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MODEL KMVR, KMVU, KHVR, KHVU, KQVR AND KQVU FLAT GLASS GAUGE VALVES INSTALLATION/OPERATION INSTRUCTIONS

GENERAL DESCRIPTION

Kenco Flat Glass Gauge Valves are simple, rugged instruments engineered and constructed in the USA to give you accurate liquid level readings for the life of the vessel. To ensure long life, only the best materials are utilized, from the forged steel valve bodies made in the USA to the Nitronic 50 steel used in NACE compliant valves. In order to control the quality of each component, all parts are machined on precision CNC equipment in Kenco Engineering's state of the art manufacturing facility, located in Tulsa, Ok. After machining, each part is carefully inspected before being assembled to the final product in the specialized work cell, designed and built specifically for Kenco Flat Glass Gauges and Valves. All this means that Kenco Engineering is able to supply the highest quality Flat Glass Gauge products in the world while providing them to you, our customer in the fastest time available. Like any instrument, Kenco Flat Glass Gauge Valves must be installed, operated and maintained with reasonable care and due regard for the application, and the environment, if they are to give accurate readings over a long life.

This instruction sheet covers both medium and high pressure gauge valves.

PART NUMBER GUIDE for KENCO FLAT GLASS GAUGE VALVES

Valve Type	Gauge Connection Style	Material	Gauge Connection Size
KHV = High Pressure KMV = Medium Pressure KQV = Quick Close (KQV Pressure rating is equivalent to KHV Valve)	R = Rigid U = Union	A = 316 Stainless Steel/Grafoil C = Carbon Steel/Grafoil W = 316 S.S. (Wetted)/Grafoil N = Carbon Steel/Grafoil (Nace) T = Carbon Steel/Grafoil (Low Temp) B = 316 Stainless Steel/PTFE D = Carbon Steel/PTFE E = 316 S.S. (Wetted)/PTFE F = Carbon Steel/PTFE (Nace) G = Carbon Steel/PTFE (Low Temp)	50 = 1/2" 75 = 3/4"

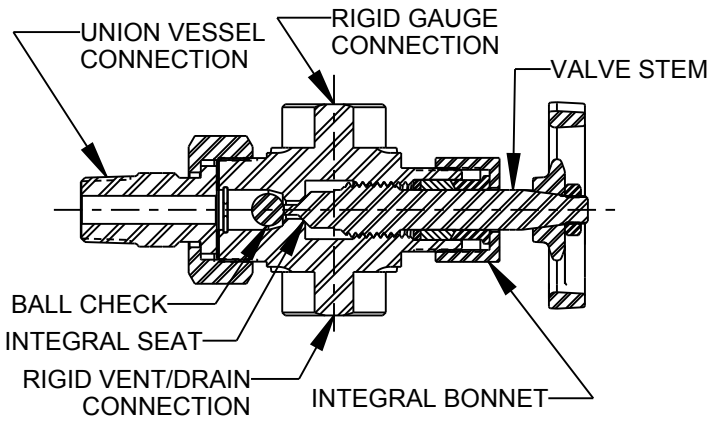
Gauge Connection Type	Vessel Connection Size	Vessel Connection Type
N = FNPT S = Socket Weld (Female) ("S" N/A on 3/4" Union Conn.)	50 = 1/2" 75 = 3/4" 10 = 1" (Flange Only) 15 = 1-1/2" (Flange Only) 20 = 2" (Flange Only) 30 = 3" (Flange Only) 40 = 4" (Flange Only) 60 = 6" (Flange Only) 80 = 8" (Flange Only)	M = Union (MNPT) N = Union (FNPT) S = Socket Weld (Female) (1/2" Only) X = Socket Weld (Male) A = 150 LB R.F. Flange B = 300 LB R.F. Flange C = 600 LB R.F. Flange D = 900 LB R.F. Flange E = 1500 LB R.F. Flange F = 2500 LB R.F. Flange G = 150 LB R.T.J. Flange H = 300 LB R.T.J. Flange J = 600 LB R.T.J. Flange K = 900 LB R.T.J. Flange L = 1500 LB R.T.J. Flange P = 2500 LB R.T.J. Flange

INSPECTION & DELIVERY

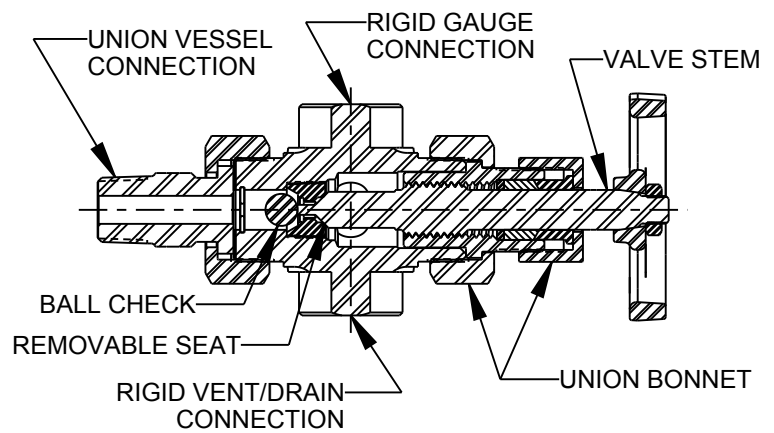
Upon receiving the valves, check all components carefully for any damage that may have incurred during shipping. If found, notify the shipping company immediately of any such damage and request a damage inspection. Confirm that the valve model number and pressure/temperature ratings (located on the nameplate) match the application conditions. Also, confirm that the valve materials are compatible with the process media and the environmental conditions around the valve.

CAUTION - Kenco Gauges and Gauge Valves are not to be used for indicating the level of lethal substances as defined by ASME Section VIII

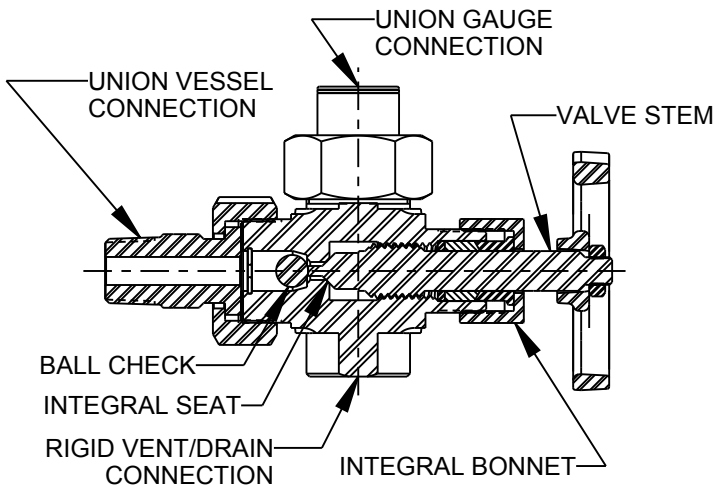
VALVE CONSTRUCTION



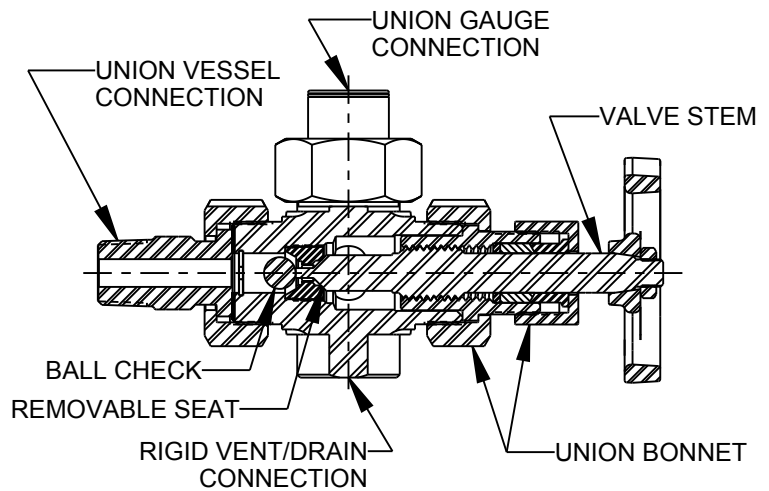
MODEL KMVR VALVE



MODEL KHVR VALVE



MODEL K MVU VALVE



MODEL KHVU VALVE

BEFORE YOU INSTALL THE GAUGE VALVES CONSIDER THE FOLLOWING:

- To avoid imposing pipe strains on the valves, connect and mount the valves so that they do not support the piping.
- Support brackets should be considered for gauges four feet or more in length or over 100 pounds in weight, especially if the gauge is exposed to vibration. These support brackets will prevent overloading the connecting valves and piping and prevent damage to the gauge and valves from excessive vibration.
- Always provide shutoff valves between the gauge and the vessel. Kenco Flat Glass Gauge Valves with automatic ball check valves are recommended to provide protection against physical injury and loss of product if glass breakage should occur. These valves also provide a means to isolate the gauge for maintenance.

OPERATION

CAUTION - Rapid opening of connecting valves can cause glass breakage and / or possible injury to personnel. Gauges should be brought into service slowly.

For protection during shipping, the valve stem is in the partially open position. Adjust the stem to the desired position after installation. Normally it is recommended that the valve be in the open position during start up to ensure the gauge and valves come up to pressure and temperature gradually with the process. The packing is pre tightened and should not require any adjustment. If the packing does leak, tighten the packing nut in 1/4 turn increments until the leak stops. Do not tighten the packing anymore than is needed to stop the leak. Overtightening the packing nut will make the valve handle difficult to turn and shorten the life of the packing.

CAUTION - While the valves are in operation, they must be in the fully open position. A partially open valve will prevent the automatic ball checks from seating, which could result in physical injury to personnel and loss of product.

MAINTENANCE

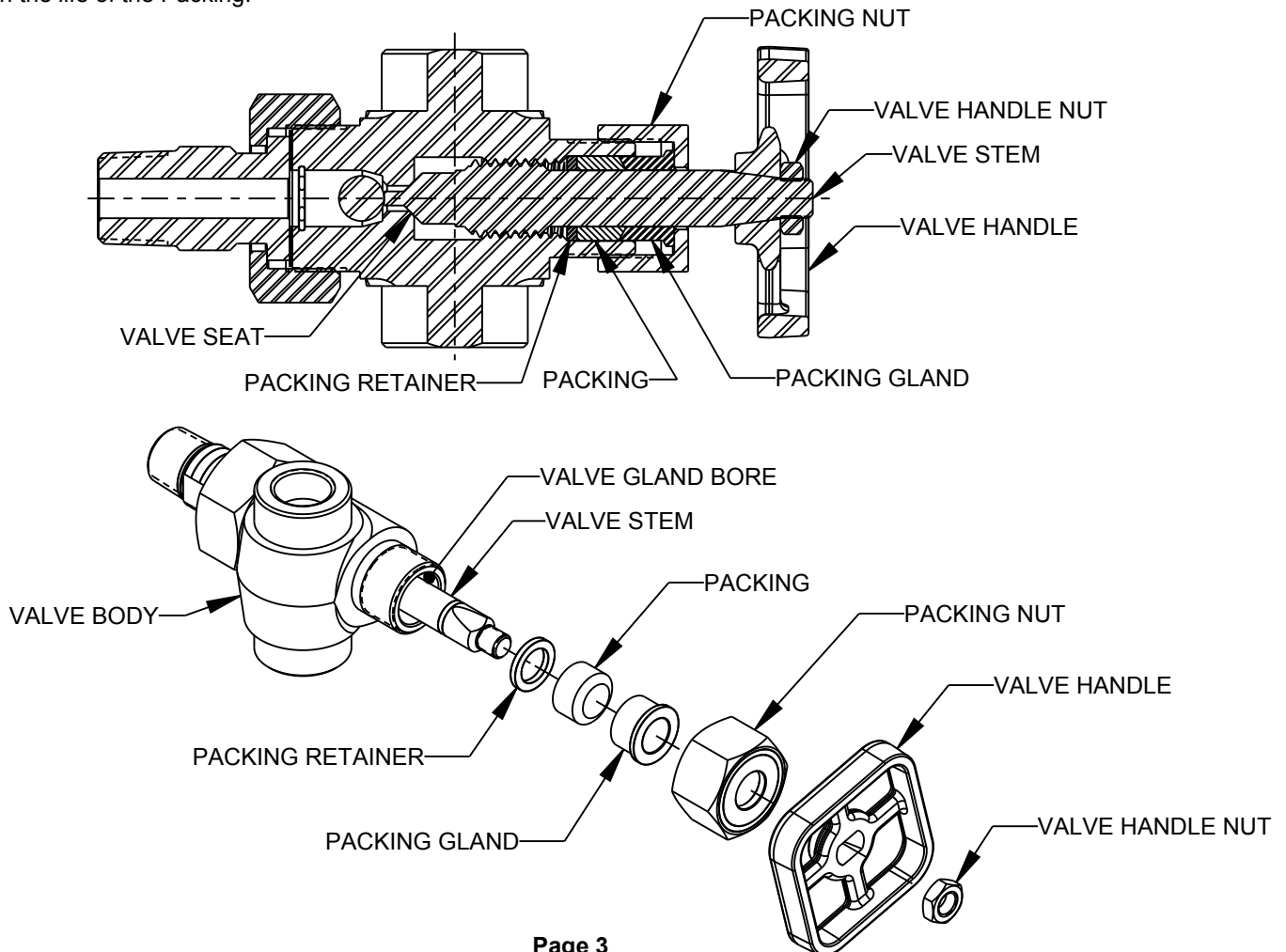
CAUTION - Prior to any disassembly of valves, first be sure that the valves are relieved of all internal pressure, the temperature is ambient and all fluids are purged/drained. Failure to do this may result in a sudden release of pressure resulting in physical injury to personnel.

CAUTION - When the gauge glass fails causing the ball checks to seat, closing the valve will allow fluid to flow from the vessel during that period when the stem pin pushes the ball check off its seat and before the stem has contacted the seat. Personnel can be injured if they don't realize what is happening. Fires could result if hazardous liquids are involved.

Replace Valve Packing (All Valves)

Note: Illustrations below represent medium pressure (KMVU/KMVR) valves but packing replacement procedure applies to both medium and high pressure (KHVR/KHVU) valves.

- 1.) Close Valves and drain fluid.
- 2.) Remove Valve Handle Nut, Valve Handle and Packing Nut.
- 3.) Remove Packing Gland and discard.
- 4.) Remove the Packing and Packing Retainer and discard. The easiest way to do this is to remove the Valve Stem. This will pull the Packing and Packing Retainer out of the Valve Gland.
- 5.) Clean the Valve Stem, Seat and Valve Gland Bore. Also make sure threads of Packing Nut and Valve Body are clean and in good shape with no damage.
- 6.) Slide new Packing Retainer, Packing and Packing Gland onto Valve Stem in exact order as shown in view.
- 7.) Apply Molykote or similar type of molybdenum disulfide lubricant to threads of Valve Stem.
- 8.) Screw Valve Stem into Valve Body until it bottoms out on Valve Seat and then back off 1/2 to 1 full turn (1/8 to 1/4 for quick close). This is done to prevent excess force being applied to Valve Seat when Packing Nut is being tightened. Make sure the Packing components are fully seated inside Valve Gland.
- 9.) Apply Molykote or similar type of molybdenum disulfide lubricant to the threads of the Packing Nut and reinstall Packing Nut. Tighten until the Packing starts to compress. Be careful not to overtighten, as it is easy to overcompress the Packing which will shorten it's life.
- 10.) Reinstall Valve Handle and Valve Handle Nut.
- 11.) Slowly bring Valve up to operating pressure and check for leaks.
- 12.) If the Packing does leak, tighten the Packing Nut in 1/4 turn increments until the leak stops. Do not tighten the Packing Nut any more than is needed to stop the leak. Overtightening the Packing Nut will make the Valve Handle difficult to turn and shorten the life of the Packing.



MAINTENANCE (Cont.)

Valve Stem, Bonnet and Valve Seat Replacement (KHVR/KHVU Only)

- 1.) Remove packing per steps 1 thru 4 in the instructions on sheet 3, but with the exception that the Valve Stem will be discarded and not reused.
- 2.) Remove Union Bonnet Nut
- 3.) Remove Bonnet and discard.
- 4.) Using a 1/4" drive socket extension, remove Valve Seat and Discard.
- 5.) Remove Ball Check and Discard.
- 6.) Clean the Valve Body internals including the bore and the internal Valve Seat threads. Also clean the Bonnet Nut threads on both the Valve Body and the Bonnet Nut itself. Inspect all threads and make sure they are clean and in good shape before reassembling Valve.
- 7.) Install new Ball Check, making sure it is in the proper location beyond the Valve Seat threads before installing the Valve Seat.
- 8.) Apply Molykote or similar type of molybdenum disulfide lubricant to the threads of the new Valve Seat. Also apply Molykote to the bottom of the thread bore for the Valve Seat (See cross section view below). This will help the Valve Seat seal on contact.
- 9.) Making sure Valve Seat is oriented as shown below, thread in Valve Seat and torque to 45 FT LBS.
- 10.) Apply Molykote or similar type of molybdenum disulfide lubricant to face of the Valve Body where the Union Bonnet seats (Again see cross section view below). Also apply Molykote to the threads of the Bonnet Nut.
- 11.) Insert Union Bonnet oriented as shown in Illustrations below.
- 12.) Install Bonnet Nut and tighten.
- 13.) Reassemble Valve Stem, packing components and Valve Handle per steps 6 thru 10 in the instructions on sheet 3.
- 14.) Slowly bring Valve up to operating pressure and check for leaks.
- 15.) If the Packing leaks, tighten the Packing Nut in 1/4 turn increments until the leak stops. Do not tighten the Packing Nut any more than is needed to stop the leak. Overtightening the Packing Nut will make the Valve Handle difficult to turn and shorten the life of the Packing.

