

HFI Model

Installation, Operation and Maintenance Manual



Delta Controls
CORPORATION

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MODEL HFI FLUSH GAS CONTROL STATION

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Specifications

Flow Range 4 - 38 LPM (standard)
Pressure Indicator: 2.5"Ø; 0-60 PSIG (0 - 410 kPa)
Pressure Control Range: 2 - 50 PSIG (14 - 35 kPa)
Filter: 5 micron sintered polypropylene
Filter Drain: Manual Valve

Materials of Construction:

Flow Meter body: stainless steel
Pressure Regulator Body: stainless steel
Pressure Gage: stainless steel
Connection Fittings: stainless steel
Panel and Mounting Hardware: stainless steel

Connection Fittings: 1/8" NPTF pipe (Standard)
6 mm or 8 mm Tubing (Optional)

Supply Pressure: 25 - 250 PSIG (170 -1700 kPa)
Supply Gas: Clean dry air or Nitrogen
(Nitrogen recommended for Claus service)

Function

The Model HFI Flush Gas Control Station is used with the Delta Controls **CLAUSTemp™** Model HIR Infrared Pyrometer, primarily in Claus Thermal Reactors, a very severe and demanding service. The HFI provides the essential functions necessary for the proper operation of the HIR Infrared Pyrometer and to help provide maintenance free operation. These primary functions are:

- (1) prevents dust and ash from clinging to the pyrometer's lens window glass.
- (2) provides the correct constant purge flow rate regardless of changes in the gas supply pressure.
- (3) Prevents excess purge gas flow that may cool the lens window and encourage the condensing of sulfur on the pyrometer lens surface. This condensing of sulfur will, over time, form a film on the glass that would otherwise attenuate the IR signal reaching the sensor, causing temperature measurement inaccuracy.
- (4) Provides a very fine (5 micron) filtration of all incoming flush gas. This prevents accumulation of contaminants in the lens body pre-heater chamber. It also provides a trap with a drain valve to catch water droplets and condensables that may be in the gas supply stream.
- (5) Provides a single place at the reactor where the operator can regularly monitor and verify proper operation of the HIR flush gas stream. Instrumentation labels indicating correct setpoints are mounted on the HFI faceplate.

Installation and Mounting

Install the HFI at eye level (approximately 5 Feet [1.5 M] above the floor), so that it can easily be observed and operated. Locate it beside a catwalk, passageway, etc. which the unit operator uses as he makes his rounds. This allows the operator to regularly verify that the purge is operating properly.

A vertical 2" pipe stand provides an ideal mounting for the HFI, which is furnished with two clamps for securing it to the pipe.

The HFI may also be mounted on a vertical surface. To do this, discard the pipe clamps, drill 4 ea. 7/16" (11mm) holes through the surface and secure the HFI with 3/8" (9mm) bolts.

Piping

The HFI is normally connected to the HIR and flush gas supply stream with tubing. The tubing size should be 1/8" (3mm) or larger. 1/4" or 6mm tubing are commonly used.

The ports on the HFI are clearly marked as to what should be connected to each of them. Tubing may enter and leave from bottom, top, right side, left side or any combination thereof. The tubing run should be installed neatly and be easy to follow and understand. Make the runs straight as possible and support them well for best long term operating results.

Operating

Set the pressure to 4 PSI (0.25 bar) above the maximum thermal reactor operating pressure (typically 10 - 12 PSI (0.7 – 0.8 bar). Set the flow rate control to a flow rate of 28 LPM. No other adjustments are required. These setpoints must be continuously maintained. It serves no purpose to increase either the flow rate or the pressure beyond the recommended settings.

If either the pressure or flow is disrupted beyond a day or two, dust, ash or a film of sulfur may begin to accumulate on the lens window glass. Left uncorrected, eventual inaccuracy of the HIR Infrared Pyrometer may result.

Flush Gas Cooling Effect

The HIR Lens body incorporates a purge pre-heating chamber. This pre-heating is to prevent cool purge gas from cooling the lens window. Maintaining the window glass at elevated temperature helps to avoid any sulfur deposits from coating the glass which would, over time obscure the IR pathway to the sensor causing inaccuracy of the temperature measurement.

Make certain that the purge gas flow is maintained at 28 LPM.

Maintenance

The operator is to observe the pressure indicator and flow rate indicator during each unit walk through to verify that the system is operating properly.

On a weekly basis, the filter bowl drain valve should be opened slightly to verify that the supply gas remains dry. If any liquid is observed, open this valve on a daily basis and if traces of liquids are observed, correct the source of the problem.

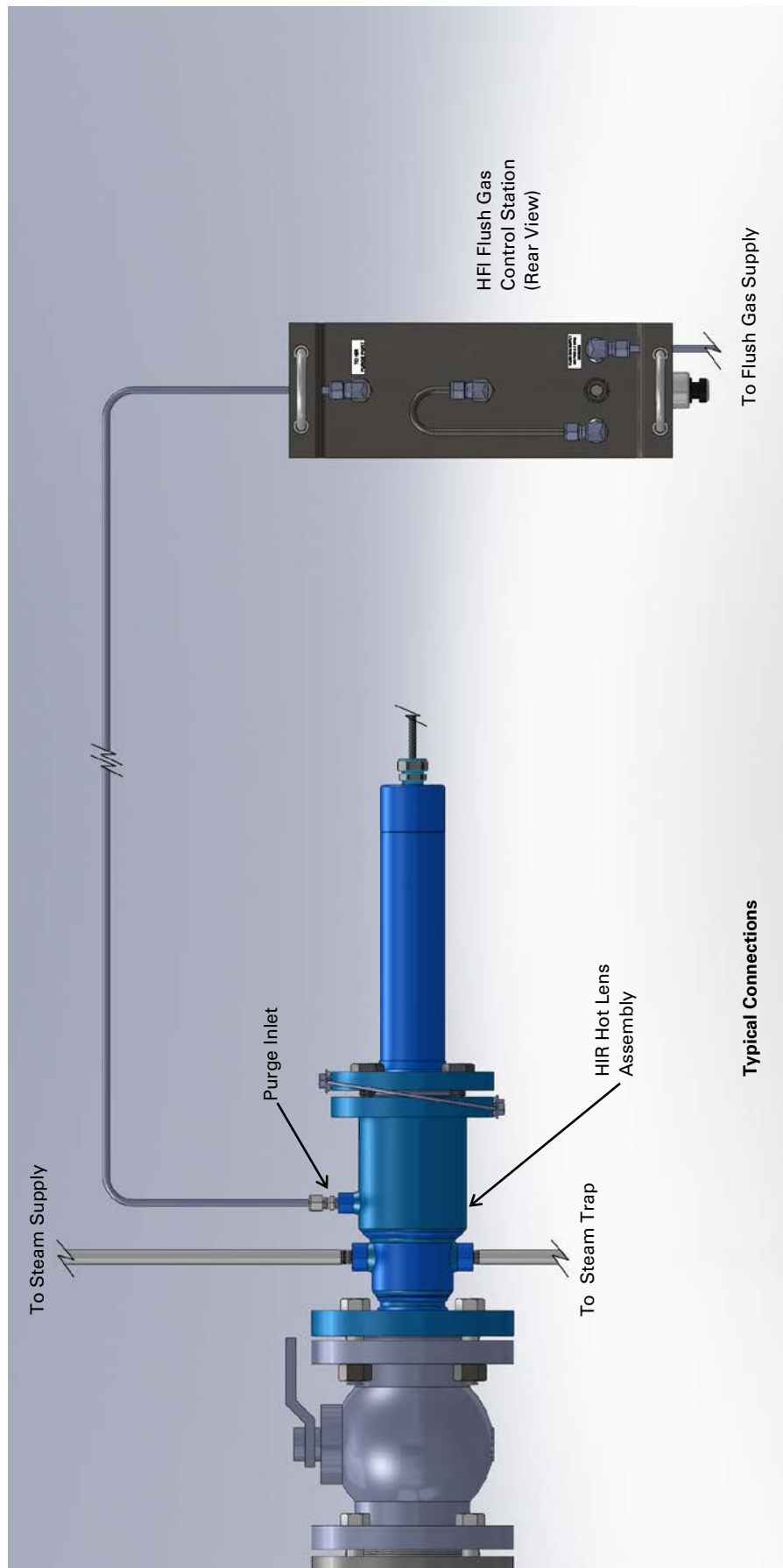
Liquids of any type in the flush gas can cause operational problems.

Replacement and Spare Parts

*	P/N 24-098AA	Pressure Control Unit, Zinc Body
*	P/N 24-098BB	Pressure Control Unit, All S.S.
*	P/N 24-106AA	5 Micron Filter Element
*	P/N 24-111BB	Overhaul Kit For 24-098
	P/N 12-056TT	Pressure Indicator, All S.S.

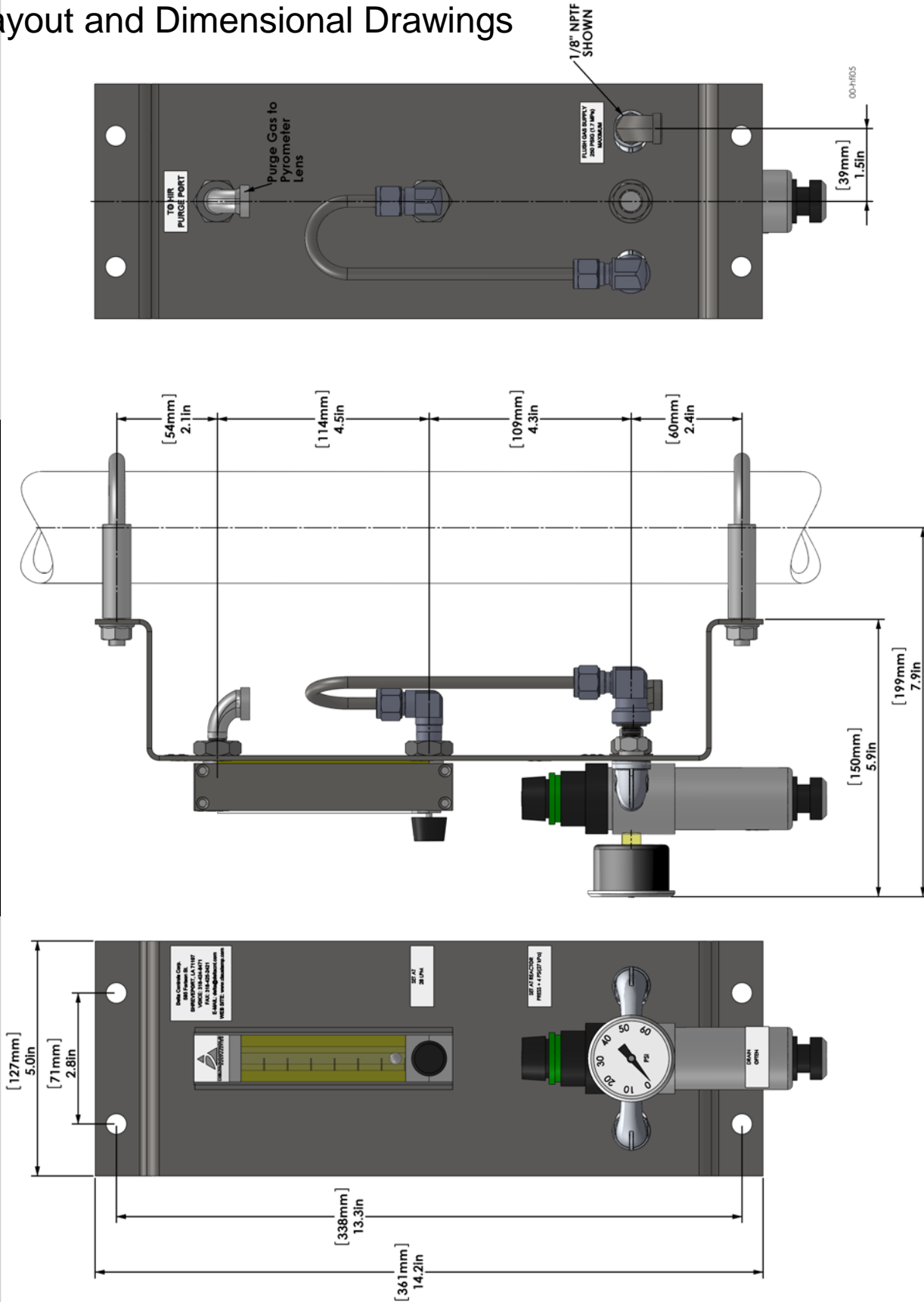
- * P/N 25-386Z1 Flow Indicator / Control Unit; Aluminum Body
- * P/N 25-386Z0 Flow Indicator / Control Unit; All S.S.

* = Recommended Spare



Layout and Dimensional Drawings

MODEL HFI FLUSH GAS CONTROL STATION LAYOUT AND DIMENSION DRAWING



FIELD CONNECTIONS: PIPING OR TUBING MAY ARRIVE AT THE HFI STATION HORIZONTALLY (FROM THE RIGHT AND/OR LEFT), VERTICALLY (FROM UP AND/OR DOWN) OR ANY COMBINATION OF THESE DIRECTIONS. CONNECTION FITTINGS MAY BE ROTATED $\pm 200^\circ$.