

AG2 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.



AG2 SERIES TUBE HEATERS

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

Qty.	Model #	Gas Type (circle one)	MBTU'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 *
	AG2-20-65	N or LP	65/50	21'-7"	13'-0"	120 # - 2	6' - 9'	Qty. 1	20-4 Alum-HRT	N/A
	AG2-20-75	N or LP	75/50	21'-7"	13'-0"	120 # - 2	7' - 10'	Qty. 1	20-4 Alum-HRT	N/A
	AG2-30-65	N or LP	65/50	31'-3"	**17'-8"	160 # - 2	6' - 9'	Qty. 2	30-4 Alum-HRT	N/A
	AG2-30-75	N or LP	75/50	31'-3"	**17'-8"	160 # - 2	7' - 10'	Qty. 2	30-4 Alum-HRT	N/A
	AG2-30-100	N or LP	100/65	31'-3"	**17'-8"	160 # - 2	8' - 14'	Qty. 2	30-4 Alum-HRT	N/A
	AG2-40-65	N or LP	65/50	40'-11"	22'-8"	190 # - 2	6' - 9'	Qty. 3	40-4 Alum-HRT	N/A
	AG2-40-75	N or LP	75/50	40'-11"	22'-8"	190 # - 2	7' - 10'	Qty. 3	40-4 Alum-HRT	N/A
	AG2-40-100	N or LP	100/65	40'-11"	22'-8"	190 # - 2	7' - 11'	Qty. 3	40-4 Alum-HRT	N/A
	AG2-40-125	N or LP	125/95	40'-11"	22'-8"	190 # - 2	9' - 14'	Qty. 3	40-4 Alum-HRT	N/A
	AG2-40-150	N or LP	150/100	40'-11"	22'-8"	190 # - 2	10' - 14'	Qty. 3	40-4 Titan-HRT	N/A
	AG2-50-100	N or LP	100/65	50'-7"	**27'-4"	235 # - 2	8' - 11'	Qty. 4	40-4 Alum-HRT	10-4 Alum-HRT
	AG2-50-150	N or LP	150/100	50'-7"	**27'-4"	235 # - 2	10' - 14'	Qty. 4	40-4 Titan-HRT	10-4 Alum-HRT
	AG2-60-150	N or LP	150/100	60'-3"	32'-4"	270 # - 3	10' - 14'	Qty. 5	40-4 Titan-HRT	20-4 Alum-HRT

* - Type packages refer to the standard 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.

The ALUM-AO option will upgrade any hot rolled steel tube to coated aluminized steel.

The ALUM-AO is highly recommended in any harsh or high moisture environment. It is required in some confinements.

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



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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.

CONTROLS

- 100% safety shut off.
- Differential pressure switch.
- Stainless steel flame swirl burner.
- Silicon carbide hot surface igniter.
- Flame rod sensing.
- Pre and post purge controls.
- Microprocessor circuit board provides soft lockout and self-diagnostic features.

EMITTER & 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).
- Optional upgrade to coated aluminized (ALUM-AO).

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. NAT LP

- Manifold pressure 3.5" 10.0"
- Min. Inlet pressure 5.0" 11.0"
- Max. Inlet pressure 14.0" 14.0"

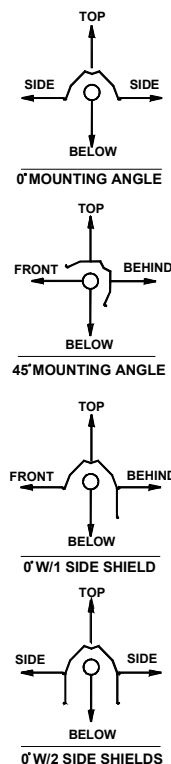
WARRANTY

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

OTHER

- One reflector center support per heater.
- Turbulator baffle included.
- Stainless steel upgrades available.
- Made in U.S.A
- Visit www.detroitradiant.com for more information including parts.

CLEARANCES TO COMBUSTIBLES (IN.)						
MODEL NO.	MOUNTING ANGLE	SIDE		TOP	BELOW	
		FRONT	BEHIND			
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 (40,50,60)-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



OPTIONAL ACCESSORIES

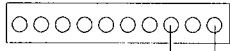
- SSCBAO.** Burner box is fully upgradeable to 304 series stainless steel with sealed construction.
- PC-36.** Three prong power cord set. Allows heater to be plugged into 120V grounded outlet.
- 5EA-SUB.** Substitute one 10' radiant tube and reflector for two 5' pieces. This is ideal for making "U" heaters for 30' and 50' models. Maximum of one per heater.



Field Data & Accessories

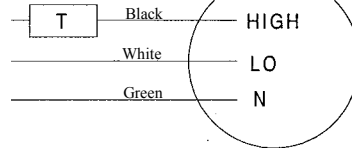


EXISTING CONTROL
MODULE

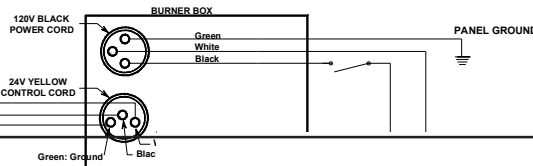


SINGLE STAGE
WATERTIGHT
T-STAT IN ROOM
SET 3°F BELOW
CONTROL SETPOINT

24V



AG2 FIELD WIRING WITH INTERNAL RELAY



YELLOW CONTROL CORD

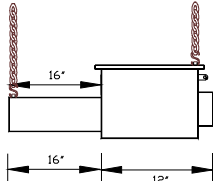
ATTACH 24V CONTROL CORD TO BURN CONTROLLER AS SHOWN:

GREEN: GROUND
WHITE: LOW FIRE
BLACK: HIGH FIRE

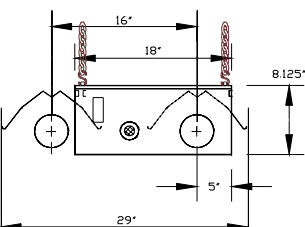
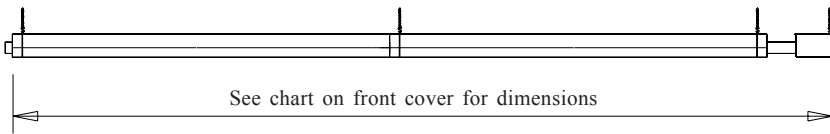
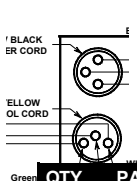
NOTE:
STAGE 1 IS THE HIGHER
TEMPERATURE SETPOINT AND
STAGE 2 IS THE LOWER
TEMPERATURE SETPOINT.

24V OUT - STAGE 1
(LOW FIRE)
24V OUT - STAGE 2
(HIGH FIRE)
24V IN

24V TWO-STAGE BURN
CONTROLLER



Side View



End View showing
"U" configuration

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 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 **UNIVERSAL-RAY AG2 SERIES** of the model numbers and inputs(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.
- Heaters 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.
- 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 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.
- 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 thermostats 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 60 second post purge as an integral part of the control assembly.

TWO-STAGE RADIANT TUBE HEATER CONSTRUCTION

- 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.
- 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. Aluminized steel finished with a high emissivity rated, corrosion resistant, black coating.
- 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 two-stage 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.

