



MINI-GAS MIXER MODEL 8520

APPLICATIONS

The Model 8520 gas mixer is designed to mix hydrogen and argon for welding and cutting applications. These include shielding gas for plasma arc welding (PAW) and gas tungsten arc welding (GTAW). A typical example is plasma arc welding of stainless steel tubing in a tube mill.

The gas mixer has a flowrate range of 0-500 SCFH and is ideal for multiple users since the surge tank design will maintain a constant mixture proportion from off to full flow.

The gas mixer can not be used to create furnace atmospheres; these mixtures must be created by gas mixers designed with required safety controls. See Thermco Specification Sheet 114.

FEATURES

- Surge tank design provides a constant mixture proportion from off to full flow.
- The hydrogen and argon are dynamically mixed which creates a steady uniform mixture. This action prevents the possibility of stratification, which can exist in some cylinder mixtures.
- Electrical circuit shuts off the hydrogen into the gas mixer if the inlet argon pressure is insufficient to create a proper mixture.
- Explosion proof electrical construction for Class I, Division 2 Group B, C, D Hazardous Area.

TYPICAL MIXTURES

- 1% H₂, 99% Ar
- 2% H₂, 98% Ar
- 5% H₂, 95% Ar
- 35% H₂, 65% Ar

SPECIFICATIONS

RANGE:

0-7% hydrogen in argon, standard
0-50% hydrogen in argon, on request

Note: Mixtures are adjusted at the factory to the requested mixture. Mixtures may be changed in the field with the use of a gas analyzer.

ACCURACY: $\pm 0.35\%$ of the minor component absolute for components from 0 to 7%. For mixtures greater than 7%, consult the factory. Example: For a 5% H₂, 95% Ar mixture, the mixture will be within the limits of 4.65% to 5.35% H₂.

Accuracies assume that the gases entering the gas mixer are at equal temperatures and the supply gases and gas mixer environment are in the range of 50-90°F (10-32°C). Accuracy outside these temperature limits will vary; consult the factory for details.

AMBIENT AND SUPPLY GAS TEMPERATURES:

32°F (0°C) to 104°F (40°C)

SUPPLY GAS PRESSURE: 100-125 PSIG (6.9-8.6 barg)

MIXED GAS PRESSURE: 10-50 PSIG (0.7-3.4 barg)

Adjustable regulator provided by Thermco in mixer.

SUPPLY, MIXED GAS CONNECTIONS: 1/2" Female NPT

SURGE TANK: 5 gallon, ASME coded, CRN number stamped, pressure safety relief valve provided.

POWER REQUIREMENTS: 115 VAC, 50/60 Hz, 0.5 ampere. Acceptable voltage range 104-126 VAC. Available on request, 220 VAC, 50/60 Hz, 0.25 ampere. Acceptable voltage range 204-240 VAC.

ELECTRICAL CONSTRUCTION: The electrical design is explosionproof for Class I, Division 2, Group B, C, D hazardous area.

WEIGHT: 80 lbs. (36.3 kg); Packed 130 lbs. (59 kg)

DIMENSIONS: 31.6" (80.3 cm) height, 28.4" (72.1 cm) width, 10.4" (26.4 cm) depth

MOUNTING: Wall or Bench, Indoors

PRINCIPLES OF OPERATION

The Model 8520 gas mixer operates on the concept of a controlled pressure drop across flow restrictions of known performance, regardless of mixed gas demand. Argon flows through a fixed orifice and hydrogen flows through a metering valve. During periods of high mixed gas flow, there is continuous flow through the flow restrictions and the pressure drop is relatively large and easily controlled. During periods of low mixed gas flow, the flow through the flow restrictions becomes intermittent due to the action of the surge tank/solenoid valve/pressure switch combination. Since the flow through the flow restrictions is large during the mixing cycle, the pressure drop across the flow restrictions can be controlled and the ratio maintained.

REQUIRED SUPPLY PRESSURE

The user must provide a supply of gases that will maintain a minimum of 100 PSIG (standard unit) at the maximum gas mixer flowrate. The gas mixer will require its maximum flowrate when the gas mixer is filling its surge tank. For example, a Model 8520 gas mixer mixing 5% hydrogen, 95% argon has a maximum flowrate of 500 SCFH. This would calculate to 25 SCFH of hydrogen, and 475 SCFH of argon. The hydrogen and argon sources must be capable of supplying this flow rate for proper mixer operation.

Gas mixers will be made for inlet pressures of 100 to 125 PSIG and mixed gas outlet pressures of 10 to 50 PSIG unless ordered otherwise. Gas mixers may be made to special pressure conditions; consult Thermco for details. There is an extra charge for manufacturing to special pressure conditions.

SAFETY SHUTOFF FEATURE

The Model 8520 is equipped with a pressure switch to automatically shutoff the hydrogen in the event that the argon supply is insufficient to create a proper mixture. A light on the front door indicates the shutoff condition. Valving is built into the gas mixer to allow testing of this safety circuit. Testing must be performed every 6 months.

CHANGING THE GAS MIXTURE

The gas mixture proportion is adjusted at the factory to the requested mixture. Since the gas mixer is designed with a fixed orifice for the argon and metering valve for hydrogen, the proportion can be changed by the user, but the user must use a gas analyzer to measure the resulting mixture. Analyzers are available from Thermco for rental or purchase to measure H₂/Ar mixtures.

WARNING

Personnel dealing with the equipment should read and understand warning labels and instruction manuals provided by Thermco. Only personnel familiar with industrial gases should attempt to install or service this equipment. Gases from high pressure cylinders must be reduced to the specified pressure before entering the gas mixing system to prevent the possibility of equipment damage and personal injury. The Model 8520 can not be used for the creation of furnace atmospheres; special gas mixers are available from Thermco for that application. The Model 8520 is intended for welding applications; the buyer should consult with Thermco before applying the Model 8520 to other applications.

NOTICE

In the interest of continued product improvement, Thermco reserves the right to change design features without prior notice.

Sale of this equipment is under the terms of the Thermco warranty available on request.

ORDERING INFORMATION

Orders may be placed directly with Thermco or through many local gas suppliers.