AG2 SERIES TUBE HEATERS

SUBMITTAL DATA – TWO-STAGE LOW INTENSITY GAS FIRED INFRARED TUBE HEATERS & ACCESSORIES

SUBMITTED BY: DATE:

JOB TITLE: CONTRACTOR:

ADDRESS: PHONE #:

CITY: ADDRESS:

STATE: ZIP: CITY:

STATE: ZIP:

ENGINEER:

LOCAL REPRESENTATIVE:

NOTES:

QTY.	MODEL #	TAG	GAS TYPE (Circle One)	BTU/H High Fire	BTU/H Low Fire	STRAIGHT LENGTH	U-TUBE LENGTH	WEIGHT	RCMD. MOUNTING HEIGHTS^ Above Animals	FIELD USE ONLY** "TYPE" TUBE PKG #1	FIELD USE ONLY** "TYPE" TUBE PKG #2
	AG2-20-65		N or LP	65,000	50,000	21' - 7"	13' - 0"	120 lbs.	6' to 9'	20-4 ALUM-HRT-UCC	N/A
	AG2-20-75		N or LP	75,000	50,000	21' - 7"	13' - 0"	120 lbs.	7' to 10'	20-4 ALUM-HRT-UCC	N/A
	AG2-30-65		N or LP	65,000	50,000	31' - 3"	*17' - 8"	160 lbs.	6' to 9'	30-4 ALUM-HRT-UCC	N/A
	AG2-30-75		N or LP	75,000	50,000	31' - 3"	*17' - 8"	160 lbs.	7' to 10'	30-4 ALUM-HRT-UCC	N/A
	AG2-30-100		N or LP	100,000	65,000	31' - 3"	*17' - 8"	160 lbs.	8' to 14'	30-4 ALUM-HRT-UCC	N/A
	AG2-40-65		N or LP	65,000	50,000	40' - 11"	22' - 8"	190 lbs.	6' to 9'	40-4 ALUM-HRT-UCC	N/A
	AG2-40-75		N or LP	75,000	50,000	40' - 11"	22' - 8"	190 lbs.	7' to 10'	40-4 ALUM-HRT-UCC	N/A
	AG2-40-100		N or LP	100,000	65,000	40' - 11"	22' - 8"	190 lbs.	7' to 11'	40-4 ALUM-HRT-UCC	N/A
	AG2-40-125		N or LP	125,000	95,000	40' - 11"	22' - 8"	190 lbs.	9' to 14'	40-4 ALUM-HRT-UCC	N/A
	AG2-40-150		N or LP	150,000	100,000	40' - 11"	22' - 8"	190 lbs.	10' to 14'	40-4 TITAN-ALUM-HRT-UCC	N/A
	AG2-50-100		N or LP	100,000	65,000	50' - 7"	*27' - 4"	235 lbs.	8' to 11'	40-4 ALUM-HRT-UCC	10-4 HRT
	AG2-50-125		N or LP	125,000	95,000	50' - 7"	*27' - 4"	235 lbs.	9' to 14'	40-4 ALUM-HRT-UCC	10-4 HRT
	AG2-50-150		N or LP	150,000	100,000	50' - 7"	*27' - 4"	235 lbs.	10' to 14'	40-4 TITAN-ALUM-HRT-UCC	10-4 HRT
	AG2-60-150		N or LP	150,000	100,000	60' - 3"	32' - 4"	265 lbs.	10' to 14'	40-4 TITAN-ALUM-HRT-UCC	20-4 HRT

* Model requires 5EA-SUB accessory package when installing in a 'U' configuration.

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

^ Recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from this data.

NOTE: AG2 Series heaters are not recommended for use in swine applications or other harsh environments.

DETROIT RADIANT PRODUCTS CO.

21400 Hoover Rd.
Warren, MI 48089-3162
Phone: (586) 756-0950
Toll Free: 1-800-222-1100

Fax: (586) 756-2626
Email: sales@drp-co.com
Website: www.detroitradiant.com

VISIT OUR WEBSITE FOR:

- Product Specs
- Parts Support
- Dealer Locator
- Applications
- C.A.D. Library
- Design Guidelines
- Theory of Infra-red
- and More!

AG2 SPECIFICATIONS

APPROVALS
- CSA Design Certified.
- Indoor/Outdoor Approval.
- Commercial/Industrial Approval.

WATERTIGHT CONTROL BOX
- Sight glass for burner inspection.
- Totally enclosed components.
- Coated enameled steel.
- Operational indicator lights.

GAS CONNECTION
- 7/8 in. flare-M FPT connection to 1/2 in. x 24 in. (304) SS PVC coated flex connector provided.
- 1/2"F NPT ball valve & inlet tap included.

GAS SUPPLY (Inches W.C.)
- Manifold pressure Nat 3.5; LP 10.0
- Min. Inlet pressure Nat 5.0; LP 11.0
- Max. Inlet pressure Nat 14.0; LP 14.0

POWER SUPPLY
- 120 VAC, 60 Hz GRD, 1 Ph., 3-wire.
- Watertight power cords.
- Ignition current - 4.8 amps.
- Running current - 1.1 amps.

CONTROLS
- Two-stage gas valve (at 100% and 65%)
- Silicon carbide hot surface ignition.
- Air proving safety switch.
- Pre and post purge controls.
- Flame rod sensing.
- 24V thermostatic control.
- Self-diagnostic - LED "soft lockout".

REFLECTOR
- Highly polished aluminum.
- Continuous overlap design.
- Two end caps included.
- Anti-rattle tension springs.
- One center support per heater.

COMBUSTION & RADIANT TUBES
- 16ga. 4" O.D. uncoated titanuim stabilized (150 MBH Models) or aluminized steel (65-125MBH models) primary combustion chamber.
- 16ga. 4" O.D. uncoated aluminized steel secondary combustion chamber (150 MBH models only).
- 16ga. 4" O.D. uncoated hot-rolled steel radiant emitter tubes.
- Slip-fit swaged tube connection.
- Stainless steel turbulator baffle.

COMBUSTION AIR INLET & VENTING
- Preset 4 in. combustion air inlet collar.
- Sidewall or roof venting - 4 in. dia. pipe up to 20 ft.

LIMITED WARRANTY
- 1 year - Burner box components.
- 3 years - Combustion and radiant tubes.
- 5 years - Stainless steel burner.

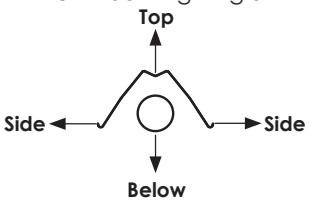
CLEARANCES TO COMBUSTIBLES (IN.)

MODEL NO.	MOUNTING ANGLE*	SIDE FRONT	SIDE BEHIND	TOP**	BELOW
AG2 (20, 30, 40) - 65 [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
AG2 (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
AG2 (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
AG2 (40, 50) - 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
AG2 (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

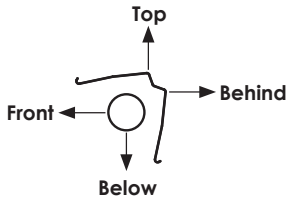
* Heaters mounted on an angle between 0° and 45° must maintain clearances posted for 0° or 45°; whichever is greater.

** Maintain a 10 in. (0° mounting angle) or 12 in. (1-45° mounting angle) clearance from ceilings constructed of tri-ply plastic or plastic fogger lines.

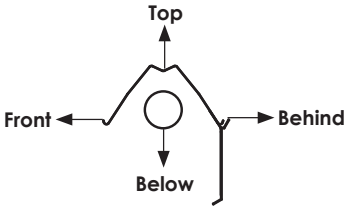
0° Mounting Angle



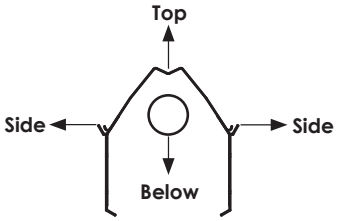
45° Mounting Angle



0° w/ 1 Side Shield



0° W/ 2 Side Shields

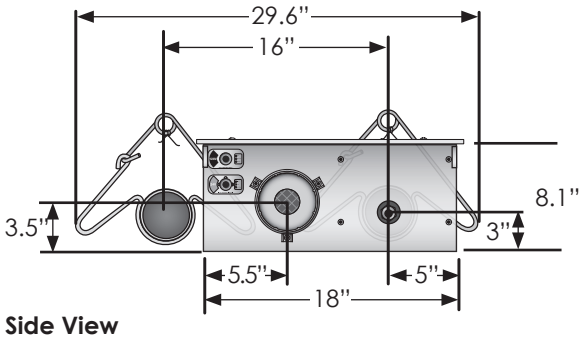


Read and understand the installation, operation and maintenance manual prior to installing or servicing this unit.

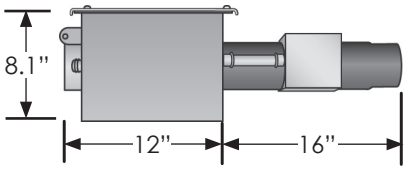
In locations used for the storage of combustible materials, signs must be posted adjacent to the heater's thermostat specifying stacking heights.

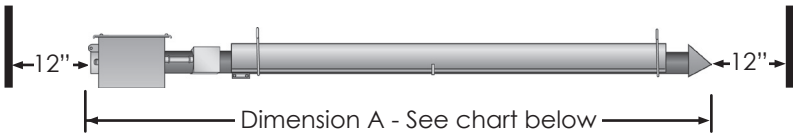
FIELD DATA

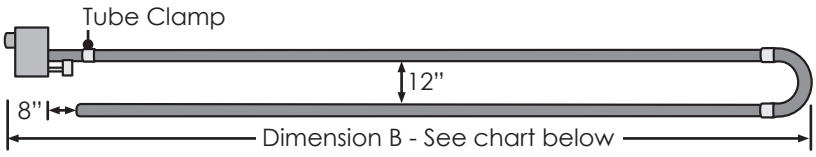
Burner Control Box with U-Bend • End View



Side View







MODEL NUMBER	DIMENSION A STRAIGHT	DIMENSION B U-TUBE
AG2-20	21' – 7"	13' – 0"
AG2-30	31' – 3"	*17' – 8"
AG2-40	40' –11"	22' – 8"
AG2-50	50' – 7"	*27' – 4"
AG2-60	60' – 3"	32' – 4"

*with 5EA-SUB

OPTIONAL ACCESSORIES

QTY.	PART #	DESCRIPTION	NOTES
	10EA	10' X 4" Tube & Reflector Extension	Optional 10 ft. extension package. Maximum of one per unit.
	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.
	BK	Angle Mounting Bracket 15-30-45 Deg.	Rotates reflector to preset mounting angles.
	E6	90 Degree, 4" Radiant Elbow	Used for making a L-shaped heater. Maximum of two per unit.
	PG	Protective Guard	Protects heat exchanger from contact or objects. Each 5 ft. in length.
	PLQ	Warning Plaque	Hung below heater, restates the clearance to combustible warning.
	REP	Reflector & Elbow Package	Reflector and accessories used to configure heater in a 'L' shape.
	RTVP-4	4" Rooftop Vent Package	Used to single vent vertically through the roof.
	RTVP-6	6" Rooftop Vent Package	Used to common vent vertically through the roof.
	RUP	Reflector & 'U' Bend Package	Reflector and accessories used to configure heater in a 'U' shape.
	SMB	Single Mount Bracket	Provides units with 'U' bend uniform mounting points. One per 10 ft.
	SSE	Side Shield Extension	Reflector side guard used to lower side clearances. Each 5 ft. in length.
	TF1B	180 Degree, 4" Radiant 'U' Bend	Used for making a U-shaped heater. Maximim of one per unit.
	THCS	Tube Heater Chain Set	5 ft. chain set with two S-hooks used for hanging heater.
	TR60	5'x4" Tube & Reflector Extension	Optional 5 ft. extension package. Maximum of two per unit.
	WIV-4	4" Combustion Air Intake - Sidewall Cap	Used to duct fresh (cold) air 0-30 ft. to a heater. Sidewall only.
	WVE-GALV	4" Unvented Exhaust Termination Cap	Required on all units when operating unvented.
	Y	4"x6"x4" Aluminized Common Vent Fitting	Used for joining two heaters on one vent. Same thermostat required.
	YSM	4"x6"x4" Galvanized Common Vent Fitting	Used for joining two heaters on one vent. Same thermostat required.

OPTIONAL UPGRADES

- ☐ **AG-19EAO** Elongated AG wire hanger for wider throw patterns.
- ☐ **5EA-SUB** Substitute one 10' radiant tube and reflector for two 5' pieces. Ideal for making "U" heaters from 30', 50' and 70' models. Maximum of one per heater.
- ☐ **ALUM-AO** Upgrade hot-rolled steel (HRT) radiant tubes to 16 gauge, black coated, aluminized steel for maximum efficiency and longevity. Highly recommended in contaminated or moisture laden environments.
- ☐ **AGAO-SS** 304 Series stainless steel burner control box.

STAINLESS STEEL UPGRADES

- ☐ **SSRAO** 304 stainless steel reflectors.
- ☐ **SSB-##** Stainless steel mounting brackets. (## = heater length)

EXTENDED WARRANTIES

- ☐ **CWO** ____ year extended controls warranty (max. 4 year).
- ☐ **EWO** ____ year extended exchanger warranty (max. 5 year).

NOTE: Refer to the Agricultural Series Heater Accessory List for detailed specifications and limitations on any of the above options.

WRITTEN SPECIFICATIONS

HEATER PARAMETER/SPECIFICATIONS

- Gas fired two-stage radiant tube heaters shall be furnished and installed in accordance with governing codes and as shown per drawing(s) provided. Two-stage radiant tube heaters shall be **RE-VERBER-RAY® AG2 SERIES** of the model numbers and input(s) in BTU/H as manufactured by Detroit Radiant Products Company, Warren, MI 48089.
- Two-stage 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 heaters low fire and high fire modes of operation must be Design Certified by CSA.
- 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.
- Two-stage radiant tube heaters shall be designed to satisfactorily operate at a minimum inlet pressure of _____ inches W.C. to a maximum inlet pressure of _____ inches W.C.
- Two-stage 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.

TWO-STAGE RADIANT TUBE HEATER BURNER CONTROLS

- The two-stage radiant tube heater's normal sequence of operation shall include a defined input differential. Heater must be CSA Design Certified to operate at an input differential of at least 30% between the low fire and high fire modes.
- The heater shall be equipped with a direct silicon carbide ignition system with a three (3)-time ignition trial to sensing mode and an infinite trial after sensing mode. Power supplied to each burner shall be 120 VAC, 60 Hz. Flame sensing shall be via an independent sensing rod and circuit.
- The control assembly shall be Design Certified by CSA, shall provide main burner regulation, and shall be of the redundant type.
- The heater controls shall include a air proving safety switch to monitor exhaust back pressure and combustion air flow, so as to provide complete burner shutdown due to insufficient combustion air or flue blockage.
- The heater shall incorporate a self-diagnostic ignition module, include an external LED readout display, and recycle the heater after an inadvertent shutdown.
- The heater's control system shall be designed to shut off 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 and a post purge upon completion, effectively removing all products of combustion from heat exchanger and/or radiant tubes.
- The heater control assembly shall include staging indicator lights that define the units operating input ranges.
- No condensation shall form as a result of combustion in the combustion chamber or radiant tubes while at operating temperatures.
- The thermostat shall be two-stage operating on 24 volts. No external transformers shall be required.
- Total heater shutdown shall occur in the event of circuit control lockout, including burner operation and combustion air blower. An interruption of power (reset thermostat) will restart the firing sequence.
- The heater controls shall provide a 120 second post purge as an integral part of the control assembly.

TWO-STAGE RADIANT TUBE HEATER CONSTRUCTION

- 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 main burner assembly shall be constructed of stainless steel.
- The heater's primary combustion chamber shall be 4" O.D. 16ga. uncoated titanium stabilized (150 MBH models) or uncoated aluminized steel (65-125 MBH models).
- The heater's secondary combustion chamber (150 MBH models only) shall be 4" O.D. 16ga. uncoated aluminized steel.
- The heater's radiant emitter tube shall be 4" O.D. 16ga. uncoated 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.
- 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 heater shall utilize a downstream turbulator baffle for maximum thermal efficiency.
- The heater shall be equipped with a sight glass allowing a visual inspection of ignitor and burner operation form the floor.
- The two-stage radiant tube heater 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.