



# **PILOT MONITORING & IGNITION SYSTEM**

## **OPERATING AND MAINTENANCE MANUAL**

**MODEL: FT-PMI-24**

## Operating Features and Settings for the “FT-PMI-24” (Pilot Monitoring & Ignition)

- **Input Power** – 24 Volt dc
- Nema 4X Control Panel enclosure with large window for easy confirmation of pilot operating temperature. Allows a quick confirmation of the temperature without opening the door and creating unsafe conditions to a live enclosure.
- Retractable to Grade level with the Pilot system for ease of maintenance
- One Hand/Off/Auto (HOA) Control Switch
  - o Hand position – Power is sent to the Ignition system for testing the Ignition system or manual ignition of the pilot if there is a problem with the thermocouple signal or Control Panel
  - o Auto position - the “Power On” light illuminates, fully automatic operation
  - o Off position - Power to internal Panel components is Off
- Three LED Lights for Power On, Pilot Proven, & Flame Fail
  - o Power On – HOA switch is in the Auto position
  - o Pilot Proven – Thermocouple temperature is above the Temperature Switch set point, normal operation
  - o Flame Fail - Thermocouple temperature is below the Temperature Switch set point and the Pilot Ignition mode did not re-establish the Pilot flame prior to the Omron Timer timing out (factory set at 10 minutes)
- Fully Automatic operation by positioning the HOA switch to the Auto position
- Power Fail Safe – Alarms under loss of power to the Control Panel
- Thermocouple Fail Safe – Alarms due to loss of Thermocouple signal (TC or cable)
- Temperature Switch displays pilot operating temperature (LED) Normal operation should be from 400°C to 600°C.
- Thermocouple is factory adjusted to reach 500°C when pilot is operating. This factory adjustment will vary with the Heating value of the Fuel gas utilized on site, and the ambient conditions (temperature & wind).
- Temperature Switch Alarm set point (factory set at 65°C) is adjustable from 65°C to 100°C. Pilot Ignition mode is activated if the Thermocouple temperature drops below the set point. For a faster response time to Pilot Ignition, raise the set point to 100°C.
- Ignition Timer – factory set at 10 minutes, Engages when Pilot Ignition mode is activated, allows the Pilot Ignition mode a maximum of 10 minutes to re-establish a Pilot Proven condition or a Flame Fail condition occurs.
- Terminal Strip for all Input & Output connections with Dry Alarm Contacts
- Maximum Power consumption for Control Panel & Ignition system
  - o Single Pilot system - 1 Amp during Pilot Ignition mode, 290 mA normal mode
  - o Dual Pilot system – 2 Amps if pilots ignite simultaneously, 580 mA normal mode
  - o Triple Pilot system – 3 Amps if all pilots ignite simultaneously, 870 mA normal mode

## Operating Instructions for the “FT-PMI-24” (Pilot Monitoring & Ignition)

1. Ensure the Pilot & Ignition system has been installed by Qualified Personnel in accordance with the Vendor Manuals.
2. Pilot nozzles are provided with a straight (inline) nozzle for Utility flares or for assisted flares the nozzle is provided at a 30° angle. If the Pilot provided has a Nozzle at a 30° angle to the main body you must ensure the pilot system is either Retracted to grade in the Horizontal position (for testing only) or raised to the top of the flare system. **“Caution”** Failure to do this may result in the pilot flame damaging the retracting cable, which could cause the cable to break. **“Never”** raise or lower a 30° pilot **to or from** the top of the flare while the pilot is ignited.
3. Turn the Fuel Gas “ON” to the Pilot / Ignition system – Ensure Regulator Set pressure is 14.5 psig.
4. Turn the HOA Switch located on the Control Panel to the “Auto” position. “Power On” LED will illuminate. If it does not check the input power supply TS-1 terminal 1 & 2 to ensure 24 Volt DC power is present. *If power is present check the Bulb is not burnt out.*
5. Pilot Ignition system should engage (a popping sound will indicate an ignition attempt has occurred). The FT-PMI-24 has an Secondary Ignition timer mounted in the Ignition Enclosure that delays each Ignition attempt until the Combustion products have been swept from the Flash tube, thus continuous popping will not be heard. If the pilot ignites on the first Ignition attempt you may only hear one pop, if the pilot does not ignite there will automatically be a delay until another pop is heard.
6. The display temperature on the Temperature switch will start to rise quite quickly once the pilot has ignited. Once the Thermocouple temperature rises above the Temperature Switch set point (normally 65°C) the Pilot Proven light will illuminate. If the Pilot Proven light does not illuminate when the Thermocouple temperature is above the set point, *check that the Bulb is not burnt out.*
7. If at any time the Thermocouple temperature drops below the Temperature switch set point, the Pilot Ignition mode will engage.
8. If during Pilot Ignition the Ignition Timer times out (10 minutes after engaging) the Pilot Ignition mode disengages, the Flame Fail Light will illuminate, and at the same time the Dry Alarm contacts will change state. *If the Flame Fail light does not illuminate check that the Bulb is not burnt out.*

## Maintaining the “FT-PMI-24” (Pilot Monitoring & Ignition)

1. A Preventative Maintenance program is available and recommended to ensure the Pilot & Ignition system remains in top operating condition.
2. As a minimum twice a year retract the Pilot and Ignition system and inspect all parts for any damage and ensure the Ignition electrode is not fouled.
2. Inspect annually to ensure there are no accumulations of oil & sludge in the flash tube.
3. Operating conditions generally determines the life of the thermowell & thermocouple, but as a general rule the TC & TW will last a minimum of two years, in most conditions 5+ years.

## Troubleshooting for the “FT-PMI-24” (Pilot Monitoring & Ignition)

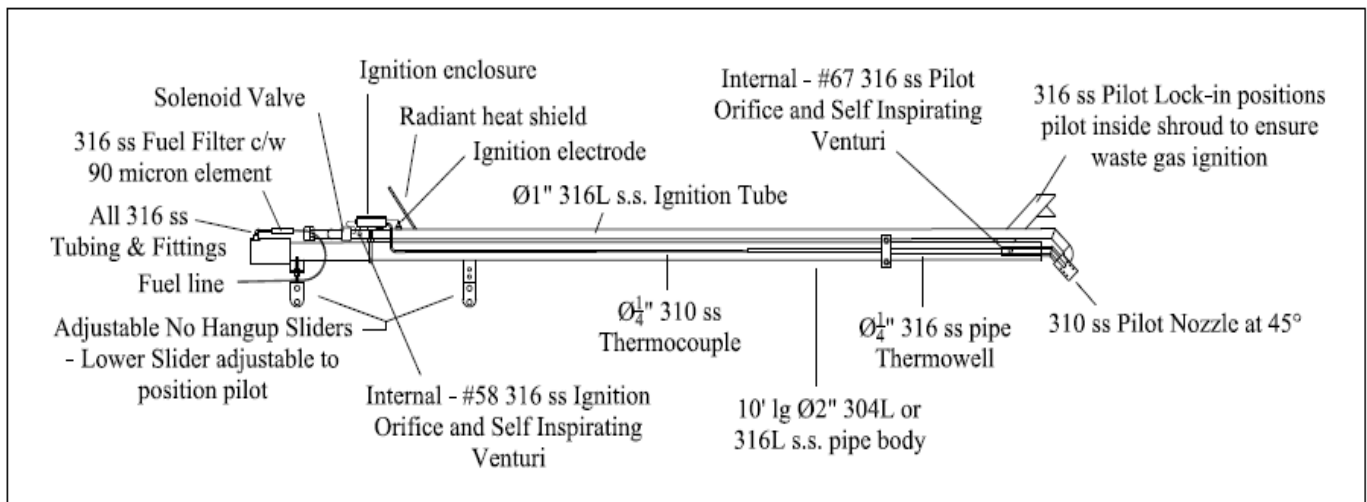
Refer To Drawings on Page #6 & #7

1. If the Temperature Switch display is flashing **OPEN** this indicates there is a Thermocouple signal problem, check the thermocouple plus thermocouple wiring & connections.
2. When the Control Panel is in alarm mode and won't clear, turn the switch from **AUTO** to **OFF** and back to **AUTO** and the alarm should clear. Turning the HOA switch to **OFF** clears the Temperature Switch to recycle through the Pilot Ignition mode.
3. If the Control Panel immediately goes back into alarm mode, check the thermocouple & T.C. wiring for breaks or loose connections. This system is Thermocouple fail safe & will automatically alarm if there is no signal from the thermocouple getting back to the Temperature Switch.
4. Once the thermocouple signal is confirmed, again turn the switch from **AUTO** to **OFF** and back to **AUTO** again. The system should now be in Pilot Ignition mode & TS 6 & 7 should have 24 Volt dc power present.
5. Once Pilot Ignition power at 6 & 7 has been confirmed, the Flash Tube assembly on the pilot should be firing (popping sound).
6. If the Flash Tube is not firing, check for 24 Vdc power at the NTK spark unit. If present check for spark on the lead going to the Ignition electrode.
7. If spark is present, check the Ignition electrode to ensure that it has not been fouled from oil or other contaminants.
8. If the electrode is clean and the flash tube does not fire, check the solenoid valve to see that it is letting fuel through the valve.
9. If fuel is passing through, check to ensure the #67 Pilot orifice and the #58 Flash tube orifice are not plugged reducing the gas flow rate. **Do not** attempt to drill out / clean out the orifices with any bit other than a #67 drill bit for the pilot and a #58 for the Flash tube.

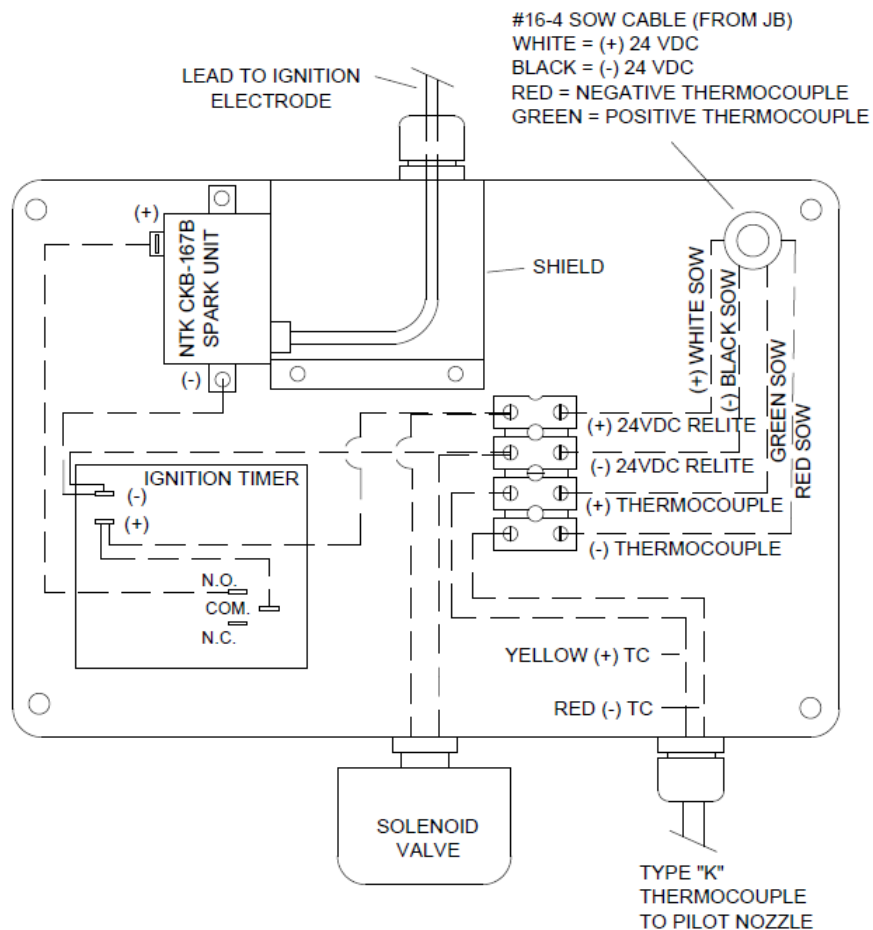
10. The Ignition timer in the Control Panel is factory set at a 10-minute time period for Pilot Ignition. If the Ignition system does not ignite the pilot in this time frame and heat the thermocouple above the minimum operating temperature, the Pilot Ignition mode will shut down and change to alarm mode. The HOA switch will have to be recycled to OFF again for the Pilot Ignition mode to start over and allow further inspection.
11. If the pilot does not ignite when the Flash Tube is firing correctly, please refer to Pilot Operating & Maintenance Manual to ensure the pilot is operating correctly. The Pilot should ignite as soon as the Pilot Ignition mode engages and should heat the thermocouple above the set point within 30 seconds.
12. Once it is confirmed that the pilot is operating properly, the Temperature Switch should now be operating in the Monitoring mode. If not, make sure the thermocouple has not slid down out of the pilot nozzle. Sliding the thermocouple further into the Pilot Nozzle will raise the temperature.
13. If it is established that the pilot is operating correctly, the thermocouple is sending the proper signal to the temperature controller, and the SET point temperature is at the factory setting 65°C to 100°C, the Temperature Switch must be damaged.

For further assistance or to order parts please call the Manufacturer  
at 403-742-2212

## MONITORING & IGNITION SYSTEM MOUNTED ON RETRACTABLE PILOT



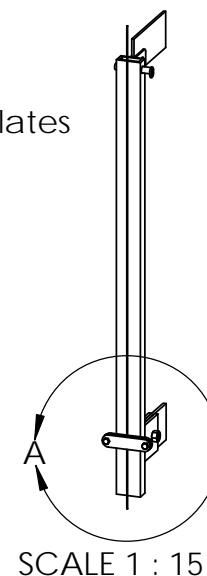
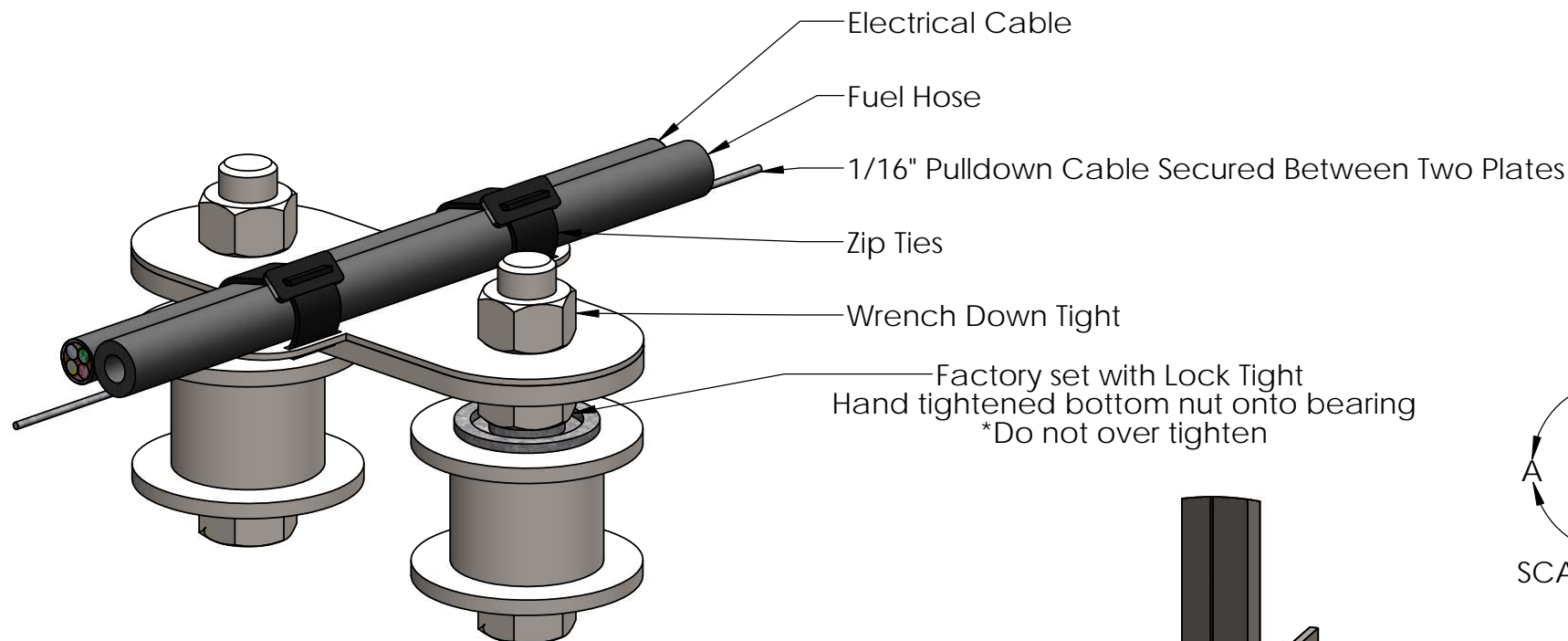
### IGNITION ENCLOSURE



## CONTROL PANEL & IGNITION ENCLOSURE

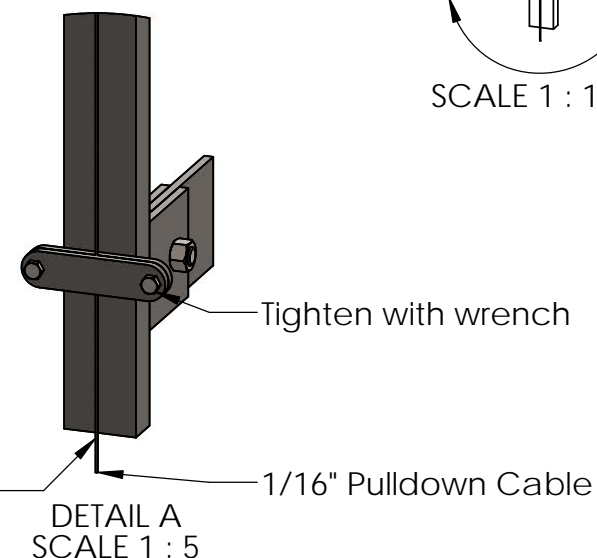






Hose Guide every 10' spaced evenly from the ignitor to gate

Pulldown tight & secure the 1/16" pulldown cable to the bottom of the tracking laydown gate between the two brackets



# **PROPRIETARY AND CONFIDENTIAL**

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FLARETECH INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FLARETECH INC IS PROHIBITED.

NAME	DATE
DRAWN Bo	08/08/14
COMMENTS:	

**FlareTech** Phone: 403-742-2212  
Fax: 403-742-2214  
Email: john@flaretechinc.com

TITLE:  
Hose Guide Assembly Instructions

SIZE	DWG. NO.	REV
<b>A</b>	14-HG-01	<b>0</b>

SCALE: 1:4	WEIGHT: 1.72	SHEET 1 OF 1
------------	--------------	--------------