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MULTI-WAY FLOW VALVES **TYPE Z1B-M**

SCOPE OF APPLICATION:

Valves Z1B-M constitute a design variant of cage valves type Z1B. These valves, thanks to application of multi-way flow through the multi-cage throttle set, are recommended to be used for liquids, vapors and gases, in conditions where exists a threat of excessive noise, cavitation and limited flow.

CHARACTERISTICS:

- the use of multi-step active throttling, multi-way (labyrinthine) flow, throttling holes of small diameter (3 or 4 mm) causes drastic reduction of noise level, resistance to cavitation and elimination of limited flow,
- the design of these valves makes them suitable for use with compressible substances (steam, gas) or non-compressible substances (liquids),
- the maximum values of dimensional coefficients in the valves F_L , X_T , X_{Fz} allow to obtain large effects with a relatively small number of throttling structures,
- linear or modified characteristics of regulation,
- materials used for throttling components : plug and seat: full stellite (up to DN100), stelliting (DN150…250),
- set of throttling cages: 1.4057, 45HRC,
- high quality and reliability.

DESIGN AND TECHNICAL DATA

Flow coefficients Kvs: ..... according to Table No 1. Non-compressible substances
according to Table No 2. Compressible substances

Characteristics: ..... linear or modified

Flow direction: ..... FTO or FTC – Non-compressible substances
FTO – Compressible substances

Design of throttling components: ..... Drawing No 1

Ways of flow in cages: ..... Drawing No 2

Kvs	h	Dg	DN25	DN40	DN50	DN80	DN100	DN150	DN200	DN250	d
2,5	20	12,7	3								3
4			3								
6,3		20,64	2	3							
10			2	3	5						
16		25,25		3	4	5					
25		31,72		2	3	4	5				
40	38	41,25				4	5	5			
63		50,8				3	4	5	5		
80		66,7					3	4	4	4	
125	63	88,9						3	3	3	4
160								3	3	3	
200	80	107,9						2	2	2	
250									2	2	
320	100	126,95								2	

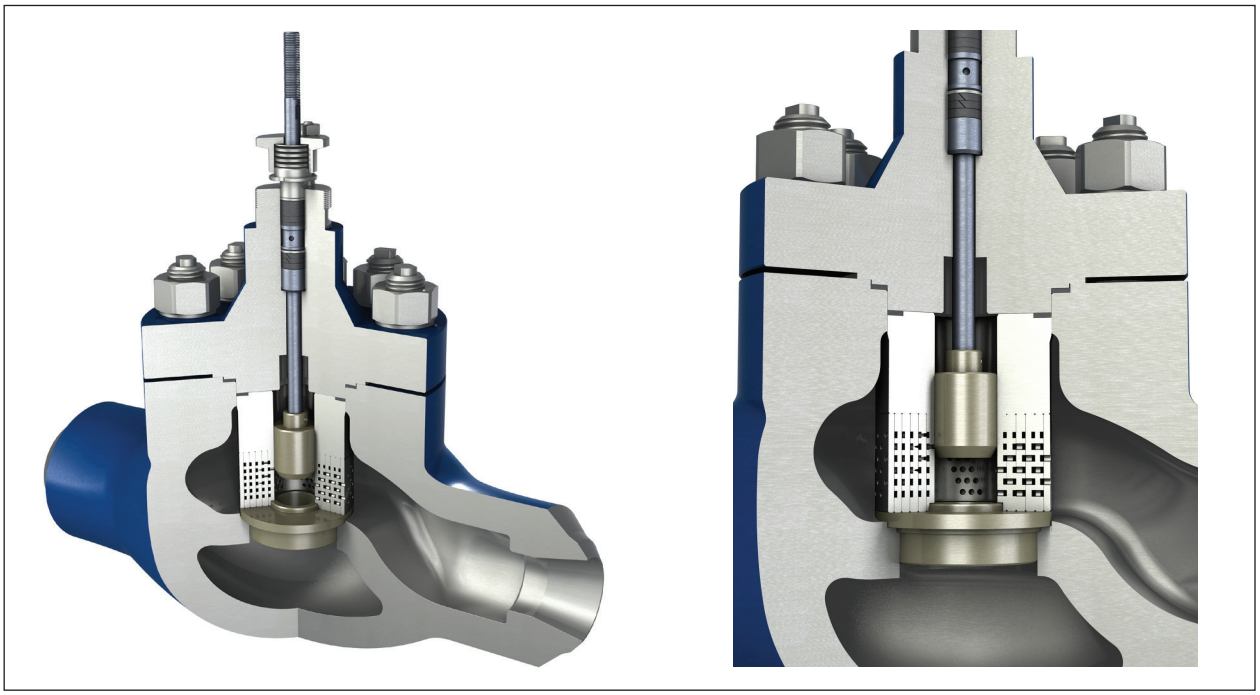
Table 1. Flow coefficients Kvs. Non-compressible substances

Kvs	h	Dg	DN25	DN40	DN50	DN80	DN100	DN150	DN200	DN250	d
2,5	20	12,7	3								3
4			3								
6,3		20,64	2	3							
10			2	3	3						
16		25,25		3	2	3					
25		31,72				3	3				
40	38	41,25				2	2	3			
63		50,8					2	2	2	2	
125	63	88,9						2	2	2	4
160									2	2	
200	80	107,9								2	
250										2	

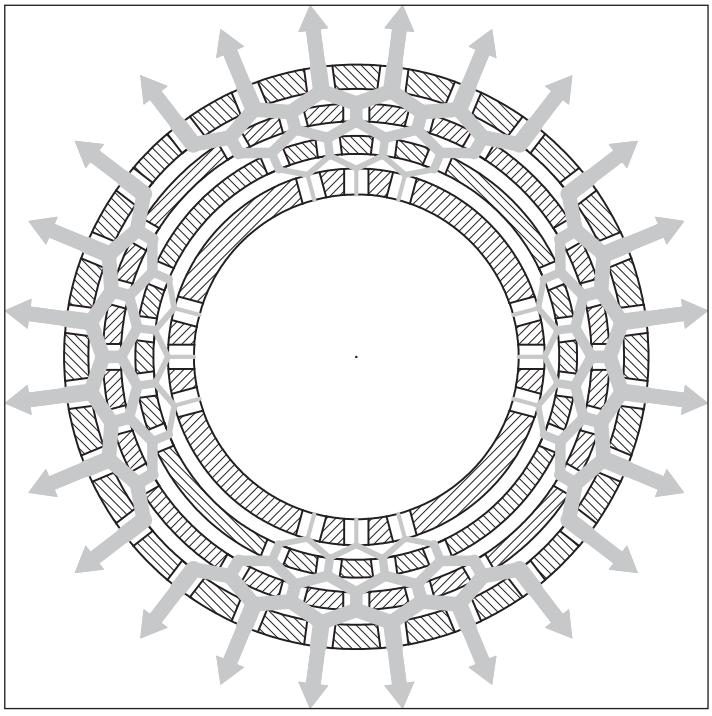
Table 2. Flow coefficients Kvs. Compressible substances

Description of abbreviations:

2...5 - maximum number of throttling stages
Kvs - flow coefficient
h - stroke [mm]
Dg - seat diameter [mm]
d - diameter of throttling holes [mm]



Drawing 1. Design of throttling components

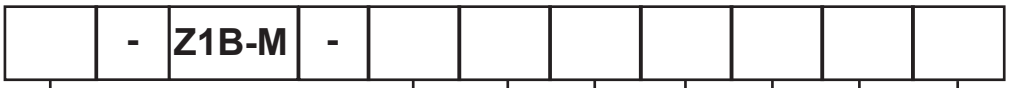


Drawing 2. Ways of flow in cages

NOTE:

Other data concerning the valves, are included in the catalogue cards Z1B, and information about the selection of pneumatic membrane-spring actuators is included in cards P/R, P1/R1.

MARKING:



Actuator type:

- pneumatic with direct action:	**P ; P1**
- pneumatic with reverse action:	**R ; R1**
- pneumatic with side-mounted handwheel:	**P1B;R1B**
- pneumatic with top-mounted handwheel:	**PN; RN**
- electric:	**E**
- manual:	**20**

Bonnet:

- standard:	**1**
- extension:	**2**
- bellow seal:	**3**
- other	**X**

Packing:

- PTFE, braided	**A**
- PTFE, V type	**B**
- PTFE, for oxygene	**C**
- graphite, braided	**D**
- graphite, expanded	**E**
- TA-Luft, PTFE	**F**
- TA-Luft, graphite	**G**

Leakage class:

- basic: class IV	**4**
- enhanced: class V	**5**
- tight (special) class VI	**6**

Valve plug:

- unbalanced	**7**
- balanced with gasket	**8**
- balanced with pilot	**9**

Choke cages:

- two	**2**
- three	**3**
- four	**4**
- five	**5**

Characteristics:

- linear	**L**
- modified	**M**
- other	**X**

Body material:

- carbon steel	**3**
- alloy steel	**4**
- stainless steel	**5**
- other	**X**

MARKING EXAMPLE:

Control valve type Z1B-M with pneumatic actuator of reverse type, complete with top-mounted handwheel, extension bonnet, packing: expanded graphite, leakage class cl.IV, with three throttling cages, plug balanced with gasket, linear characteristic, body material: stainless steel.:

RN-Z1B-M-2E483L5

Marking is shown on valve nameplate.
Additionaly, it shows:
- nominal size [DN],
- nominal pressure [PN],
- max working temperature [TS],
- max working pressure [PS],
- test pressure [PT],
- flow ratio [Kvs],
- plug stroke [H],
- plug stroke fluid group [1 or 2],
- serial number and year of manufacture.

Revision: Z1B-M/10/2016
Valid until the next revision.