



July 2021

RegO® Field Topics

Regulator Listed BTU Capacity & Performance

Field Topics are intended to provide useful information to the network of authorized LP-Gas and Anhydrous Ammonia distributors regarding the proper use of RegO® products.

Warning Bulletins covering many of the hazards involved are available from RegO for more detailed information. These bulletins can be found in our **L-500, L-102 and NH3-102** catalogs. Neither the Field Topic or the Warning Bulletins are intended to conflict with federal, state, or local ordinances and/or regulations, which should be observed at all times. This information also is not intended to be a substitute for or to supplement any training in the safe handling and use of propane and related equipment, as required by any applicable law. By providing this material, ECI assumes no responsibility for providing any such training. Only individuals properly trained in the safe handling and use of propane and related equipment should be permitted to do so, and by providing this information, ECI does not assume responsibility for providing such training.

For more information on LP Gas system requirements, refer to Liquefied Petroleum Gas Code (NFPA 58), National Fuel Gas Code (NFPA 54), National Propane Gas Association Safety Handbook, the RegO LP-Gas Serviceman's Manual L-545, RegO catalogs L-500/L-102/NH3-102, ANSI K61.1 Safety Requirements for Storage and Handling of Anhydrous Ammonia, as well as any applicable local codes and ordinances.

Regulator Listed BTU Capacity & Performance

The selection process of each regulator is dependent upon the demand of the system, temperature conditions, and the capacity of the regulator. The regulator is considered the heart of the system and a complete understand of the listed BTU capacity, set point and performance curve is needed.

It is important to not only understand where to identify the BTU capacity but to also determine at what delivery pressure the regulator will perform under those conditions. The listed BTU capacity can often be much lower than your operating ranges needed for your system. The listed BTU capacity of RegO Regulators can be found in various locations such as the L-500 Catalog and the RegO App.



Steps to Understanding Listed BTU Capacity of an LV3403TR Series

Step 1: Identify the Listed Capacity and How Determined

Refer to your L-500 catalog to the listed BTU Capacity and operation for how the capacity determined. Below we find the listed BTU Capacity at 1,500,000 BTU's and the flow is based on an inlet pressure of 20 PSIG higher than the regulator setting and delivery pressure 20% lower than the regulator setting (8 PSIG).

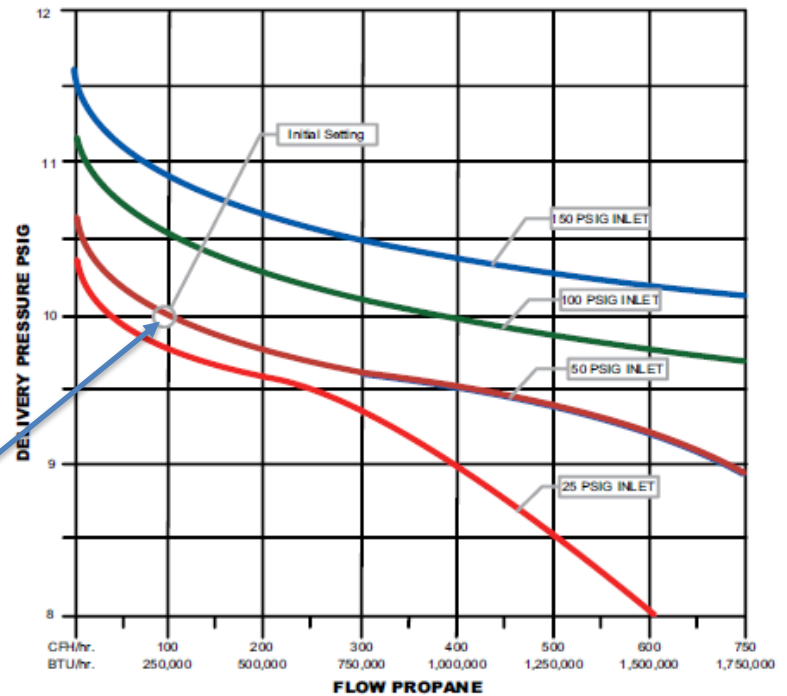
Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Vapor Capacity BTU/hr Propane*
LV3403TR	¼" F.NPT	½" F.NPT	7/32"	10 PSIG	1,500,000
LV3403TRV9					

* Maximum flow based on inlet pressure 20 PSIG higher than the regulator setting and delivery pressure 20% lower than the regulator setting.

Step 2: Identify the Setpoint and Performance Curve

Identify the set point of the regulator in the catalog from the performance curve and datasheet. The performance curve can also be used to determine your delivery pressure at various inlet pressure. Your lowest inlet and associated temperature condition should always be referenced to determine delivery at your lowest condition.

The set point of an LV3403TR Series would be 10 PSIG at a 250,000 BTU demand



Step 3: Understanding the Data

We find that an LV3403TR series has a published rating of 1,500,000 BTU's. This was determined with the inlet pressure of 30 PSIG and a delivery pressure of 8 PSIG. The regulator is set at the factory at 10 PSIG with a demand of 250,000 BTU's. When designing a system, the outlet pressure should be carried over to your 2nd stage regulator capacity and performance curve.



Steps to Understanding Listed BTU Capacity of an LV4403B66

Step 1: Identify the Listed Capacity and How Determined

Refer to your L-500 catalog to the listed BTU Capacity and operation for how the capacity determined. Below we find the listed BTU Capacity at 935,000 BTU's and the flow is based on an inlet pressure of 10 PSIG and a 9" w.c. delivery pressure.

How BTU Capacity is determined

Listed BTU Capacity

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr. Propane**
LV4403B4	½" F. NPT	½"	#28 Drill	11" w.c. at 10 PSIG Inlet	9" to 13" w.c.	Over Inlet	935,000
LV4403B46							
LV4403B46R*							
LV4403B66	¾" F. NPT						
LV4403B66R*							

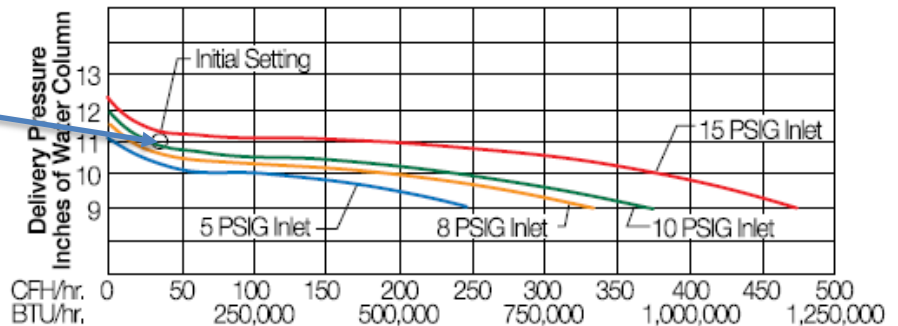
* Backmount design

** Maximum flow based on 10 PSIG inlet and 9" w.c. delivery pressure

Step 2: Identify the Setpoint and Performance Curve

Identify the set point of the regulator in the catalog from the performance curve and datasheet. The performance curve can also be used to determine your delivery pressure at various inlet pressure. This setpoint may vary from your first stage outlet pressure. Your lowest inlet and associated temperature condition should always be referenced to determine delivery at your lowest condition.

The set point of an LV4403B66 would be 11" w.c. at a 75,000 BTU demand.



Step 3: Understanding the Data

We find that an LV4403B66 has a published rating of 935,000 BTU's. This was determined with an inlet pressure of 10 PSIG and a delivery pressure of 9" w.c. The regulator is set at the factory at 11" w.c. with a demand of 75,000 BTU's. For proper selection of a 2nd stage regulator determine your inlet pressure to your 2nd stage regulator to determine your performance and delivery pressure matched on the performance curve. Always refer to your equipment data plate to determine the minimum and maximum inlet pressures. Remember, readjusting a regulator affects not only the delivery pressure but also lock up pressure. Be sure the system and appliances will operate properly before making major changes to the regulator delivery pressure adjustment.



Steps to Understanding Listed BTU Capacity of an LV404B96

Step 1: Identify the Listed Capacity and How Determined

Refer to your L-500 catalog to the listed BTU Capacity and operation for how the capacity determined. Below we find the listed BTU Capacity at 600,000 BTU's and the flow is based on an inlet pressure of 25 PSIG and a 9" w.c. delivery pressure.

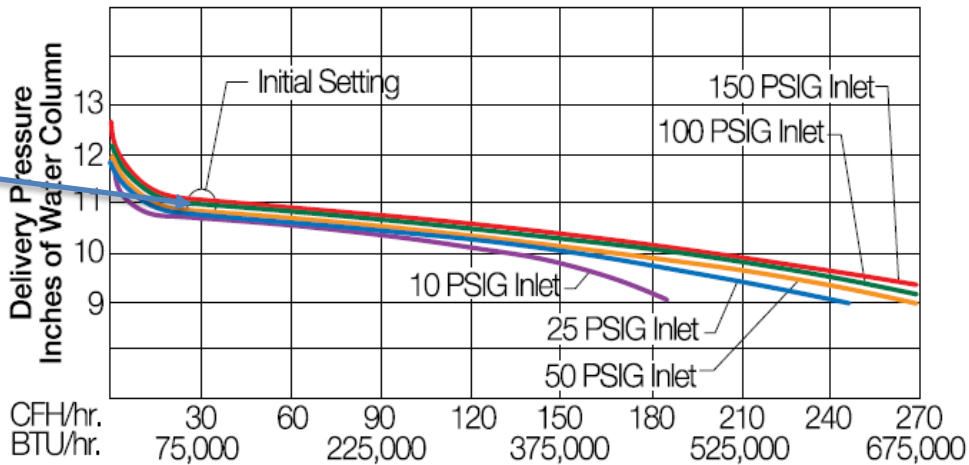
How BTU Capacity is determined				Listed BTU Capacity				
Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range 2nd Stage	Bonnet Vent Position 1st Stage	Bonnet Vent Position 2nd Stage	Capacity BTU/hr. Propane*
LV404B96	F. P.O.	1/4" F. NPT	3/16"	11" w.c. at 100 PSIG Inlet	9" - 13" w.c.	Down	Over Outlet	600,000
LV404B96V9						9 o'clock	9 o'clock	

Maximum flow is based on 25 PSIG inlet pressure and 9" w.c. delivery pressure.

Step 2: Identify the Setpoint and Performance Curve

Identify the set point of the regulator in the catalog from the performance curve and datasheet. The performance curve can also be used to determine your delivery pressure at various inlet pressure. Your lowest inlet and associated temperature condition should always be referenced to determine delivery at your lowest condition.

The set point of an LV404B96 would be 11" w.c. at a 75,000 BTU demand.



Step 3: Understanding the Data

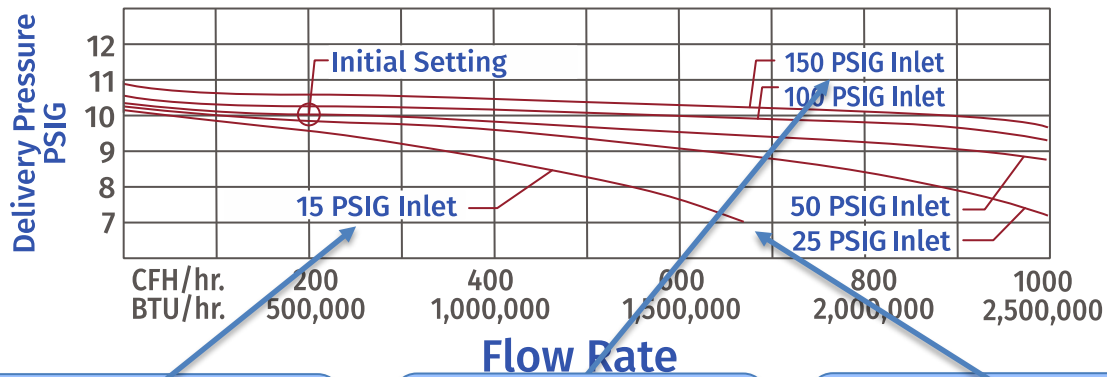
We find that an LV404B96 has a published rating of 600,000 BTU's. This was determined with an inlet pressure of 25 PSIG and a delivery pressure of 9" w.c. The regulator is set at the factory at 11" w.c. with a demand of 75,000 BTU's. Always refer to your equipment data plate to determine the minimum and maximum inlet pressures. Remember, readjusting a regulator affects not only the delivery pressure but also lock up pressure. Be sure the system and appliances will operate properly before making major changes to the regulator delivery pressure adjustment.



Performance Curves

Performance Curves should be referenced on every installation for your desired delivery pressure. The delivery pressure will vary with inlet pressure and BTU demand needed. Inlet pressure will vary with temperature and pressure differential.

LV4403TR Series First Stage Regulators



When inlet pressure goes down, delivery pressure goes down

When inlet pressure goes up, delivery pressure goes up

As demand goes up delivery pressure goes down

Conclusion

The listed BTU capacity and performance curve should be taken into consideration on all new and existing installations. Reference of the regulator performance curve will help determine outlet pressures at varying pressure/temperature difference. Regulator performance curves listed capacity and datasheets can be found in your L-500 catalog or on the RegO APP. Adjustment of the regulator delivery pressure should be done to fine tune the pressure of the system and never to compensate for an undersized regulator or piping system.

Should you have any questions or concern, please contact me.

Cody Reeves
Technical Services Manager



O: +1 336.446.7292
creeves@regoproducts.com
 100 RegO Drive, Elon, NC 27244 USA