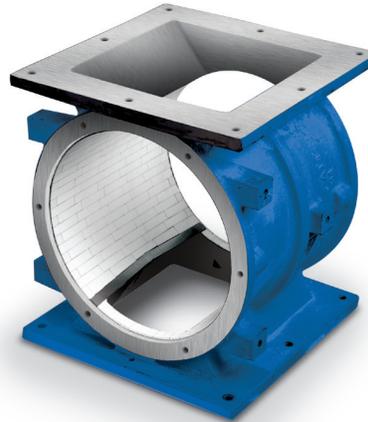




ABRASION RESISTANT

TYPE 8 ROTARY VALVE



Reaching back to our roots in pneumatic conveying through the founder of Magnum Systems' brand Smoot, Dave Smoot's goal was how to make something work better. Nearly 60 years later Magnum Systems still strives to fulfill the same concept. Our latest development is our Type 8 rotary valve.

WHY DO WE NEED TO OFFER ANOTHER ABRASION RESISTANT DESIGNED ROTARY VALVE?

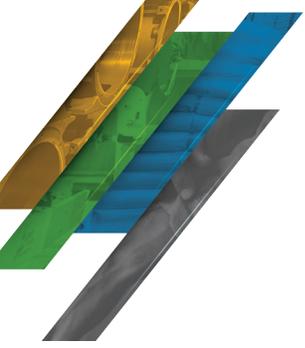
One of the most popular selling valves we manufacture is the Type 2 rotary valve (hard chrome bore and endplates, a closed end mild steel rotor, and bolt-on hardened steel tips) has been the industry go-to valve for abrasive materials, like cement and pebble lime, for years. Sometimes our customers would benefit from a more abrasive resistant valve or desired an even higher level of abrasion resistance as an insurance policy against wear. Historically these customers would purchase our Type 6 rotary valve. The Type 6 (Ni-Hard housing, closed end mild steel rotor, and stellite infused blades and rotor shroud) was our highest level of abrasion resistant design for almost 30 years. The one Achilles' heal in our type 6 design is we only offer three sizes (our FT 12, 16, and 22) and only in

a square flange pattern. With 99% of our abrasion resistant rotary valve market is the replacement of other rotary valve designs, the limitation of the 3 sizes was a hurdle.

INTRODUCING THE TYPE 8

The Type 8 utilizes a standard cast iron housing lined with ceramic and tungsten carbide tiles. We capped the standard carbon steel closed end rotor vanes and shrouds with tungsten carbide tiles. The Type 8 was born. Unlike our type 6, the Type 8 is available in every size of valve we currently make and in all our standard flange patterns. The first type 8 was introduced early 2012. We built one unit for a customer who had bought Type 2's from us every year like clockwork. The customer agreed to let us use the application as a beta test site. The beta test valve is now 4 years old and still performing. In 2013 we installed two more units in different applications and then in 2014 a few more. Our target was customers who would allow us to do comparisons between the Type 8 performance and what they had been using previously. To this day, we still do not have a single Type 8 that has "worn out" and in need of replacement.

Engineering, Design & Manufacturing
to Keep the Line Moving



ABRASION RESISTANT

CUSTOMER VERIFIED DATA COLLECTION

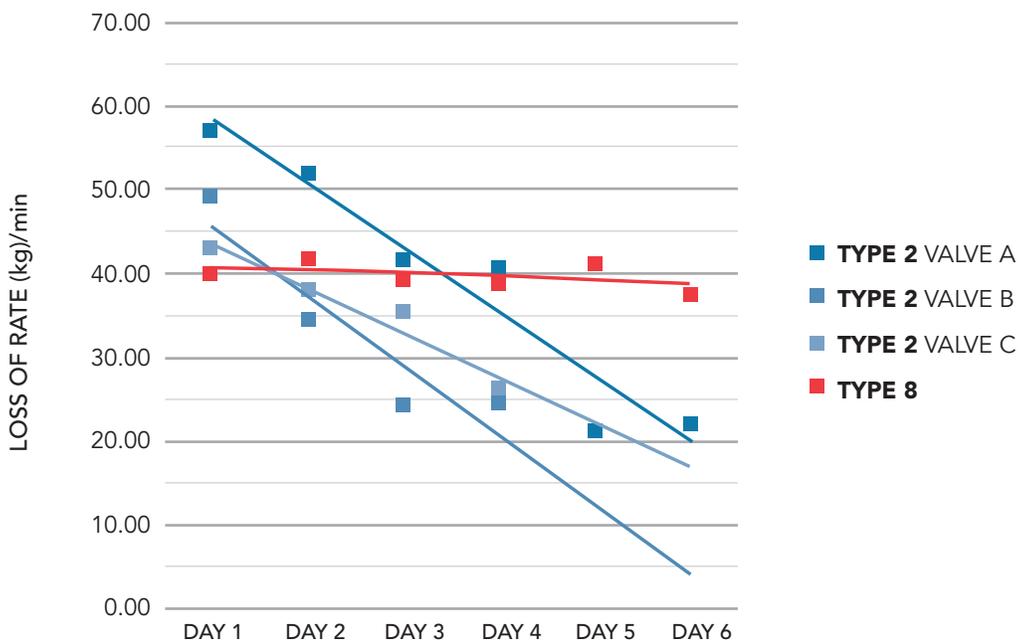
A customer who installed a dilute phase conveying system handling very fine abrasive material contacted us about supplying an abrasion resistant airlock. Due to urgency, a Type 2 was supplied, which quickly wore out and was replaced. It did not take long to determine that an airlock was not the correct solution and a dense phase system was recommended and purchased, but we had to keep the customer running until the dense phase system could be fabricated and installed.

The customer had a very flexible control system, allowing for data collection to calculate the wear on the airlock by averaging the lbs/hr the system conveyed each time the system ran. A new valve would start around 7,000 to 8,000 lbs/hr and the system would keep ahead of production until

the valve wore out to the point of only delivering 2,500 lb/hr and would need to be replaced. We had to do something more than keep building and shipping Type 2 airlocks. The customer purchased a Type 8.

The good news is that the Type 8 lasted longer than the Type 2. The bad news is that the dense phase equipment showed up and was installed PRIOR to the Type 8 going to the failure point. Shown below is the data from the last 3 Type 2 airlocks VS. the Type 8. The data is plotted with corresponding trend lines. In summary: The Type 2 airlocks were wearing out at a rate of 1,000 lbs/hr per day. The Type 8 was wearing out at a rate of 50 lbs/hr per day. A 95% improvement in wear rate.

WEAR RATE TYPE 2 VS TYPE 8



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