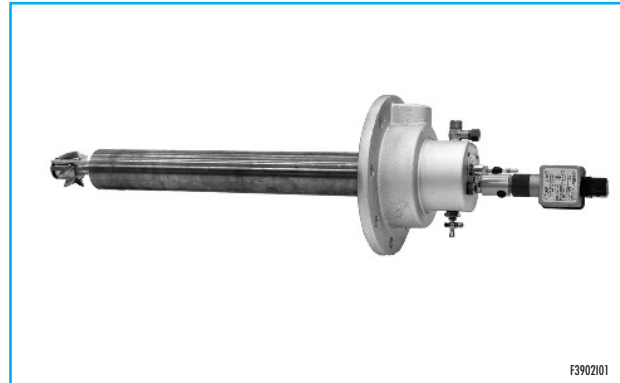


SINGLE-ENDED RECUPERATIVE RADIANT TUBES SER SERIES

FEATURES

- | | |
|--|--|
| • Mixer body: | cast iron G25 |
| • Flame tube: | AISI310 |
| • Nozzle: | AISI310 |
| • External radiant tube: | 25/20 |
| • Inner combustion tube: | inconel |
| • Pre-heated air: | up to 400°C |
| • Capacity range: | 28 to 52 kW |
| • Air and gas pressure at burner: | 40 mbar |
| • Suitable for different types of gas: | CH ₄ /L.P./propane/etc. |
| • Wide turndown range: | 12÷1 |
| • Excellent flame stability: | excess air
excess fuel
on ratio firing |
| • Low noise level. | |
| • Easily replaced electrodes. | |
| • Separated air and gas inlets, mixing at discharge point, no flashback. | |
| • Light-weight, small-sized compact burners supplied with micrometer type gas flow adjuster, spark electrode and flame rod, peepsight, calibrated orifice plate flow meters and pressure plugs to measure air and gas flows. | |



F3902101



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APPLICATIONS

- Heat treat furnaces.
- Foodstuff ovens.
- Glass hardening furnaces.
- Copper and aluminium pipe processing furnaces.

DESCRIPTION

The SER combustion system of ESA-PYRONICS is a complete unit combining the burner, the radiant tube and the recuperator into a single compact device. As it passes through the SER's recuperator section, incoming combustion air is preheated by the hot exhaust

gases. Burner ignition is achieved by a direct spark ignition electrode (Wand) which may be easily installed from outside without disassembling the burner. A micrometer type valve, air and gas orifices allow for accurate combustion control.



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INSTALLATION

SER burners may be mounted to operate in any position; installation is simplified by adjustable mounting flanges.

Air and gas connections, which are one opposite the other, and flue outlet may rotate by 90°.

IGNITION AND FLAME DETECTION

Burner ignition is mainly achieved by a Wand direct spark ignition electrode. Flame detection is done by a UV-2 ultraviolet scanner.

Flame detection systems are required on all burners operating at furnace temperatures below 750°C.

Catalog No.	Pilot burner ignition		Electrode ignition	
	Ignition	Detection	Ignition	Detection
SER-50/114	(not available)	(not available)	Wand	UV-2
SER-66/152	(not available)	(not available)	Wand	UV-2
SER-66/190	(not available)	(not available)	Wand	UV-2

MAXIMUM RADIANT TUBE DISSIPATION

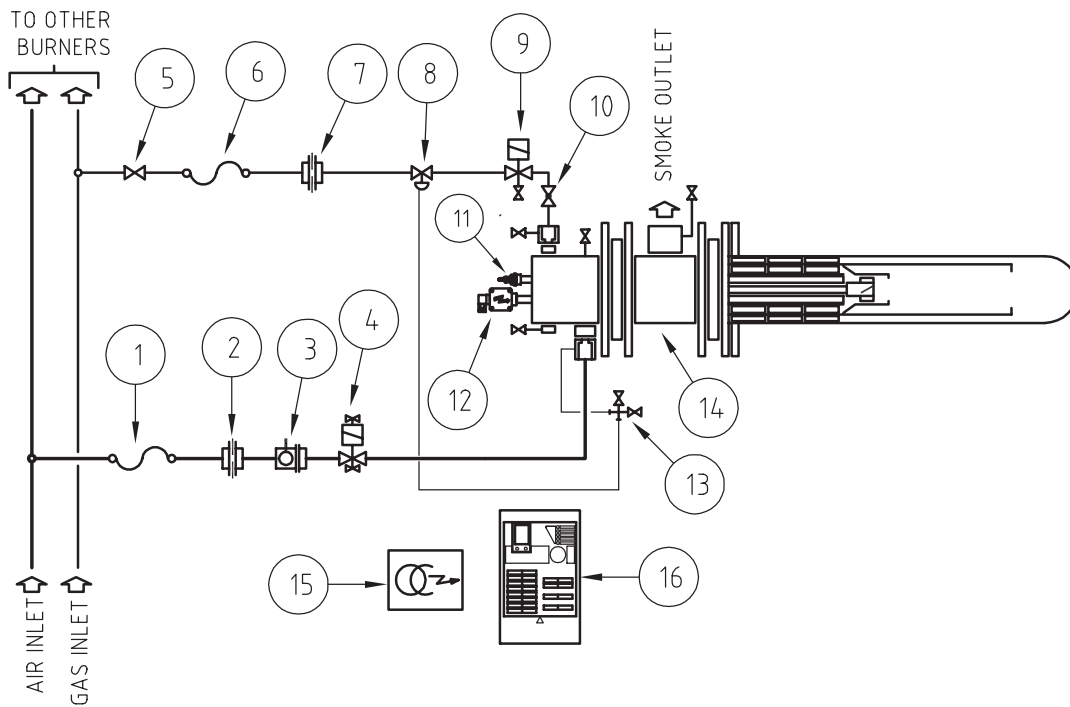
Operating temperature of furnace	Maximum dissipation in kW/m ²
1050 °C	18.0
1000 °C	22.6
950 °C	27.1
900 °C	30.7
850 °C	34.8
800 °C	38.4
750 °C	41.5
700 °C	45.1

HEAT EFFICIENCY

Operating temperature of furnace in °C	Straight and "U" non-recuperative tubes		Straight and "U" recuperative tubes		Recuperative tubes inlet-outlet on one side	
	Maximum dissipation rate	22.6 kW/m ² dissipation rate	Maximum dissipation rate	22.6 kW/m ² dissipation rate	Maximum dissipation rate	22.6 kW/m ² dissipation rate
1050	42%	—	56%	—	64%	—
1000	43%	—	56%	—	65%	—
950	44%	45%	57%	58%*	67%	68%*
900	45%	47%	58%	60%	68%	70%
850	47%	49%	59%	61%	68%	70%
800	48%	51%	60%	63%	69%	72%
750	49%	52%	61%	64%	71%	74%
700	50%	54%	62%	65%	74%	74%

* Experimented data - Other data are calculated.

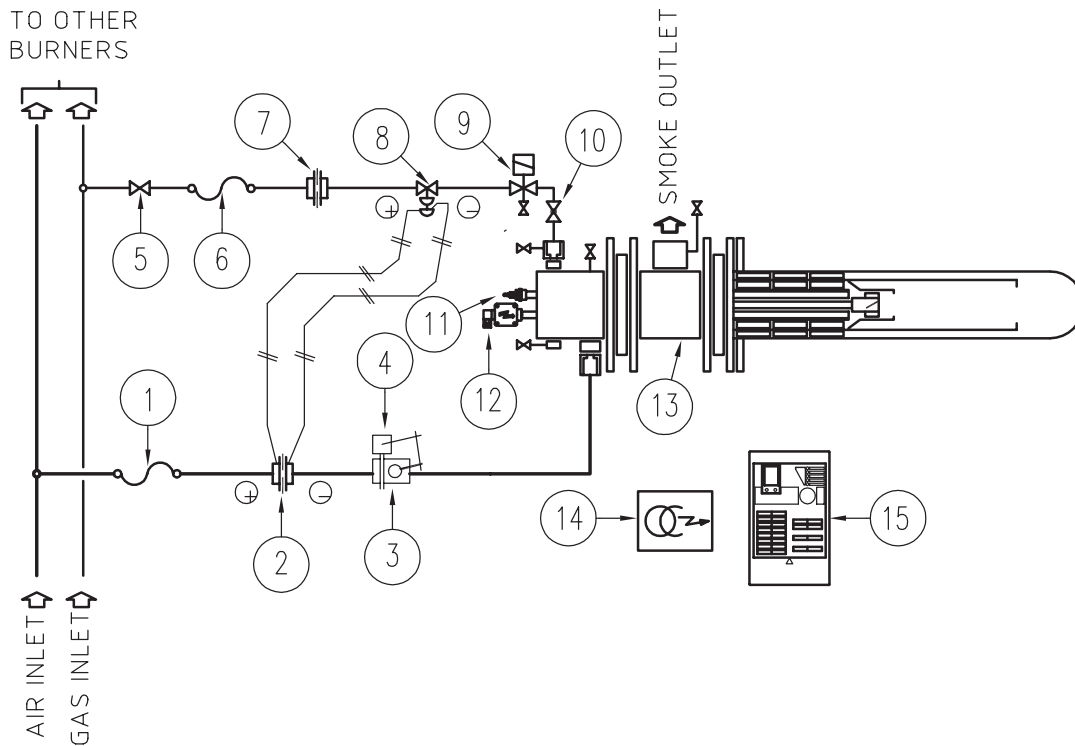
FLOW CHART (TWO STEPS)



Pos.	Model identification
1	Flexible connector
2	Orifice flow meter for ΔP air
3	Manual air valve
4	Safety solenoid air valve
5	Gas ball valve
6	Flexible connector
7	Orifice flow meter for ΔP gas
8	Flow regulator
9	Safety solenoid gas valve
10	Gas throttle orifice
11	Spark electrode
12	UV-scanner
13	Impulse line
14	Radiant tube burner
15	Ignition transformer
16	Flame control

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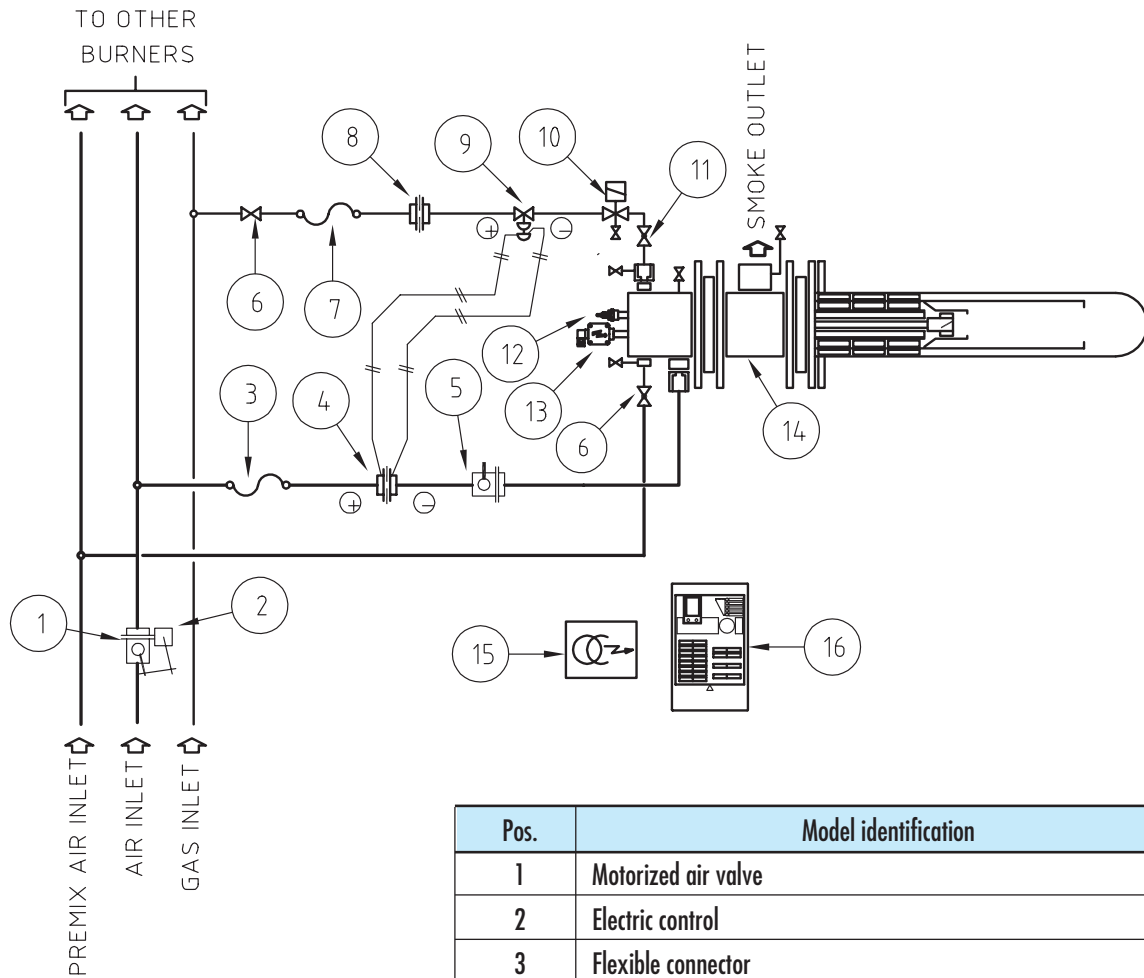
FLOW CHART (FOR ADJUSTING)



Pos.	Model identification
1	Flexible connector
2	Orifice flow meter for ΔP air
3	Motorized air valve
4	Electric control
5	Gas ball valve
6	Flexible connector
7	Orifice flow meter for ΔP gas
8	Flow regulator
9	Safety solenoid gas valve
10	Gas throttle orifice
11	Spark electrode
12	UV-scanner
13	Radiant tube burner
14	Ignition transformer
15	Flame control

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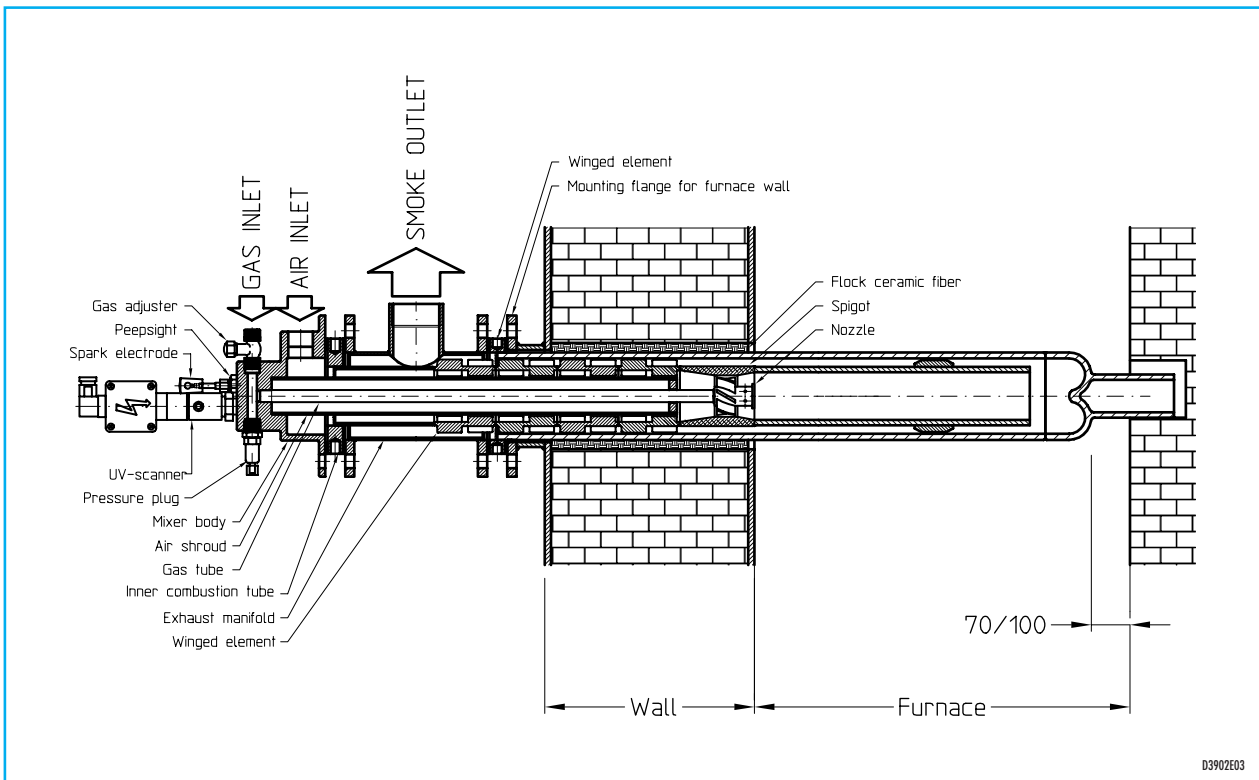
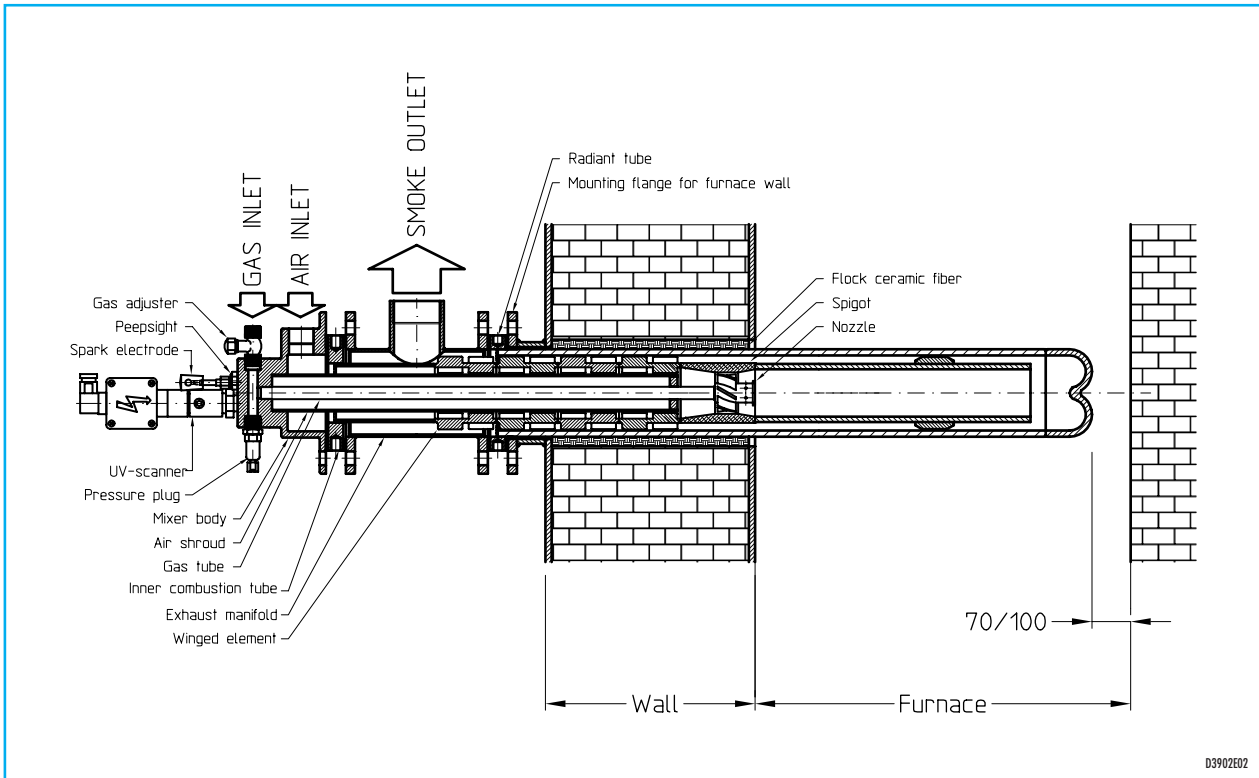
FLOW CHART (FOR ADJUSTING WITH L.P.)



Pos.	Model identification
1	Motorized air valve
2	Electric control
3	Flexible connector
4	Orifice flow meter for ΔP air
5	Manual air valve
6	Gas throttle orifice
7	Flexible connector
8	Orifice flow meter for ΔP gas
9	Flow regulator
10	Safety solenoid gas valve
11	Gas throttle orifice
12	Spark electrode
13	UV-scanner
14	Radiant tube burner
15	Ignition transformer
16	Flame control

D3902/05

BURNER SECTION



NOTE: Based on the company's policy aimed at a continuous improvement on product quality, ESA-PYRONICS reserves the right to bring changes to the technical characteristics of this device without previous notice. Our catalog updated to the latest version is available on our web site www.esapyronics.com and it is possible to download modified documents

WARNING: When operating, this combustion system can be dangerous and cause harm to persons or damage to equipment. Every burner must be provided with a protection device that monitors the combustion. The installation, adjustment and maintenance operations should only be performed by trained and qualified personnel.