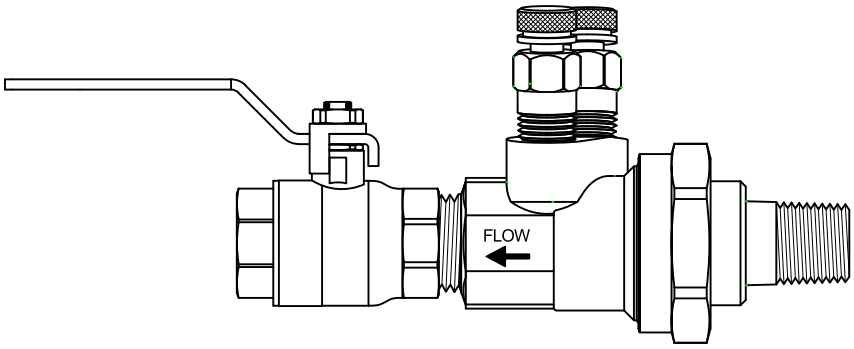
NLCBV Series Installation and Operations Manual
No Lead Combination Ball Valve/Venturi



PRODUCT DESCRIPTION: The NLCBV is a brass venturi that provides highly accurate flow measurement capabilities with minimal permanent pressure loss due to the 15° regain cone. Coupled with a 600 WOG / CWP ball valve with memory stop, the product is a highly accurate manual flow balancing valve. The venturi has a union inlet allowing for multiple tail piece connections. When the same size tail piece or any male reducing tail piece is used, no upstream pipe diameters are required to sustain accurate readings. The union side also incorporates an o-ring seal for maximum sealing protection.

PRO Hydronic Specialties (*PRO*HS) assumes no responsibility for injuries or damages that result from the nonobservance or noncompliance with installation and operational procedures. It is the responsibility of each link in the supply chain between the factory and the ultimate installation to assure each subsequent party has a copy of this document and understands the proper installation and cautions concerning this product. Upon receipt of shipment, the product should be thoroughly inspected for any damage. Once installed, the product should be checked under pressure for leaks and thereafter at least annually.

Limited Warranty: *PRO*HS's liability is limited to the repair or replacement of the defective component. By purchasing and/or installing *PRO*HS products, it is understood the purchaser/installer contractually agrees with the warranty terms as stated here and elaborated in the full warranty statement found at www.prohydronicspecialties.com. *PRO*HS makes no general claim of usability of this product unless *PRO*HS is directly advised of the specific use and installation of this product and responds in writing.

CAUTION

CAREFULLY FOLLOW THESE INSTRUCTIONS. FAILURE TO DO SO MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR PROPERTY DAMAGE.

DO NOT use pipe dope or sealant on union threads, o-rings, or in o-ring grooves. Doing so can result in leaks.

DO NOT use silver solder for sweat end models.

DO NOT use an excessive amount of flux or solder.

DO NOT over tighten the union nut. Tool marks on the union nut indicate over tightening.

DO NOT adjust factory installed and tested fittings.

ALWAYS use a heat sink when soldering. Do not overheat product.

ALWAYS use properly engineered pipe supports and avoid placing excessive loads on the product.

ALWAYS perform no less than annual inspections on components. These products are dynamic in nature and due to varying system conditions there are no representations as to the duration of useful life for these products in excess of the warranty.

ALWAYS pressure test the components once installed to assure no leaks exist. If a leak or defect is found, immediately isolate from pressure and contact the factory for repair or replacement under warranty.

ALWAYS isolate the product from pressure when leaks or damage are detected to avoid property damage and contact the factory immediately to determine appropriate actions. The factory is not responsible for damages as the result of any repairs performed on the products while under pressure.

Failure to follow these cautions, not following standard industry practices, and/or using non-trained/unqualified installers could result in catastrophic failure.

Installation Procedures

General:

PRO Hydronic Specialties manual balancing valves are directional. Observe flow arrow for proper orientation.

Threaded End Valves:

Inspect pipe threads on valve and piping to ensure they are clean and free of burs or other foreign material. The union nut should be hand tightened or snugged with a wrench to sufficiently seal. If a wrench is used to tighten the union nut, use a back-up wrench to prevent the valve from turning. If a drip occurs, check the o-ring and ensure the surface is clean.

Sweat End Valves:

Clean the valve and tube ends with a wire brush before soldering. ALWAYS wrap the valve with a heat sink. The ball valve must be either fully open or fully closed when soldering so as to not damage the Teflon seal. Direct the flame away from the center of the valve body and remove excess flux and solder.

Setting a CBV:

1. Determine the desired flow rate for the coil.
2. Identify the NLCBV venturi model (including Beta for 1/2" and 3/4"). The venturi shall have markings of size and Beta on the valve.
3. Using either the flow equation or table, determine the inches of water column that matches the desired flow rate for the proper venturi size and Beta. If the GPM is specified, the tag will have the inches of water column and GPM.
4. Properly attach the differential meter/gauge to the venturi (use arrows or by default the high pressure side is near the union.)
5. Loosen the stem nut which holds the memory stop secure.
6. Throttle the valve until the inches of water column matches the desired result.
   Suggestion: If the flow rate changes, it is often convenient to mark the desired inches of water column with a piece of tape or non-permanent marker on the attached tag. If the tag is permanently labeled with the GPM and inches of water column, update the tag if the flow information changes.
7. Move the memory stop against the stop and tighten the stem nut.
   Note: Be careful not to strip the nut by over tightening.
8. Close the valve fully to assure proper memory stop placement then open the valve against the memory stop assuring a firm stop.
9. Verify once more the inches of water column when opened against the stop at the desired flow rate.
10. Remove differential gauge and replace the PT caps.

Troubleshooting Guide

(General guide is not inclusive of all situations)

Symptom	Possible Cause	Solution
No differential reading	Hi/Lo pressure lines switched on the gauge	Make sure the high pressure is obtained upstream. The low pressure is taken down.
	Probe not inserted fully	Make sure the pressure lines to the differential gauge have pressure.
	Air entrapment in pressure lines or gauge	Make sure the lines and/or gauge are bled of air.
	Valves are shut off	Make sure supply and return valves are open. Make sure the control valve is open.
	Insufficient flow	Very low flow conditions may not create sufficient differential pressure across the venturi.
Differential "pegs" out	Air entrapment in pressure lines or gauge	Make sure the lines and/or gauge are bled of air.
	Too much flow	High flow creates differential higher that the differential gauge can measure.
Estimated flow does not match measured flow	Venturi in backwards	Verify that the flow arrow on the venturi matches the flow direction.
	Actual flow is not as estimated	Assure proper Beta venturi is selected and chart is read correctly.