

# CC Series Selection Procedure

## Step (1) Select the bore size of air-hydro cylinder

First of all, select a bore size from data (D) <Theoretical Output Table>. When making a selection, the ratio between the theoretical output and the load should be 0.5 or less.

## Step (2) Select converter

Select the nominal diameter and the effective oil level stroke from data (A), <Cylinder Displacement and Converter Capacity Diagram>. When selecting a converter by its nominal diameter, the converter's oil level speed should be 200 mm/s or less. When the cylinder stroke is beyond <Cylinder Displacement and Converter Capacity Diagram>, select a converter capacity that is 1.5 or more times larger than the cylinder capacity as a guide.

## Step (3) Select required function for valve unit

Select a model from data (B), <Converter and Valve Unit Combinations and Applications Table> by determining the functions that are needed for the valve unit in accordance with your application.

## Step (4) Select the size of valve unit

Using data (C), <Air-Hydro Cylinder's Maximum Operating Speed> as a reference, select the size of a valve unit by determining whether it meets the desired cylinder operating speed.

\* The model of an air-hydro unit that is suitable for a particular application is determined by the combination of the converter that was selected in steps (1) and (2), and the valve unit that was selected in steps (3) and (4). For details on how the models are indicated, refer to "How to Order".

### ⚠ Caution on Selection

1. Make sure to select a cylinder and a rotary actuator for an air-hydro operation. Do not use these for pneumatic operations because they will lead to oil leaks.

Air-hydro cylinder: **CA1**□H□-□  
**CQ2**□H□-□  
**CS1**□H□-□  
**CM2**□H□-□  
**CG1**□H□-□ (up to ø63)  
**HC03-X1**□-□ x □□

Air-hydro rotary actuator:  
**CRA1H**□-□

2. When determining the size of a converter based on the <Cylinder Displacement and Converter Capacity Diagram>, do not select a converter bore that is too small for the cylinder's bore size because this will increase the oil level speed, causing the oil to blow out. Thus, select a converter bore, so that the oil level speed will be 200 mm/s or less.

Refer to the table below for the relationship of the converter size, cylinder bore size and cylinder piston speed, which make the oil level 200 mm/s or more.

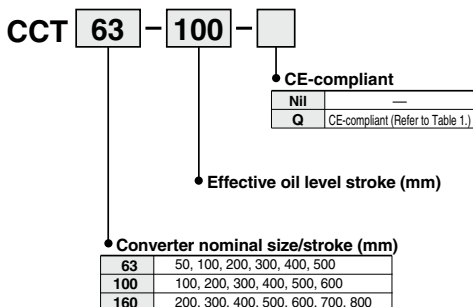
When the cylinder piston speed becomes more than those listed in the table below, select a converter one size bigger.

Converter size	Cylinder bore size (mm)	Cylinder piston speed (mm/s)
<b>CCT40</b>	ø32	310 or more
	ø40	200 or more
<b>CCT63</b>	ø50	315 or more
	ø63	200 or more
	ø80	120 or more
	ø100	75 or more

# Air-hydro Converter CCT Series



## How to Order



## Specifications

<b>Operating pressure</b>	0 to 0.7 MPa
<b>Proof pressure</b>	1.05 MPa
<b>Ambient and fluid temperature</b>	5 to 50°C
<b>Fluid</b>	Turbine oil (40 to 100 mm <sup>2</sup> /s)

## Converter Standard Effective Oil Level Stroke/Effective Volume (cm<sup>3</sup>)

Converter nominal size (mm)	Standard effective oil level stroke (mm)								Limited flow* (dm <sup>3</sup> /min)	
	50	100	200	300	400	500	600	700		800
<b>63</b>	150	300	600	890	1190	1480	—	—	—	36
<b>100</b>	—	750	1510	2260	3010	3770	4520	—	—	88
<b>160</b>	—	—	3660	5490	7320	9150	10980	12810	14640	217

\* Limited flow shows the limit of converter oil level speed (200 mm/s) which can maintain stability of converter oil level.

## Table 1 CE-compliant

Applicable model	CE marking applicable standard
<b>CCT160-400 to 800</b>	Directive 97/23/EC Category I

## CCT40 — Effective oil level stroke

Because the CCT40 is a converter for an actuator with a small capacity, it cannot be made into an air-hydro unit. Instead, use an individual CC valve unit or a speed controller (AS2000, AS3000, AS4000, etc.) through a pipe connection.



## Specifications

<b>Operating pressure</b>	0 to 0.7 MPa
<b>Proof pressure</b>	1.05 MPa
<b>Ambient and fluid temperature</b>	5 to 50°C
<b>Fluid</b>	Turbine oil (40 to 100 mm <sup>2</sup> /s)
<b>Nominal size</b>	40 mm

## Converter Standard Effective Oil Level Stroke/Effective Volume

Standard effective oil level stroke (mm)	50	100	150	200	300
Effective volume (cm <sup>3</sup> )	60	120	180	250	370
Limited flow (dm <sup>3</sup> /min)	15				

\* Limited flow shows the limit of converter oil level speed (200 mm/s) which can maintain stability of converter oil level.

## Air-hydro Unit Weight

Converter nominal size	Valve unit size	Control valve	Combined valve	Effective oil level stroke											
				50	100	150	200	300	400	500	600	700	800		
63	S	0	2	2.7	2.9	3.1	3.3	3.7	4.1	4.5	—	—	—		
			1	0	3.2	3.4	3.6	3.8	4.2	4.6	5.0	—	—	—	
				1	3.4	3.6	3.8	4.0	4.4	4.8	5.2	—	—	—	
		2		3.3	3.5	3.7	3.9	4.3	4.7	5.1	—	—	—		
		2	0	3.2	3.4	3.6	3.8	4.2	4.6	5.0	—	—	—		
			1	3.4	3.6	3.8	4.0	4.4	4.8	5.2	—	—	—		
			2	3.3	3.5	3.7	3.9	4.3	4.7	5.1	—	—	—		
		3	0	3.2	3.4	3.6	3.8	4.2	4.6	5.0	—	—	—		
			1	3.4	3.6	3.8	4.0	4.4	4.8	5.2	—	—	—		
			2	3.3	3.5	3.7	3.9	4.3	4.7	5.1	—	—	—		
		100	S	0	2	—	4.5	—	5.2	5.9	6.6	7.3	8.0	—	—
					1	0	—	5.0	—	5.7	6.4	7.1	7.8	8.5	—
1	—					5.2	—	5.9	6.6	7.3	8.0	8.7	—	—	
2	—			5.1		—	5.8	6.5	7.2	7.9	8.6	—	—		
2	0			—	5.0	—	5.7	6.4	7.1	7.8	8.5	—	—		
	1			—	5.2	—	5.9	6.6	7.3	8.0	8.7	—	—		
	2			—	5.1	—	5.8	6.5	7.2	7.9	8.6	—	—		
3	0			—	5.0	—	5.7	6.4	7.1	7.8	8.5	—	—		
	1			—	5.2	—	5.9	6.6	7.3	8.0	8.7	—	—		
	2			—	5.1	—	5.8	6.5	7.2	7.9	8.6	—	—		
160	L			0	2	—	5.6	—	6.3	7.0	7.7	8.4	9.1	—	—
					1	0	—	6.8	—	7.5	8.2	8.9	9.6	10.3	—
		1	—			7.2	—	7.9	8.6	9.3	10.0	10.7	—	—	
		2	—	7.0		—	7.7	8.4	9.1	9.8	10.5	—	—		
		2	0	—	6.8	—	7.5	8.2	8.9	9.6	10.3	—	—		
			1	—	7.2	—	7.9	8.6	9.3	10.0	10.7	—	—		
			2	—	7.0	—	7.7	8.4	9.1	9.8	10.5	—	—		
		3	0	—	7.0	—	7.7	8.4	9.1	9.8	10.5	—	—		
			1	—	6.8	—	7.5	8.2	8.9	9.6	10.3	—	—		
			2	—	7.2	—	7.9	8.6	9.3	10.0	10.7	—	—		
		63	L	0	2	—	—	—	12.6	14.4	16.2	18.0	19.8	21.6	23.4
					1	0	—	—	—	13.8	15.6	17.4	19.2	21.0	22.8
1	—					—	—	14.2	16.0	17.8	19.6	21.4	23.2	25.0	
2	—			—		—	14.0	15.8	17.6	19.4	21.2	23.0	24.8		
2	0			—	—	—	14.0	15.8	17.6	19.4	21.2	23.0	24.8		
	1			—	—	—	13.8	15.6	17.4	19.2	21.0	22.8	24.6		
	2	—	—	—	14.2	16.0	17.8	19.6	21.4	23.2	25.0				
3	0	—	—	—	14.0	15.8	17.6	19.4	21.2	23.0	24.8				
	1	—	—	—	14.0	15.8	17.6	19.4	21.2	23.0	24.8				
	2	—	—	—	14.0	15.8	17.6	19.4	21.2	23.0	24.8				

## Air-hydro Converter Weight

Converter nominal size	CCT40	CCT63	CCT100	CCT160
50	0.85	1.6	—	—
100	0.90	1.8	3.4	—
150	0.95	—	—	—
200	1.0	2.2	4.1	10.4
300	1.1	2.6	4.8	12.2
400	—	3.0	5.5	14.0
500	—	3.4	6.2	15.8
600	—	—	6.9	17.6
700	—	—	—	19.4
800	—	—	—	21.1

## Air-hydro Valve Unit Weight

Small flow	Weight	Small flow	Weight	Large flow	Weight
CCVS02-□□	1.1	CCVS30-□□	1.6	CCVL02-□□	2.2
CCVS10-□□	1.6	CCVS31-□□	1.8	CCVL10-□□	3.4
CCVS11-□□	1.8	CCVS32-□□	1.7	CCVL11-□□	3.8
CCVS12-□□	1.7	CCVS33-□□	1.7	CCVL12-□□	3.6
CCVS13-□□	1.7			CCVL13-□□	3.6
CCVS20-□□	1.6			CCVL20-□□	3.4
CCVS21-□□	1.8			CCVL21-□□	3.8
CCVS22-□□	1.7			CCVL22-□□	3.6
CCVS23-□□	1.7			CCVL23-□□	3.6