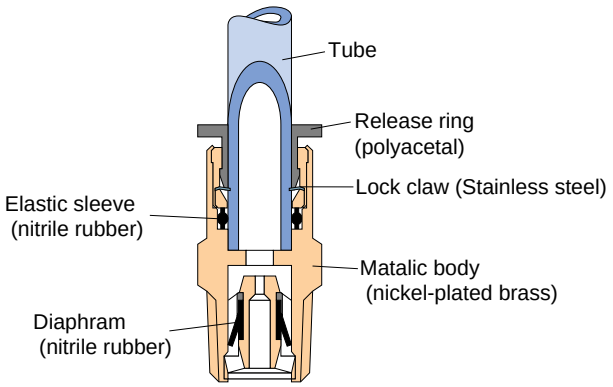
Fixed Type Speed Control Valve (Production upon order)

Constant Flow Speed Controller

Features

- This speed controller fixes the operation speed of a driving device.
- The Constant Flow Speed Controller is best suited for use with massproduced dedicated machines.
- Flow is controlled by fixed orifice. Select the optimum I.D. of the orifice from the control flow characteristics on page 203.

Construction



Specification

Fluid admitted	Air	
Service pressure range	0~150psi	0 ~ 0.9MPa
Check valve operating pressure	7.25psi	0.05MPa
Service temperature range	32~140˚F	0 ~ 60°C

Model Designation (Example)

JKC (1) 6 (2) - 01 (3) A (4) 0.7 (5)

(1)Type

(2)Tube dia.

	mm Size		
Code	**4**	**6**	**8**
Size(mm)	ϕ4	ϕ6	ϕ8

(3)Thread size

	Taper pipe thread	
Code	**01**	**02**
Size	R1/8	R1/4

(4)Control direction

A : Meter-out control (Inscription "A" in Matalic body)

B : Meter-in control (Inscription "B" in Matalic body)

(5)Oritice I.D. (mm)

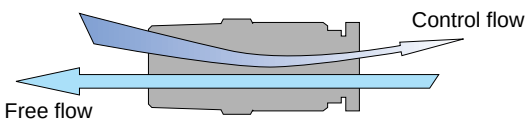
Oritice I.D.(Code)	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1
R1/8	○	○	○	○	○	○	○	○	○
R1/4	○	○	○	○	○	○	○	○	○

Oritice I.D.(Code)	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
R1/8	○	○	○	○	-	-	-	-	-
R1/4	○	○	○	○	○	○	○	○	○

*Production upon order

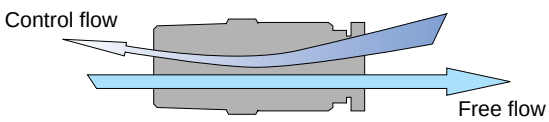
*Meter-out control

■ The flow rate of air entering from the thread side can be controlled, whereas air entering from the joint side comes out of the thread side at the same (not controlled) flow rate.



*Meter-in control

■ The flow rate of air entering from the joint side can be controlled, whereas air entering from the thread side comes out of the joint side at the same (not controlled) flow rate.



Detailed Safety Instruction

Before using the PISCO device, be sure to read the "Safety Instructions", "Common Safety Instructions for Products Listed in This Manual" on pages 23~24 and "Common Safety Instructions for Controllers" on pages 167~168.

⚠ Caution

1. Before use, be sure to confirm the orifice inside diameter marked on the hexagon part. A wrong orifice inside diameter may change the speed of the actuator.
2. To achieve accurate speed control, select, by actual measurements, an optimal combination of orifice inside diameter, cylinder type, loading and piping.

How to select Orifice Inside Diameter

■When controlling the cylinder speed with a constant flow speed controller, determine the orifice inside diameter as follows:

(1)Using the following formula, obtain the air flow rate necessary for cylinder operation at desired speed.
(Formula for calculation of air flow rate)

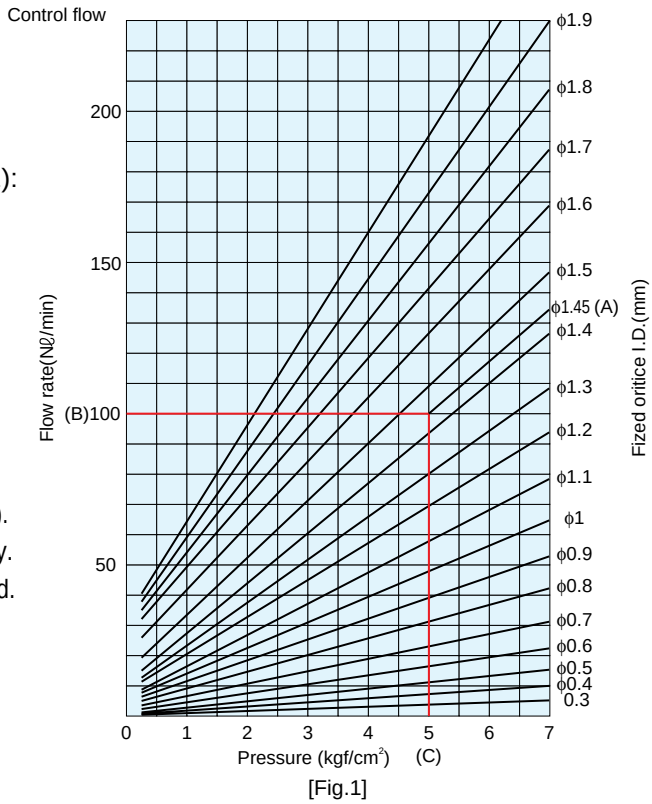
$$Q=4.7\times10^{-5}\times\frac{D^2\times L}{t}\times\frac{P+1.03}{1.03}$$

Q= air flow rate (Nℓ/min)
D=cylinder I.D. (mm)
L=cylinder stroke (mm)
t=time for one-way stroke (sec)
P=working pressure (kgf/cm^2)

(2)Using the graph of control flow (flow characteristics) on page 203, locate the intersecting point of flow rate and working pressure. Select 2 or 3 samples whose orifice I.D. provides characteristcs closest to the above. Then choose the optimal model from actual measurements.

(Example,1)
D (Inside diam.)=25mm
L (Stroke)=60mm
t (Time)=0.1 sec
P (Pressure)=5kgf/cm^2 (A)
Calculate the necessary air flow, using the formula of (1):
Q=100Nℓ/min (B)
Find the inside diameter of the fixed orifice from Fig1.
Inside diameter of fixed orifice=ϕ1.45mm (C)
The range of selection is : ϕ1.6mm~ϕ1.4mm

*The formula of (1)does not take load on cylinder and air consumption in piping into consideration.



[Fig.1]

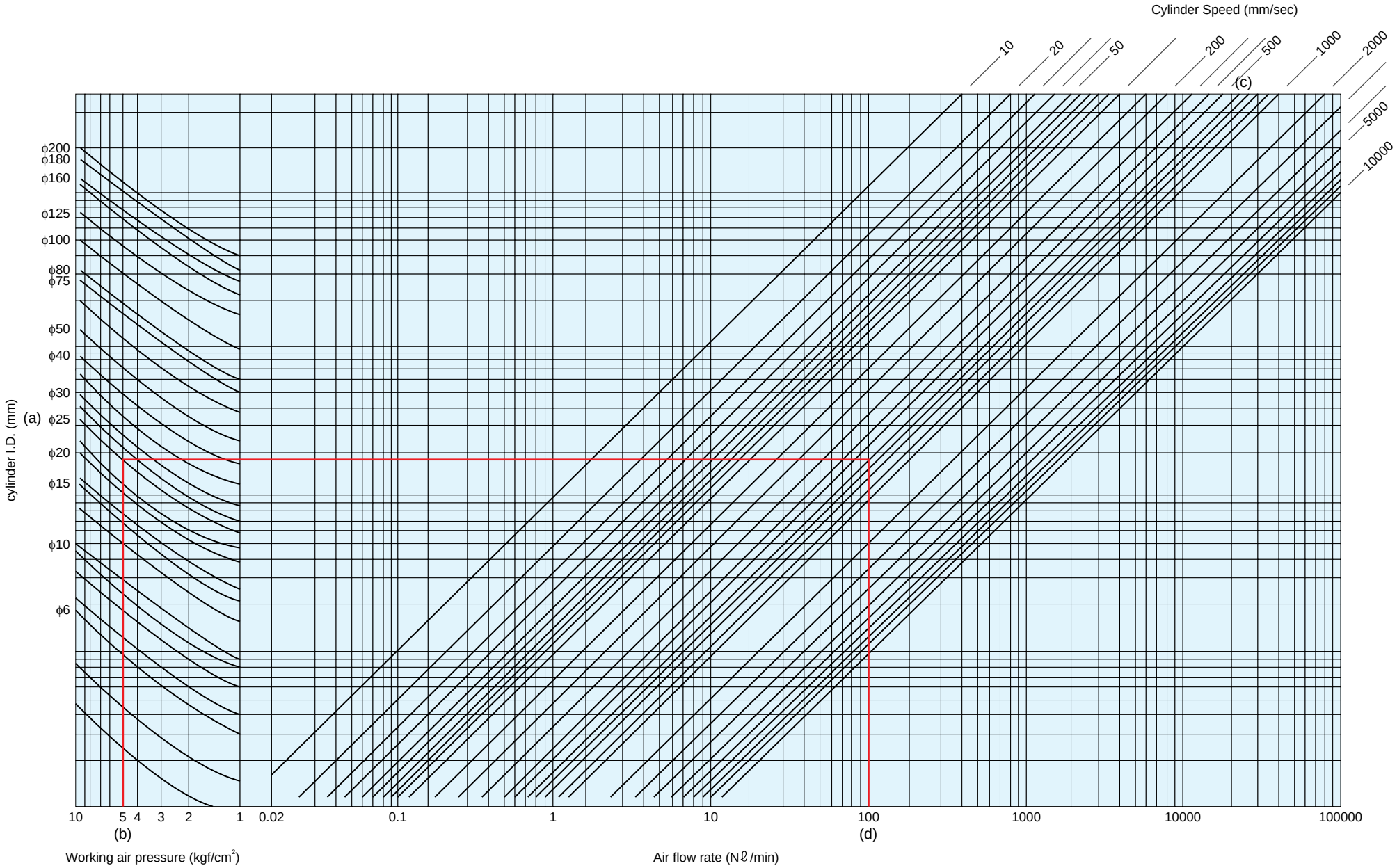
Fig.2 shows a graphic representation of the calculation formula of (1).
By use of the graph, the air flow rate can be obtained quite easily.
It is necessary, however, to obtain the cylinder speed beforehand.
(Formula for calculation of cylinder speed)

$$V=\frac{L}{t}$$

V=cylinder speed (mm/sec)
L=cylinder stroke (mm)
t=time for one-way stroke (sec)

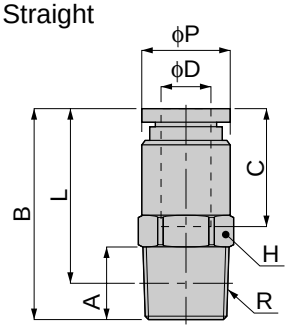
(Example 2)
How to Use the Graph (Example)
Cylinder I.D.=25mm (a)
Cylinder stroke=60mm
Time for one-way stroke=0.1sec (Cylinder speed:600mm/sec) (c)
Working pressure=5kgf/cm^2 (b)
Air flow rate=100Nℓ/min
Determine the air flow, then the inside diameter of the Constant Flow Controller can be selected.

[Fig.2] Graph for calculation of required air flow of Air Cylinder



Control Series Constant Flow Speed Controller

JKC
Straight



unit:mm

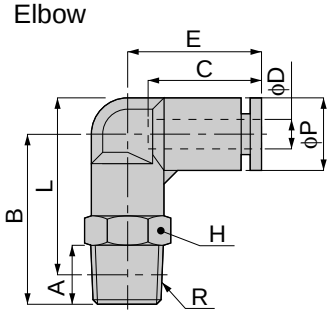
Model	Tube dia. ϕD	R	A	B	L	ϕP	C	H	Mass (g)	Free flow Eff. a. (mm²)
JKC 4-01□	4	R1/8	8	23.5	19.5	10	11	10	9.5	3.1 ~ 3.5
JKC 6-01□	6	R1/8	8	24	19.5	10	12	10	8.5	3.9 ~ 4.6
JKC 6-02□		R1/4	11	27.5	21.5	11		14	17	6.7 ~ 7.3
JKC 8-01□	8	R1/8	8	30	26	14	18.5	14	17	3.4 ~ 4.5
JKC 8-02□		R1/4	11	33	27				20.5	6.4 ~ 7

1

Orifice I.D. (mm)	ϕ0.3	ϕ0.4	ϕ0.5	ϕ0.6	ϕ0.7	ϕ0.8	ϕ0.9	ϕ1.0	ϕ1.1
Control flow Eff. a. (mm²)	0.06	0.11	0.16	0.2	0.3	0.4	0.5	0.65	0.8

Orifice I.D. (mm)	ϕ1.2	ϕ1.3	ϕ1.4	ϕ1.5	ϕ1.6	ϕ1.7	ϕ1.8	ϕ1.9	ϕ2.0
Control flow Eff. a. (mm²)	0.9	1.1	1.25	1.5	1.8	2	2.3	2.55	2.8

JKL
Elbow



unit:mm

Model	Tube dia. ϕD	R	A	B	L	ϕP	C	E	H	Mass (g)	Free flow Eff. a. (mm²)
JKL 4-01□	4	R1/8	8	26	26.5	10.5	15	17	10	11.5	3.1 ~ 3.5
JKL 6-01□	6	R1/8	8	25.5	27.5	13	17	20	12	13.5	3.9 ~ 4.6
JKL 6-02□		R1/4	11	28.5	28.5				14	19	6.7 ~ 7.3
JKL 8-01□	8	R1/8	8	28.5	31.5	15	18.5	23	14	18.5	3.4 ~ 4.5
JKL 8-02□		R1/4	11	31.5	32.5					22.5	6.4 ~ 7

1

Orifice I.D. (mm)	ϕ0.3	ϕ0.4	ϕ0.5	ϕ0.6	ϕ0.7	ϕ0.8	ϕ0.9	ϕ1.0	ϕ1.1
Control flow Eff. a. (mm²)	0.06	0.11	0.16	0.2	0.3	0.4	0.5	0.65	0.8

Orifice I.D. (mm)	ϕ1.2	ϕ1.3	ϕ1.4	ϕ1.5	ϕ1.6	ϕ1.7	ϕ1.8	ϕ1.9	ϕ2.0
Control flow Eff. a. (mm²)	0.9	1.1	1.25	1.5	1.8	2	2.3	2.55	2.8

Flow characteristics