



**Mustang Sampling®**

# **NATURAL GAS LIQUIDS SAMPLE CONDITIONING**



Analytically Accurate®  
**TECHNOLOGY**

# NATURAL GAS LIQUIDS SAMPLE CONDITIONING SYSTEMS

## ANALYTICALLY ACCURATE® TECHNOLOGY

The Mustang® NGL Sample Conditioning System (MNGL®) combines a Mustang® Vaporizer and Mustang® Heated Regulator (MHR™) with a PID temperature controller and a liquid membrane separator to create a robust, single-path pressure regulating and vaporizing sample conditioning system for natural gas liquids.

A representative sample is delivered to a flash chamber within the vaporizer, preventing pre-vaporization. An independently controlled electric cartridge heater, with sufficiently large surface area, maintains a stable gas temperature throughout the process. The liquid membrane separator eliminates entrained liquids and particulates at high pressure. Pre- and post-regulation heat exchangers, along a tortuous gas path in the Mustang Heated Regulator, ensure sample and phase stability for introduction into natural gas analyzers. The Mustang NGL Sample Conditioning System is available with dual Mustang Vaporizers if redundancy is required as well as dual filtration and shut down.

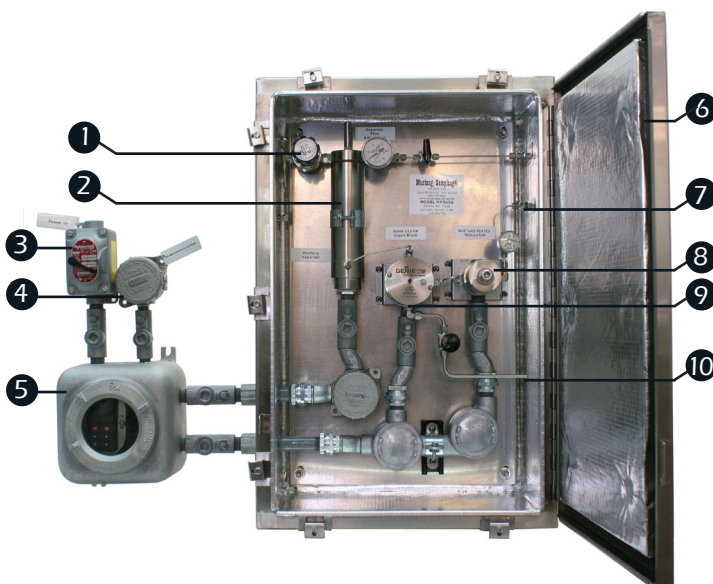
### BENEFITS

- Provides an accurate and reliable representative sample to the Gas Chromatograph
- Eliminates post-vaporization hydrocarbon liquid dropout
- Reduces the incoming liquid pressure
- Eliminates the presence of any remaining liquid in the natural gas sample
- Able to condition a wide range of liquids
- cETLus certifiable

### FEATURES

- Patented technology
- Continuous gas flow design
- Dual temperature controller
- Pressure regulator
- Single path vaporizer
- Liquid membrane separator
- Heated regulator
- NEMA 4X Enclosure
- Optional temperature monitoring thermocouple

### DUAL TEMPERATURE CONTROLLER



Item Number	Description
1	Manual Liquid Pressure Regulator
2	Single Path Mustang® Vaporizer
3	Power Source Switch
4	Communications Port
5	Dual PID Temperature Controller
6	Stainless Steel Insulated Enclosure
7	Sample Outlet (to analyzer)
8	Single or Multi-Stage Mustang® Heated Regulator
9	Membrane Liquid Separator
10	Drain

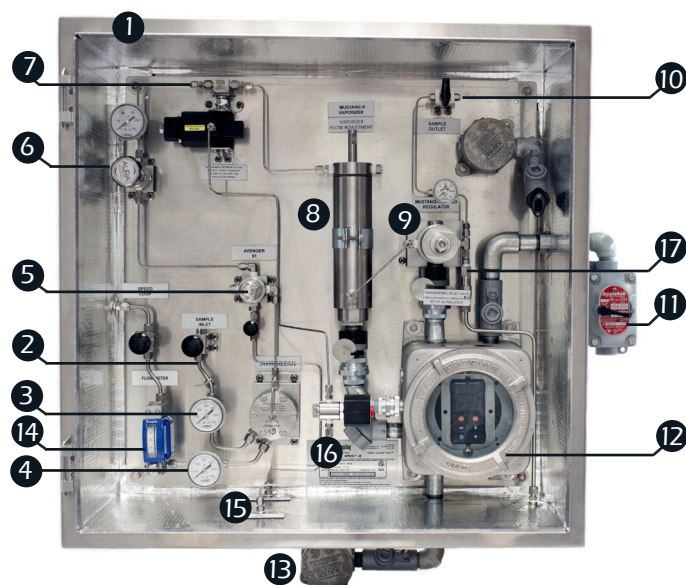
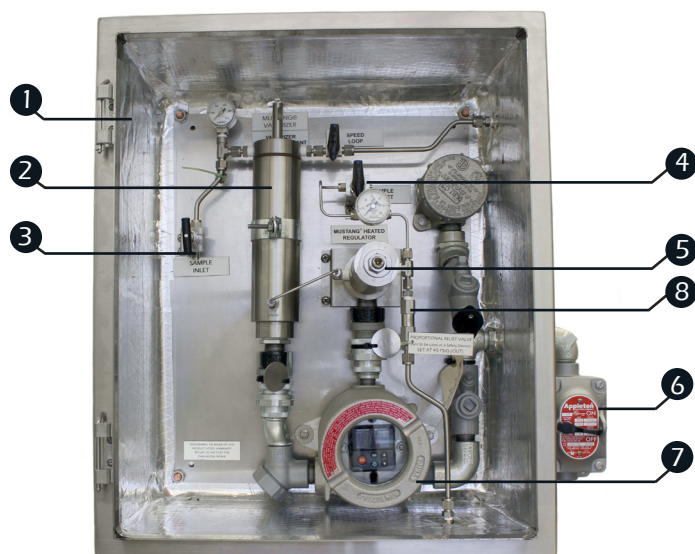






## SINGLE TEMPERATURE CONTROLLER

## DUAL TEMPERATURE CONTROLLER WITH FILTRATION & SHUT DOWN

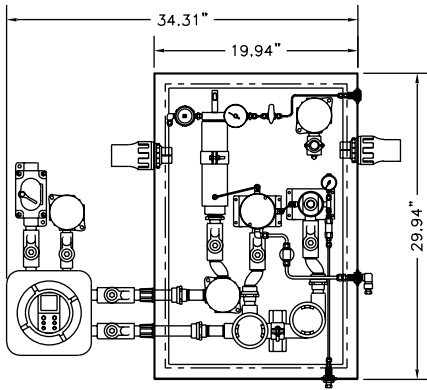


Item Number	Description
1	Stainless Steel Insulated Enclosure
2	Single Path Mustang® Vaporizer
3	Sample Inlet (from process)
4	Sample Outlet (to analyzer)
5	Single or Multi-Stage Mustang® Heated Regulator
6	Power Source Switch
7	PID Temperature Controller
8	Relief Valve

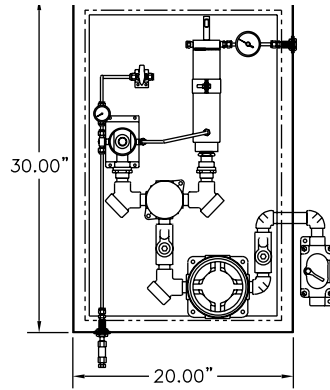
Item Number	Description
1	Stainless Steel Insulated Enclosure
2	Sample Inlet (from process)
3	Particulate Filter
4	Filter Drain to Speed Loop
5	Coalescing Filter
6	Manual Liquid Regulator
7	Shut-off Valve
8	Single Path Mustang® Vaporizer

Item Number	Description
9	Single or Multi-stage Mustang Heated Regulator
10	Sample Outlet (to analyzer)
11	Power Source Switch
12	Dual PID Temperature Controller
13	Communications Port
14	Armored Flow Meter
15	Liquid Drain
16	Thermal Shut-off Valve
17	Relief Valve

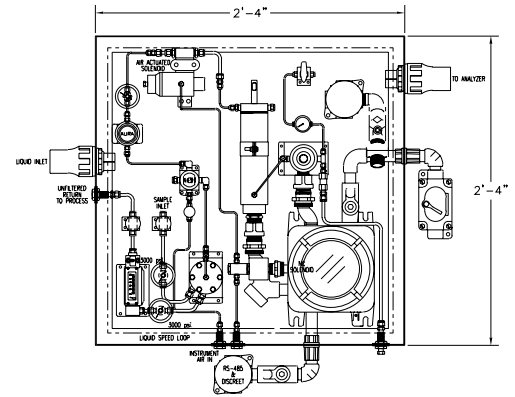
## PRODUCT DIMENSIONS



Front View - Dual Temperature Controller



Front View - Single Temperature Controller



Front View - Dual Temperature Controller with Filtration and Shut Down

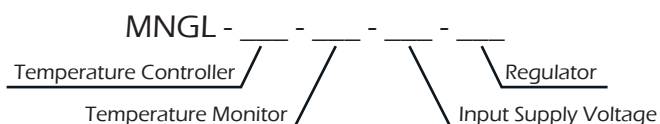
## SAMPLE CONDITIONING STAGES

- **STAGE 1**—Single-path unit designed to flash vaporize Natural Gas Liquids
- **STAGE 2**—A liquid membrane separator utilizes innovative technology to remove 100% of entrained liquid and particulate in a gas sample
- **STAGE 3**—A pre and post-heated pressure regulator designed to prevent hydrocarbon dew point dropout and reduce sample pressure which is then delivered to the heated membrane separator

## PRODUCT SPECIFICATIONS

Maximum Allowable Operating Pressure	3750 psig (359 bar)
Proportional Temperature Control Range	0°F to 300°F (-18°C to 148°C)
Port Sizes	1/4" female NPT
Conduit Sizes	3/4" female NPT
Hazardous Area Classification	Class 1, Division 1 & 2, Groups C, D, T3
Wetted Materials	Machined parts: 316 stainless steel/NACE compliant All other metal parts: stainless steel/NACE compliant Sulfinert® (other materials available upon request)
Temperature Controller & Optional Filtration	<b>SR</b> Dual Temperature Controller <b>JR</b> Single Temperature Controller <b>FS</b> Dual Temperature Controller with Dual Filtration & Shut Down
Temperature Monitor	<b>T</b> Thermocouple
Input Supply Voltage Options Dual Temperature Controller	<b>120</b> VAC, 790 Watts, 50/60 Hz, ± 10% <b>240</b> VAC, 790 Watts, 50/60 Hz, ± 10%
Input Supply Voltage Options Single Temperature Controller	<b>120</b> VAC, 590 Watts, 50/60 Hz, ± 10% <b>240</b> VAC, 590 Watts, 50/60 Hz, ± 10%
Input Supply Voltage Options FS Single Temperature Controller	<b>120</b> VAC, 600 Watts, 50/60 Hz, ± 10% <b>240</b> VAC, 600 Watts, 50/60 Hz, ± 10%
Regulator Options	<b>MHR</b> ™ Single-Stage Heated Regulator <b>MJTHR</b> ™ Multi-Stage Heated Regulator

Use the bold alpha-numeric characters from the table above to build your model number:



## Analytically Accurate® TECHNOLOGY

### About Mustang Sampling

Mustang Sampling, LLC is the innovator of Analytically Accurate® solutions within sample conditioning systems. We provide custom solutions of products and services globally to the Natural Gas, Natural Gas Liquids (NGL), and Liquefied Natural Gas (LNG) industries. Mustang Sampling continues to pioneer integrated control systems, allowing our customers to maintain phase stability from sample extraction at the source through sample analysis. Our products are continuously improved and subjected to the highest quality standards which provides our customers with the best sample conditioning solutions.

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U.S. Patent 9,285,299 and 10,281,368

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