

NACHI

**NEW**

# **ECO6** SERIES



# A long-awaited SCARA robot appears from Nachi

The EC06 series are simple structure robots with high-speed, high precision that meet for applications such as assembling, handling, and so on.

Maximum reach can be selected from 3 types; 500mm, 600mm, 700mm.

The tip axis is a hollow structure, therefore, tube/hose routing from the robot to the tool is simple.

Complex construction is significantly reduced as well.

## **EC06** SERIES



EC06 robots have a smooth and flowing design inherited from MZ,EZ series.

### CFD controller

Achieved operability similar to previous Nachi robots  
Abundant controller options are also available



### Application example

#### Inspection



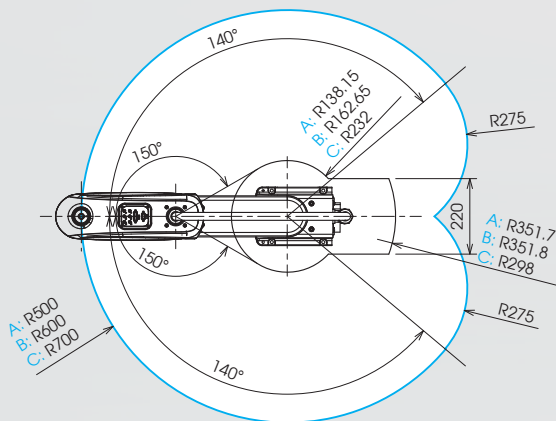
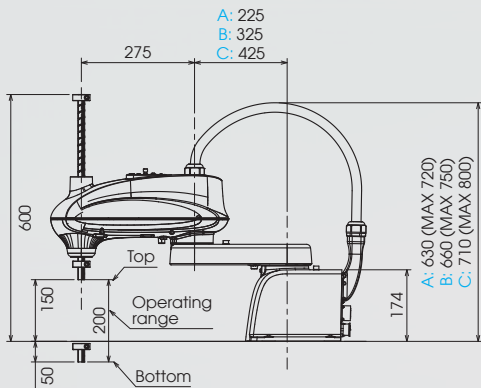
#### Packing



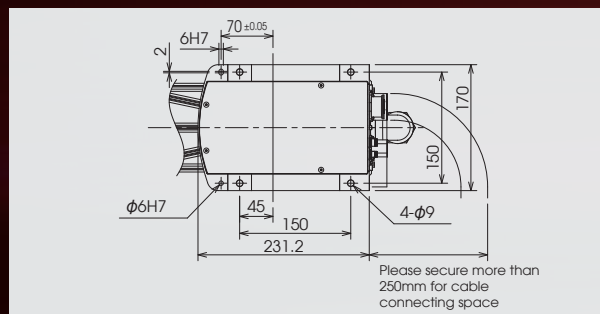
# 3 different types of reach are available depending on operating range requirement

## Dimensions and operating range

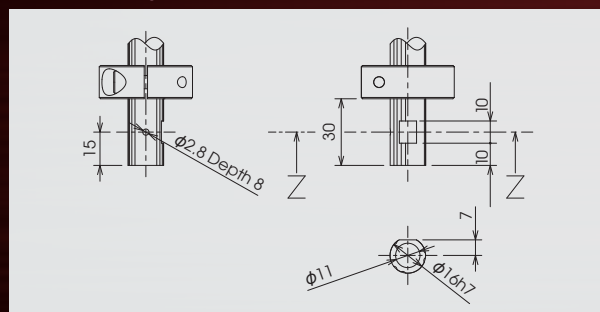
- A: EC06-5020-01
- B: EC06-6020-01
- C: EC06-7020-01



## Robot Base Dimensions



## Tool installing part dimensions



## Specification

Items		Specification		
Robot type		EC06-5020-01	EC06-6020-01	EC06-7020-01
Structure		SCARA robot		
Degree of Freedom		4		
Brake		J1,J2,J4 : Without brake J3 : With brake		
Maximum motion range	J1 Swivel1	±2.44rad (±140°)		
	J2 Swivel2	±2.62rad (±150°)		
	J3 Upward/Downward	200mm		
	J4 Rotation	±6.28rad (±360°)		
Maximum Velocity*1	J1+J2	7120mm/s	7850mm/s	8580mm/s
	J1 Swivel1	7.33rad/s (420°/s)		
	J2 Swivel2	12.57rad/s (720°/s)		
	J3 Upward/Downward	1100mm/s		
Payload	Rated	3kg		
	Maximum	6kg		
Axis 3 maximum pressing force		100N*2		
Maximum static load torque*3		0.05kg·m <sup>2</sup> (Rated 0.01kg·m <sup>2</sup> )		
Maximum reach		500mm	600mm	700mm
Position repeatability	X-Y composite	±0.02mm		
	J3 (Z)	±0.01mm		
	J4 (θ)	±0.005°		
Standard cycle time*6		0.39sec	0.40sec	0.42sec
Air tubes		Primary : φ6×2, φ4×2 Secondary : φ6×2, φ4×2 (When a built-in valve is not used) φ6×1, φ4×5 (When a built-in valve is used)*5		
Application cables		24 wires (15 wires + 9 wires)		
Mounting Condition		Floor		
Ambient Temperature		0 ~ 40°C*4		
Ambient Humidity		20 ~ 80%RH (No dew or frost allowed)		
Protection class		IP20		
Robot weight		17kg	17kg	18kg

\*1: The maximum velocity showing in the chart is the maximum value. It will change depending on operation program and the wrist load condition.

\*2: Overload error occurs if it is pressing for a long time. Please use the robot under the condition that an error won't occur.

\*3: Allowable maximum inertia moment varies by the wrist load condition.

\*4: Using at 1000 m or lower sea level. Ambient temperature has limitations when allowable altitude is exceeded.

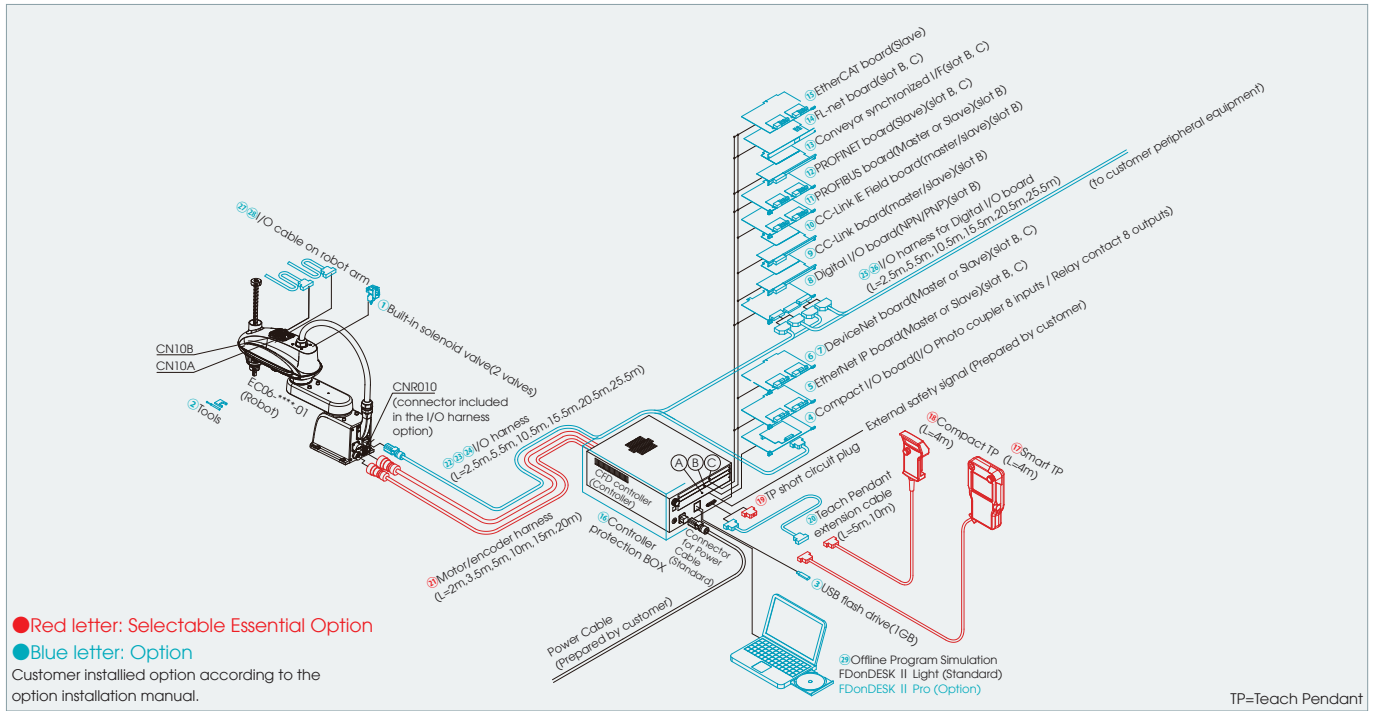
\*5: φ4 of secondary pipes can be obtained by a built-in valve (optional).

\*6: Payload : 2kg, Horizontal direction : 300mm, Vertical direction : 25mm, Reciprocating motion.(rough positioning)

$$1(\text{rad}) = 180/\pi(^{\circ}), \quad 1(\text{N}\cdot\text{m}) = 1/9.8(\text{kgf}\cdot\text{m})$$



# Optional List



Number	Item	Specifications	Parts No.			Remark
			EC06-5020-01	EC06-6020-01	EC06-7020-01	
1	Built-in solenoid valve	2 valves	OP-H5-028			2 position single specification type
2	Tools	Zeroing pin & Zeroing block	OP-T2-109			
3	USB flash drive	1GByte 4GByte	FD11-OP93-A FD11-OP93-B			Please select one
4	Compact I/O board	I/O Photo coupler 8 inputs / NPN Transistor 8 outputs I/O Photo coupler 8 inputs / Relay 2 outputs	CFD-OP150-A CFD-OP150-B			Used by stacking on the sequence board in slot A. Please select one of them.
5	EtherNet IP board	Master1CH, Slave1CH, Master1CH+Slave1CH, Slave2CH, Master2CH	CFD-OP130-○*1			Occupies (1) slot
6	DeviceNet board	Master1CH, Slave1CH, Master1CH+Slave1CH, Slave2CH, Master2CH	CFD-OP131-○*1			Occupies (1) slot
7	DeviceNet board (Quick connect)	Master1CH, Slave1CH, Master1CH+Slave1CH, Slave2CH, Master2CH	CFD-OP129-○*1			Occupies (1) slot
8	Digital I/O board	I/O 32 inputs/32 outputs(NPN 1 board) I/O 64 inputs/64 outputs(NPN 2 boards) I/O 32 inputs/32 outputs(PNP 1 board) I/O 64 inputs/64 outputs(PNP 2 boards)	CFD-OP125-A CFD-OP125-B CFD-OP151-A CFD-OP151-B			Occupies (1) slot Occupies (2) slot Occupies (1) slot Occupies (2) slot
9	CC-Link board	1CH for both master and slave	CFD-OP98-B			Occupies (1) slot
10	CC-Link IE Field board	1CH for both master and slave	CFD-OP155-A			Occupies (1) slot
11	PROFIBUS board	Master1CH, Slave1CH, Master1CH+Slave1CH, Slave2CH, Master2CH	CFD-OP132-○*1			Occupies (1) slot
12	PROFINET board	Slave1CH Slave2CH	CFD-OP136-B CFD-OP136-D			Occupies (1) slot Please select one
13	Conveyor synchronized I/F	RS422 differential input encoder counter	CFD-OP47-A			Occupies (1) slot
14	FL-net board	1CH	CFD-OP101-C			Occupies (1) slot
15	EtherCAT board	Slave1CH	CFD-OP169-B			Occupies (1) slot
16	Controller protection BOX	Upgrade to IP54 equivalent by preparing dust-proof and moisture-resistant box	CFD-OP133-A			W540×D700×H270
17	Smart TP	Cable length 4m	CFDTP-10-04M			Please select one of ⑰⑱
18	Compact TP	Cable length 4m	MINITP-10-04M			
19	TP short circuit plug	Used when teach pendant is separated from the controller	CFD-OP153-A			Connects robot to controller*4
20	Teach Pendant extension cable	5m 10m	CFDTP-RC05M CFDTP-RC10M			Up to one extension (Both ends have a connector). Please select one.
21	Motor/encoder harness	2m, 3.5m, 5m, 10m, 15m, 20m	ZA101C-J1-○-○-A*2			Connects robot to controller
22	I/O harness (A connector on the robot side. Separate cables on the controller side)	2.5m, 5.5m, 10.5m, 15.5m, 20.5m, 25.5m	IOCABLE-10B-○-○-M*3			Connects robot to controller*4
23	I/O harness for NPN output. (Connectors on the robot side and the controller side)	2.5m, 5.5m, 10.5m, 15.5m, 20.5m, 25.5m	IOCABLE-40-○-○-M*3			I/O harness that connects to the sequence board between the robot and the controller.*5
24	I/O harness for relay output (Connectors on the robot side and the controller side)	2.5m, 5.5m, 10.5m, 15.5m, 20.5m, 25.5m	IOCABLE-40B-○-○-M*3			I/O harness that connects to the sequence board between the robot and the controller.*5
25	I/O harness for 1 additional I/O board 32/32 (A connector on the robot side. Separate cables on the tool side)	2.5m	IOCABLE-30-1-○-○-M*3			Available for CFD-OP-125-A/CFD-OP-151-A*7
26	I/O harness for 2 additional I/O boards 64/64 (A connector on the robot side. Separate cables on the tool side)	2.5m	IOCABLE-30-2-○-○-M*3			Available for CFD-OP-125-B/CFD-OP-151-B*7
27	I/O cable on robot arm	1.5m	IOCABLE-20E-015M			Cable for CN10A (D-Sub9Pin)
28	I/O cable on robot arm	1.5m	IOCABLE-20F-015M			Cable for CN10B (D-Sub15Pin)
29	FDONDESK II Pro	Robot Program Simulator	FDONDESK2-PRO			2 additional functions to the FD on desk Light (standard option) ● Programming function from CAD ● Supports multiple controllers

\*1: ○ is the following: A: Master1CH, B: Slave1CH, C: Master1CH+Slave1CH, D: Slave2CH, E: Master2CH

\*2: ○-○ is cable length 02:2m, 03:3.5m, 05:5m, 10:10m, 15:15m, 20:20m

\*3: ○-○ is cable length 02:2.5m, 05:5.5m, 10:10.5m, 15:15.5m, 20:20.5m, 25:25.5m

\*4: The controller side has separate cables and assembly is required by customer after signal assignment

\*5: Controller unit option: A cable with a connector on both ends that can be directly connected to the CFD-OP-150-A (Compact I/O board).

\*6: Controller unit option: A cable with a connector on both ends that can be directly connected to the CFD-OP-150-B (Compact I/O board).

\*7: Wiring for the application side needs to be done by customer



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