

# Victaulic® StrenghThin™ 100 System

## Series E125 Installation-Ready™ Rubber-Lined Butterfly Valve for Stainless Steel Pipe



31.05



Series E125

### 1.0 PRODUCT DESCRIPTION

#### Available Sizes

- 2 – 8"/DN50 – DN200

#### Pipe Material

- Designed exclusively for use on stainless steel pipe per EN 10217-7 which features ends formed with the Victaulic StrenghThin™ 100 groove profile (see section 7.0 for Reference Materials)

#### End Preparation

- StrenghThin™ 100 Groove System

#### Maximum Working Pressure

- 232 psi/1600 kPa/16 bar
- Full working pressure for bi-directional service

#### Operating Temperature

- Dependent on seat selection from section 3.0

#### Application

- Installation-Ready™ rubber-lined butterfly valve typically for use in commercial and industrial water applications
  - HVAC (Hot and cold water)
  - Process water
  - Potable water (Approvals pending)

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	



## 1.0 PRODUCT DESCRIPTION (Continued)

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### Actuation Options

- Standard ISO 5211 mounting flange
- 10-position lever lock handle; Padlockable
- Gear operator
- Accommodates 2"/50 mm of insulation
  - Additional 2"/50 mm neck extension available when more than 2"/50 mm of insulation is needed
  - 4 ½"/120 mm-long handle wheel input shaft extension

### NOTES

- A padlockable valve refers to those valves which can be padlocked to lockout equipment for preventing inadvertent valve operation. When used in conjunction with an appropriate lockout/tagout system, multiple padlocks may be used. The valve may be padlocked either fully open or fully closed.
- A tamper-resistant option is also available, which is meant to deter theft, vandalism or other malicious activity. The handles and associated components are assembled with tamper-resistant fasteners which are designed for one-time assembly. Attempts to defeat the padlock by partial disassembly of the valve will likely result in evidence of such activity. The valve may be padlocked either fully open or fully closed.
- Handwheel input shaft extensions are not for use with chainwheels.

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## 2.0 CERTIFICATION/LISTINGS

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Compliant with Closure/Seat Leakage Rate A per EN 12266-1, EN 1074-1, EN 1074-2 and ISO 5208.

Product designed and manufactured under the Victaulic Quality Management System, as certified by LPCB in accordance with ISO-9001.

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## 3.0 SPECIFICATIONS – MATERIAL

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**Housing:** Ductile iron conforming to ASTM A536 Grade 65-45-12.

**Housing Coating: (specify choice)**

Standard: Hot dipped galvanized.

Optional: Plascoat.

**Body:** Ductile iron conforming to ASTM A536 Grade 65-45-12.

**Body Coating: (specify choice)**

Standard: Hot dipped galvanized.

Optional: Plascoat.

**Seat:** Victaulic EPDM

(Light green stripe color code). Temperature range –30° to +180°F/–34°C to +82°C. NOT RECOMMENDED FOR PETROLEUM SERVICES OR STEAM SERVICES.

### NOTE

- Low temperature use is dependent upon system operating characteristics. Contact Victaulic for additional information on low temperature applications.

**Bolts/Nuts:** Carbon steel oval neck track bolts meeting the mechanical property requirements of ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel heavy hex nuts meeting the mechanical property requirements of ASTM A563M Class 9 (metric – hex nuts). Track bolts and heavy hex nuts are zinc electroplated per ASTM B633 ZN/FE5, finish Type III (metric).

### 3.0 SPECIFICATIONS – MATERIAL (Continued)

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**Disc:** 316 stainless steel conforming to ASTM A351 Grade CF8M.

**Shaft:** AISI 416 stainless steel.

**Handle: Lever Lock**

Ductile iron conforming to ASTM A536, Grade 65-45-12, with carbon steel latch plate and zinc-plated carbon steel fasteners, infinitely variable and padlockable. Optionally available with tamper-resistant hardware.

**Handle Coating: (specify choice)**

Standard: Hot dipped galvanized.

Optional: Plascoat.

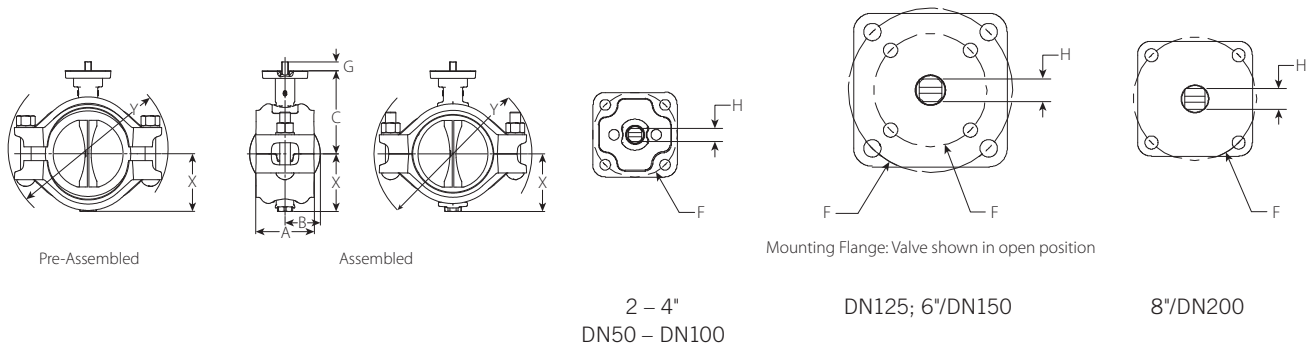
**Gear Operator: (specify choice)**

Handwheel

Handwheel with chainwheel

## 4.0 DIMENSIONS

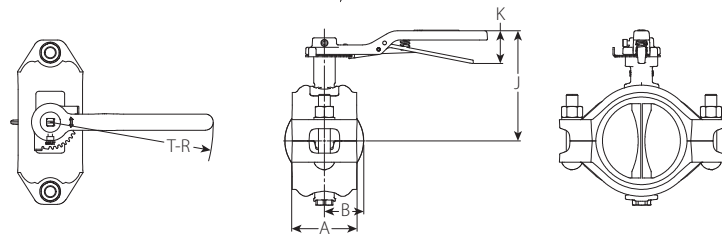
### Series E125 Installation-Ready™ Butterfly Valve – Bare Valve



Size		Pipe End Separation	Bolt/Nut		Dimensions										Weight
Nominal inches DN	Actual Outside Diameter inches mm	Allowable inches mm	Qty.	Coupling Bolt Size mm	Pre-Assembled (Installation- Ready™ Condition)		Joint Assembled		A inches mm	B inches mm	C inches mm	F ISO 5211 Flange Designation inches mm	G inches mm	H (sq) inches mm	Approx. (Each) lb kg
					X inches mm	Y inches mm	X inches mm	Y inches mm							
2 DN50	2.375 60.3	1.92 49	2	M12 x 76	2.38 60	6.58 167	2.38 60	6.48 165	3.95 100	-	4.55 116	F07	0.64 16	0.35 9	7.4 3.4
DN65	3.000 76.1	1.92 49	2	M12 x 76	2.38 60	7.29 185	2.38 60	7.18 182	3.95 100	-	4.81 122	F07	0.64 16	0.35 9	9.8 4.4
3 DN80	3.500 88.9	2.41 61	2	M16 x 83	3.06 78	9.07 230	3.06 78	8.91 226	4.36 111	2.18 55	5.17 131	F07	0.64 16	0.43 11	12.9 5.9
4 DN100	4.500 114.3	2.41 61	2	M16 x 83	3.54 90	10.23 260	3.54 90	10.1 257	4.4 112	2.2 56	5.67 144	F07	0.64 16	0.43 11	16.6 7.5
DN125	5.500 139.7	2.80 71	2	M20 x 108	4.27 109	12.26 311	4.27 109	12.44 316	4.80 122	2.46 63	6.37 162	F07	0.79 20	0.55 14	26.6 12.1
											F10				
6 DN150	6.625 168.3	2.82 72	2	M20 x 127	4.74 120	13.17 335	4.74 120	12.99 330	4.83 123	2.90 74	6.83 174	F07	0.79 20	0.55 14	30.7 13.9
											F10				
8 DN200	8.625 219.1	3.37 86	2	M22 x 140	6.23 158	15.51 394	6.23 158	15.44 392	5.83 148	3.76 96	7.93 201	F10	0.83 21	0.67 17	54.1 24.6

## 4.1 DIMENSIONS

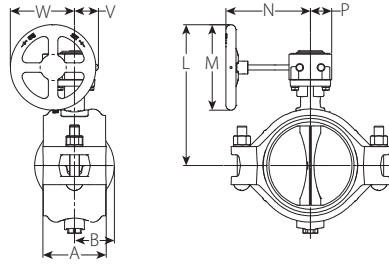
### Series E125 Installation-Ready™ Butterfly Valve – With Handle



Size		Pipe End Separation	Bolt/Nut	Dimensions										Weight
Nominal inches DN	Actual Outside Diameter inches mm	Allowable inches mm	Qty.	Coupling Bolt Size mm	Pre-Assembled (Installation- Ready™ Condition)		Joint Assembled		A inches mm	B inches mm	T-R inches mm	J inches mm	K inches mm	Approx. (Each) lb kg
					X inches mm	Y inches mm	X inches mm	Y inches mm						
2 DN50	2.375 60.3	1.92 49	2	M12 x 76	2.38 60	6.58 167	2.38 60	6.48 165	3.95 100	–	7.00 178	6.00 152	1.93 49	8.1 3.7
DN65	3.000 76.1	1.92 49	2	M12 x 76	2.38 60	7.29 185	2.38 60	7.18 182	3.95 100	–	7.00 178	6.00 152	1.93 49	10.5 4.8
3 DN80	3.500 88.9	2.41 61	2	M16 x 83	3.06 78	9.07 230	3.06 78	8.91 226	4.36 111	2.18 55	9.00 229	6.37 162	2.22 56	14.3 6.5
4 DN100	4.500 114.3	2.41 61	2	M16 x 83	3.54 90	10.23 260	3.54 90	10.1 257	4.4 112	2.2 56	9.00 229	6.87 174	2.22 56	18.0 8.2
DN125	5.500 139.7	2.80 71	2	M20 x 108	4.27 109	12.26 311	4.27 109	12.44 316	4.80 122	2.46 63	12.00 305	7.72 196	2.42 61	28.1 12.8
6 DN150	6.625 168.3	2.82 72	2	M20 x 127	4.74 120	13.17 335	4.74 120	12.99 330	4.83 123	2.90 74	12.00 305	8.18 208	2.42 61	32.2 14.6
8 DN200	8.625 219.1	3.37 86	2	M22 x 140	6.23 158	15.51 394	6.23 158	15.44 392	5.83 148	3.76 96	14.00 356	9.53 242	2.72 69	55.9 25.4

## 4.2 DIMENSIONS

### Series E125 Installation-Ready™ Butterfly Valve – With Gear Operator



Size		Pipe End Separation	Bolt/Nut		Dimensions												Weight
Nominal inches DN	Actual Outside Diameter inches mm	Allowable inches mm	Qty.	Coupling Bolt Size mm	Pre-Assembled (Installation- Ready™ Condition)		Joint Assembled		A inches mm	B inches mm	L inches mm	M inches mm	N inches mm	P inches mm	V inches mm	W inches mm	Approx. (Each) lb kg
					X inches mm	Y inches mm	X inches mm	Y inches mm									
2 DN50	2.375 60.3	1.92 49	2	M12 x 76	2.38 60	6.58 167	2.38 60	6.48 165	3.95 100	-	7.52 191	3.94 100	5.16 131	1.65 42	1.89 48	3.66 93	9.9 4.5
DN65	3.000 76.1	1.92 49	2	M12 x 76	2.38 60	7.29 185	2.38 60	7.18 182	3.95 100	-	7.80 198	3.94 100	5.16 131	1.65 42	1.89 48	3.66 93	12.3 5.6
3 DN80	3.500 88.9	2.41 61	2	M16 x 83	3.06 78	9.07 230	3.06 78	8.91 226	4.36 111	2.18 55	8.20 208	3.94 100	5.16 131	1.65 42	1.89 48	3.27 83	15.2 6.9
4 DN100	4.500 114.3	2.41 61	2	M16 x 83	3.54 90	10.23 260	3.54 90	10.1 257	4.4 112	2.2 56	8.70 221	3.94 100	5.16 131	1.65 42	1.89 48	3.27 83	18.9 8.6
DN125	5.500 139.7	2.80 71	2	M20 x 108	4.27 109	12.26 311	4.27 109	12.44 316	4.80 122	2.46 63	10.63 270	5.00 127	6.89 175	2.20 56	2.24 57	4.49 114	29.9 13.6
6 DN150	6.625 168.3	2.82 72	2	M20 x 127	4.74 120	13.17 335	4.74 120	12.99 330	4.83 123	2.90 74	11.09 282	5.00 127	6.89 175	2.20 56	2.24 57	4.49 114	34.0 15.4
8 DN200	8.625 219.1	3.37 86	2	M22 x 140	6.23 158	15.51 394	6.23 158	15.44 392	5.83 148	3.76 96	12.98 330	6.50 165	7.17 182	2.20 56	2.24 57	5.20 132	61.1 27.7

### 4.3 DIMENSIONS

#### Accessories

##### Chainwheels

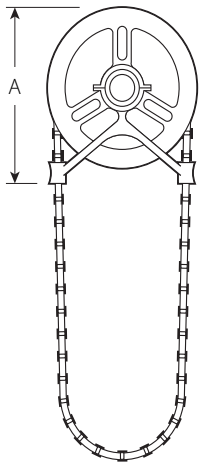
Chainwheels are mounted to the gear operator handwheels. Sprocket rim and guide arms are made of cast aluminum. Chain is galvanized steel.

##### HOW TO ORDER:

Specify type valve and operator by valve numbering system shown on page 10.

Always specify length of chain required.

Handwheel input shaft extensions are not for use with chainwheels. Chainwheels use an industry-standard weldless chain.



Chainwheel and Guide  
with Safety Cable Kit

Size		Sprocket Size	Chain Trade Size	Chainwheel Size (Diameter)	Dimensions	Weight
Nominal inches DN	Actual Outside Diameter inches mm				A inches mm	Approximate (Each) lb kg
2 – 4 DN50 – DN100	2.375 – 4.500 60.3 – 114.3	0	2	4.00 102	4.63 118	2.00 0.9
DN125 – DN150	5.500 – 6.625 139.7 – 168.3	1	1/0	5.75 146	6.38 162	4.00 1.8
8 DN200	8.625 219.1	1 ½	1/0	7.50 190	7.75 197	5.00 2.3

For insulation and locking device, contact Victaulic for details.

## 5.0 PERFORMANCE

### Series E125 Installation-Ready™ Butterfly Valve

#### Flow Characteristics

C<sub>v</sub>/K<sub>v</sub> values for flow of water at +60°F/+16°C with various disc positions are shown in the table below.

Formulas for C<sub>v</sub>/K<sub>v</sub> values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

**Where:**

Q = Flow (GPM)  
 ΔP = Pressure Drop (psi)  
 C<sub>v</sub> = Flow Coefficient

$$\Delta P = \frac{Q^2}{K_v^2}$$

$$Q = K_v \times \sqrt{\Delta P}$$

**Where:**







Q = Flow (m<sup>3</sup>/hr)  
 ΔP = Pressure Drop (Bar)  
 K<sub>v</sub> = Flow Coefficient

Size		Full Open C <sub>v</sub> K <sub>v</sub>
Nominal Size inches DN	Actual Outside Diameter inches mm	
2 DN50	2.375 60.3	149 128
DN65	3.000 76.1	273 235
3 DN80	3.500 88.9	298 256
4 DN100	4.500 114.3	653 562
DN125	5.500 139.7	858 738
6 DN150	6.625 168.3	1667 1434
8 DN200	8.625 219.1	2695 2318

**NOTE**

+ Contact Victaulic for more information.

#### Flow Coefficients

Size		Flow Coefficients					
Nominal Size inches DN	Actual Outside Diameter inches mm	Degrees From Closed					
		90 	70 	60 	50 	40 	30 
		C <sub>v</sub> K <sub>v</sub>	C <sub>v</sub> K <sub>v</sub>	C <sub>v</sub> K <sub>v</sub>	C <sub>v</sub> K <sub>v</sub>	C <sub>v</sub> K <sub>v</sub>	C <sub>v</sub> K <sub>v</sub>
2 DN50	2.375 60.3	149 128	114 98	74 64	42 36	24 21	11 10
DN65	3.000 76.1	273 235	216 186	138 118	76 65	43 37	22 19
3 DN80	3.500 88.9	298 256	183 158	112 97	64 55	36 32	23 20
4 DN100	4.500 114.3	653 562	383 329	238 204	134 116	69 59	32 28
DN125	5.500 139.7	858 738	585 503	366 314	216 186	117 101	53 45
6 DN150	6.625 168.3	1667 1434	1122 965	659 567	406 350	235 202	111 95
8 DN200	8.625 219.1	2695 2318	2007 1726	1349 1160	854 734	517 444	269 231

**NOTE**

+ Contact Victaulic for more information.



## 5.1 PERFORMANCE

### Series E125 Installation-Ready™ Butterfly Valve

#### Torque Requirements

Size		Torque - Inch Pounds/Newton Meters				
Nominal inches DN	Actual Outside Diameter inches mm	Differential Pressure – psi/bar				
		50/3	100/7	150/10	200/14	232/16
2	2.375	52	64	75	87	94
DN50	60.3	6	7	8	10	11
	3.000	86	100	114	128	137
DN65	76.1	10	11	13	14	15
3	3.500	134	172	201	232	242
DN80	88.9	15	19	23	26	27
4	4.500	190	229	269	309	334
DN100	114.3	21	26	30	35	38
	5.500	409	544	680	815	901
DN125	139.7	46	62	77	92	102
6	6.625	542	663	782	904	982
DN150	168.3	61	75	88	102	111
8	8.625	862	982	1103	1224	1307
DN200	219.1	97	111	125	138	148

#### NOTE

+ Contact Victaulic for more information.

#### Source:

These torque values were derived from test data with valves in water at ambient temperatures with EPDM seals. For other material and service conditions, apply a suitable service factor.

#### Torque Factors:

All torque values are for normal conditions (i.e., the valve is operated at least once a quarter, disc corrosion is expected to be minor, the media is clean and nonabrasive, and the chemical effects upon the elastomer are minor).

#### Typical Fluid Torque Factors Commonly Used in the Industry:

Water: 1.0; Lubricated service: 0.8; Dry gases: Lubricated nitrile "T" seat seals may be specified for dry gases wherever chemically appropriate. See material torque factor below.

#### Material Torque Factors:

EPDM = 1.0

#### Cycling Factor:

Valve torque will typically increase and actuator output decrease as the valve is cycled. A factor of 1.5 should be applied when total valve cycles are expected to exceed 5,000.

#### Actuation Factor:

A factor should be added to account for potential drift in the output of the actuator due to actuator performance, misalignment or external inputs (i.e., air or power supply). For this, a factor of up to 1.25 may be used.

#### Combining Torque Factors:

When multiple torque factors apply, they are combined by multiplying them. Example: For an EPDM seal and a 5,000-cycle factor, the combined factor would be 1.0 X (1.5) = 1.5.

#### NOTES

- Under certain high flow conditions, the hydrodynamic torque can exceed the seating torque. Large butterfly valves are not recommended for use in a free discharge condition, such as filling an empty line with fluid or draining a system at the full-rated pressure.
- Contact Victaulic for other services.

## 5.2 PERFORMANCE

### Series E125 Valve Numbering System

Type	Actual OD in/mm	Size Code	Series	Disc/Stem	Seat	Operator
V	2.375/60.3	020	E125	X - CF8M/416SS	E - EPDM	0 - Bare 2 - 10-Position lever lock handle 3 - Gear operator with hand wheel 6 - Gear operator with chain wheel
	3.000/76.1	761				
	3.500/88.9	030				
	4.500/114.3	040				
	5.500/139.7	139				
	6.625/168.3	060				
	8.625/219.1	080				

## 5.3 PERFORMANCE

### Series E125 Installation-Ready™ Butterfly Valve

#### Important Installation Considerations

Always refer to the I-120 Installation and Gear Operator Conversion Manual for complete installation instructions.

When using the Series E125 Installation-Ready™ Butterfly Valve for throttling service, Victaulic recommends positioning the disc no less than 30 degrees open. For best results, the disc should be between 30 and 70 degrees open; this is dependent on the flow requirements/characteristics for the piping system. High pipeline velocities and/or throttling with the disc less than 30 degrees open may result in noise, vibration, cavitation, erosion, and/or loss of control. Contact Victaulic regarding throttling services.

Victaulic recommends limiting the flow velocities for water service to 13.5 feet/second (4 meters/second). Contact Victaulic before installing this valve when higher flow velocities are necessary or specified.






Victaulic recommends good piping practices by installing the valve five pipe diameters downstream of sources of irregular flow, such as pumps, elbows and control valves. If not practical due to space constraints, the system should be designed to locate and orient the valve to minimize the impact to dynamic torque and valve life.



Do not install butterfly valves into the system with the disc in the fully open position. Exposed disc may be damaged and prevent proper function of the valve.

## 6.0 NOTIFICATIONS

**⚠ WARNING**

- Read and understand all instructions before attempting to install any Victaulic piping products.
- Always depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.
- Wear safety glasses, hardhat, and foot protection.
- **DO NOT USE AN INSTALLATION-READY™ BUTTERFLY VALVE IN DEAD-END SERVICE OR FOR A SYSTEM LEAK TEST IN A DEAD-END SERVICE.**
- **ALWAYS VERIFY THAT MATING COMPONENTS WITH THE CORRECT GROOVE PROFILE ARE BEING USED WITH THE VALVE.**
- **DO NOT LOOSEN OR TIGHTEN HARDWARE WHEN THE VALVE IS PRESSURIZED.**
- The system designer is responsible for verifying suitability of mating component materials with the intended fluid media.
- The effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on mating component materials shall be evaluated to confirm system life will be acceptable for the intended service.

Failure to follow these instructions could result in death or serious personal injury and property damage.

## 7.0 REFERENCE MATERIALS

[17.01: Victaulic Stainless Steel Pipe End Preparation](#)

[24.01: Victaulic Pipe Preparation Tools](#)

[25.13: Victaulic StrengThin™ 100 Groove Specifications](#)

[I-120: Victaulic Installation and Operator Conversion Instructions - Series E125 Installation-Ready™ Butterfly Valve](#)

### User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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### Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

### Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at [www.victaulic.com](http://www.victaulic.com).

### Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

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