

TFR PACKAGED IMMERSION TUBE BURNERS

MODEL: TFR

Revision: 0

BULLETIN
8807

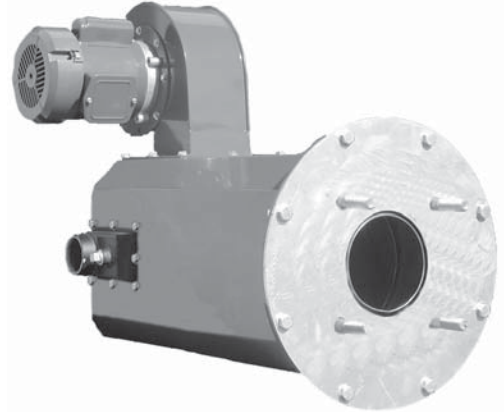
DESCRIPTION

The Pyronics TFR Packaged Burner Series is designed to offer the equipment designer and user a complete pre-wired, pre-piped burner package for firing into small bore immersion tubes in liquid tanks.

The system offers the precise package required for virtually all types of small bore immersion tube process heating applications.

TFR burners can be supplied with high fire thermal inputs ranging from 240,000 Btu/hr to 2,600,000 Btu/hr. Higher firing rates are possible with induced draft exhaust fans and/or higher capacity separate combustion air blowers.

Depending on immersion tube selection TFR burner applications can produce thermal efficiencies of over 80%.



BENEFITS

- High thermal efficiencies
- High tube length to diameter ratios - up to 80:1
- Pre-packaged, pre-piped assembly
- FM and IRI gas trains available
- Electrical components pre-wired to electrical enclosure
- Ease of maintenance and installation
- Easy access to gas nozzle, spark plug and flame sensor

PREPACKAGED BURNERS - COMPLETE HEAT!

Each burner unit is supplied with a packaged and pre-piped valve assembly, including the safety valves and controls necessary to form a fully prepackaged combustion module. Optionally TFR burners can be supplied without selected components as required by the user or OEM equipment designer.

All burners have an integral combustion air fan, air pressure switch, ignition spark plug and flame sensor. The flame sensor can be either a flame rod (flame rectification) or an optional UV sensor. All the electrical components on the burner are pre-wired to an integral terminal enclosure mounted on the burner assembly.

The NEMA 12 electrical enclosure contains an on-off switch, reset button and burner run and flame failure indication lights.

As an option, full custom-designed control panels containing temperature controls, high temperature limits and any other control equipment the user or OEM may desire are available.

Burners are supplied complete with a gas valve assembly consisting of pilot/start valve assembly, automatic shut-off valves, pressure switches and regulators. Either FM or IRI may be supplied as standard. Valve trains are supplied either with modular components or with pre-piped individual components. Other gas trains are available upon request.

Pre-built burner packages are fully tested and the operation of all components checked before shipment from the factory.

CAUTION: Operation of combustion equipment can be hazardous resulting in bodily injury or equipment damage. Each burner should be supervised by a combustion safeguard and only qualified personnel should install, make system adjustments and perform any required service.



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NOTICE: PYRONICS practices a policy of continuous improvement in the design of its products. It reserves the right to change the specifications at any time without prior notice.

TFR PACKAGED IMMERSION TUBE BURNERS

BULLETIN 8807
PAGE NO. 2

THE TFR BURNER

The TFR series of gas burners are prepackaged fan assisted units designed for all typical immersion tube fired applications.

Typical applications include parts washers, coating and finishing tanks and salt and acid baths.

The TFR burner head has been specifically developed for small bore applications and is available for firing into immersion tubes with diameters up to 8" and length to diameter ratios up to 150:1 depending upon tube diameter.

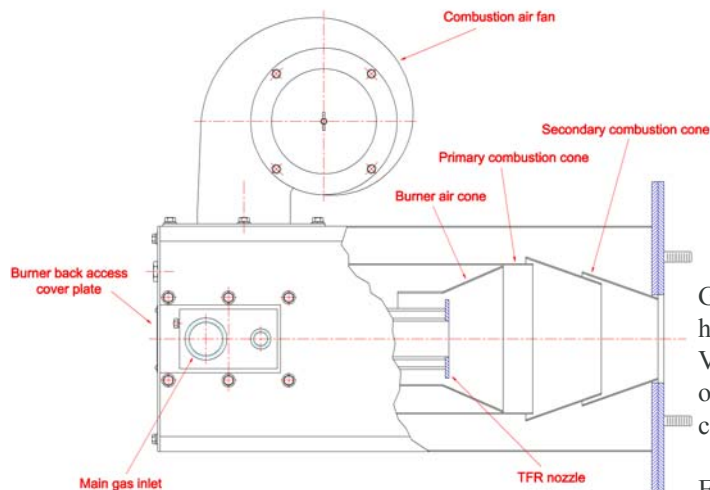
To prevent over heating of the burner components and immersion tubes with these high firing rates, the burner has been designed with a split combustion cone head where air is introduced into the flame at three points to provide cooling.

The TFR burner series has been designed with a small "footprint" allowing mounting in applications where other burners may not fit.

Small bore immersion tube systems are typically sized for an efficiency of 80%. At high efficiencies, particularly during start up or idle periods, products of combustion may condense. If these conditions are expected, the tube system should be designed to allow this condensation to be removed with a condensate drain at the exhaust.

To increase the burner capacity or to use with longer tubes than shown in the capacity table on page 3, the TFR burner may be used with an external blower to supply additional pressure and volume or an induced draft exhaust fan can be used on the immersion tube outlet. Higher gas pressures and/or larger fuel valve trains may also be required to achieve these increased firing rates.

Sectional View of Typical Basic TFR Burner



UTILITY REQUIREMENTS

Gas – TFR burners can fire either natural gas or propane, however, some sizes require a different nozzle for propane. Valve assemblies on the burners are sized for an inlet pressure of 8" WC natural gas or 12" WC propane. Burners and valves can be sized to handle other inlet pressures as required.

Electrical – TFR burners are supplied with combustion air blower motors either 115/230/1/60 or 230/460/3/60 depending upon burner capacity and customer preference. Both TEFC (standard) and ODP motors are available.

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TFR PACKAGED IMMERSION TUBE BURNERS

BULLETIN 8807
PAGE NO. 3

CAPACITIES AND TUBE DESIGN

The capacities listed below are based upon firing into the given size tube with a natural draft exhaust. Systems with exhaust back pressures and no exhaust fan will have reduced firing rates. The tube configuration greatly affects burner performance and the system designer should attempt to keep piping losses to a minimum to ensure maximum performance.

If the application calls for significantly lower releases in a given size tube, the Pyronics TF Packaged Immersion Tube Burner may be the preferred selection. See Bulletin 8806 for additional information.

If the application calls for the use of a separate externally mounted combustion air blower (with a corresponding increase in inlet gas pressure) can increase the firing rate shown in the table below.

TYPE OF CONTROL

Burners are supplied with on-off control with a slow opening safety shut off valve and control valves.

INSTALLATION, START-UP, MAINTENANCE

A complete installation and maintenance manual is supplied for all complete packages. Commissioning should be carried out by qualified personnel using the instructions in the manual. If desired, Pyronics' representatives can arrange for installation and/or maintenance services.

Burners, parts and service are available worldwide.

Burner	Blower HP	Btu/hr With Integral Blower*	Btu/hr With External Blower*	Nominal Tube Diameter	Maximum Tube Length*
TFR-B-65	1/2	238,840	512,000	2-1/2"	21'
TFR-B-80	1/2	477,680	973,000	3"	30'
TFR-B-100	1-1/2	955,360	1,467,000	4"	40'
TFR-C-80	1/2	511,800	973,000	3"	30'
TFR-C-100	1-1/2	1,000,000	1,467,000	4"	40'
TFR-C-150	2	1,978,960	3,000,000	6"	75'
TFR-D-150	2	2,047,200	3,000,000	6"	75'
TFR-D-200	TBA	2,559,000	TBA	8"	100'

*See section above regarding capacities and tube design. Contact Pyronics for pressure requirements of external blowers.

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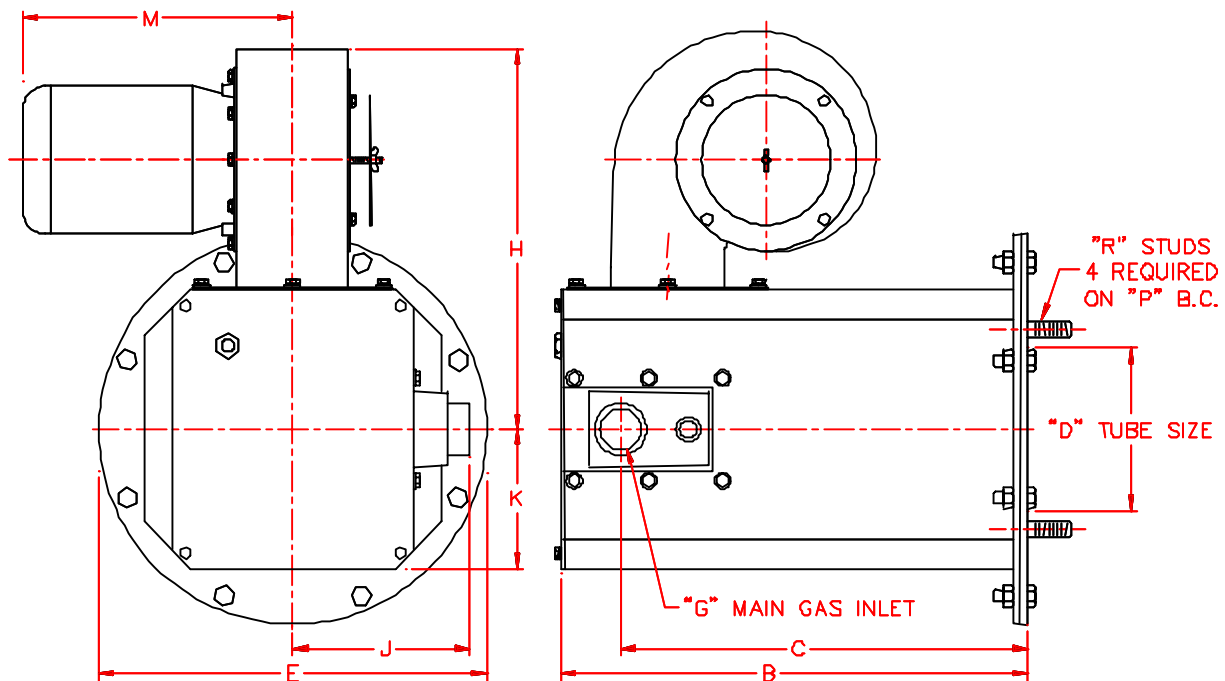
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TFR PACKAGED IMMERSION TUBE BURNERS

BULLETIN 8807
PAGE NO. 4

BURNER TYPE	TUBE SIZE	B	C	D	E	G	H	J	K	M	N	P	R
TFR-B-65	2-1/2	16-3/4	14-5/8	2-19/32	12-1/4	3/4	17-1/8	7	4-3/8	10-7/8	4	5-1/2	5/8
TFR-B-80	3	16-3/4	14-5/8	3-5/32	12-1/4	3/4	17-1/8	7	4-3/8	10-7/8	4	6	5/8
TFR-B-100	4	16-3/4	14-5/8	4-1/32	12-1/4	1	21-3/8	7	4-3/8	12-7/8	4	7-1/2	5/8
TFR-C-80	3	19-3/4	17-3/4	3-5/32	14-5/8	3/4	18-1/4	8-1/8	5-1/2	10-7/8	4	6	5/8
TFR-C-100	4	19-3/4	17-3/4	4-1/32	14-5/8	1	22-1/2	8-1/8	5-1/2	12-7/8	4	7-1/2	5/8
TFR-C-150	6	19-3/4	17-3/4	5-29/32	14-5/8	1-1/2	22-1/2	8-3/8	5-1/2	13	4	9-1/2	3/4
TFR-D-150	6	24-1/2	22-1/8	5-29/32	16-1/2	1-1/2	23-1/4	8-3/4	6-3/8	13	4	9-1/2	3/4
TFR-D-200	8	24-1/2	22-1/8	7-7/8	16-1/2	2	TBA	8-3/4	6-3/8	TBA	4	11-3/4	3/4

NOTE : all dimensions are in inches + or - 1/8



M Dimension approximate, dependent upon motor manufacturer. All dimensions in inches and are subject to change without notice. Blower may be mounted in other configurations.