

Wall Mounted Pump saves mines time and money

Innovation in sump dewatering

The “Wall Mounted Pump” concept grew out of our customer’s desire, Inco Ltd.(Copper Cliff South Mine, Copper Cliff, Ontario) to have a rugged pump mounted on a jumbo rock drill that would drain water from the drill face. Traditionally a small electric submersible or air powered pump was set by the face to remove the water generated by the drill. When drilling was completed, all equipment was moved away to safety while the holes were loaded with explosives, connected and the face blasted. This involved disconnecting the pump, hose, wiring / air line and moving it all by hand. The customer wished to manually move as little equipment as possible when relocating the drill.

The design

Following initial consultation with the drillers, a concept sketch was prepared and reviewed with mine personnel. Based on their positive feedback and suggestions, a prototype was prepared and tested in the local Flygt service shop using a Flygt BS-2052, electric submersible pump. A demonstration was then arranged for mine personnel including the Underground Superintendent. They quickly realized that there were far greater savings possible if the concept was applied to many of their underground dewatering pumps and a larger version was commissioned immediately.

The concept involves mounting a heavy duty Flygt electric submersible slurry pump on a plate that would be hung on a wall outside a typical mine sump. Virtually, all related components would be compactly mounted on the plate, with a special control installed nearby, a suction/vent hose assembly running into the sump, and level sensors mounted near the end of the hoses.

The pumps used, HS-3127 (10 hp), HS-3152 (20 hp) or HS-5100 (30 hp), are heavy duty pumps designed to handle water containing moderate amounts of abrasives. The pumps are mounted on



Fig. 1: The Wall Mounted Pump using an HS-5100

a specially designed steel plate, which is attached to the wall several metres outside the sump. Before the pump is able to start, the air must be removed from the system. This is done automatically by filling the piping with water. At the end of the priming cycle, water is pushed out through the

vent into the strainer. This has a cleaning effect on the strainer and will also agitate slimes around the strainer. Once the priming cycle is complete, the pump can then operate normally.

The results

The advantage to this type of system is that no equipment must be moved when the sump is mucked out. Mucking (removal of accumulated solids formerly suspended in the incoming water) is usually accomplished by large scoop trams. Before they can enter the sump; pumps, level sensors and other equipment must usually be moved out of the way – a time consuming and dangerous task. After mucking, the pumps must be re-installed. The Wall Mounted Pump doesn't need to be moved because there is virtually nothing in the path of the scoop trams. The level sensors and hoses are carefully mounted on a sidewall out of harms way.

Savings are considerable since the sumps must typically be mucked every two to three weeks. In addition,



Fig. 2: Suction line during priming

pumps are frequently damaged when being moved or wear out prematurely because the sumps have not been mucked on a regular basis. The heavy-duty HS pumps are not only more durable, but also the Wall Mount concept ensures that they are not overwhelmed by heavy slimes or run dry. After 36 months of operation, the initial pumps have yet to require service.

The “Wall Mounted Pump” concept is a true innovation in sump dewatering.

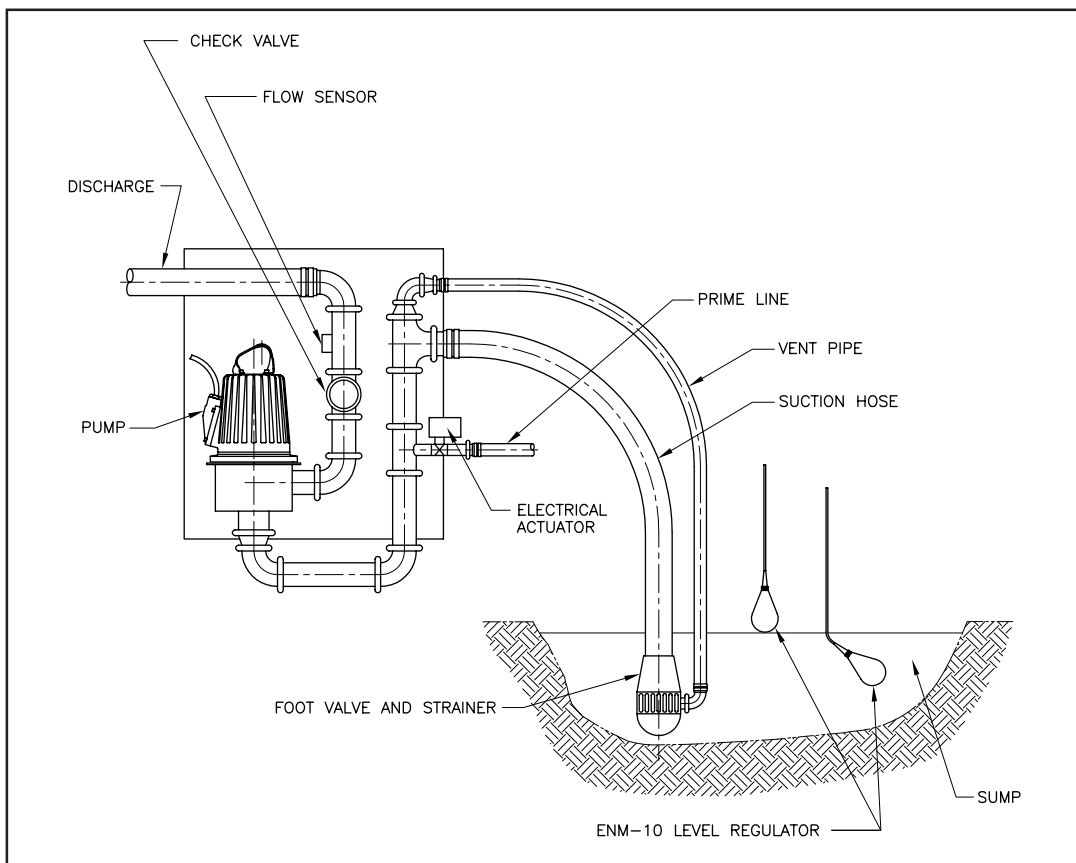


Fig. 3: Wall mounted pump items



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