

# Wedge gate & knife wedge gate penstocks

Specifically designed for arduous, off seating duty with **zero leakage**



Wedge gates are a type of penstock utilising a whole of gate wedging action. Knife wedge gates are a variation specifically for grit prone invert situations. They can be used for circular or rectangular openings, are drip tight, and designed specifically for the application and duty.

The seal on the frame is neoprene. The sliding surface for the gate is UHMW Polyethylene, a low friction proven material in aggressive water environments.

The higher the closing load applied by the stem, the higher the sealing pressure on the neoprene seal. This is unlike a knife gate valve that closes vertically by necessity of the outside flange.

The concept is not unique. A number of manufacturers use it, especially in North America. Wedge action has been applied to cast iron penstocks for over a century. What is unique is the combination of new technologies; the knife action into sand filled inverts, the cantilevered lower gate, full length wedges rather than individual ones which have to be staggered horizontally and the application of new technologies that have emerged in the past couple of years.

There are many actuation options available including submerged hydraulics, where we recommend the use of Queensland Hydraulics' equipment. The most important issue is that each unit is designed specifically for the circumstances under which it is to be used and that the designer has significant experience in that area. With decades of experience, Mark La Forest and Steve Posselt are available to discuss your needs and ensure the right outcome for you at no charge.

Although we manufacture knife gate valves they are designed to be between flanges and must have one piece gates that are designed to the specified head. Without any stiffening available the head is critical to the gate thickness. Knife gate valves have a role, but are a product for pipelines whereas knife wedge gates are for end of pipe or wall mounted applications.



Both Australian and New Zealand workshops are strictly non-ferrous. Materials used are marine grade aluminium, 316ss, duplex stainless steels and exotics.

Seals can be made to any specification, but in the main sliding surfaces use UHMW Polyethylene with a friction co-efficient of 0.15. Non sliding surfaces are usually neoprene but EPDM and other materials can be provided.



# fabricated knife gate valve

Where a knife gate valve is required either by specification or by pipeline requirements AWE manufactures at competitive prices in large sizes. The material is 316/316L stainless steel

Although they are not as well suited to end of pipe situations as the wedge gate penstocks, they are comparable to all other 316ss knife gates. Leakage rates are typically half of the Australian Standard AS6401 Knife-Gate Valves for Waterworks Purposes

They can be unbonnetted, fully bonnetted or have a simple cover over the rising blade. All valves have bi-directional capability.

Top sealing can be gland packing or the AWE special neoprene seal which does not require adjustment like the gland packing

The invert seal is flush with the bottom of the pipe making the valve ideal for sewage or applications with grit in the fluid.



## Features

- ✓ All metals 316/316L stainless steel
- ✓ Conforms to AS6401:2003
- ✓ Integral flanges drilled and tapped to AS4087:1993
- ✓ Neoprene resilient perimeter seal
- ✓ Dynamic neoprene resilient top seal
- ✓ UHMW Polyethylene body liners with neoprene O-rings
- ✓ Heavy duty polished gate
- ✓ Bi-directional capability

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