.
	WVE-GALV	4" unvented exhaust termination cap	Required on all units when operating unvented.
	4-DSK	4" sidewall vent kit	Required for all single sidewall vents. No roof venting.
	6-DSK	6" sidewall vent kit	Required for all common sidewall vents. No roof venting.
	Y	4" x 4" x 6" common Y vent fitting	Used for joining two heaters on one vent. Same T-stat required.
	E6	90 degree, 4" radiant elbow	Used for making a "L" tube shaped heater. Max. two per unit.
	RE	Reflector elbow shield	Reflector and accessories used to cover E6.
	TF1B	180 degree, 4" radiant "U" bend	Used for making a "U" shaped heater. Max. one per unit.
	SMB	Single mount bracket	Provides units with "U" bend uniform mounting points. One per 10'.
	RU	Reflector "U" shield	Reflector and accessories used to cover TF1B.
	TR60	5' x 4" tube & reflector extension	Optional 5' extension package. Max. two per unit.
	10EA	10' x 4" tube & reflector extension	Optional 10' extension package. Max. one per unit.
	SSE	Side shield extension	Reflector side guard used to lower side clearances. Each 5' in length.
	PG	Protective guard	Protects heat exchanger from contact or objects. Each 5' in length.
	PLQ	Warning plaque	Restates the clearance to combustible warning.
	BK	Angle mounting bracket 10-25-45 Deg.	Rotates unit to preset mounting angles.



# Written Specifications

## HEATER PARAMETERS/SPECIFICATIONS

- Gas fired radiant tube heaters shall be furnished and installed in accordance with governing codes and as shown per drawing(s) provided. Radiant tube heaters shall be **UNIVERSAL-RAY AG1 SERIES** of the model numbers and inputs(s) in BTU/H as manufactured by Detroit Radiant Products Company, Warren, MI 48089.
- Radiant tube heaters shall be Design Certified by CSA and comply with current Occupational Safety and Health Act (OSHA) Requirements. The supplier shall provide the CSA Certification Number and the heaters shall bear the CSA Seal of Certification.
- The supplier shall provide a manufacturer's published warranty covering the heater's stainless steel burner for a period of five (5) years, combustion and radiant emitter tube assembly for a period of three (3) years, and all components utilized in the heater control assembly for a period of one (1) year.
- The supplier shall furnish the owner/contractor with \_\_\_\_\_ copies of the engineering specification forms, showing physical dimensions, installation detail, recommendations, control wiring diagrams, and spare parts list.
- Radiant tube heaters shall be designed to satisfactorily operate at a minimum inlet pressure of \_\_\_\_\_ inches W.C. on natural gas, \_\_\_\_\_ inches W.C. on LP gas to a maximum inlet pressure of \_\_\_\_\_ inches W.C. on natural or LP gas.
- Radiant tube heaters shall be designed to operate without adjustments when burning natural gas having a heat value of \_\_\_\_\_ BTU per cubic foot with a specific gravity of \_\_\_\_\_, or when burning propane gas have a heat value of 2500 BTU per cubic foot with a specific gravity of 1.53.
- An Installation, Operation, and Maintenance Manual shall be supplied with each heater.

## RADIANT TUBE HEATER BURNER CONTROLS

- Heater shall be equipped with a moisture and corrosion resistant potted ignition control module.
- Heater shall be equipped with a direct silicon carbide ignition system with a one (1)-time ignition trial to sensing mode and an infinite trial after sensing mode. Power supplied to each burner shall be 120 VAC, 60 Hz.
- Heater controls shall have independent flame rod sensing.
- The main burner shall be constructed of stainless steel.
- The control assembly shall be Design Certified by CSA, shall provide main burner regulation, and shall be of the redundant type.
- Heater control voltage shall be 24VAC.
- Heater controls shall include two safety differential pressure switches: one to monitor exhaust back pressure and one to monitor combustion air flow, so as to provide complete burner shutdown due to insufficient combustion air or flue blockage.
- The heater's control system shall be designed to shutoff the gas flow to the main burner in the event either a gas supply or power supply interruption occurs.

- The heater's air flow control system shall provide a 45 second pre-purge prior to initiating burner operation.
- No condensation shall form as a result of combustion in the combustion chamber or radiant tubes while at operating temperatures.

## RADIANT TUBE HEATER CONSTRUCTION

- Total heater shutdown shall occur in the event of circuit control lockout. An interruption of power (reset thermostat) will restart the firing sequence.
- The heater's control housing shall be totally enclosed with a corrosion resistant enameled steel exterior. The controls shall be easily serviceable by removing one (1) panel.
- The heater's combustion chamber shall be 4" O.D. 16ga. titanium alloy treated or aluminized steel finished with a high emissivity rated, corrosion resistant, black coating.
- Heater's radiant emitter tube shall be 4" O.D. 16ga. hot rolled steel.
- The heater's combustion chamber and radiant emitter tube shall incorporate a 4" slip fit connection in which the upstream tube slides into the next tube and is held by a bolted clamp.
- Safety differential pressure switches shall incorporate atmospheric sensing termination fittings designed to eliminate blockage due to moisture or foreign matter.
- The silicon carbide ignitor shall be readily accessible and serviceable without the use of tools.
- Reflectors shall be .025 polished aluminum with a multi-faceted design which includes reflector end caps. Reflectors shall be rotatable from 0 to 45 degrees when required. The heater's reflector hanging system shall be designed to permit expansion while minimizing noise and/or rattles. Reflectors shall be assembled to the heater without the use of tools.
- The heaters shall utilize a downstream turbulator baffle for maximum thermal efficiency.
- Heaters shall be equipped with a sight glass allowing a visual inspection of ignitor and burner operation from the floor.
- The radiant tube heaters shall be designed such that, at the customer's option, outside combustion air may be supplied without the use of additional supply fans. An air intake collar shall be supplied as part of the burner control assembly to accept a 4" O.D. supply duct.

