



## MIL 91000 Matrix Series - Severe Service Control Valves with Multi-stage Multi-path Trim

### Standard sizes & rating

½" to 20" : ASME 150# to ASME 4500#

Seat leakage class (as per FCI 70.2)

Standard : Class V

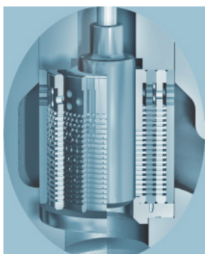
Optional : Class VI



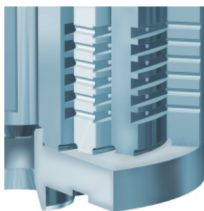
### Applications

- Boiler Feed Water Control
- Boiler Feed Pump Minimum Recirculation Control
- Re-Heater and Super Heater Spray Control
- PRDS Spray Control
- Valve for Pump test loop
- High pressure drop Steam service
- Control of any fluid where High Pressure drop, Cavitation, Noise and High Velocity is expected

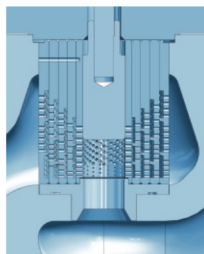
More information:  
[www.ksb-mil.com](http://www.ksb-mil.com)



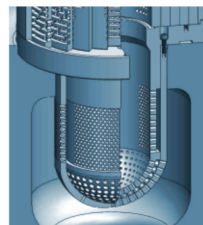
Axial flow trims



Radial flow trims



Steam / Gas trims



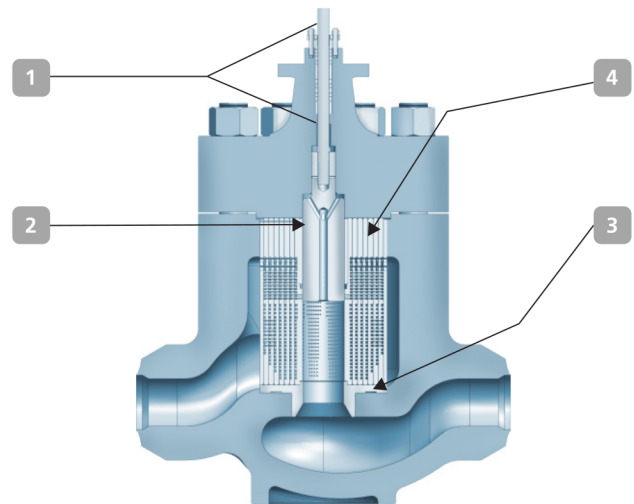
Optional double stage strainer for protection from foreign particles

# MIL 91000 Matrix Series - Severe Service Control Valves with Multi-stage Multi path Trim



CONTROLS SUPPLY CHAIN  
VALVES ACTUATORS INSTRUMENTATIONS

- 1 Multi-stage, multi-path trim design
- 2 Varying and expanding flow passage
- 3 Discrete pressure and velocity reduction stages
- 4 Tortuous, high impedance, energy absorbing 3 dimensional flow path
- 5 Near zero pressure recovery and Pressure Recovery Factor (Cf or FL) up to 0.999
- 6 Large stroke valves for precise controllability
- 7 Flow to open design for inherent dynamic stability
- 8 No cavitation damage to leading edges of the plug due to lesser pressure drop in last stages
- 9 Field proven and rugged design with as many as 50 pressure / velocity reduction stages
- 10 Low noise levels
- 11 Custom built for specific site conditions



1 Packing Box    2 Plug    3 Seat ring    4 Cage stack S/A

## Model Decodification

1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>
-	-	9	1	-	-	-
Actuator Type		Body Series		Seal Type	Body Type	Trim Type
37. Direct spring diaphragm 38. Reverse spring diaphragm 67. Direct piston cylinder 68. Reverse piston cylinder 90. Electrical actuator		91. Multi-stage, multi-path, anti-cavitation & low control valve		0. Undefined 1. Unbalanced 2. Pressure energised polymeric seal ring (static) 4. Pilot operated 5. Metallic seal ring 6. Polymeric seal ring 8. Pressure-energised polymeric seal ring with soft seat 9. Graphite seal ring	0. Undefined 1. Inline 2. Angle - Bottom entry Side outlet 3. Z type 4. Angle - Side entry Bottom outlet	1. Axial (Incompressible flow) 2. Radial (Incompressible flow) 3. Radial (Compressible flow) 4. Axial Low flow control 5. Radial Low flow control 8. Radial (Compressible Flow -FTC) 9. Radial (Incompressible Flow - FTC)

## General Data

<b>Body</b>	Type	Globe or Angle
	End connections	Flanged or Butt weld or Socket weld
	Standard flow directions	Flow to open, Flow to close* (Optional)
<b>Bonnet</b>	Type	Stud bolted with moderate extension
	Temperature range*	-29° C to 566° C (<315° C for balanced design)
<b>Gland Packing</b>	Type	Adjustable double sealed packing box with PTFE (<180° C) or Graphite (>180° C) moulded split rings
	Option	Ecolock® gland sealing system
<b>Trim</b>	Cage stack	Multi-stage and multi-path, radial or axial flow with flow stream under the plug
	Plug	Heavily guided all along its length. Unbalanced without seal ring or balanced with seal ring
	Seat	Metal seated, quick change type
	Optional	Diffuser seat ring

\* Meets the stringent Class A emission requirement as per ISO 15848

\* Special designs available for applications outside the given temperature range, consult KSB MIL