

# TF PACKAGED IMMERSION TUBE BURNERS

MODEL: TF

Revision: 0

BULLETIN  
8806

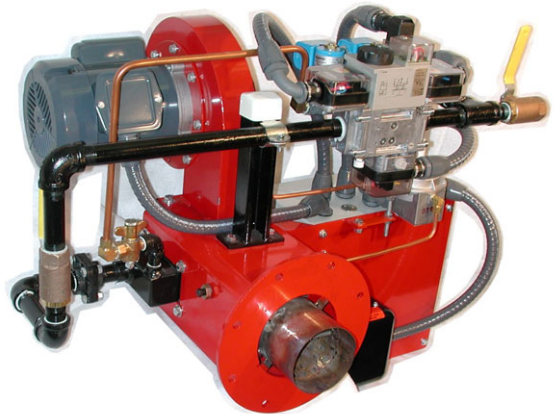
## DESCRIPTION

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

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

The TF burners utilize standard nozzle mix burner heads and are intended for applications in "conventional" sized tubes with diameters up to 12" and length to diameter ratios up to 80:1 depending on tube diameter.

TF Burners can be supplied with high fire thermal inputs from 170,000 Btu/hr to 3,300,000 Btu/hr. Depending on immersion tube selection TF burners can produce thermal efficiencies of over 75%.



## 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 TF 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.

Prebuilt 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.

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BULLETIN 8806  
PAGE NO. 2

## THE TF BURNER

The TF 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 TF uses a well-proven nozzle mix burner head and may be used for firing into immersion tubes with diameters up to 12" and length to diameter ratios up to 80:1 depending upon tube diameter.

The TF burner series has been designed to operate at efficiencies of 70-75%. For higher efficiencies, greater heating capacities or longer immersion tubes than shown in the capacity table on page 3, the Pyronics TFR burner designed for small bore immersion tubes should be used. See Bulletin 8807 for additional information.

## UTILITY REQUIREMENTS

Gas – TF 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 – TF 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.

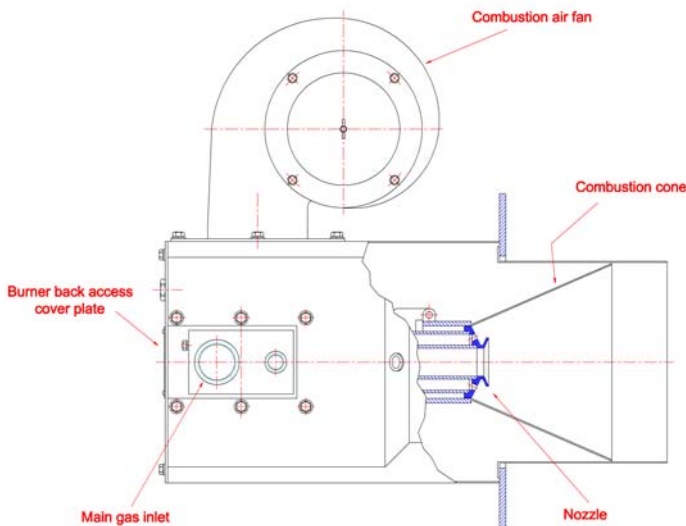
## TYPES OF CONTROL

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

If required, modulation control or high-low controlled burners can be supplied.

Condensation of products of combustion in the immersion tube limits the turndown range available when highlow or modulation control are used.

Sectional View of Typical Basic TF Burner



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# TF PACKAGED IMMERSION TUBE BURNERS

BULLETIN 8806  
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.

The use of a separate externally mounted combustion air blower (with a corresponding increase in inlet gas pressure) can oftentimes increase the firing rate. In general, however, higher firing rates should be accomplished with the use of the Pyronics TFR Packaged Immersion Tube Burners. The TFR Series has been specifically designed to increase the heat release into

small diameter tubes, while preventing the overheating of the burner components and the immersion tube. See Bulletin 8807 for additional information.

## 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*	Nominal Tube Diameter	Maximum Tube Length*
TF4-3	1/2	170600	3"	15'
TF4	1/2	307800	4"	20'
TF6-4	1/2	341200	4"	20'
TF6	1/2	955360	6"	40'
TF8-6	1/2	1160080	6"	40'
TF8	3/4	1910720	8"	53'
TF10-8	3/4	2047200	8"	53'
TF10	1-1/2	2866080	10"	67'
TF12	1-1/2	3343760	12"	80'

\*See section above regarding capacities and tube design.

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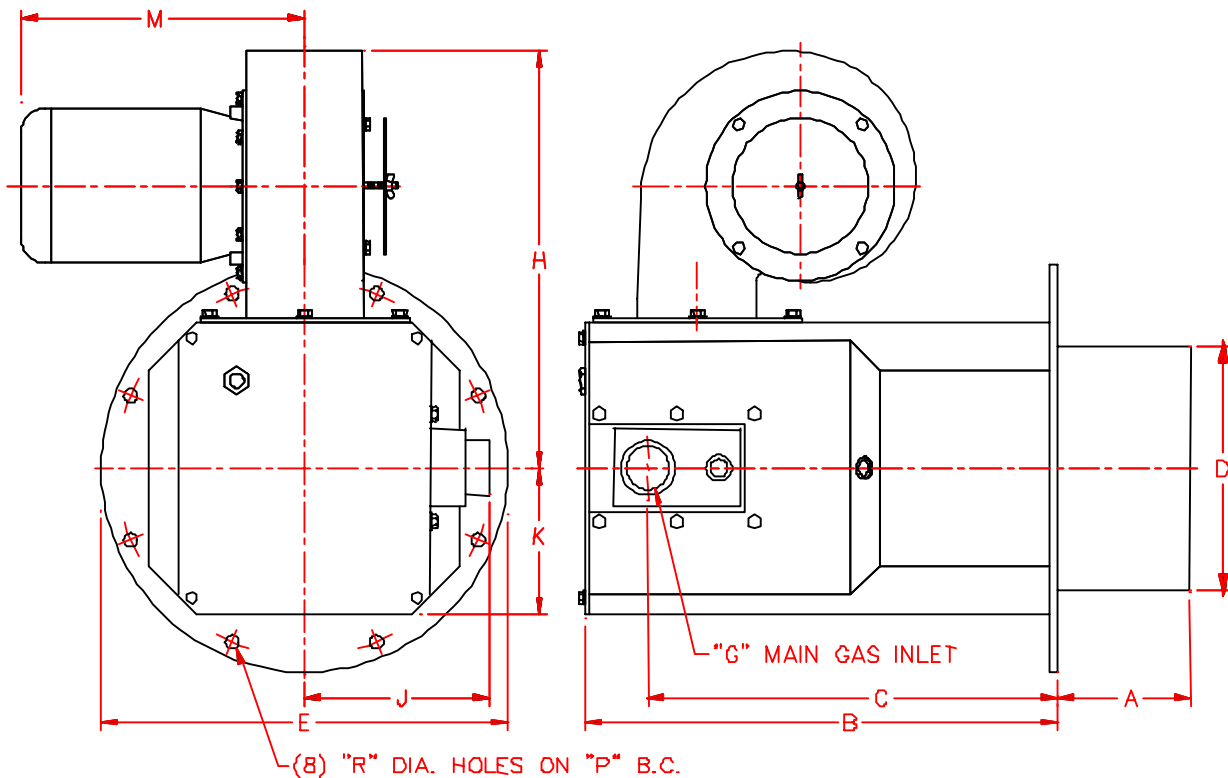
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BULLETIN 8806  
PAGE NO. 4

BURNER TYPE	A	B	C	D	E	F	G	H	J	K	M	P	R
TF4-3	2	12-1/2	10-1/2	2-15/16	9-5/8	0	3/4	14-1/4	6	3-3/8	9-5/8	8-1/2	1/2
TF4	2-1/2	12-1/2	10-1/2	3-15/16	9-5/8	0	3/4	14-1/4	6	3-3/8	9-5/8	8-1/2	1/2
TF6-4	2-1/2	14-3/8	12-3/8	3-15/16	12-1/4	1-5/8	3/4	17-1/8	6-1/8	2-3/4	10-7/8	11	1/2
TF6	3-1/8	14-3/8	12-3/8	5-7/8	12-1/4	1-5/8	1	17-1/8	6-1/8	2-3/4	10-7/8	11	1/2
TF8-6	3-1/8	17	15	5-7/8	14-5/8	1-1/2	1-1/2	18-1/4	7-1/4	4	11-1/4	13-3/8	9/16
TF8	3-3/4	17	15	7-7/8	14-5/8	1-1/2	1-1/2	18-1/4	7-1/4	4	11-1/4	13-3/8	9/16
TF10-8	3-3/4	19-3/4	17-1/4	7-7/8	16-1/2	0	2	18-3/4	7-1/2	6	13-1/4	15-3/8	9/16
TF10	4	19-3/4	17-1/4	9-7/8	16-1/2	0	2	18-3/4	7-1/2	6	13-1/4	15-3/8	9/16
TF12	4	21-3/4	19-1/4	11-3/4	18-7/8	0	2	20-1/4	8-3/4	7-1/2	13-1/4	17-3/4	9/16

NOTE ; All dimensions are in inches + or - 1/8  
TF8 blower housing mounted sideways on casing  
w/motor facing mtg. plate when no gas train is req'd



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.

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