

INDUSTRIAL ROBOTS

# Vertical Articulated Robots

General catalog for Vertical Articulated Robots

TVL Series

TVM Series

TV Series





# Vertical Articulated



# MACHINE QUALITY

## HISTORY

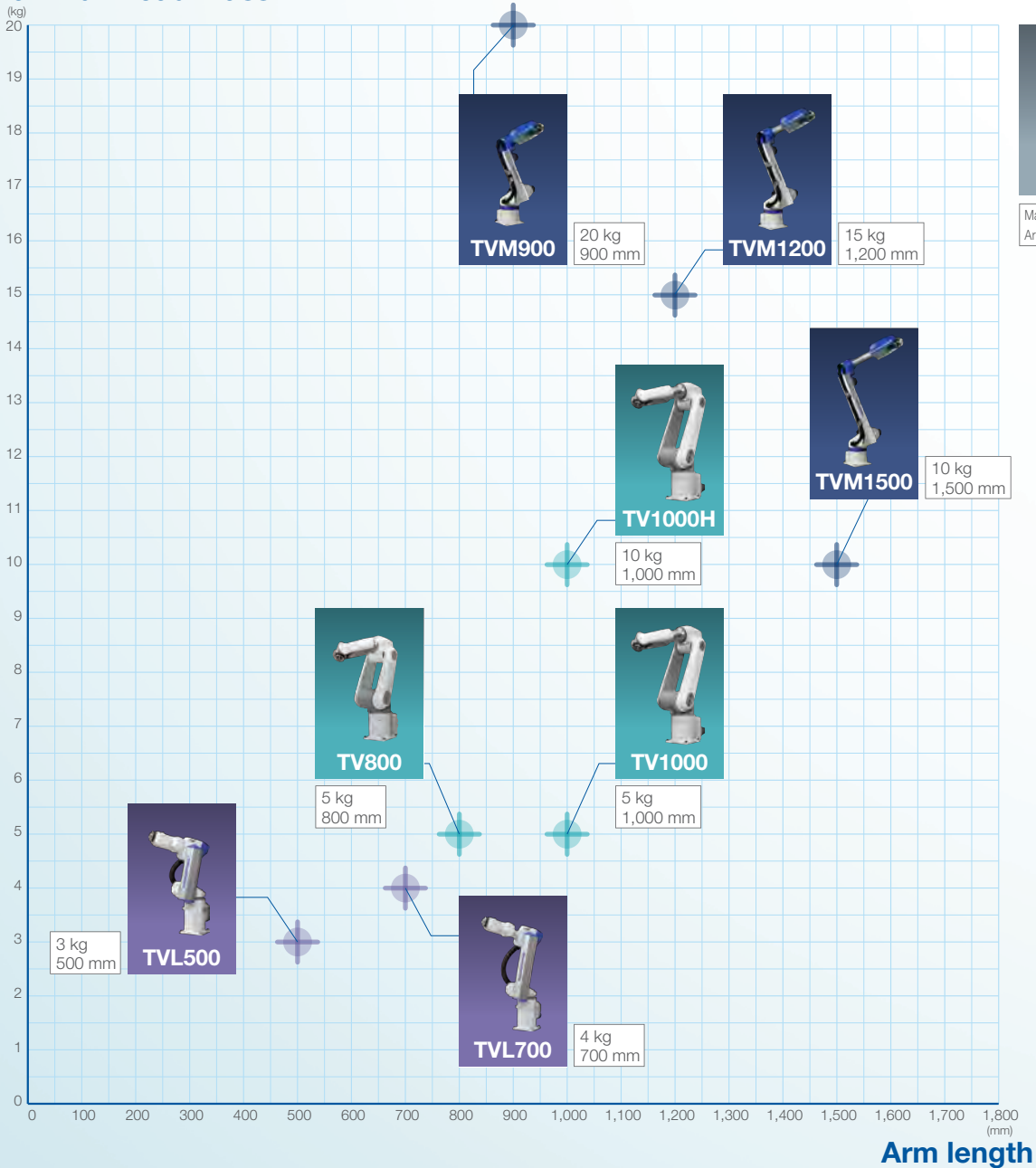
SHIBAURA MACHINE CO., LTD.

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<ul style="list-style-type: none"> <li>TH450A</li> <li>TH550A</li> <li>THP550</li> </ul>	<ul style="list-style-type: none"> <li>THP700</li> <li>TH1200A</li> </ul>	<ul style="list-style-type: none"> <li>THL300</li> <li>THL400</li> <li>THL500</li> <li>THL600</li> <li>THL700</li> </ul>	<ul style="list-style-type: none"> <li>THL800</li> <li>THL900</li> <li>THL1000</li> </ul>	<ul style="list-style-type: none"> <li>THE400</li> </ul>	<ul style="list-style-type: none"> <li>THE600</li> </ul>	<ul style="list-style-type: none"> <li>THL1200</li> </ul>					
<ul style="list-style-type: none"> <li>TV1000H-WP</li> </ul>				<ul style="list-style-type: none"> <li>TV600</li> </ul>	<ul style="list-style-type: none"> <li>TVL500</li> <li>TVL700</li> </ul>			<ul style="list-style-type: none"> <li>TVM900</li> <li>TVM1200</li> <li>TVM1500</li> </ul>			
			<ul style="list-style-type: none"> <li>TLD1100 (Line Dancer)</li> </ul>		<ul style="list-style-type: none"> <li>SWAN</li> <li>CoSWAN</li> </ul>				<ul style="list-style-type: none"> <li>SR-405HC</li> </ul>		



# Contributes to productivity improvement in line work by high speed operation Selection can be made according to the application

## Maximum load mass



### Various options

(Main robot options)

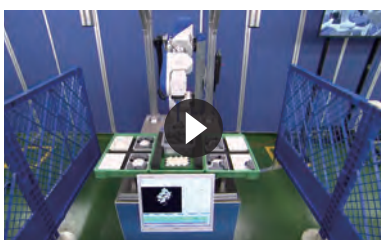
- Ceiling-mount type
- Built-in three-way solenoid valve
- Dust and drip proof (IP65)
- Cleanroom design (ISO class 3)
- Hand I/O Panel install in 2nd Arm (2)
- Hand I/O Panel install in 3rd Arm
- Oil proof
- Arm-3 hollow

Details:

TVL series: P6

TVM series: P10

TV Series: P15



### Please watch the videos for our Vertical Articulated robot

To see the application video use this QR Code

<https://www.youtube.com/watch?v=VE4Bpi1Wcyk>



To download the catalog and

CAD data use this QR code or see the details below

<https://www.shibaura-machine.co.jp/jp/product/robot/download.html>



# Example of applications using Vertical Articulated robots

Type: TVM1200, TVM900, (THL900)

## Automotive parts assembly demo

Automates the process of picking, assembling, inspecting, and transporting parts stacked in bulk.



To see the application video use this QR Code

<https://www.youtube.com/watch?v=7lnv2xFO6Ng>



Type: TVM1200, TV1000, TV800, TVL700, (THL1000)

## Picking and transporting from molding /tool machine

Automates the removal of parts from Injection Molding Machines, transporting them to post-production processes and packing.



To see the application video use this QR Code

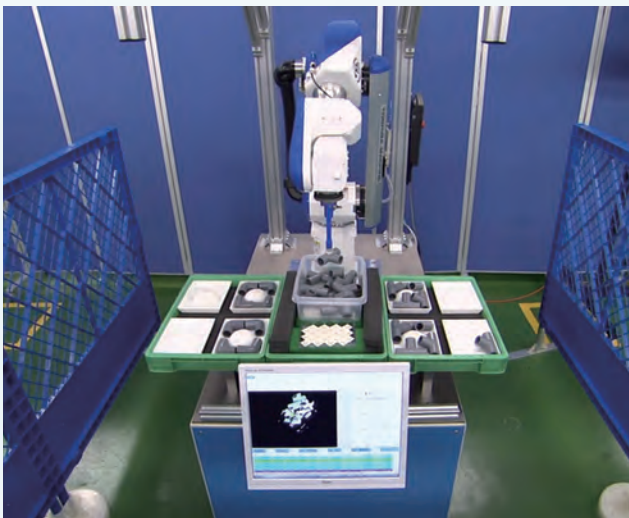
<https://www.youtube.com/watch?v=8p8Buqzax3w>



Type: TVL700

## Bulk picking

Sort the parts by type from a box that contains randomly shaped or sized parts



To see the application video use this QR Code

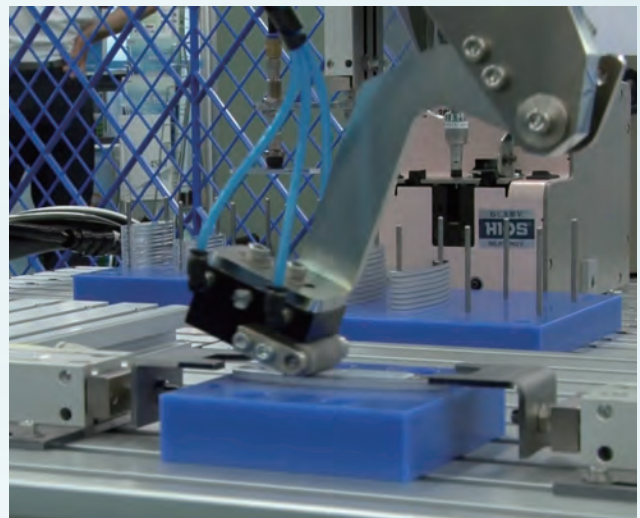
<https://www.youtube.com/watch?v=VE4Bpi1Wcyk>



Type: TVL500

## Parts assembly and labeling

Parts assembly and labeling to the product



To see the application video use this QR Code

<https://www.youtube.com/watch?v=N4tbGTLEBcl>



# TVL Series

## World-class performance

High performance (standard cycle time of 0.3 seconds level) is achieved with competitive prices.

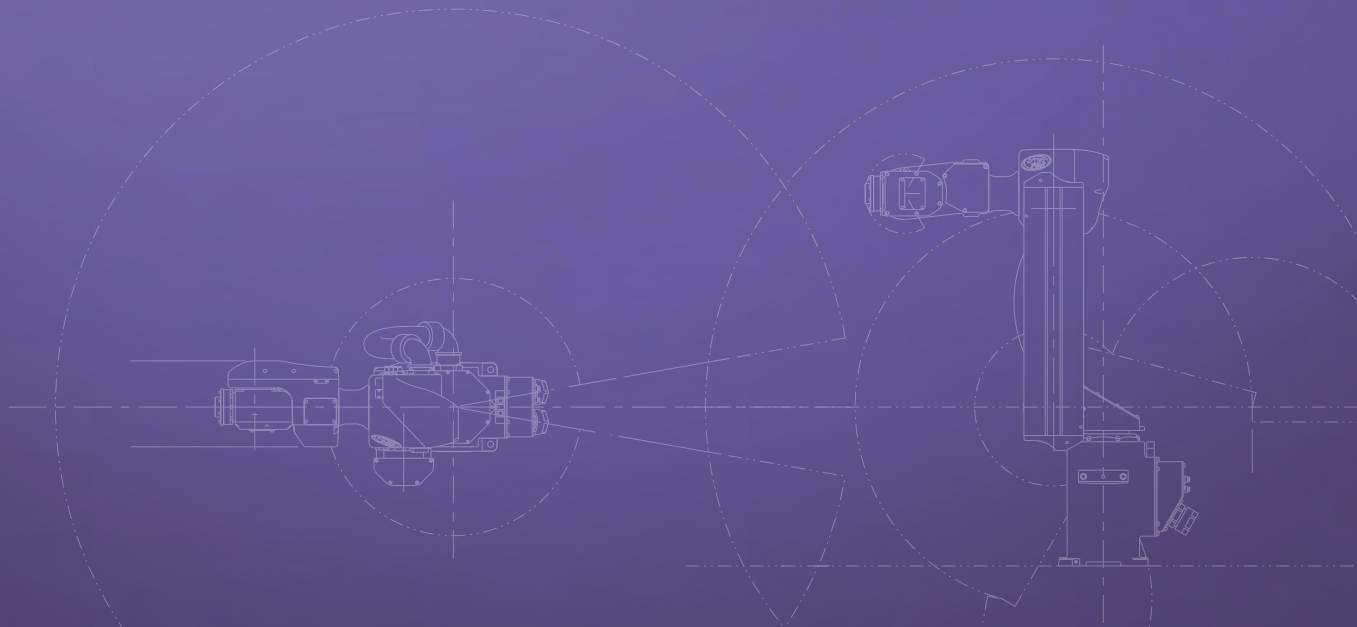
## Special features

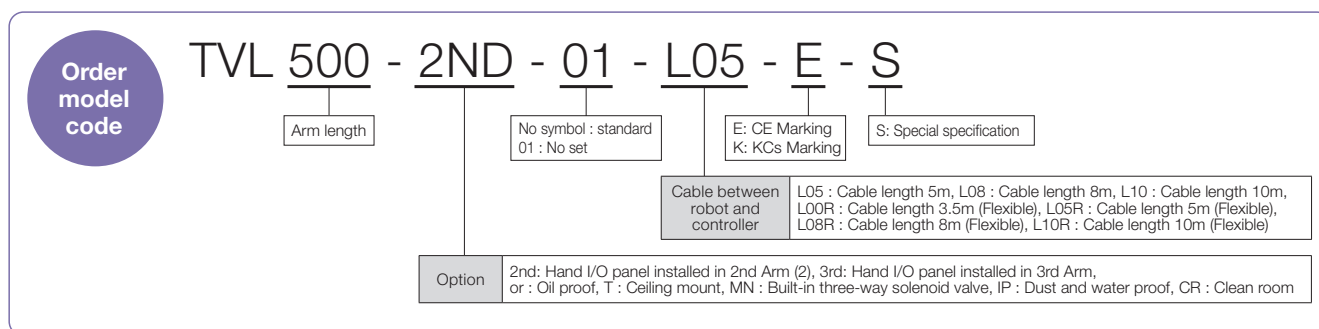
Tap holes and 1st arm equipped with T-groove are offered as standard.

Electric wires and measuring equipment can be attached easily.

## Lightweight models easy to install

A lightweight robot with a body weight of about 30 kg.  
It can be easily installed and moved to equipment.





TVL500



TVL700

Model		TVL500	TVL700
Arm length	Total length	500 mm	700 mm
	1st arm	260 mm	400 mm
	2nd arm	240 mm	300 mm
	Reach	602 mm	801 mm
Maximum speed	Composite	7.98 m/sec	7.71 m/sec
Standard cycle time <sup>*1</sup>		0.3 sec level	0.4 sec level
Maximum payload mass		3 kg (rated: 1 kg)	4 kg (rated: 1 kg)
		(Downward: 5 kg)	(Downward: 5 kg)
Positioning repeatability <sup>*3</sup> X-Y-Z		±0.02 mm	±0.03 mm
Mass		28 kg	31 kg
Connectable controller		TSL3100, TSL3100E	TSL3100, TSL3100E

\*1: Continuous operation of standard cycle motion pattern is not possible beyond the effective load ratio (Horizontal 300 mm, vertical 25 mm, round-trip, coarse positioning)

\*2: Acceleration rates are limited depending on motion patterns, payload mass, and offset value.

\*3: Positioning repeatability accuracy in one-direction movement, when the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy. The specification value may be exceeded depending on moving pattern, load mass and offset amount.

Trajectory accuracy is not ensured.

\*4: Hand wiring cable can be offered (additional option). Please contact us for more details.

\*5: Pneumatic joints for hand are provided on the base. Pipes are to be provided by the customers.







# TVL700

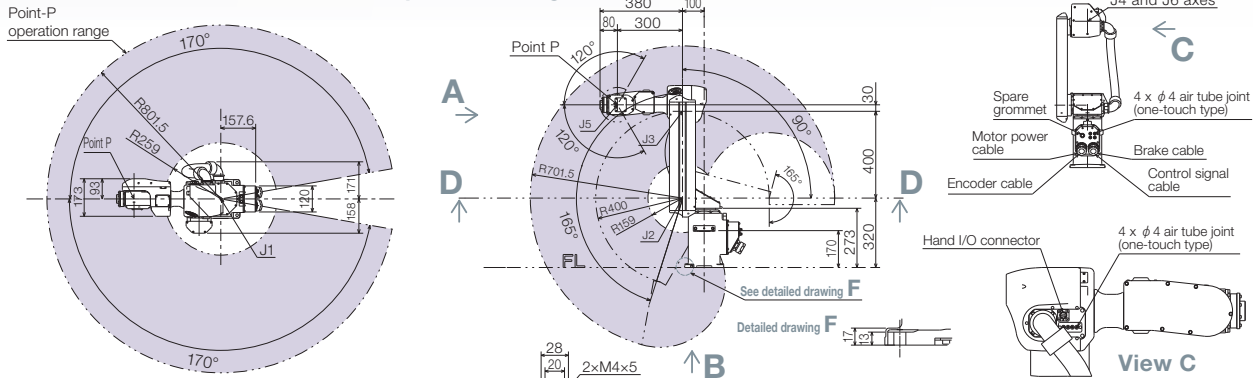


Model	TVL700	
Arm length	Total length	700 mm
	1st arm	400 mm
	2nd arm	300 mm
	Reach	801 mm
Working envelope	Axis 1	±170°
	Axis 2	-90~+165°
	Axis 3	0~+165°
	Axis 4	±190°
	Axis 5	±120°
	Axis 6	±360°
Maximum speed	Axis 1	295°/s
	Axis 2	270°/s
	Axis 3	295°/s
	Axis 4	422°/s
	Axis 5	422°/s
	Axis 6	696°/s
	Composite	7.71 m/sec
Standard cycle time <sup>*1</sup>	0.4 sec level	
Maximum payload mass	4 kg (rated: 1 kg)	
	(Downward: 5 kg)	
Allowable moment of inertia <sup>*2</sup>	Axis 4	0.15 kg·m <sup>2</sup>
	Axis 5	0.15 kg·m <sup>2</sup>
	Axis 6	0.2 kg·m <sup>2</sup>
Positioning repeatability <sup>*3</sup>	X-Y-Z	±0.03 mm
Hand wiring <sup>*4</sup>	4 inputs and 4 outputs	
Hand pneumatic joint <sup>*5</sup>	φ4×4 pieces	
Robot controller cable	3.5 m	
Power supply	1.5 kVA	
Mass	31 kg	
Connectable controller	TSL3100, TSL3100E	

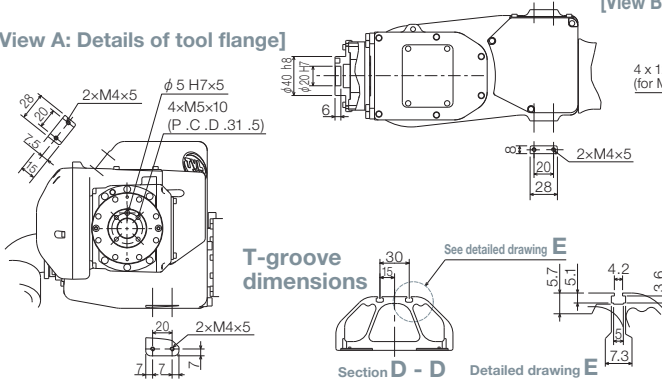
Please refer to pg.7 for more information on \*1~\*5

## External view

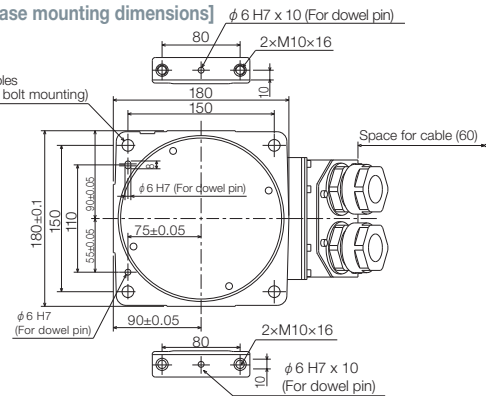
### External dimensions and operation range



### [View A: Details of tool flange]



### [View B: Base mounting dimensions]



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# TVM Series

## Wide working envelope

Robot with wide working envelope is offered in response to customer requests.

## High performance at a good price

Maximum payload 20kg

World class performance

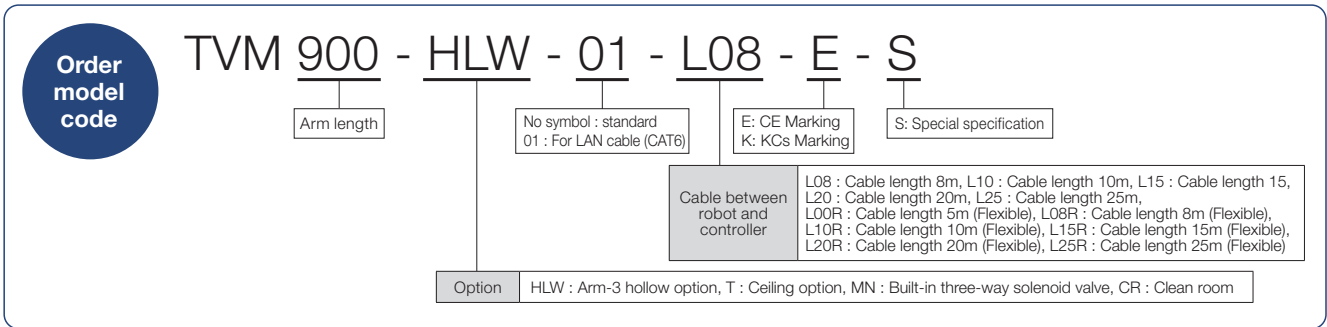
Vertical articulated robot with competitive prices

## Variety of options

IP65 is standard specification

Various other options can be offered to fulfill customer requirements





Model		TVM900	TVM1200	TVM1500
Arm length	Total length	900 mm	1,200 mm	1,500 mm
	1st arm	450 mm	600 mm	750 mm
	2nd arm	450 mm	600 mm	75 mm
	Reach	1,142 mm	1,432 mm	1,726 mm
Maximum speed	Composite	8.7 m/sec	10.7 m/sec	12.0 m/sec
Maximum payload mass		20 kg (rated: 5 kg)	15 kg (rated: 5 kg)	10 kg (rated: 5 kg)
Positioning repeatability <sup>*2</sup> X-Y-Z		±0.05 mm	±0.05 mm	±0.05 mm
Mass		122 kg	125 kg	131 kg
Connectable controller		TSL3200E	TSL3200E	TSL3200E

\*1: Speed and acceleration rates are limited depending on motion patterns, load mass and load offset values.  
 \*2: Positioning repeatability accuracy in one-direction movement, when the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy. The specification value may be exceeded depending on moving pattern, load mass and offset amount.  
 Trajectory accuracy is not guaranteed.  
 \*3: Hand wiring cable can be offered (additional option). Please contact us for more details.  
 \*4: Pneumatic joints for hand are provided on the base. Pipes are to be provided by the customer.

# TVM900

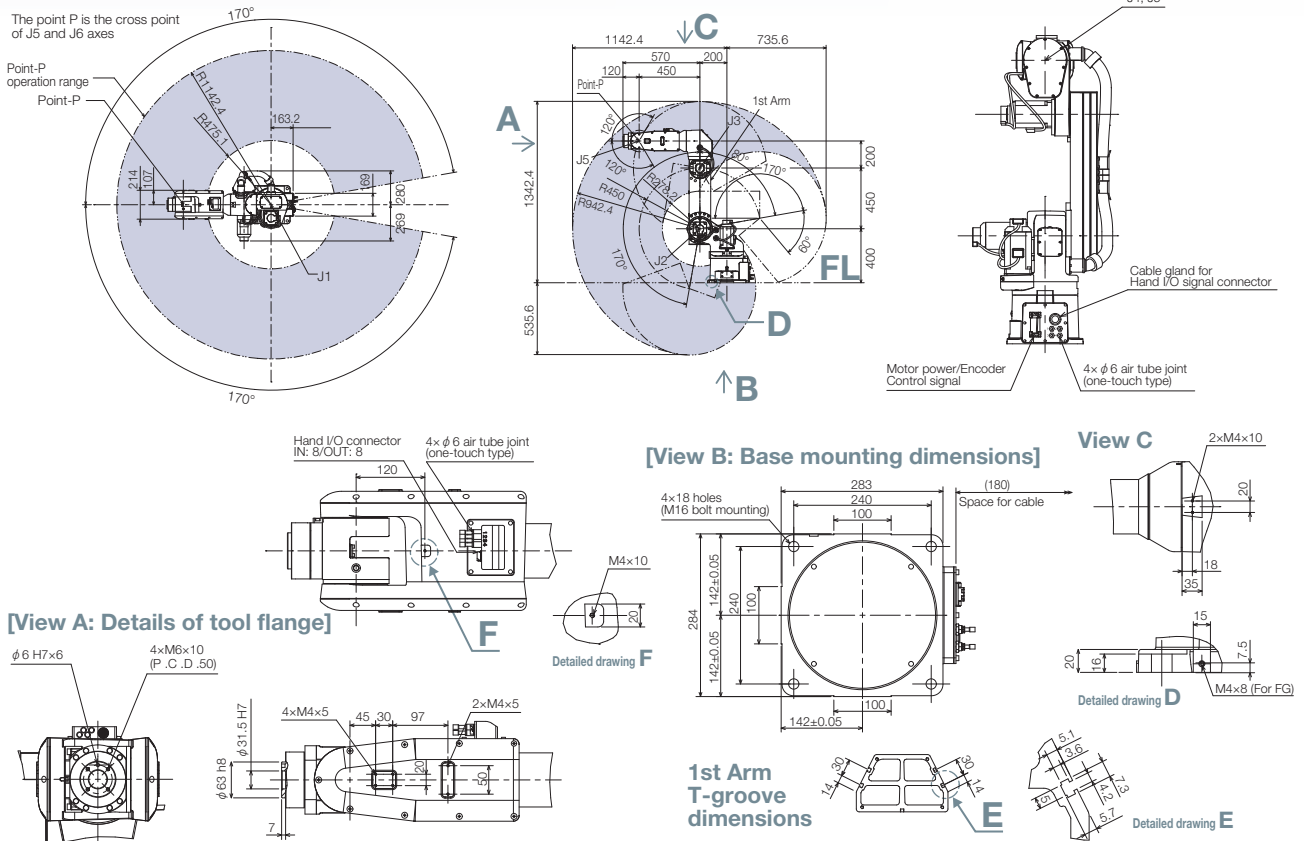


Models		TVM900
Arm Length	Total	900 mm
	1st Arm	450 mm
	2nd Arm	450 mm
	Reach	1,142 mm
Working Envelope	Axis 1	±170°
	Axis 2	-80~+170°
	Axis 3	-60~+170°
	Axis 4	±190°
	Axis 5	±120°
	Axis 6	±360°
Maximum Speed	Axis 1	223°/s
	Axis 2	191°/s
	Axis 3	270°/s
	Axis 4	412°/s
	Axis 5	336°/s
	Axis 6	720°/s
Composite	8.7 m/s	
Maximum Load Mass		20 kg (rated : 5 kg)
Allowable moment of inertia <sup>*1</sup>	Axis 4	1.8 kg·m <sup>2</sup>
	Axis 5	1.8 kg·m <sup>2</sup>
	Axis 6	0.3 kg·m <sup>2</sup>
Positioning repeatability <sup>*2</sup>	X-Y-Z	±0.05 mm
Hand wiring <sup>*3</sup>		8 inputs and 8 outputs
Hand pneumatic joint <sup>*4</sup>		φ6×4 pieces
Robot controller cable		5 m
Power Supply		6.9 kVA
Mass		122 kg
Connectable controller		TSL3200E

Please refer to pg.11 for more information on \*1~\*4

## External view

### External dimensions and operation range



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# TVM1200



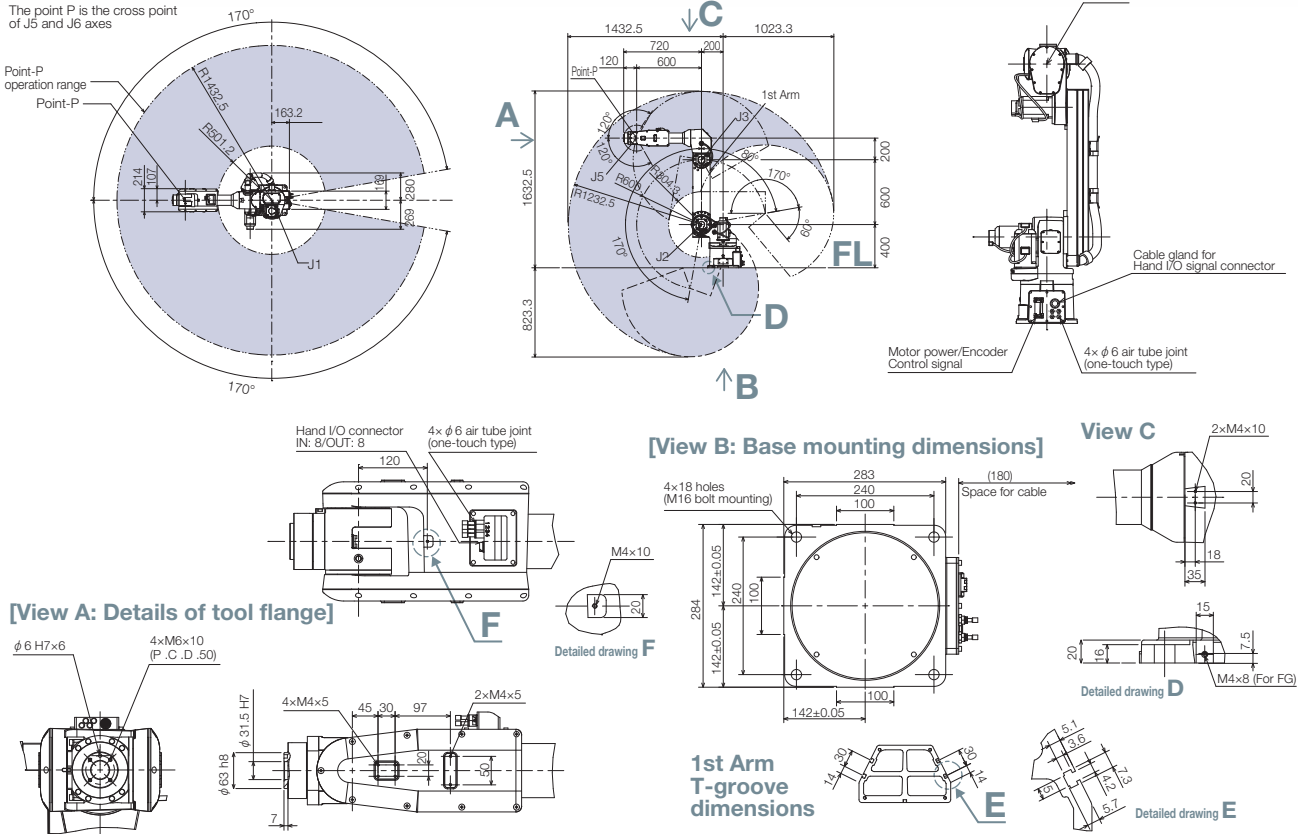
Models	TVM1200	
Arm Length	Total	1,200 mm
	1st Arm	600 mm
	2nd Arm	600 mm
	Reach	1,432 mm
Working Envelope	Axis 1	±170°
	Axis 2	-80~+170°
	Axis 3	-60~+170°
	Axis 4	±190°
	Axis 5	±120°
	Axis 6	±360°
Maximum Speed	Axis 1	223°/s
	Axis 2	191°/s
	Axis 3	270°/s
	Axis 4	412°/s
	Axis 5	336°/s
	Axis 6	720°/s
Composite	10.7 m/s	
Maximum Load Mass	15 kg (rated: 5 kg)	
Allowable moment of inertia <sup>1)</sup>	Axis 4	1.8 kg·m <sup>2</sup>
	Axis 5	1.8 kg·m <sup>2</sup>
	Axis 6	0.3 kg·m <sup>2</sup>
Positioning repeatability <sup>2)</sup> X-Y-Z	±0.05 mm	
Hand wiring <sup>3)</sup>	8 inputs and 8 outputs	
Hand pneumatic joint <sup>4)</sup>	φ6×4 pieces	
Robot controller cable	5 m	
Power Supply	6.9 kVA	
Mass	125 kg	
Connectable controller	TSL3200E	

Please refer to pg.11 for more information on <sup>1)</sup>-<sup>4)</sup>

## External view

### External dimensions and operation range

The point P is the cross point of J5 and J6 axes



CAD Download URL <https://www.shibauramachine.co.jp/en/product/robot/download.html>





# TV Series

## Excellent rigidity and durability

Its weight is the lowest of robots in the same class, achieving excellent rigidity

The robot is easy to install and offers high rigidity and durability

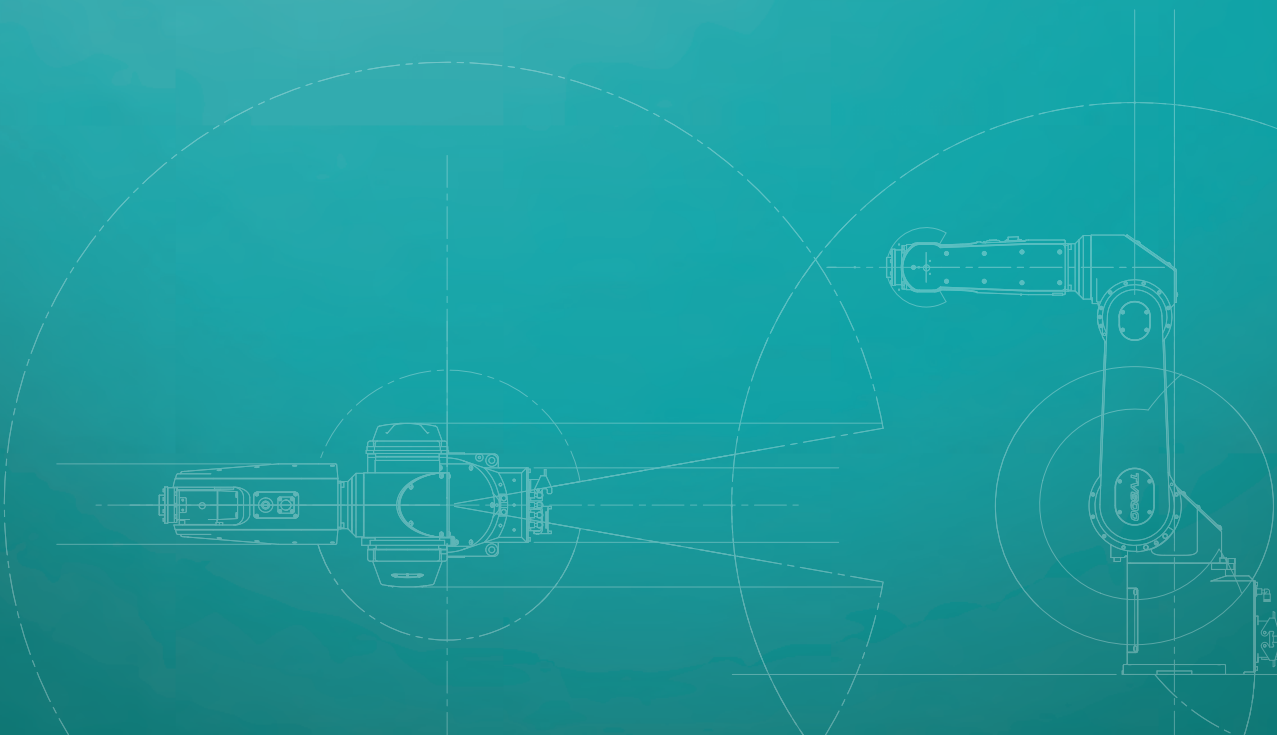
## Work in 3 dimensions

Sideways and diagonal motion is possible

Able to work like a human arm

## Variety of options

Variety of options can be offered to fulfill customer requirements



Order  
model  
code

TV 800 - T - 01 - L08 - E - S

Arm length

No symbol : standard  
01 : No set

E: CE Marking  
K: KCs Marking

S: Special specification

Cable between  
robot and  
controller

L08 : Cable length 8m, L10 : Cable length 10m, L15 : Cable length 15,  
L20 : Cable length 20m, L25 : Cable length 25m, L00R : Cable length 5m (Flexible),  
L08R : Cable length 8m (Flexible), L10R : Cable length 10m (Flexible),  
L15R : Cable length 15m (Flexible), L20R : Cable length 20m (Flexible),  
L25R : Cable length 25m (Flexible)

Option T : Ceiling option, MN : Built-in three-way solenoid valve, IP : Dust and water proof, CR : Clean room



TV800



TV1000, TV1000H

Model		TV800	TV1000	TV1000H
Arm length	Total length	800 mm	1,000 mm	1,000 mm
	1st arm	380 mm	480 mm	480 mm
	2nd arm	420 mm	520 mm	520 mm
	Reach	892 mm	1,090 mm	1,090 mm
Maximum speed	Composite	8.06 m/sec	9.61 m/sec	7.46 m/sec
Standard cycle time <sup>*1</sup>		0.4 sec level	0.6 sec level	0.9 sec level
Maximum payload mass		5 kg (rated: 2 kg)	5 kg (rated: 2 kg)	10 kg (rated: 2 kg)
Positioning repeatability <sup>*3</sup> X-Y-Z		±0.02 mm	±0.03 mm	±0.04 mm
Mass		45 kg	47 kg	47 kg
Connectable controller		TS3100, TS3100E	TS3100, TS3100E	TS3100, TS3100E

<sup>\*1</sup>: Continuous operation of standard cycle motion pattern is not possible beyond the effective load ratio.  
(Horizontal 300 mm, vertical 25 mm, round-trip, coarse positioning)

<sup>\*2</sup>: Acceleration rates are limited depending on motion patterns, payload mass, and offset value.

<sup>\*3</sup>: Positioning repeatability accuracy in one-direction movement, when the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy. The specification value may be exceeded depending on moving pattern, load mass and offset amount.  
Trajectory accuracy is not guaranteed.

<sup>\*4</sup>: Hand wiring cable can be offered (additional option). Please contact us for more detail.

<sup>\*5</sup>: Pneumatic joints for hand are provided on the base. Pipes are to be provided by the customer.



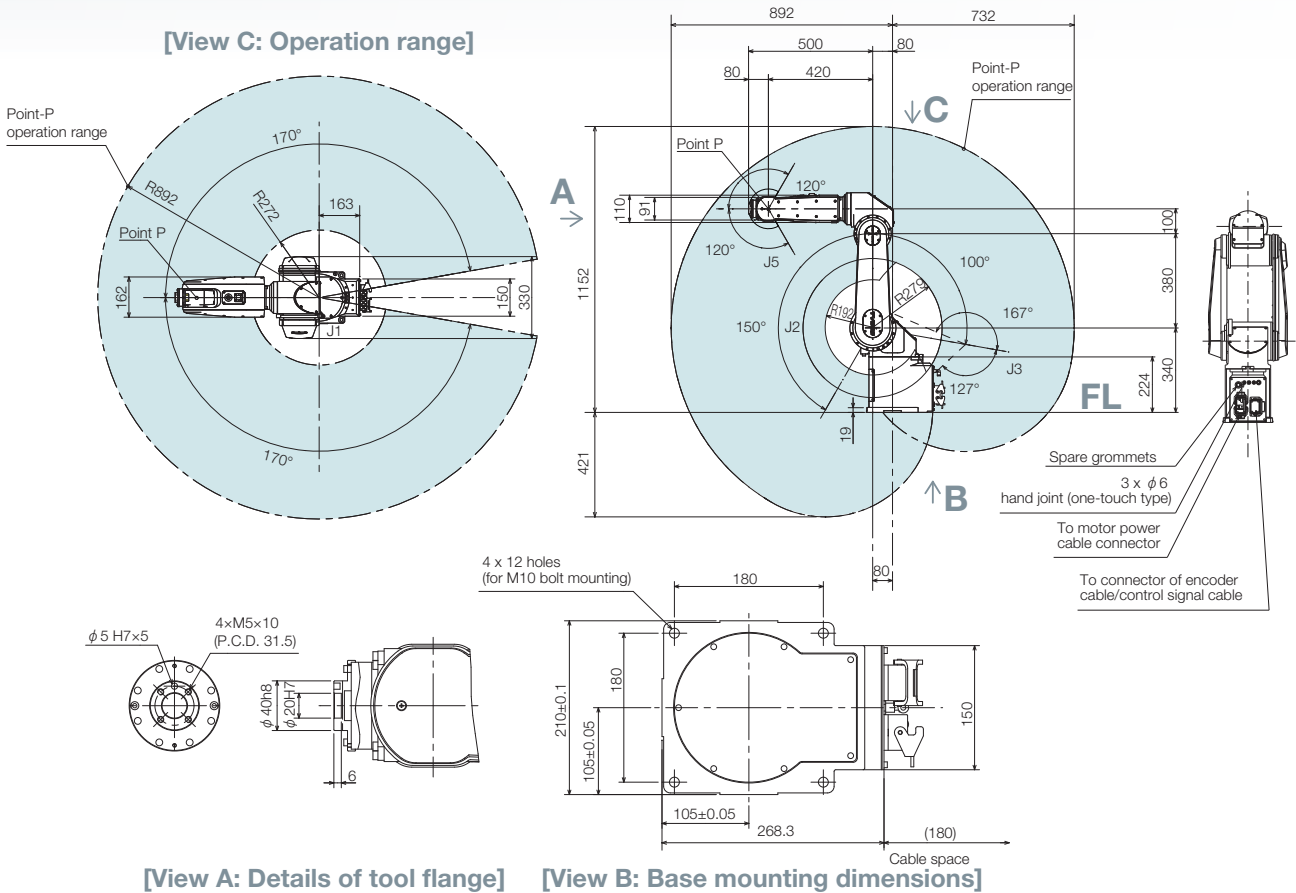
# TV800



Type	TV800	
Arm length	Total length	800 mm
	1st arm	380 mm
	2nd arm	420 mm
	Reach	892 mm
Working envelope	Axis 1	±170°
	Axis 2	-100~+150°
	Axis 3	-127~+167°
	Axis 4	±190°
	Axis 5	±120°
	Axis 6	±360°
Maximum speed	Axis 1	237°/s
	Axis 2	240°/s
	Axis 3	288°/s
	Axis 4	350.5°/s
	Axis 5	484°/s
	Axis 6	576°/s
	Composite	8.06 m/sec
Standard cycle time <sup>*1</sup>	0.4 sec level	
Maximum payload mass	5 kg (rated: 2 kg)	
Allowable moment of inertia <sup>*2</sup>	Axis 4	0.3 kg·m <sup>2</sup>
	Axis 5	0.3 kg·m <sup>2</sup>
	Axis 6	0.05 kg·m <sup>2</sup>
Positioning repeatability <sup>*3</sup>	X-Y-Z	±0.02 mm
Hand wiring <sup>*4</sup>	8 inputs and 2 outputs	
Hand pneumatic joint <sup>*5</sup>	φ6×3 pieces	
Robot controller cable	5 m	
Power supply	2.5 kVA	
Mass	45 kg	
Connectable controller	TS3100, TS3100E	

Please refer to pg.16 for more information on \*1~\*5

## External view



CAD Download URL <https://www.shibauramachine.co.jp/en/product/robot/download.html>



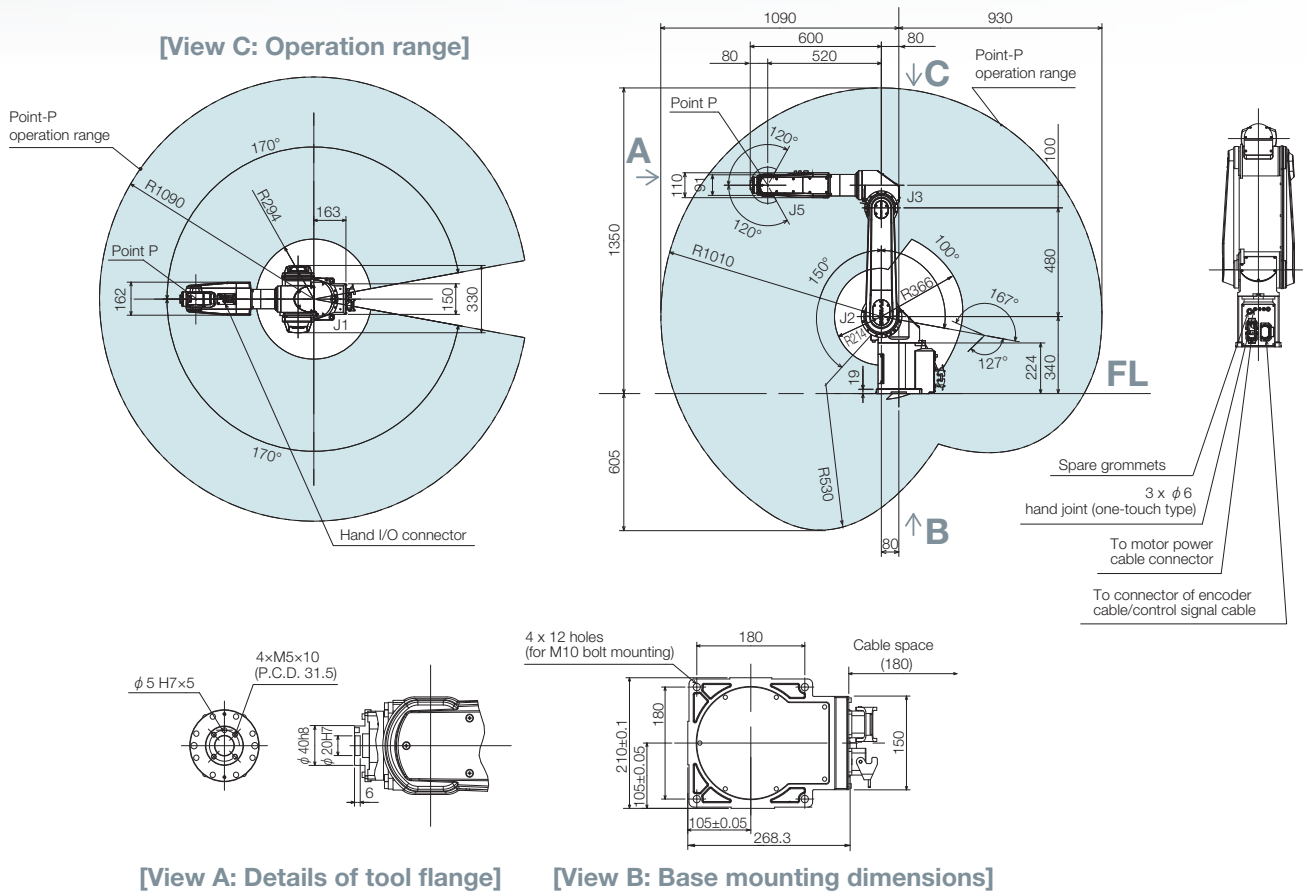
## TV1000



Type	TV1000	
Arm length	Total length	1,000 mm
	1st arm	480 mm
	2nd arm	520 mm
	Reach	1,090 mm
Working envelope	Axis 1	±170°
	Axis 2	-100~+150°
	Axis 3	-127~+167°
	Axis 4	±190°
	Axis 5	±120°
	Axis 6	±360°
Maximum speed	Axis 1	237°/s
	Axis 2	240°/s
	Axis 3	288°/s
	Axis 4	350.5°/s
	Axis 5	484°/s
	Axis 6	576°/s
	Composite	9.61 m/sec
Standard cycle time <sup>1</sup>	0.6 sec level	
Maximum payload mass	5 kg (rated: 2 kg)	
Allowable moment of inertia <sup>2</sup>	Axis 4	0.3 kg·m <sup>2</sup>
	Axis 5	0.3 kg·m <sup>2</sup>
	Axis 6	0.05 kg·m <sup>2</sup>
Positioning repeatability <sup>3</sup>	X-Y-Z	±0.03 mm
Hand wiring <sup>4</sup>	8 inputs and 2 outputs	
Hand pneumatic joint <sup>5</sup>	φ6×3 pieces	
Robot controller cable	5 m	
Power supply	2.5 kVA	
Mass	47 kg	
Connectable controller	TS3100, TS3100E	

Please refer to pg.16 for more information on \*1~\*5

## External view



CAD Download URL <https://www.shibauramachine.co.jp/en/product/robot/download.html>



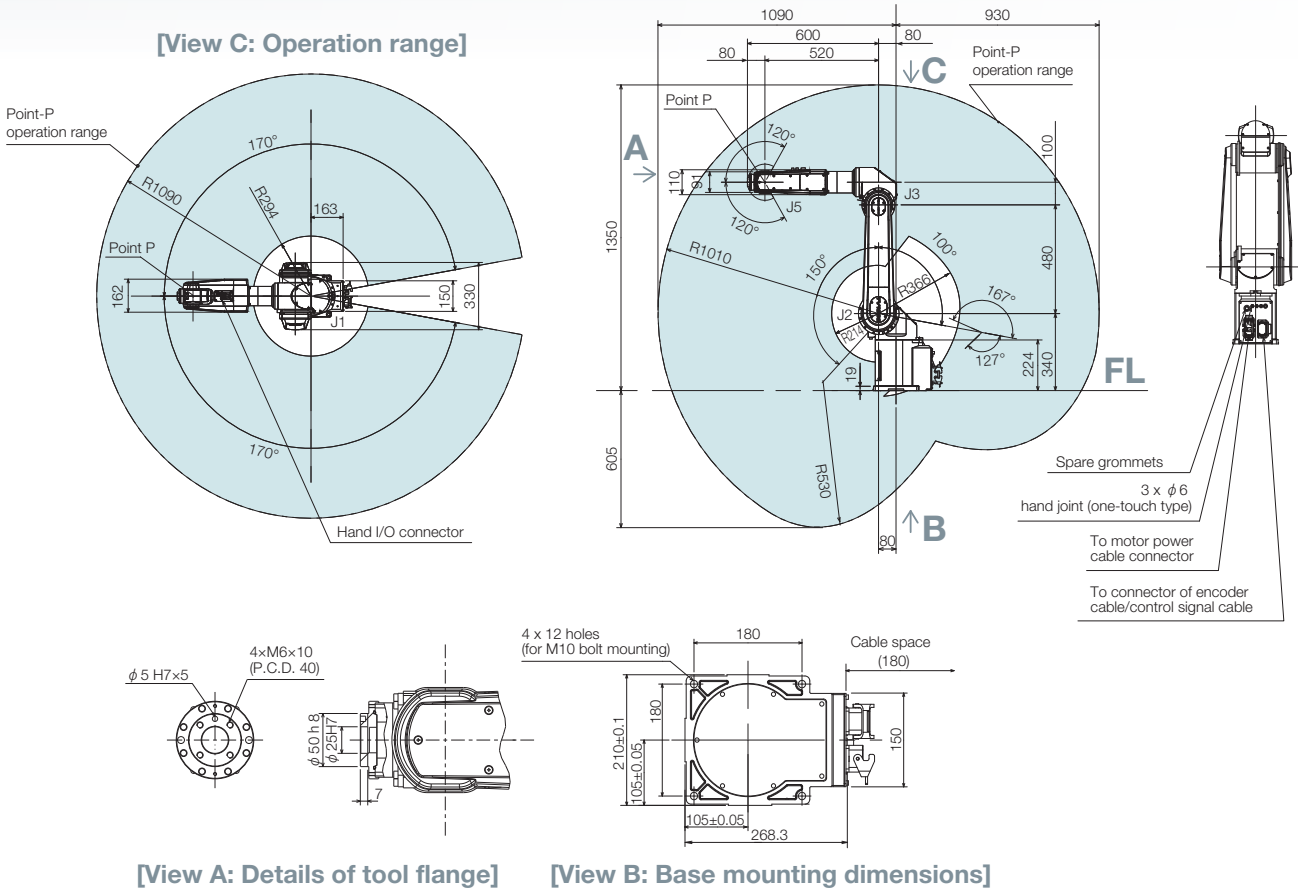
# TV1000H



Type	TV1000H	
Arm length	Total length	1,000 mm
	1st arm	480 mm
	2nd arm	520 mm
	Reach	1,090 mm
Working envelope	Axis 1	±170°
	Axis 2	-100~+150°
	Axis 3	-127~+167°
	Axis 4	±190°
	Axis 5	±120°
	Axis 6	±360°
Maximum speed	Axis 1	237°/s
	Axis 2	180°/s
	Axis 3	180°/s
	Axis 4	220.7°/s
	Axis 5	244.4°/s
	Axis 6	576°/s
	Composite	7.46 m/sec
Standard cycle time <sup>*1</sup>	0.9 sec level	
Maximum payload mass	10 kg (rated: 2 kg)	
Allowable moment of inertia <sup>*2</sup>	Axis 4	0.3 kg·m <sup>2</sup>
	Axis 5	0.3 kg·m <sup>2</sup>
	Axis 6	0.05 kg·m <sup>2</sup>
Positioning repeatability <sup>*3</sup> X-Y-Z	±0.04 mm	
Hand wiring <sup>*4</sup>	8 inputs and 2 outputs	
Hand pneumatic joint <sup>*5</sup>	φ6×3 pieces	
Robot controller cable	5 m	
Power supply	2.5 kVA	
Mass	47 kg	
Connectable controller	TS3100, TS3100E	

Please refer to pg.16 for more information on \*1~\*5

## External view

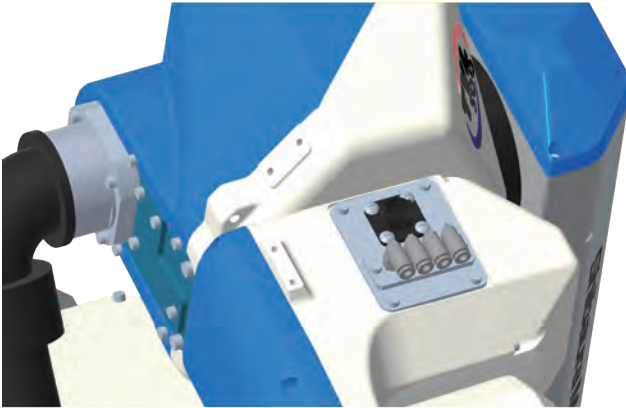


CAD Download URL <https://www.shibauramachine.co.jp/en/product/robot/download.html>



## TVL Series specific option TVL Series ▶ P.6~

### HAND IO Panel install in 2nd Arm (2) (2ND)



### HAND IO Panel install in 3rd Arm (3RD)



Wiring and piping to the robot tip can be connected through the inside of the robot  
Prevent wires and air tubes from getting tangled by changing the position of the connection panel.

### Oil-proof specification (OR)

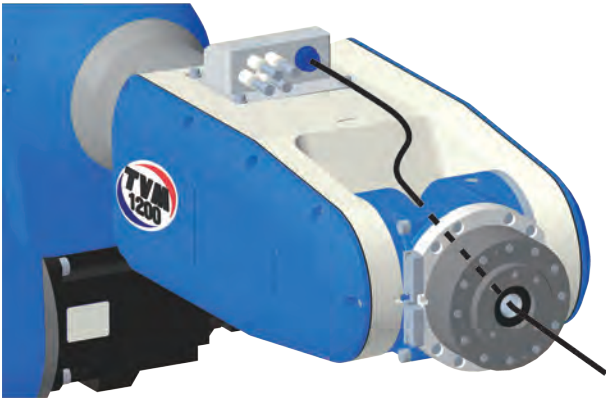
Effective for oil-mist equipment such as around Machine Tools.

\* Limitation of oil types. Please contact us for more details.

## TVM Series specific option TVM Series ▶ P.10~

### Arm-3 hollow option (HLW)

The die 3 arm (hand part of the robot) is hollow.  
By passing wiring through the hollow part, it is possible to prevent entanglement of electric wires and air tubes.



### LAN cable specification (01)

LAN cable is inside the robot arm.  
Useful when attach the electronics (ex: camera) on the tips of robot arm.  
Prevent from the cable disconnected and tangled.

## Common option TVL Series ▶ P.6~ TVM Series ▶ P.10~ TV Series ▶ P.15~

### Ceiling mount (T)

Working area space can be saved by suspending the robots from the ceiling.

\* Working envelope is different from standard specification. Please contact us for more details.

### Dust-proof specification (IP)

Dust-proof and splash-proof specification equivalent to IP65. (Does not allow dust intrusion and protects the robot from harmful effects of direct water splashes from any direction.)

\* TVM Series has IP65 with standard specifications

### Built-in three-way solenoid valve (MN)

Three-way solenoid valve can be installed inside the robot  
Wiring and piping for robot hands can be easily done.

### Clean room (CR)

Cleanroom design equivalent of ISO clean Class 3.  
Effective for dust-averse applications such as semiconductor and electronics manufacturing.



Order model code Example of Order model code

TVM 900 - HLW - 01 - L08 - E - S

● Model	● Arm length	● No.1	● No.2	● No.3	● No.4	● No.5
<b>TVL</b>	<b>500 - 1500</b>	No symbol No option (standard)	No symbol No option (standard)	No symbol Standard specification <sup>*2</sup>	No symbol No special marking (standard)	No symbol No other options (standard)
<b>TVM</b>		<b>2ND</b> Hand I/O Panel install in 2nd Arm (2)	<b>01</b> For LAN cable (CAT6)	<b>L05</b> 5 m	<b>E</b> CE Marking	<b>S</b> Special specification
<b>TV</b>		<b>3RD</b> Hand I/O Panel install in 3rd Arm		<b>L08</b> 8 m	<b>K</b> KCs Marking	
		<b>OR</b> Oil proof		<b>L10</b> 10 m		
		<b>HLW</b> Arm-3 hollow		<b>L15</b> 15 m		
		<b>T</b> Ceiling mount		<b>L20</b> 20 m		
		<b>MN</b> Built-in three-way solenoid valve		<b>L25</b> 25 m		
		<b>IP</b> Dust-proof		<b>L00R</b> Standard specification (Flexible) <sup>*2</sup>		
		<b>CR</b> Clean room		<b>L05R</b> 5 m (Flexible)		
				<b>L08R</b> 8 m (Flexible)		
				<b>L10R</b> 10 m (Flexible)		
				<b>L15R</b> 15 m (Flexible)		
				<b>L20R</b> 20 m (Flexible)		
				<b>L25R</b> 25 m (Flexible)		

## Option table

○: Developed △: Please contact us for details ×: No development

Type	No.	Symbol	TVL500	TVL700	TVM900	TVM1200	TVM1500	TV800	TV1000	TV1000H
No option (standard)	1	No symbol	○	○	○	○	○	○	○	○
Hand I/O Panel install in 2nd Arm (2)		2ND	○	○	×	×	×	×	×	×
Hand I/O Panel install in 3rd Arm		3RD	○	○	×	×	×	×	×	×
Oil proof		OR	○	○	×	×	×	×	×	×
Arm-3 hollow option		HLW	×	×	○	○	○	×	×	×
Ceiling mount		T	○	○	○	○	○	○	○	○
Built-in three-way solenoid valve		MN	○	○	○	○	○	○	○	○
Dust-proof		IP	○	○	○ <sup>*1</sup>	○ <sup>*1</sup>	○ <sup>*1</sup>	○	○	○
Clean room		CR	○	○	○	○	○	○	○	○
No option (standard)	2	No symbol	○	○	○	○	○	○	○	○
For LAN cable (CAT6)		01	×	×	○	○	○	×	×	×
Standard specification <sup>*2</sup>	3	No symbol	○	○	○	○	○	○	○	○
Cable length 5 m		L05	○	○	×	×	×	×	×	×
Cable length 8 m		L08	○	○	○	○	○	○	○	○
Cable length 10 m		L10	○	○	○	○	○	○	○	○
Cable length 15 m		L15	×	×	○	○	○	○	○	○
Cable length 20 m		L20	×	×	○	○	○	○	○	○
Cable length 25 m		L25	×	×	○	○	○	○	○	○
Standard specification (Flexible) <sup>*2</sup>		L00R	○	○	○	○	○	○	○	○
Cable length 5 m (Flexible)		L05R	○	○	×	×	×	×	×	×
Cable length 8 m (Flexible)		L08R	○	○	○	○	○	○	○	○
Cable length 10 m (Flexible)		L10R	○	○	○	○	○	○	○	○
Cable length 15 m (Flexible)		L15R	×	×	○	○	○	○	○	○
Cable length 20 m (Flexible)	L20R	×	×	○	○	○	○	○	○	
Cable length 25 m (Flexible)	L25R	×	×	○	○	○	○	○	○	
No special marking (standard)	4	No symbol	○	○	○	○	○	○	○	○
CE Marking		E	○	○	○	○	○	○	○	○
KCs Marking		K	○	○	○	○	○	○	○	○
No other options (standard)	5	No symbol	○	○	○	○	○	○	○	○
Special specification		S	△	△	△	△	△	△	△	△

\*1 : TVM Series has IP65 with standard specifications

\*2 : Standard cable length for TVL Series is 3.5m, and for TV, TVM Series is 5m

# Controller Teach Pendant

## Small and lightweight

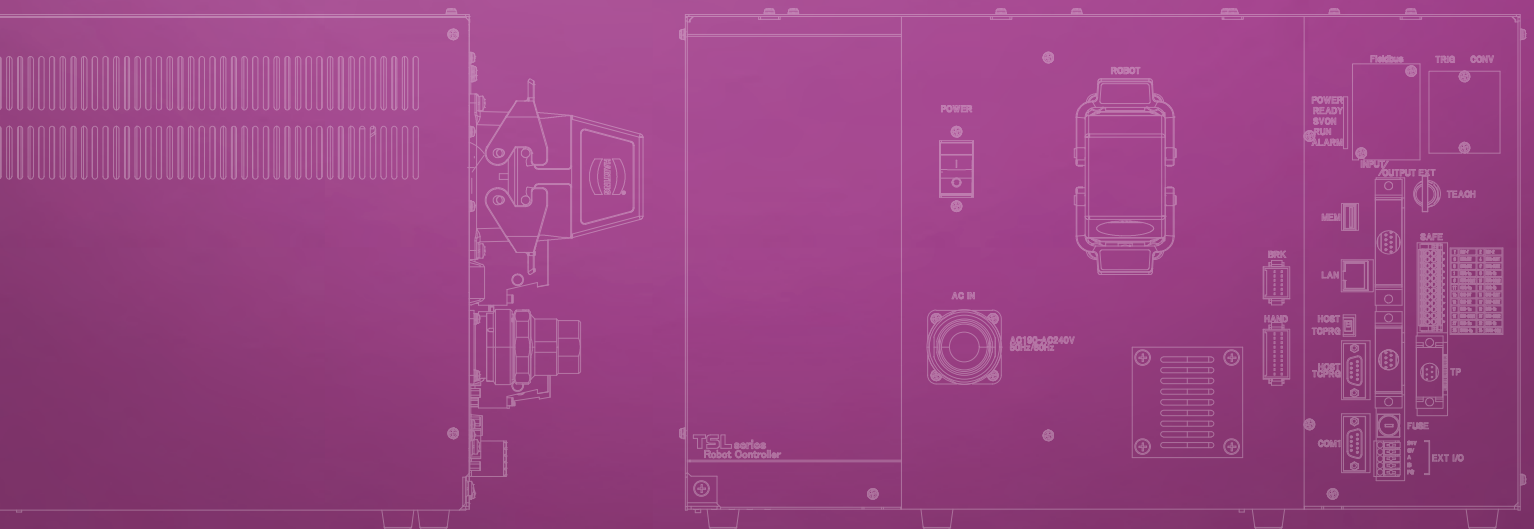
Small and lightweight controller (height 241 mm to 290 mm)  
Contributes to the reduction in size of a control panel

## Powerful software

Provides world-class programming support  
User-friendly software

## TC mini (simple PLC) function

Includes simple PLC function as standard  
Customization possible for I/O allocation



# TSL3100, TSL3100E



TSL3100



TSL3100E

Model	TSL3100	TSL3100E
Number of controlled axes	6 axis	
Program language	SCOL (Original language)	
Movement command	PTP (point to point), CP (Continuous Path: Linear,Circular), short-cut	
Memory	0.5 MB	1.5 MB
Auxiliary memory	USB memory	
Number of programs that can be stored	User file:242, System file: 14	
Maximum number of program lines	Per program, teaching point: 2000 points, program section: 3000 lines	
I/O signals	General	8 inputs and 8 outputs
	System	Input point: 13 points (external emergency stop input, program selection, start, stop, etc.) Output point: 9 points (Servo ON state contact, operation preparation complete, failure, etc.)
Communication port	RS-232C: General use port (COM1) 1 port, Ethernet: 1 port	
Power supply <sup>1</sup>	Main power supply	Single phase AC190 V to 240 V 50/60 Hz
	Power supply for I/O signals	DC24 V (over 100 W)
Outer dimensions	220 (W) × 266 (H) × 304 (D) mm <sup>2</sup>	320 (W) × 266 (H) × 304 (D) mm <sup>2</sup>
Mass	9 kg	13 kg
Teach Pendant (optional)	Teach Pendant: TP1000, TP3000	
Connectable robot	TVL Series	

# TSL3200E



Model	TSL3200E	
Number of controlled axes	6 axis	
Program language	SCOL (Original language)	
Movement command	PTP (point to point), CP (Continuous Path: linear, circular), short-cut	
Memory	1.5 MB	
Auxiliary memory	USB memory	
Number of programs that can be stored	User file:242, System file: 14	
Maximum number of program lines	Per program, teaching point: 2000 points, program section: 3000 lines	
I/O signals	General	8 inputs and 8 outputs
	System	Input point: 13 points (external emergency stop input, program selection, start, stop, etc.) Output point: 9 points (operation preparation complete, failure, etc.)
Communication port	RS-232C: General use port (COM1) 1 port, Ethernet: 1 port	
Power supply <sup>1</sup>	Main power supply	Single phase AC190 V to 240 V 50/60 Hz
	Power supply for I/O signals	DC24 V (over 100 W)
Outer dimensions	470 (W) × 290 (H) × 304 (D) mm <sup>2</sup>	
Mass	19 kg	
Teach Pendant (optional)	Teach Pendant: TP1000, TP3000	
Connectable robot	TVM Series	

# TS3100, TS3100E



TS3100, TS3100E

Model	TS3100, TS3100E	
Number of controlled axes	6 axis	
Program language	SCOL (Original language)	
Movement command	PTP (point to point), CP (Continuous Path: linear,circular), short-cut	
Memory	1.5 MB	
Auxiliary memory	USB memory	
Number of programs that can be stored	User file:242, System file: 14	
Maximum number of program lines	Per program, teaching point: 2000 points, program section: 3000 lines	
I/O signals	General	32 inputs and 32 outputs
	System	Input point: 13 points (external emergency stop input, program selection, start, stop, etc.) Output point: 9 points (Servo ON state contact, operation preparation complete, failure, etc.)
Communication port	RS-232C: General use port (COM1) 1 port, Ethernet: 1 port	
Power supply <sup>1</sup>	Main power supply	Single phase AC200 V to 240 V 50/60 Hz
	Power supply for I/O signals	DC24 V (over 100 W)
Outer dimensions	420 (W) × 241 (H) × 298 (D) mm <sup>2</sup>	
Mass	17 kg	
Teach Pendant (optional)	Teach Pendant: TP1000, TP3000	
Connectable robot	TV Series	

\*1: Please see specification table for power capacity of each robot  
\*2: Height (H) includes the rubber legs.

Please see website for details

- TSL3100  
<https://www.shibaura-machine.co.jp/en/product/robot/lineup/tv/tsl3100.html>
- TSL3200E  
<https://www.shibaura-machine.co.jp/en/product/robot/lineup/tv/tsl3200e.html>
- TS3100  
<https://www.shibaura-machine.co.jp/en/product/robot/lineup/th/ts3100.html>



TSL3100



TSL3200E



TS3100

# TP3000



## Adopting color screen for easy viewing

The use of an LCD color screen has dramatically improved the expressive power compared to the conventional teach pendant (TP1000).

## Teach pendant equipped with graphic operation keys

The keyboard display will dynamically change to match the screen. Reduce the hassle of required key input.

## Adopting language Associative Function

Suggestions will be displayed as you enter text  
Reserved word input will be quicker compared to conventional teach pendant.

## Outline function

The main program, sub-programs, and labels in a SCOL program can be displayed in a hierarchical manner, allowing you to quickly grasp the structure of the program.

Model	TP3000
Input method	Graphic operation keyboard
Mass	520 g (except cable)
Outer dimensions	226 (W) × 162 (H) × 55 (D) mm
Cable length	5 m
Protection level	IP65
Connectable controller	TS3100, TS3100E, TSL3100, TSL3100E, TSL3200E

Please see website for details <https://www.shibaura-machine.co.jp/en/product/robot/lineup/tv/TP3000.html>



# TP1000-6AX



## Inexpensive and easy-to-use standard model

Button placement is intuitive and easy to understand  
Quick startup time for performing small operations.  
Monitor includes backlight for ease of use in the dark

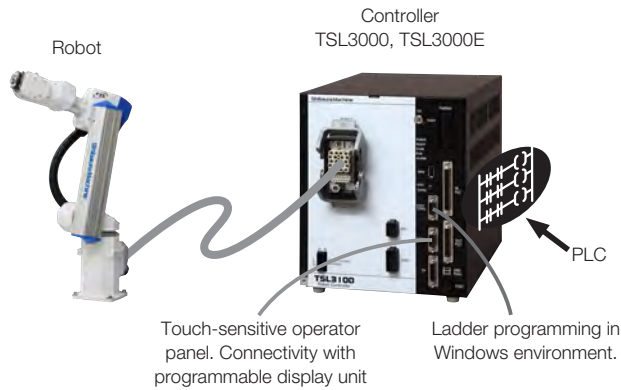
Model	TP1000-6AX
Input method	Button
Mass	600 g (except cable)
Outer dimensions	133 (W) × 255 (H) × 48 (D) mm
Cable length	5 m
Connectable controller	TS3100, TS3100E, TSL3100, TSL3100E, TSL3200E



## Built-in PLC TCmini

Various controllers have a simple PLC (TCmini) built in as standard. By editing the ladder program you can change the assignment of input/output signals while the robot program is not running.

\* To edit Ladder Program, option software "TC-WORK" is required



## Industrial networks

Supports CC-Link, DeviceNet, PROFIBUS, Ethernet/IP, EtherCAT, PROFINET\*<sup>1</sup>

The sequencer can output a start signal to the controller, and the controller status can be monitored by the sequencer.

## Extended I/O Unit

The number of external I/O signal points can be increased by adding an expansion unit. The maximum number of input/output points can be increased to 56 points/40 points.

## Option table

	TSL3100	TSL3100E	TSL3200E	TS3100	TS3100E
Built-in PLC	○	○	○	○	○
Vision + Conveyor Synchronization	×	○	○	×	○
Industrial network <sup>1</sup>	CC-Link	○	○	○	○
	DeviceNet	○	○	○	○
	PROFIBUS	○	○	○	○
	EtherNet/IP	○	○	○	○
	EtherCAT	○	○	○	○
	PROFINET	○	○	○	○
CE Marking	×	○	○	×	○
KCs Marking	○	○	○	○	○
Extended I/O Unit	○	○	○	○	○
Additional axis	○	○	○	○	○

\*1 : Ethernet is a registered trademark of XEROX Corp. from the U.S.

CC-Link is a registered trademark of CC-Link society

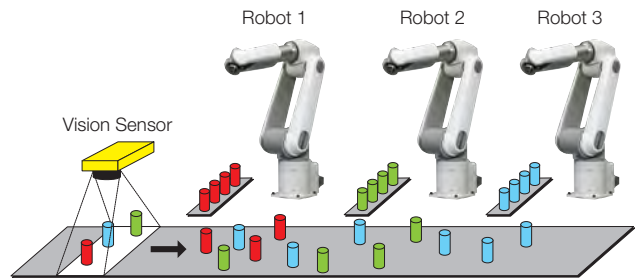
Device Net and Ethernet I/P are registered trademarks of ODVA.

PROFIBUS and PROFINET are registered trademarks of PROFIBUS User Organization.

Ether CAT is a registered trademark and patent technology of Beckhoff Automation GmbH from Germany.

## Vision + Conveyor Synchronization

- A large number and wide variety of types of work pieces on a conveyor can be sorted and put into boxes by multiple robots in coordination.
- Damage and breakage of work pieces is avoided by synchronization with the conveyor.
- Programming is made easy with special, dedicated commands to achieve efficient work-piece handling, with functionalities such as identification and duplicate data avoidance.



## CE Marking

## KCs Marking

Applicable to each marking

## Additional axis

A traveling axis or another type of axis can be added under the robot body to control it as the 7th or 8th axis.

## Robot Programming Assist Tool

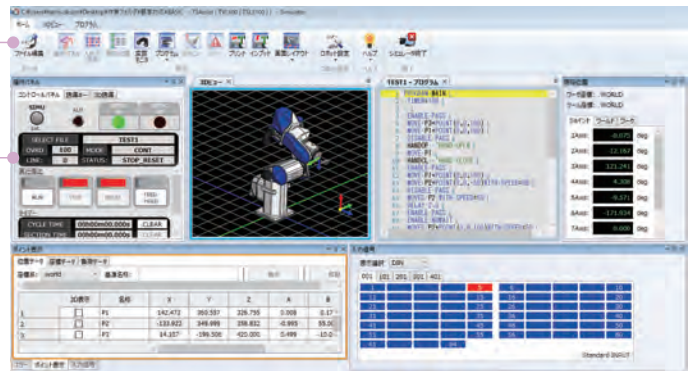


### Easy Operation

Easy-to-understand, intuitive screen design, ribbon interface, window-dock function for customizable operator panels

Beginners will find it easy to understand and can quickly master robot programming skills. For experienced robot users, TSAssist helps them create robot programs efficiently.

- Easy-to-understand, intuitive screen design
- Ribbon interface
- Customized operation panels by window-dock function

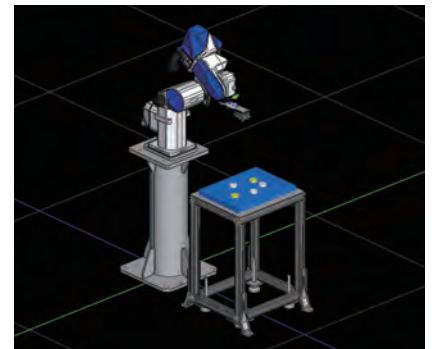


### High Performance 3D Simulation

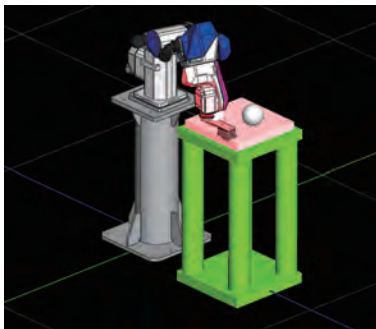
Interference check, Locus display, timer (cycle time measurement), placing simple work pieces and model shapes, loading 3D CAD data, saving 3D simulations to a video file and multi-angle view

These functions enable the accurate and high quality estimation of robot-automation processes. From simple outline simulation to detailed simulation closer to actual machine implementation, TSAssist helps with all phases of the robot automation system life cycle, from initial "sketch, planning, proposal, designing and installation, to the improvement and repurposing of existing facilities.

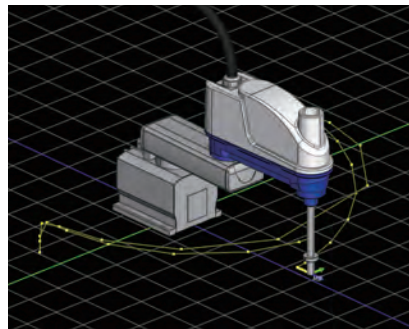
\* ".stl" files of 3D CAD data can add to TSAssist directly.  
 \* The conversion software "Virfit Agent" is required to add the ".stp" files of 3D CAD data.  
 \* USB license key (sold separately) is required to use the high performance 3D simulation.



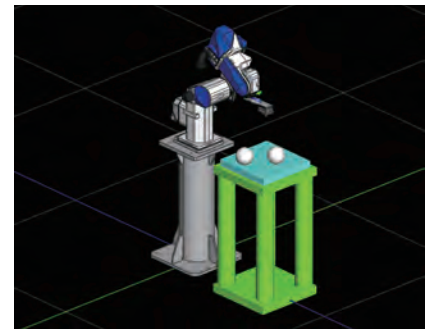
#### ▪ Interference check



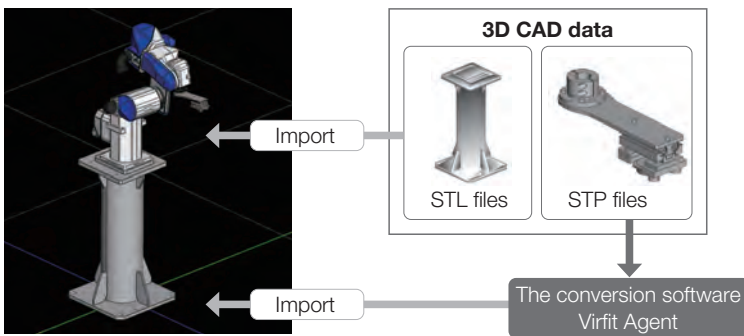
#### ▪ Locus display



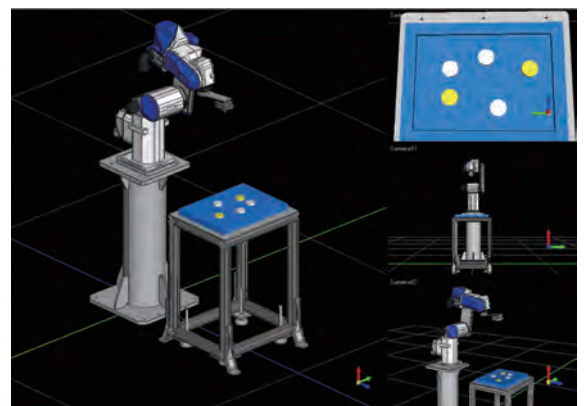
#### ▪ Placing simple work pieces



#### ▪ Loading 3D CAD data



#### ▪ Multi-angle view



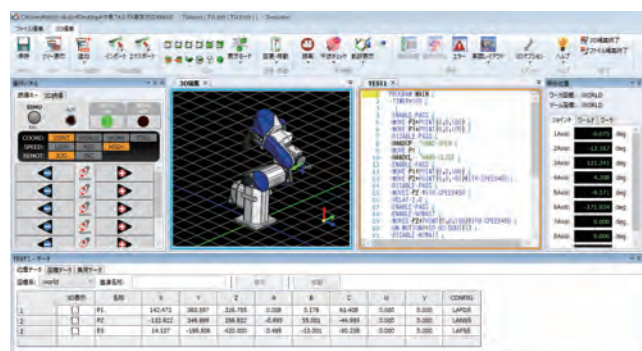
#### ▪ Timer (cycle time measurement)

#### ▪ Saving 3D simulation to a video file

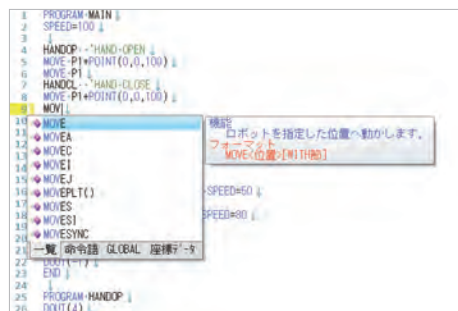
## Highly Functional Program Editor

Robot language input support (keyword suggestions), outline display and split display.

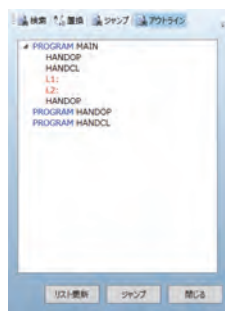
Point data (taught position information) editor with, sort, search and filter functions. In 3D editor mode, the robot can be guided by mouse dragging and by clicking on the object model surface. No complex position calculation is necessary. With these functions, programming can be done efficiently with minimum mistakes.



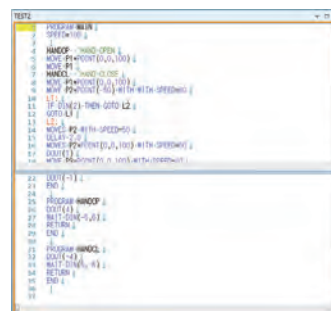
### ■ Robot language input support (keyword suggestions)



### ■ Outline display



### ■ Split display



### ■ Point data editor's sort, search and filter functions

### ■ 3D editor mode enables robot guidance and teaching by mouse

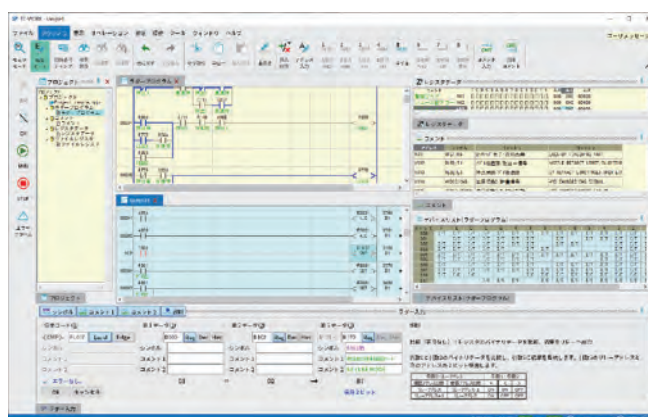
## Operating environment

OS	Windows7 / 8.1 / 10 (32/64bit)
CPU	Intel Core I series or newer than Intel Core2 Quad
Memory	More than 2 GB recommended
Monitor	Screen resolution 1024×768 (WXGA) or higher *1366×768 (FEXGA) is recommended
HDD	More than 1 GB free hard drive space
Graphics (display)	NVIDIA GeForce series, Quadro series, Intel HD Graphics 4000 or newer recommended DirectX 9.0c ready More than 64 MB graphics memory recommended Direct3D Acceleration enable
Mouse	Use Wheel Mouse for operation
USB	Use 1Port (USB2.0 for USB license key)
DVD-ROM	Use DVD-ROM drive to install this software
I/F	LAN-Port or COM-Port for connect to Controller

## TC-WORX

### For programming the simple PLC

1. Ladder-style logic programming for the simple PLC.
2. In addition to program creation, online monitoring of ladder program and I/O status to help reduce development and debugging time.
3. Extensive functions, such as address map display, comment display and search, are provided.



# Robot selection guidelines

In order to select a robot model please consider the following factors:

1 | Mass and center of gravity-offset values of the work piece and end of arm effector combined

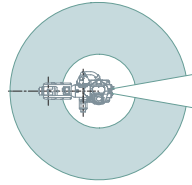
2 | Environmental requirements of the installation site

Environment types: general, cleanroom, dust and splash proof.

3 | Area coverage requirements and installation configurations

Please review the external dimension drawing (CAD file) of each model for the working envelope (area coverage).

For example: Standard floor-mounted configuration or optional ceiling-mount configuration.



An example of Vertical Articulated robot working envelope

4 | The robot motion patterns and the time requirement (cycle time) review

5 | Cable length requirements (the distance between the robot and the controller)

Please refer to the specification table of each model for standard cable lengths.

Optional cable lengths are available. Optional movable cable is available.

6 | Controller option requirements

Please refer to the specification table of each model for available controller options.  
For example: Whether optional field network connectivity is required.

7 | Teach Pendant (optional)

Please select according to the robot type.

For Vertical Articulated robot



TP1000-6AX



TP3000

8 | PC software

Please select according to the robot type.

For Vertical Articulated robot

TSAssist

Programming assistance software

TC-WORX

Programming assistance software for TC mini

\* This document presents an overview of our robot product lineup. For full details, such as specification data and external dimension CAD files, please refer to the brochure for each model and our website. Please contact our sales representatives with any questions you may have.

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[www.shibaura-machine.co.jp/](http://www.shibaura-machine.co.jp/)



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