

## 510D Pneumatic Labyrinth Cage Type Control Valve

### OVERVIEW

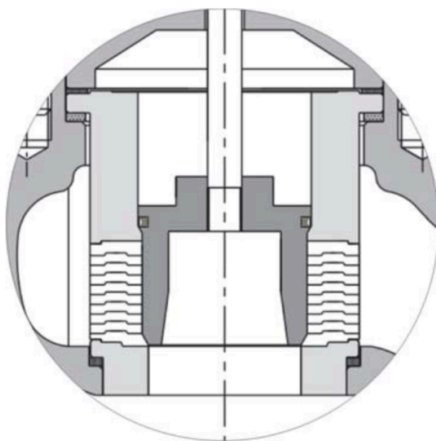
510D Model is adopts cage guided type balanced trim, movement balanced ring, fission labyrinth type standard cage, optional movement seal ring, high strength structure. The 510D series is the most pointed control valve in the high differential pressure operating mode, has used the labyrinth type valve cage, has the characteristic which multistage falls pressure, the multilayered labyrinth gasket type valve can reduce the fluid noise and eliminate cavitation as well as the multi-hole cage valve. Moreover, reduces the volume greatly, the trim in the valve are interchangeable between HCB series control valve with HSC series Cage Guided control valve.

Trim type:

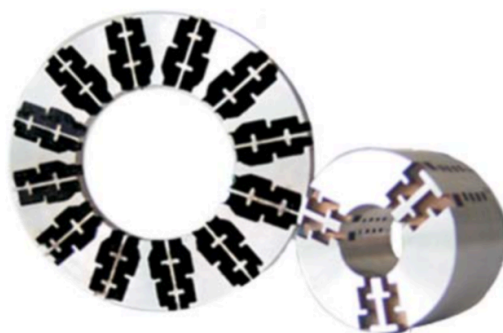
- Cage guided type
- Balance trim
- Labyrinth gasket type cage
- Normal double seated or with balanced seal ring seat type structure

Size range: 1''~ 12''

Pressure Rating: Class 150 ~ 1500#



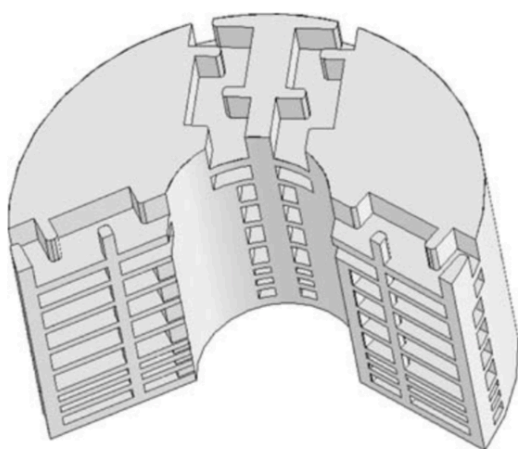
a



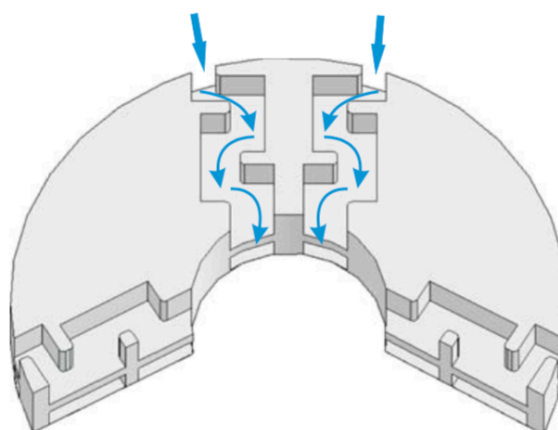
b

Application situation: The heavy load, used in normal and very bad operating mode, achieved the goal of reduces the noise and the air defense destruction and multistage falls pressure and strength the anti-cavitation ability. Specially aims at the high differential pressure of each kind of different operating mode realization many kinds of plans combination, suitable temperature arrange:-196~-+538°C, with balance seal ring-45~+415°C.

## FLOW CHANNEL EXPLANATION

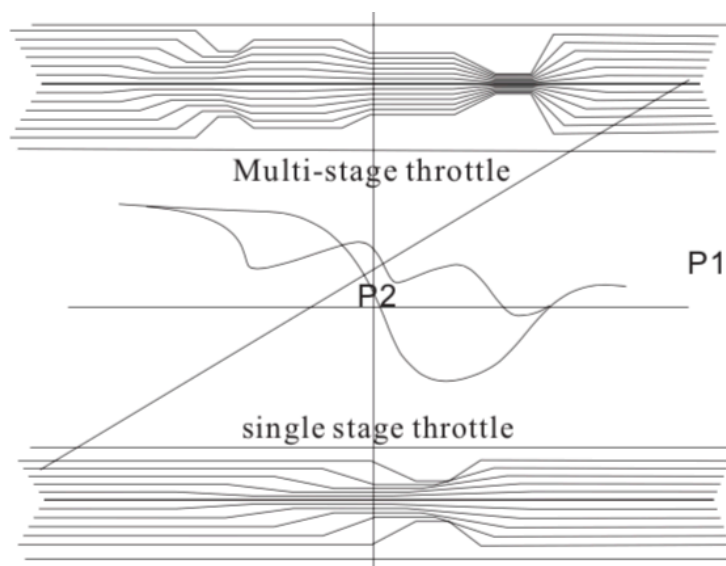


Labyrinth Gasket Structure



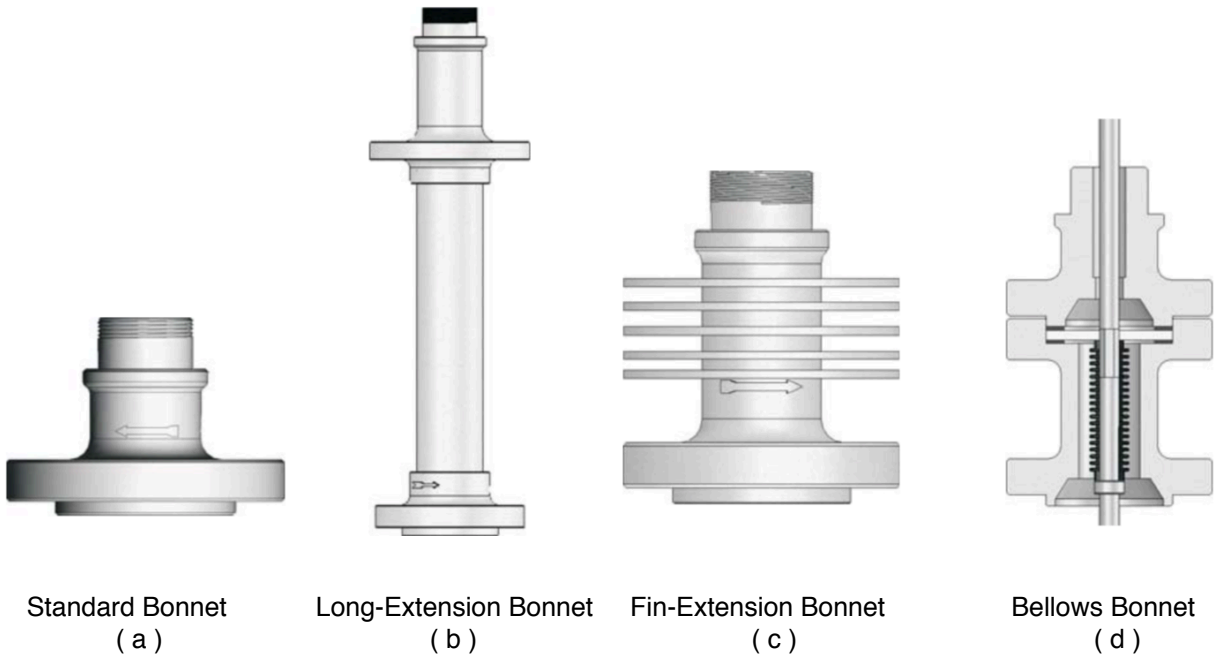
Flow Channel Characteristic

- 510D Labyrinth Cage type control valve have the special flow channel mouth design in the labyrinth gasket, establishes the flow rate characteristic of approximate equal percentage or approximate linear.
- 510D labyrinth type valve cage structure prevents the demolition of the air bubble far from the metal surface by controlling the area and extent of fluid cavitation, reduces the damage to trim form cavitation effectively, achieves the throttle, the proliferation and the inflation fluid goal, designs the enough layer to maintain the low speed of flow to realize the pressure gradually to reduce, thus reduces the noise and the pressure, prevents the cavitation effectively, reduces the influence of the flash vaporization to the trim, grew the trim service life.
- The modular design enable it to have the interchangeability with the ordinary valve trim, to satisfy with higher leakage level may adopt unbalanced plug



Ordinary and labyrinth control valve pressure comparison

## BONNET TYPE



Standard Bonnet  
( a )

Long-Extension Bonnet  
( b )

Fin-Extension Bonnet  
( c )

Bellows Bonnet  
( d )

- Standard Bonnet

Chart ( a ) is a normal bonnet standard type, can seal the body and connect to actuator, which suitable temperature range is  $-20\sim 230^{\circ}\text{C}$ .

- Fin-Extension Bonnet

Chart ( c ) is a fin-extension bonnet type, design for high temperature service, chooses special material , the maximum temperature can bear  $750^{\circ}\text{C}$ .

- Long-Extension Bonnet

Chart ( b ) is a long-extension bonnet type, design for cryogenic service, which suitable temperature is  $-196\sim 538^{\circ}\text{C}$ , this kind bonnet can protect the packing and actuator effectively, adopts the low temperature material which can bear impact and suitable for different temperature requirement.

- Bellows Bonnet

Chart ( d ) is a bellows bonnet type, which is used the situation that not allow the any leakage around the stem, when the fluid is flammable, virulent, easy to explode, radioactive, precious or fast to damage the padding, generally speaking, we'll choose bellows bonnet type, and it also uses in under the vacuum to prevent leakage.



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