



**Hammond Valve  
Engineering Department**

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This bulletin discusses the issues related to use of valves in general in buried or underground service, in terms of hardware and successful service, and presents the company's official technical position related thereto.

1. Below grade service is special service that carries unique challenges and considerations, depending on the degree to which the valves are 'buried' or may be buried in soil, etc. Should there be an expectation that the valves will indeed be buried, even if only partially, the user is reminded to take precautions against compacted material impeding function, corrosion, frost damage, piping loads due to thermal and alpha considerations as well as ordinary structural loads, (and all other associated risks) by whatever means available – addressing these issues in detail is outside our scope as a valve manufacturer. As an observation, there are (e.g. AWWA) valves intended for buried service. Hammond Valve does not manufacture any valves specifically designed to be buried. We do have certain products that have been used successfully in below grade service, when the proper considerations are made in installation (e.g. heavy duty bronze valves in golf course service, butterfly, iron, steel, and other valves applied in boxes, and others).
2. Presuming the issues identified in paragraph (1) above are properly addressed, the remaining questions relate to valve orientation and actuation. We recommend that wherever possible, the valves be installed with the stems vertical. For gate and globe valves, this becomes more important with increasing valve size (in other words, larger valves present greater difficulty in seating with horizontal stems due to weight of the wedge or disc and friction effects). We recommend gear operators on all valves from 2" and up, furthermore, we recommend high reduction (special) gear operators on 4" and larger valves, to maximize mechanical advantage, considering that the gears will be driven via a linkage or extended 'T' handle with presumably poor inherent mechanical advantage. Given our recommendation for stem vertical, the use of gear operators and remote drivers would require some kind of angular power take off, which can be provided integral to the gear, or as an accessory package for adaptation to input shafts of conventional gears. When needed, Hammond Valve engineering can assist in the investigation of these options, or the customer can take the responsibility to adapt to either our bare stem or our standard gear operated valves. In any case, care must be taken to prevent valve damage from actuation method. For example, large heavy tee handle drivers are frequently used to open and close manual gate valves – these drivers can impart excessive torque to the valves and cause damage as a result. Given the above, it still remains an option for the valves to be installed with stems horizontal, conventional gears, and drive the gears via a square nut on the input shaft of the gear operator, driven via a simple tee handle or similar. We do repeat that this approach may present limits for larger valves.
3. For any below grade service, as in any other valve service, the final selection of valve type, materials of construction, and attached hardware remains the ultimate responsibility of the end user. Contact the factory with any specific questions.