

# M-SERIES

## VENTURI LPG/AIR MIXER MODELS: M21.0 THROUGH M250.0

### OPERATION

The Sam Dick Industries M-Series venturi-type LPG/Air mixer incorporates the design and technological improvements provided by years of design and manufacturing experience for utility, industrial and commercial applications worldwide. It is custom designed to meet your plant's specific requirements for mixed gas delivery pressure and capacity. Mixed gas delivery pressures are available up to 15 psig for propane and 8 psig for butane without air assist. Mixed gas delivery pressures are available up to 40 psig with air assist.

The M-Series is the perfect solution for continuous use or as a stand-by system used during an interruption in natural gas supply. The unit provides an LPG/Air mixture to supplement or replace your natural gas, so no modifications to your equipment are necessary. The unit connects directly to existing natural gas fuel lines. There are no orifices to change and no sooting or fouling of combustion equipment. The M-Series complies with Class I, Division 1, Group D requirements as specified by NFPA Pamphlet 58 and 70.

Sam Dick Industries has nearly 40 years of LPG gas plant experience around the world. This experience is at your disposal. Contact SDI for help in sizing and designing a system that will allow your facility to operate at peak efficiency.

### STANDARD FEATURES

- *Solid state progressive sequencer performs pre-programmed logic On/Off switching functions to accurately match each venturi to any flow demand (21-250 MMBTU/hr).*
- *Adjustable mixed gas delivery pressures are available between: 4-5 psig, 6-8 psig, 9-10 psig, 11-12 psig, and 13-15 psig. Consult factory for adjustable range on air assist models.*
- *Low vapor pressure safety switch prevents rich mixtures from developing due to inadequate motive pressure (i.e., delivery pressure of unmixed LPG to the venturi nozzle).*
- *100% turndown capability.*
- *High mixed gas pressure safety switch prevents over pressurization of gas accumulator.*
- *Two or more units can easily be operated in parallel to meet the growing requirements of your business.*
- *All external metal surfaces are mechanically cleaned, primed, and painted.*
- *120V/1ph electrical system (220V/1ph optional).*
- *Shipped complete with all operating and safety controls.*



### OPTIONS

- *Air intake silencers.*
- *Mixed gas BTU analyzer.*
- *Mixed gas accumulator tank.*
- *Air assist option for mixed gas pressure between 15-40 psig.*

# S P E C I F I C A T I O N S

## M-SERIES MODELS

### DELIVERY PRESSURE <sup>HH</sup>

Capacity <sup>H</sup> Million BTU/Hr.	5 psig	8 psig	10 psig	12 psig	15 psig <sup>3,4</sup>	15-40 psig	LPG Vapor <sup>1,2</sup> Inlet (FNPT)	LPG/Air <sup>4</sup> Outlet
21	M21-5 <sup>1</sup>	M21-8		M21-12			1"	6"-150# FLG
26			M26-10				1"	6"-150# FLG
28	M28-5 <sup>1</sup>	M28-8		M28-12	M28-15	M28-PA	1"	6"-150# FLG
35	M35-5	M35-8		M35-12			1-½"	6"-150# FLG
39			M39-10				1-½"	6"-150# FLG
42	M42-5 <sup>2</sup>	M42-8		M42-12	M42-15	M42-PA	1-½"	6"-150# FLG
52			M52-10				1-½"	6"-150# FLG
56	M56-5 <sup>2</sup>	M56-8		M56-12	M56-15	M56-PA	1-½"	6"-150# FLG
65			M65-10				2"	6"-150# FLG
70	M70-5	M70-8		M70-12	M70-15	M70-PA	2"	6"-150# FLG
78			M78-10				2"	6"-150# FLG
84	M84-5	M84-8		M84-12	M84-15	M84-PA	2"	6"-150# FLG
100	M100-5	M100-8		M100-12	M100-15 <sup>4</sup>	M100-PA	2"	8"-150# FLG
125	M125-5	M125-8		M125-12		M125-PA	2-½"	8"-150# FLG
150	M150-5	M150-8		M150-12	M150-15 <sup>4</sup>	M150-PA	3"	8"-150# FLG
175	M175-5	M175-8		M175-12		M175-PA	3"	8"-150# FLG
200	M200-5	M200-8		M200-12		M200-PA	3"	8"-150# FLG
225	M225-5	M225-8		M225-12		M225-PA	3"	8"-150# FLG
250	M250-5	M250-8		M250-12		M250-PA	3"	8"-150# FLG

Vaporaire Models	Shipping Dimensions W X H (inches)	Accumulator Tank Capacity
M7-V28 <sup>3</sup>	64 X 98	240 Gallon
M30-V84 <sup>3</sup>	74 X 98	240 Gallon
M100-V250	84 X 84	640 Gallon

<sup>1</sup> Models M21-5 and M28-5 have a 1-½"NPT vapor inlet.

<sup>2</sup> Models M42-5 and M56-5 have a 2"NPT vapor inlet.

<sup>3</sup> All 15 PSI models use a 640 gallon accumulator tank.

<sup>4</sup> Models M100-15 and M150-15 have a 6" 150# flange.

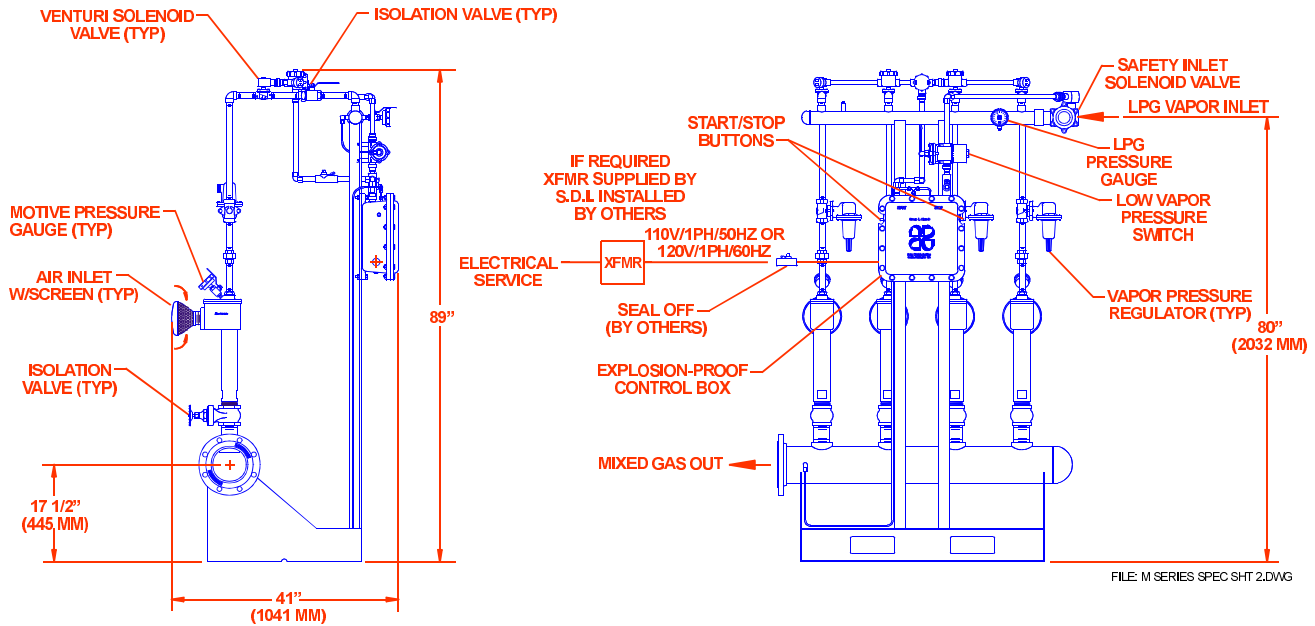
<sup>H</sup> Mixing capacities shown are approximate and may be adjusted by increasing or decreasing the LPG motive pressure. Capacity ratings based on a mixed gas gross heating value of 1450 BTU/SCF ± 5% with commercial grade propane.

<sup>HH</sup> Delivery pressures shown are valid up to 2000 ft elevation. Contact factory for information regarding applications at higher elevations.

Contact factory for shipping weights.

# DIMENSIONAL DRAWING

\*Contact factory for inlet temperatures exceeding 180°F



Product improvement is a continuing goal at Sam Dick Industries. Designs and specifications are subject to change without notice or obligation.

## VENTURI OPERATION

Mixed gas is produced by the M-Series® venturi assembly. LPG vapor enters the M-Series® vapor inlet. The venturi solenoid valves energize upon command from the controller and admits LPG to the venturis. The controller is a solid state switching device linked to a pressure transducer that monitors accumulator tank pressure. When pressure falls, the controller sequentially energizes the number of solenoid valves necessary to re-establish the proper mixed gas pressure. LPG vapor flows through a regulator and pressure is reduced to the proper motive pressure desired for the venturi nozzle. The regulated LPG vapor enters the venturi nozzle, accelerates, and creates a suction at the air inlet. The gas/air mixtures are propelled into the diffuser where it decelerates and gains pressure as it fills the accumulator tank. The mixed gas remains in the accumulator tank at the pressure set by the sequencer until withdrawn through the mixed gas discharge valve. The high mixed gas pressure safety switch monitors mixed gas pressure within the accumulator tank. If this pressure exceeds the normal mixed gas delivery pressure, the inlet safety solenoid valve will close, restricting LPG vapor flow into the mixer.

## LPG VAPOR PRESSURE REQUIREMENT DATA FOR PROPANE

Mixed Air/Propane Delivery Pressure (psig)	Minimum Inlet Vapor Pressure (psig)	Nozzle Motive Pressure (psig)
5	35 - 55	31 - 35
8	80 - 85	72 - 74
10	113 - 123	108 - 117
12	125 - 130	120
15	165	157

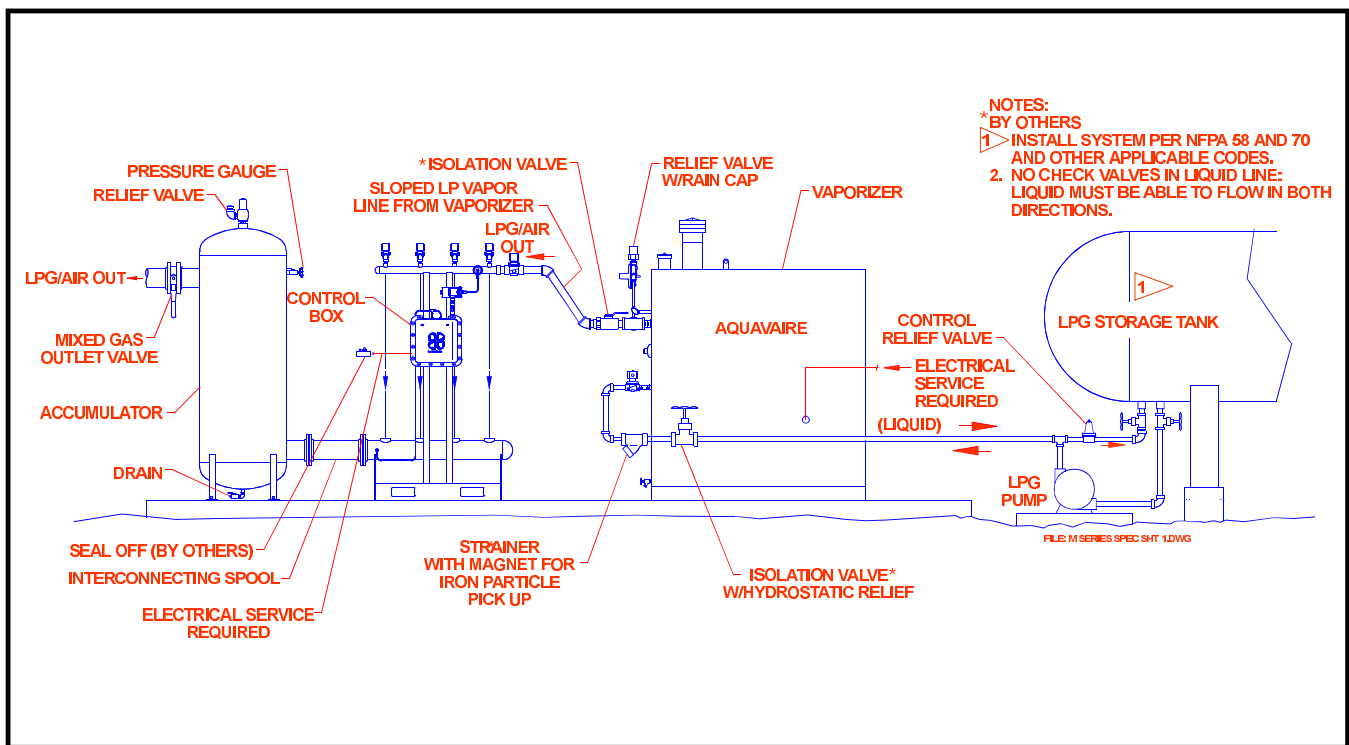
## FOR BUTANE

8	95	80
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## FOR AIR ASSIST

15 - 40	70 - 90	65 - 85
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**Contact factory for additional information**



## THE SAM DICK WARRANTY

**Sam Dick Industries, Inc.** warrants that the equipment is free of defects in materials and workmanship under normal use and service and agrees to repair or replace, at **Sam Dick Industries'** option, without charge, f.o.b. factory, any part which shall prove defective to the satisfaction of **Sam Dick Industries** within one (1) year from the date of original installation or eighteen (18) months from the date of shipment, whichever is the earlier. Equipment, which in the opinion of **Sam Dick Industries**, has been damaged by improper installation or operation, or has been abused or tampered with in any way, will not be accepted for return under warranty. **Sam Dick Industries** will not accept back charges for work performed by others upon or in conjunction with **Sam**

**Dick Industries'** equipment unless prior authorization is given by means of a **Sam Dick Industries'** purchase order. **Sam Dick Industries** shall not be liable for loss of anticipated profits, loss by reason of shutdown, non-operation or increased expense of operation of other equipment, or any other loss or damage of any nature, whether direct or consequential arising from any cause whatsoever.

**Sam Dick Industries** makes no other warranty of any kind whatsoever expressed or implied; and all warranties of merchantability and fitness for a particular purpose are hereby disclaimed by **Sam Dick Industries** and excluded from these terms of sale.

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