

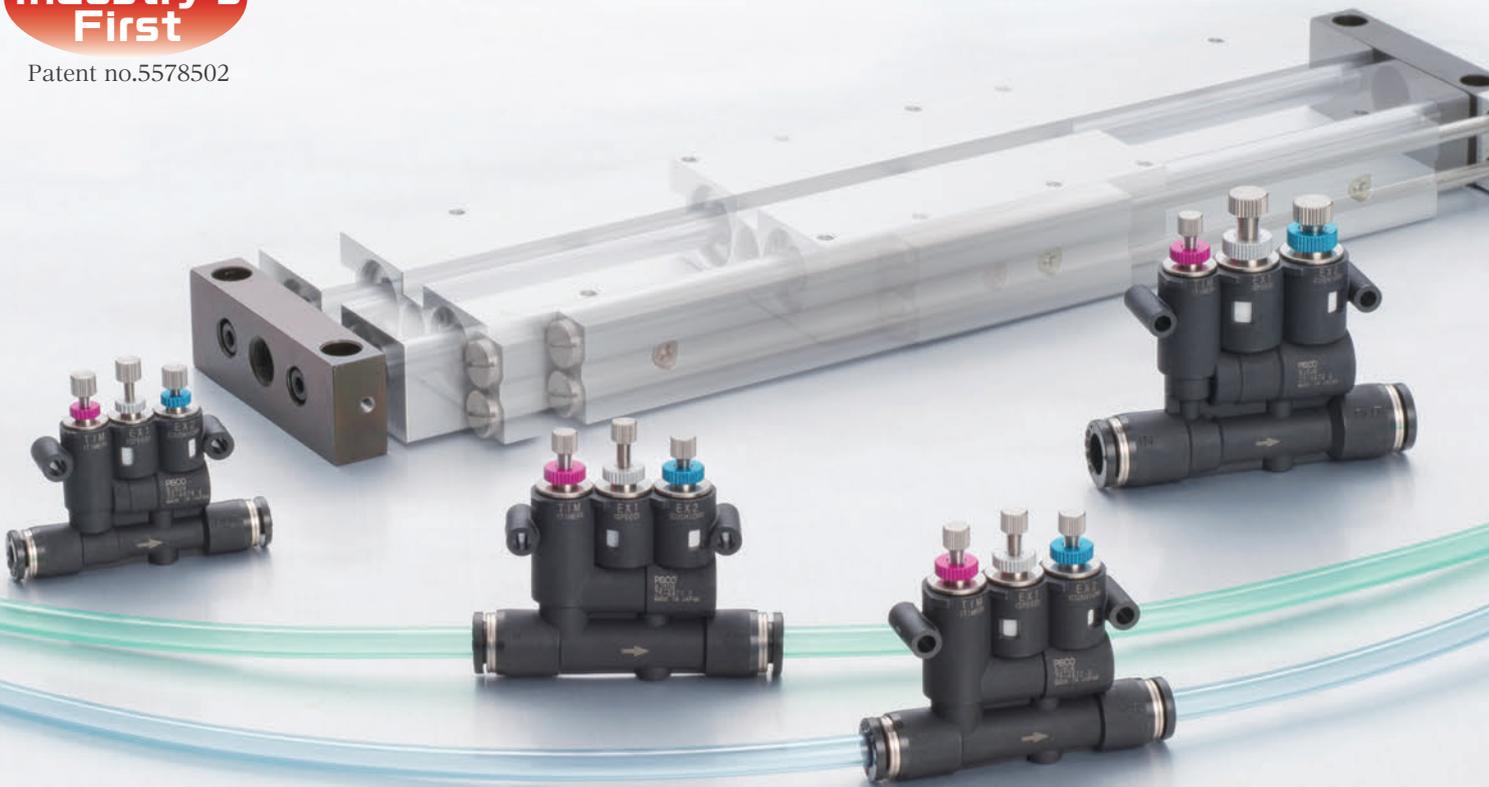
**Q** Be bothered by installation or replacement of a shock absorber?

**A** There is a solution with Pisco's

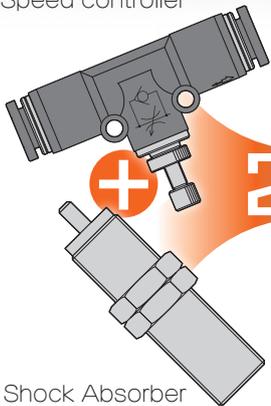
## 2-stage Speed Controller

**Industry's First**

Patent no.5578502

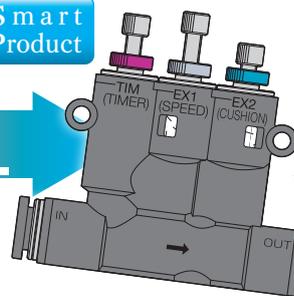


Speed controller



Shock Absorber

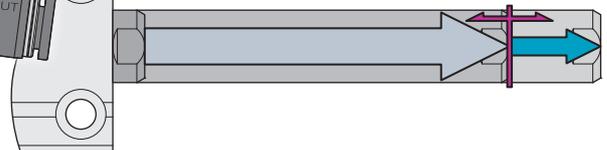
Smart Product



By 3 needles,

**Initial speed** & **2nd speed** & **Shift timing**  
 [Cyl. speed] [cushion/braking] [brake timing]

are adjusted separately.



**Durability** is about **3 times** of a normal shock absorber mounted on a cylinder.

## Feature

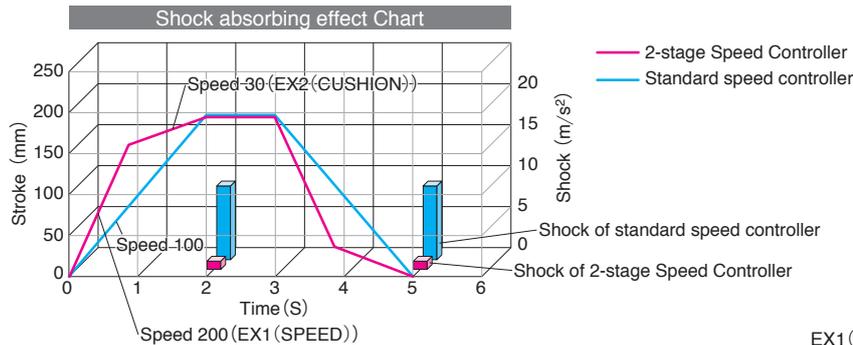
### Shock absorber is not required.

With realized 2-stage exhaust flow adjustment, a similar control as a shock absorber becomes possible.

### Adjustment of shock absorbing property is possible by the adjustment of 2nd speed (EX2 (CUSHION)) flow rate.

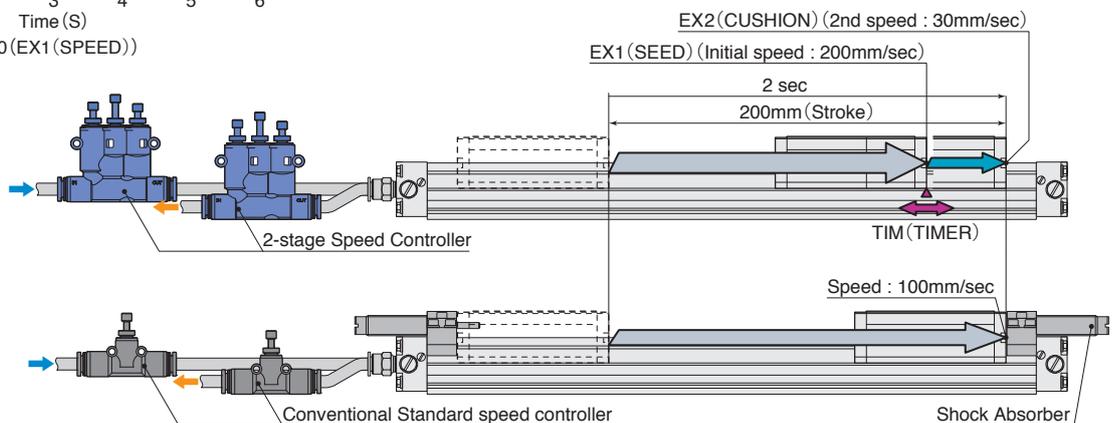
2-stage speeds can be controlled by individual needles.

e.g. Reducing the shock to 1/9 (reducing speed to 1/3) while keeping the same cycle time.



Easily understandable video about the characteristics of 2-Stage Speed controller is available.

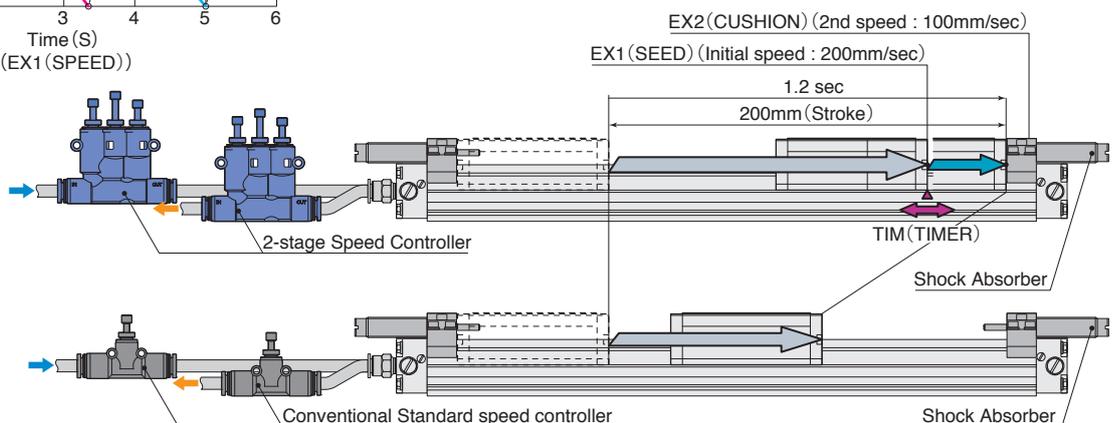
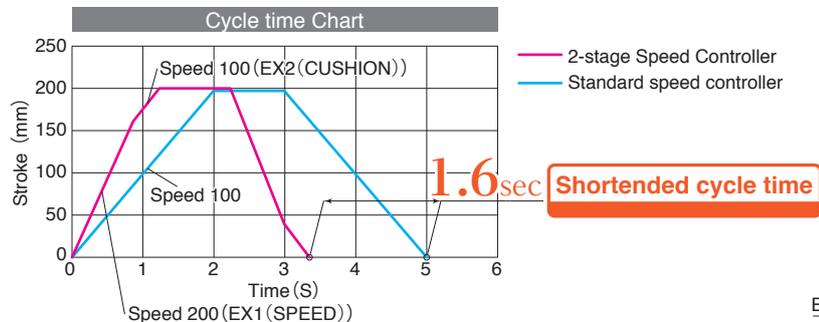
<http://en.pisco.co.jp/product/detail/b/b25#mmJy63SMTbk>



*It is possible to shorten traveling (cycle) time as long as conventional shock absorbing (cushion) property is same.\**

\*Conventional shock absorbing property means shock absorbing by reducing the cylinder speed by a cylinder mounting type shock-absorber near the stroke end.

e.g. Actuate 80% of cylinder stroke at the speed of twice as fast as the regular speed of a conventional standard speed controller, then actuate the last 20% of the stroke at the regular speed.



## Speed shift timing is adjustable.

The speed shifting (brake) timing from EX1 to EX2 can be set at the position where the shock absorber does not work. Intermediate stop of cylinder is possible.

## Fixing methods are selectable.

· Direct mounting



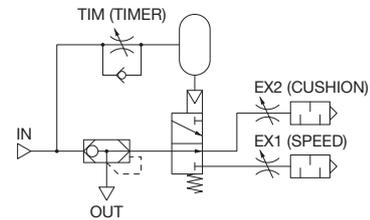
· Fixing with a bracket



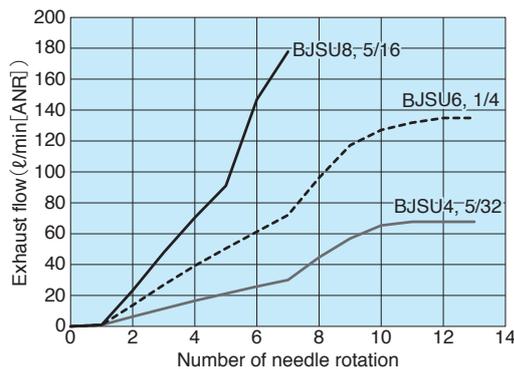
## Specifications

Fluid medium	Air
Operating pressure range	0.2~1.0MPa
Operating temp. range	0~60°C (No freezing)

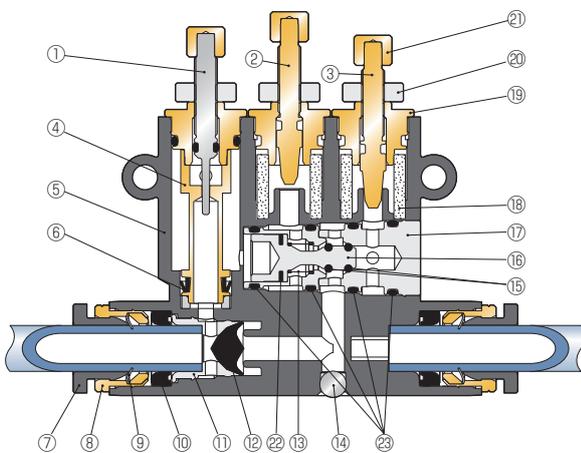
## Pneumatic Symbol



## Exhaust flow characteristic (Air supply : 0.5MPa)



## Construction



No.	Part	Material
①	Timer (TIM) needle	Special stainless steel
②	Speed (EX1) needle	Electroless nickel-plated brass
③	Cushion (EX2) needle	Electroless nickel-plated brass
④	Inner ring	Electroless nickel-plated brass
⑤	Resin body	PBT
⑥	Diaphragm	HNBR
⑦	Release-ring	POM
⑧	Guide-ring	Electroless nickel-plated brass
⑨	Lock-claws	Stainless steel
⑩	Elastic-sleeve	NBR
⑪	Valve retainer	Aluminum
⑫	Valve element	HNBR
⑬	Spring	Stainless steel
⑭	Stopper ball	Stainless steel
⑮	Main spool O-ring	HNBR
⑯	Main valve spool	Aluminum
⑰	Main spool guide	Aluminum
⑱	Silencer	PVF
⑲	Needle guide	Electroless nickel-plated brass
⑳	Lock nut	Aluminum
㉑	Knob	Electroless nickel-plated brass
㉒	Spool seal packing	HNBR: BJSU4,5/32, NBR: BJSU6,1/4 & BJSU8,5/16
㉓	Fixed O-ring	NBR

## Model Designation (Example)

**BJS** ①   **U** ②   **4** ③ → ③. Tube dia.

	mm			inch		
Code	<b>4</b>	<b>6</b>	<b>8</b>	<b>5/32</b>	<b>1/4</b>	<b>5/16</b>
Tube dia. (mm)	ø4	ø6	ø8	ø3.97	ø6.35	ø7.94
Applicable max. cylinder bore(mm)	ø20	ø25	ø32	ø20	ø25	ø32

\*The above max. cylinder bore sizes are configured for the condition of 0.5MPa air supply and cylinder speed of 500 mm /sec.

\*Release ring color: Black for mm size, White for inch size.

②. Type

Code	<b>U</b>
Type	Union Straight

①. 2-stage Speed Controller

## Model Designation of Accessory (Example)

**BJSB** ①   **4** ② → ②. Tube dia.

Code	<b>4</b>	<b>6</b>	<b>8</b>
Applicable model codes	BJSU4 BJSU5/32	BJSU6 BJSU1/4	BJSU8 BJSU5/16

①. Bracket for 2-stage Speed Controller

## Detailed Safety Instructions

### ⚠ Warning

Adjust a speed of an actuator by referring to Speed adjusting method(Page.6).Inappropriate procedure may result in rapid action or jumping out of an actuator under incorrect procedure.

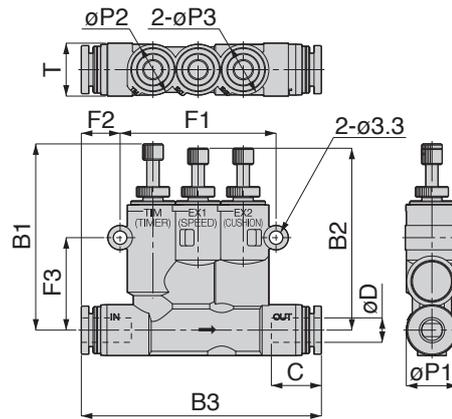
### ⚠ Cautions

1. Since the speed controllers is designed to tolerate some leakage, avoid using on an application requiring complete air-tightness.
2. During braking ( shock absorbing ) process, thrust of a cylinder is reduced by back pressure till the residual air in cylinder is exhausted completely.
3. Air leak around a cylinder may affect the speed adjustment.
4. Do not block the exhaust ports during the adjustment and operation.
5. In the following cases, please be aware that the set-up shock absorbing may not function properly as desired.
  - In a case where the residual air pressure in the cylinder is exhausted and the cylinder position changes for example by its own weight, the shock absorbing function may not work properly on first stroke when supplying pressurized air again.
  - \*BJSU uses the air in the product or cylinder as same as speed controller. Therefore, for the first stroke without back pressure in the cylinder, the above situation may be observed.
  - Depending on the performance of cylinder (such as a piston sliding characteristic, air tightness of a cylinder), shock absorbing operation may not function satisfactorily: the shock absorbing start point is possibly deviated.
6. The timing of speed shift (brake) may change from the initial setting, depending on the operating conditions (fluid medium characteristics and standby time, etc.). Adjust TIM needle with enough safety margin based on the actual operating conditions and readjust it if necessary.
7. Momentary chattering of a main valve spool due to the back pressure from exhaust may cause noise, depending on the conditions such as supply pressure, settings of EX1 and EX2 needles.

## Outline Dimensional Drawing

### BJSU Union Straight

CAD2D&3D



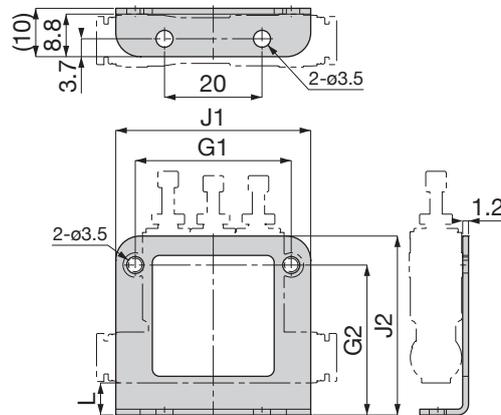
Unit : mm

Model code	Tube O.D. $\phi D$	B1		B2		B3	$\phi P1$	$\phi P2$	$\phi P3$	Tube end C	F1	F2	F3	T	Eff. sect Area (mm <sup>2</sup> )			WT. (g)	Price (¥)
		max.	min.	max.	min.										IN→OUT	OUT→EX1	OUT→EX2		
BJSU4	4	38.4	34.7	37.1	34.4	51.1	10	10	10	14.9	32	9.2	18.9	10.4	2.6	1.0	1.0	21	4,500
BJSU6	6	47	41.9	44.7	40.8	58.5	12.5	12.5	12.5	17	38	9.5	22.7	13	4.5	2.0	2.0	33	4,700
BJSU8	8	53.8	48.7	52	49	65.6	14.5	12.5	14.5	18.1	43	11.1	29.5	15	5.0	2.6	2.6	52	4,900
BJSU5/32	5/32	38.4	34.7	37.1	34.4	51.1	10	10	10	14.9	32	9.2	18.9	10.4	2.6	1.0	1.0	21	4,500
BJSU1/4	1/4	47	41.9	44.7	40.8	58.5	12.5	12.5	12.5	17	38	9.5	22.7	13	4.5	2.0	2.0	33	4,700
BJSU5/16	5/16	53.8	48.7	52	49	65.6	14.5	12.5	14.5	18.1	43	11.1	29.5	15	5.0	2.6	2.6	52	4,900

\*The release-ring color of mm size tube is black.(color of inch size tube is white.)

## Outline Dimensional Drawing of Accessory

### BJSB Bracket

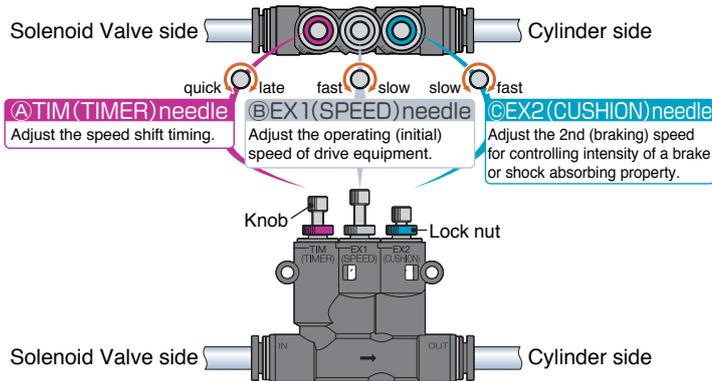


Unit : mm

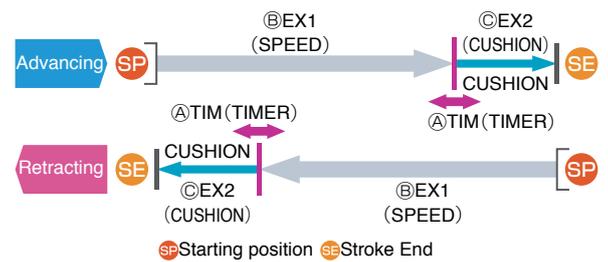
Model code	G1	G2	J1	J2	L	WT. (g)	Applicable Model	Price (¥)
BJSB4	32	31	40	37	7.1	9.8	BJSU4, BJSU5/32	450
BJSB6	38	36.5	45	44	7.55	13	BJSU6, BJSU1/4	450
BJSB8	43	43.5	51	51	6.75	16	BJSU8, BJSU5/16	450

## Speed adjusting method

### Function of each needle



### Controlling details



\*For forwarding and returning motion of the cylinder, 1 each BJSU speed controller is necessary in above mentioned control.

### Speed adjusting method

- Install the product. Connect tube from cylinder port to the OUT side of the product.
- Before carrying out the speed adjustment, fully open **TIM** and **EX1** needles by turning them counterclockwise and completely close **EX2** needle by turning it clockwise.
- Adjust the 2nd (braking) speed with **EX2** needle. Actuate the cylinder by gradually opening the **EX2** needle so that the piston moves and reaches to stroke-end. Tighten the lock nut while holding the needle head in order not to change the adjusted speed.
- Adjust the shift (brake) timing with **TIM** needle. Close **TIM** needle gradually so that the brake (shock absorber function) works near the stroke end. Do not turn the **TIM** needle to near full close position or close the needle quickly from full open position, otherwise speed shifting effect (brake or shock absorbing function) does not work.
- When decelerate the operating speed of the cylinder, adjust **EX1** needle and readjust **TIM** needle again.
- Fine-tune all of the needles. Then tighten the lock nuts firmly while holding the needle heads of **TIM** and **EX1** in order not to change the adjusted setting.

### Tips for the adjustment

- Fix the pressure and the length of tube before adjusting these needles, so that the setting of this product will not be affected.
- As for speed adjusting process ①~③ adjust two controls together at the both sides of the cylinder, then adjust them separately for process ④~⑥.
- Completely open **EX1** needle (accelerate cylinder) and nearly completely close **EX2** needle (strengthen a brake), when the timing of a brake is difficult to sense.
- Adjust the timing of a brake with sufficient distance from the stroke end.
- Adjust all needles over again if encountering a problem.



Easily understandable video about how to adjust 2-Stage Speed controller is available.  
<http://en.pisco.co.jp/product/detail/b/b25/#RhgPnA8Rqag>



# NIHON PISCO CO.,Ltd.

Overseas & OEM Business Group

3884-1 MINAMIMINOWA, KAMIINA, NAGANO-PREF., 399-4588 JAPAN

TEL : +81-(0)265-76-7751 FAX : +81(0)265-76-3305

E-mail : intl@pisco.co.jp

<http://en.pisco.co.jp/>

The specifications are subject to change without advance notice.

2017.02