YAMAHA

New Product information

YAMAHA Single-Axis Robots

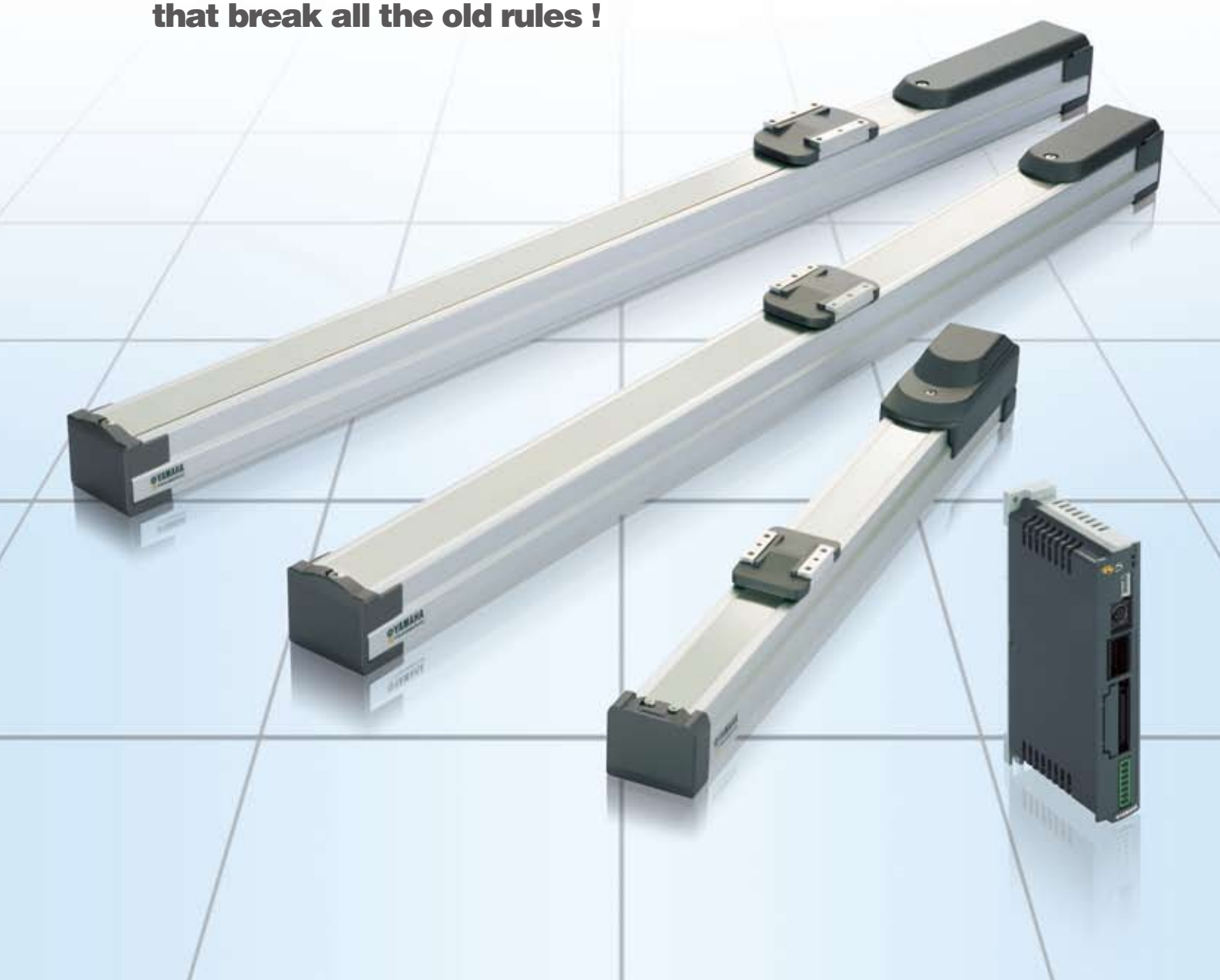
TRANSERVO

Stepping Servo（SS04 / SSC04 / SS05 / SSC05 / SS05H / SSC05H）

The TRANSERVO by YAMAHA !

Stepping motor single-axis robots

that break all the old rules !



The TRANSERVO – Don't you know about it yet?

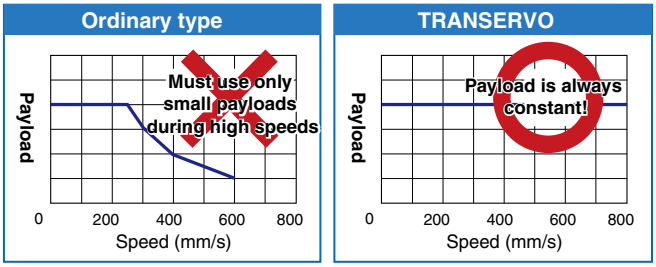
Thanks for taking the time to check out our catalog!
You are probably using single-axis robots for all kinds of applications with functions like positioning and push aren't you? Well, the TRANSERVO is a new type of compact single-axis robot that combines the best features of stepping motors and servomotors.
In recent years, automated machinery is being subjected to ever tougher demands in terms of specifications, costs, and deadlines of delivery, which call for nearly superhuman efforts from designers.
Well the TRANSERVO will prove the answer to all those design problems.

1 New control method combines the best features of servo and stepping motors!

Stepping motors have great features such as a low cost and no tiny vibrations while stopped. Yet they also have drawbacks such as a drastic drop in torque at high speeds and heavy current consumption while stopped.
The TRANSERVO by YAMAHA eliminates all these problems by adopting an innovative vector control method. In effect, the TRANSERVO delivers the same functions and low cost of a servomotor while using a stepping motor.

● High-speed operation slashes production time!

TRANSERVO moves even a heavy workpiece quickly because the payload is constant up to its maximum speed. On ordinary equipment, with conventional control the upper model has to be selected to match the high-speed range, but now one model can do it all!

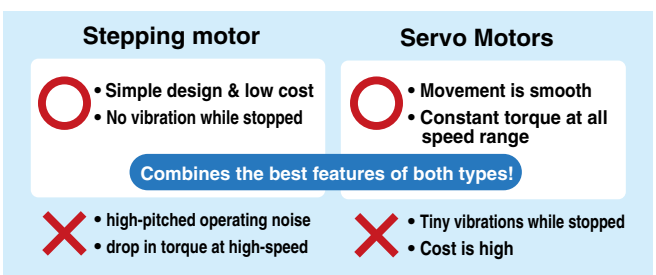


● Energy saver! Perfect stop!

Control is basically the same as a servomotor so power consumption is kept to a minimum, which saves energy and helps cut down on CO_2 emissions. Also perfect stop can be achieved as the same as with ordinary stepping motors so choose this setting if needed.

● Quiet operation – Just like a servo motor!

Robots using ordinary stepping motors have a characteristic "shrill" or high-pitched noise during operation. TRANSERVO operation, however, is extremely quiet, just like a servo motor!



2 Environmentally rugged resolver provides closed loop control

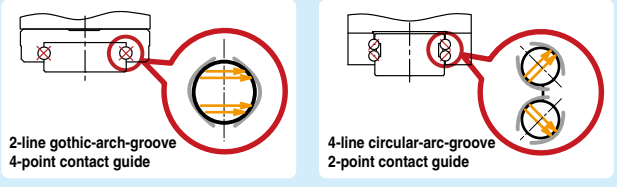
Of course "no step-out". The resolver used here for detecting the motor position is the same well-known and reliable resolver as used in our high-level robots. It offers stable position detection even in harsh environments containing dust or oil, etc. Moreover, it boasts a high resolving power of 20480 pulses per rotation.

Resolver

The resolver is a magnetic position detector. Its structure is simple with no electronic component and no optical elements. One great feature compared to ordinary optical encoders is that there are very few points where a failure might occur.
Vast quantities of resolvers are used in fields like aviation and the automobile industry where reliability is essential and also because they are highly tough in harsh environments with a low failure rate.

3 Ideal 4-line circular-groove 2-point contact guide gives longen service life

A newly developed module guide is employed, and a 4-line circular-groove 2-point contact guide, which has been used for high-level models, was built into a body that is just as compact as the previous models.
Guide maintains a satisfactory rolling movement with minimal ball differential slip, even if a large momentum load is applied or the installation surface accuracy (flatness) is bad. Rugged design ensures that breakdowns from problems like abnormal wear will seldom occur.



▶ **Ordinary model**

Large differential slip tends to occur when a large momentum load is applied or installation surface accuracy is poor.

▶ **TRANSERVO**

Utilizes a circular-arc-groove 2-point contact guide. Ball differential slip (spin) is minimal.

TRANSERVO Series Lineup

A maximum stroke up to 800mm. High lead types are also available on the SS05/SS05H for unmatchable speed!

Model	Lead (mm)	Payload (kg)		Stroke (mm) and maximum speed (mm/s)															
		Horizontal	Vertical	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
SS04 SSC04	12	2	1	600															
	6	4	2	300															
	2	6	4	100															
SS05 SSC05	20	4	-	1000												933	833	733	633
	12	6	1	600												560	500	440	380
	6	10	2	300												280	250	220	190
SS05H SSC05H	20	6	-	1000												933	833	733	633
	12	8	-	600												560	500	440	380
		-	2	500														440	380
	6	12	-	300												280	250	220	190
		-	4	250														220	190

Ordering Method Example: SS05-06SB-NN-600-1L-SNP

SS05 - [ ] **S** [ ] - [ ] - [ ] - [ ] - [ ] - **S** [ ]

Standard model	Lead	Type	Brake	Origin position	Grease option	Stroke	Cable length	Controller	I/O
SS04 SS05 SS05H	02: 2mm 06: 6mm 12: 12mm 20: 20mm	S: Straight	B: With brake N: With no brake	N: Standard origin position Z: Bon-motor side	N: Standard grease C: Clean room grease	SS04: 50 to 400 SS05: 50 to 800 SS05H: 50 to 800 (50mm pitch)	1L: 1 meter 3L: 3 meters 5L: 5 meters (flexible cables)	S: TS-S	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet

SSC05 - [ ] **S** [ ] - [ ] - [ ] - [ ] - [ ] - **S** [ ]

Clean room model	Lead	Type	Brake	Air coupler position	Origin position	Stroke	Cable length	Controller	I/O
SSC04 SSC05 SSC05H	02: 2mm 06: 6mm 12: 12mm 20: 20mm	S: Straight	B: With brake N: With no brake	RJ: Right LJ: Left	N: Standard origin position Z: Bon-motor side	SS04: 50 to 400 SS05: 50 to 800 SS05H: 50 to 800 (50mm pitch)	1L: 1 meter 3L: 3 meters 5L: 5 meters (flexible cables)	S: TS-S	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet

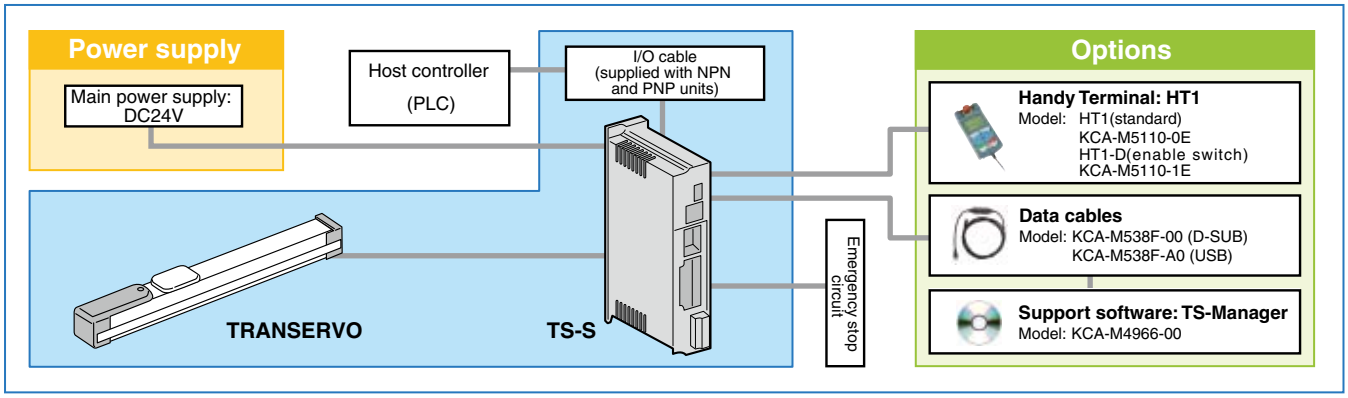
TRANSERVO Basic Specifications

Model No.		SS04/SSC04			SS05/SSC05			SS05H/SSC05H		
Motor		42 □ step motor								
Repeatability (mm)		±0.02								
position detector		Resolver								
Deceleration mechanism		Ball screw ϕ8			Ball screw ϕ12					
Ball screw lead (mm)		12	6	2	20	12	6	20	12	6
Maximum speed (mm/s)	Horizontal	600	300	100	1000	600	300	1000	600	300
	Vertical								500	250
Maximum payload (Kg)	Horizontal	2	4	6	4	6	10	6	8	12
	Vertical	1	2	4	-	1	2	-	2	4
Max. pressing force (N)		45	90	150	27	45	90	36	60	120
Stroke (mm)		50 to 400			50 to 800			50 to 800		
Degree of cleanliness		CLASS 10 (0.1 micron base; only for clean room models)								

TS-S Basic Specifications

Model No.	TS-S
Number of controllable axes	1
Controllable robots	TRANSERVO
Dimensions	W30×H162×D82mm
Weight	Approx. 200g
Input power supply voltage	DC24V±10%
Power capacity	70VA
Resolution	20480 pulses/rev
Control method	Closed loop, vector control method
Number of points	255
Number of error logs	50
Operating emperature / storage temperature	0 to 40˚C / -10 to 65˚C

TS-S system configuration



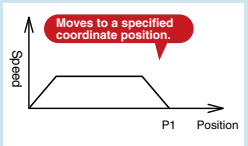
Dedicated Robot Positioner TS-S

TS-S is a positioner type controller that only performs point trace. No program is needed. Operation is simple. After setting point data, specify the point number and enter a START signal a from host controller such as a PLC. Positioning or pushing operation then begins.

Main operation patterns

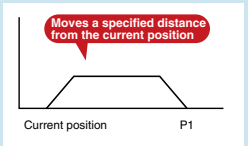
Normal operation

ABS (absolute) operation



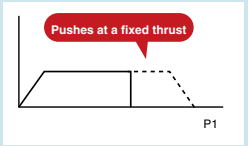
Moves to the target position relative to the origin point and completes positioning.

INC (incremental) operation



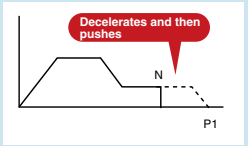
Moves from the current position just by a distance specified in point data and completes positioning.

Pushing operation



Moves while pushing at a preset push force.

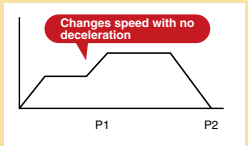
Pushing after decelerating



Pushing starts after decelerating at a distance equal to "Near width (N)" from the target position.

Merge operation

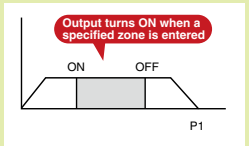
Merge operation



Moves to multiple points in succession. If different speeds were set, then the speeds are changed without decelerating and stopping to continue point-to-point operation.

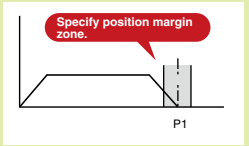
Output pattern

Zone output



Zone for external I/O output can be set for each point.

"Near width" output



"Near width" output zone can be set for each point as a position margin zone where "positioning complete" signal is to be output.

TS series main functions

Detailed data can be set for each point

Settings such as acceleration, deceleration, zone output range, and position margin zone can be set for each point. Different operations can be easily specified by combining these settings with the above operation patterns.

■ Setting items

Setting item		Description
1	Run type	Specifies operation pattern such as ABS, INC, positioning, push, and point-to-point link.
2	Position	Specifies position or distance to move.
3	Speed	Specifies maximum speed during operation.
4	Accel.	Specifies acceleration during operation.
5	Decel.	Specifies deceleration during operation (Percentage of acceleration)
6	Push	Specifies motor current limitation during pushing operation.
7	Zone (-)	Specifies upper and lower limits of "personal zone" for each point data.
8	Zone (+)	
9	Near width	Specifies position margin zone where "near width" output should turn on.
10	Jump	Specifies next movement destination after positioning or linked destination for point-to-point operation.
11	Flag	Specifies stop mode and others.

Note: Acceleration and deceleration can be set in easy-to-understand percentage (%) units (standard setup) or in SI units (custom setup) which make it easy to calculate the cycle time.

Maximum acceleration auto setting

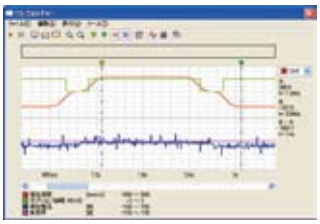
Acceleration is a critical parameter that determines how long the robot can continue operating (or service life). In worst cases, setting the acceleration too high may cause the robot to breakdown after a short time.
On the TS series, the maximum acceleration is finely set by taking into account the service life span of the motor output and the guide for each robot model and payload. This eliminates any worry about setting the acceleration too high by mistake.

Full range of monitor functions

The TS-Manager software was developed exclusively for the TS series. Besides data write and edit, data backup, and parameter settings, it has a cycle time simulator and various types of monitor functions.

A run distance monitor is also included as a standard feature, which helps determine maintenance schedules. Design stresses easy use and friendly operation.

Main monitor displays	
· Position	· Speed
· Current	· Load factor
· Voltage	· Temperature
· Input information	
· Output information	



Supports various field networks

Select from the following I/O types to match the host controller specifications. All hardware is built into the positioner unit so cabling and wire hookups are easy.

Item	Description
NPN	Input: 16 points, 24VDC ± 10%, 5.1mA/point, positive common Output: 16 points, 24VDC ± 10%, 50mA/point, sink type
PNP	Input: 16 points, 24VDC ± 10%, 5.1mA/point, negative common Output: 16 points, 24VDC ± 10%, 50mA/point, source type
CC-Link	Supports CC-Link Ver. 1.10, remote device station (1 station)
DeviceNet※	DeviceNet slave node

※ **Scheduled to go on sale in September 2009**

Connection to Peripheral Units

Input signal

Signal name	Meaning	Description
PIN0 to PIN7	Point number selection	• Point number used to perform positioning operation • Point number to teach current position
JOG+	Jog (+)	Jogs in plus (+) direction when ON.
JOG-	Jog (-)	Jogs in plus (-) direction when ON.
MANUAL	Manual mode	ON: manual mode
ORG	Return-to-origin	Starts return-to-origin.
/LOCK	Interlock	ON: Movement possible, OFF: Movement impossible
START	Start	Starts moving to position specified by point number.
TEACH	Teach	Teaches current position to specified point number.
RESET	Reset	•Resets alarm. Resets point number output. •Clears remaining distance in relative positioning operation.
SERVO	Servo ON	ON: Servo ON, OFF: Servo OFF

Output signal

	Meaning	Description
	Point number selection	•Point number used to perform positioning operation •Alarm number when alarm has occurred
	Control output 0 Control output 1 Control output 2 Control output 3	Allocate the following outputs to OUT0 to OUT3. •Zone output •Personal zone output •Manual mode status •Return-to-origin status •Near width output •Movement-in-progress output •Push status •Warning output
	Zone output	Turns ON while at the zone specified by parameter.
	Personal zone output	Turns ON while at the zone specified by point setting.
	Manual mode status	Turns ON when in manual mode.
	Return-to-origin status	Turns ON when return-to-origin is complete.
	Push status	Turns ON during push in pushing operation.
	Warning output	Turns ON when warning is issued.
	Near width output	Turns ON when near width (position margin zone) is entered.
	Movement in progress	Turns on during movement.
	Operation in progress	Outputs ON during operation.
	Operation complete	Outputs operation result. Turns ON when operation has ended normally.
	Alarm	Turns ON when operation is normal. Turns OFF when alarm has occurred.
	Servo status	Outputs ON at servo-on.

TS Series Options (for all TS series models)

TS-S TS-X TS-P

Handy Terminal: HT1

Has graphic LCD display with backlight for easy viewing.

Model:
- HT1 (standard) KCA-M5110-0E
- HT1-D (enable switch) KCA-M5110-1E

TS-Manager (support software)

Besides data writing, editing and backup functions, the TS-Manager also offers cycle time simulation and various types of monitor functions.

Model: KCA-M4966-00

Data cables

TS-Manager data cable Select from USB cable or D-sub cable.

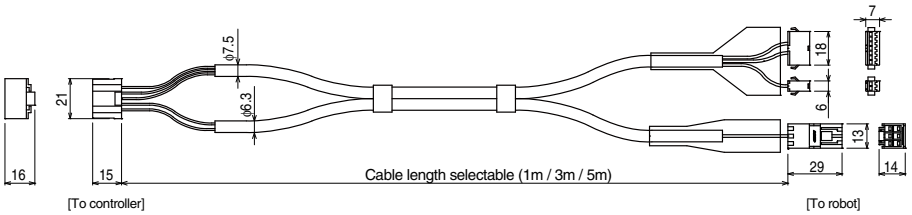
Model: KCA-M538F-00(D-sub)
KCA-M538F-A0 (USB)

I/O cables (for maintenance tasks)

NPN or PNP I/O cables
Color-coded flat cables.
Lattice type, 20 conductors x 2, total length 2 meters, one end unterminated. (This cable is supplied with NPN and PNP units)

Model: KCA-M4421-20

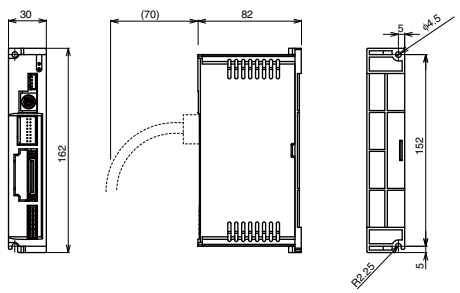
TRANSERVO robot cable (flexible cable) (Cable specifically designed to connect TS-S to SS04/SS05/SS05H/SSC04/SSC05/SSC05H)



Model: KCK-M4751-10 (1m)
KCK-M4751-30 (3m)
KCK-M4751-50 (5m)

Note: The standard units of the TRANSERVO series robots and positioners are CE compliant.

TS-S



SS04

Medium stroke | CE compliance

Ordering Method

SS04 -		- S -		-		-		-		-		- S -	
Robot	Lead	Type	Brake	Origin position	Grease option	Stroke	Cable length*1	Controller	I/O
	12 : 12mm 6 : 6mm 2 : 2mm	S: Straight	B: With brake N: With no brake	N: Standard origin position Z: Bon-motor side	N: Standard grease C: Clean room grease	50 to 400 (50mm pitch)	1L : 1m 3L : 3m 5L : 5m	S : TS-S	NP : NPN PN : PNP CC : CC-Link DN : DeviceNet

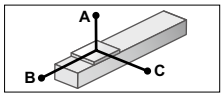
*1: The robot cable is flexible and resists bending.

Basic specifications

Motor		42 ☐ Step motor		
Repeated positioning accuracy*1 (mm)		±0.02		
Deceleration mechanism		Ball screw ϕ8(Class C10)		
Ball screw lead (mm)		12	6	2
Maximum speed (mm/sec)		600	300	100
Maximum payload (kg)	Horizontal installation	2	4	6
	Vertical installation	1	2	4
Max. pressing force (N)		45	90	150
Stroke (mm)		50 to 400 (50 pitch)		
Overall length (mm)	Horizontal installation	Stroke+216		
	Vertical installation	Stroke+261		
Maximum outside dimension of body cross-section		W49×H59		
Cable length (m)		Standard : 1 / Option : 3, 5		

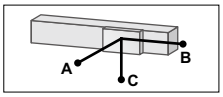
*1: Positioning repeatability in one direction.

Allowable overhang*



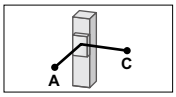
Horizontal installation (Unit: mm)

		A	B	C
Lead12	1kg	807	218	292
	2kg	667	107	152
Lead6	2kg	687	116	169
	3kg	556	76	112
	4kg	567	56	84
Lead2	4kg	869	61	92
	6kg	863	40	60



Wall installation (Unit: mm)

		A	B	C
Lead12	1kg	274	204	776
	2kg	133	93	611
Lead6	2kg	149	102	656
	3kg	92	62	516
	4kg	63	43	507
Lead2	4kg	72	48	829
	6kg	39	29	789

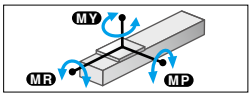


Vertical installation (Unit: mm)

		A	C
Lead12	0.5kg	407	408
	1kg	204	204
Lead6	1kg	223	223
	2kg	107	107
Lead2	2kg	118	118
	4kg	53	53

* Service life is calculated for 400mm stroke models.

Static loading moment



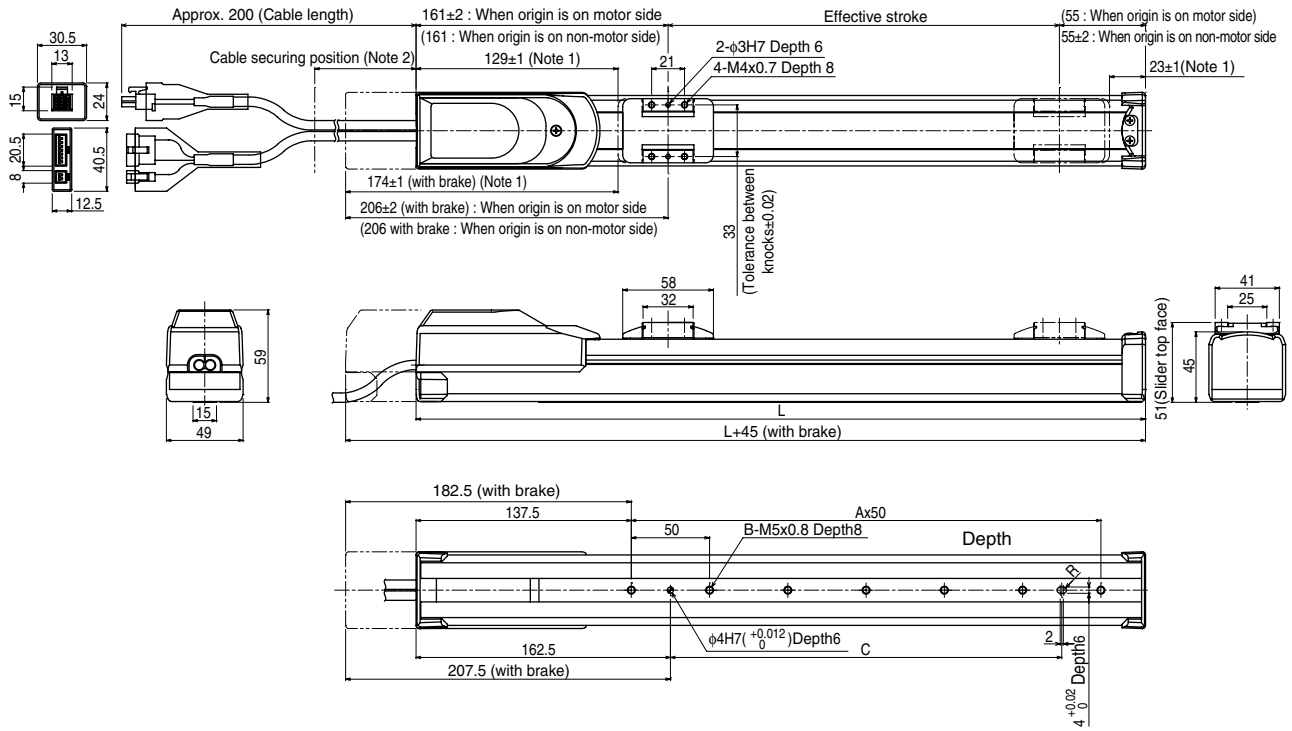
(Unit: N.m)

MY	MP	MR
16	19	17

Controller

Controller	Operation method
TS-S	Point trace

SS04



Effective stroke	50	100	150	200	250	300	350	400
L	266	316	366	416	466	516	566	616
A	2	3	4	5	6	7	8	9
B	3	4	5	6	7	8	9	10
C	50	100	150	200	250	300	350	400
Weight (kg) (See note 4)	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3

Note 1. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 3. The cable's minimum bend radius is R30.
Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.

SS05

High lead: Lead 20 | Medium stroke | CE compliance

Ordering Method

SS05	-		-	S	-		-		-		-		-		-	S	-	
Robot		**Lead**		**Type**		**Brake**		**Origin position**		**Grease option**		**Stroke**		**Cable length*1**		**Controller**		**I/O**
		20 : 20mm 12 : 12mm 6 : 6mm		S: Straight		B: With brake N: With no brake		N: Standard origin position Z: Bon-motor side		N: Standard grease C: Clean room grease		50 to 800 (50mm pitch)		1L : 1m 3L : 3m 5L : 5m		S : TS-S		NP : NPN PN : PNP CC : CC-Link DN : DeviceNet

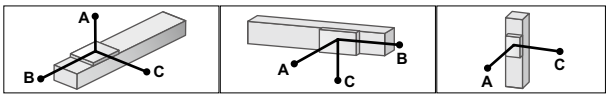
*1: Brake-equipped models can be selected only when the lead is 12mm or 6mm.
*2: The robot cable is flexible and resists bending.

Basic specifications

Motor		42 □ Step motor		
Repeated positioning accuracy*1 (mm)		±0.02		
Deceleration mechanism		Ball screw ϕ12(Class C10)		
Ball screw lead (mm)		20	12	6
Maximum speed (mm/sec)*2		1000	600	300
Maximum payload (kg)	Horizontal installation	4	6	10
	Vertical installation	–	1	2
Max. pressing force (N)		27	45	90
Stroke (mm)		50 to 800 (50 pitch)		
Overall length (mm	Horizontal installation	Stroke+230		
	Vertical installation	Stroke+275		
Maximum outside dimension of body cross-section		W55×H56		
Cable length (m)		Standard : 1 / Option : 3, 5		

*1: Positioning repeatability in one direction.
*2: When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, reduce the speed by referring to the maximum speeds shown in the table under the dimensional drawing.

Allowable overhang*



Horizontal installation (Unit: mm)

		A	B	C
Lead20 Lead12	2kg	413	139	218
	4kg	334	67	120
	4kg	347	72	139
	6kg	335	47	95
Lead6	4kg	503	78	165
	8kg	332	37	79
	10kg	344	29	62

Wall installation (Unit: mm)

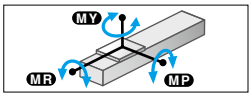
		A	B	C
Lead20 Lead12	2kg	192	123	372
	4kg	92	51	265
	4kg	109	57	300
	6kg	63	31	263
Lead6	4kg	134	63	496
	6kg	76	35	377
	8kg	47	22	355

Vertical installation (Unit: mm)

		A	C
Lead12	0.5kg	578	579
	1kg	286	286
Lead6	1kg	312	312
	2kg	148	148

* Service life is calculated for 600mm stroke models.

Static loading moment



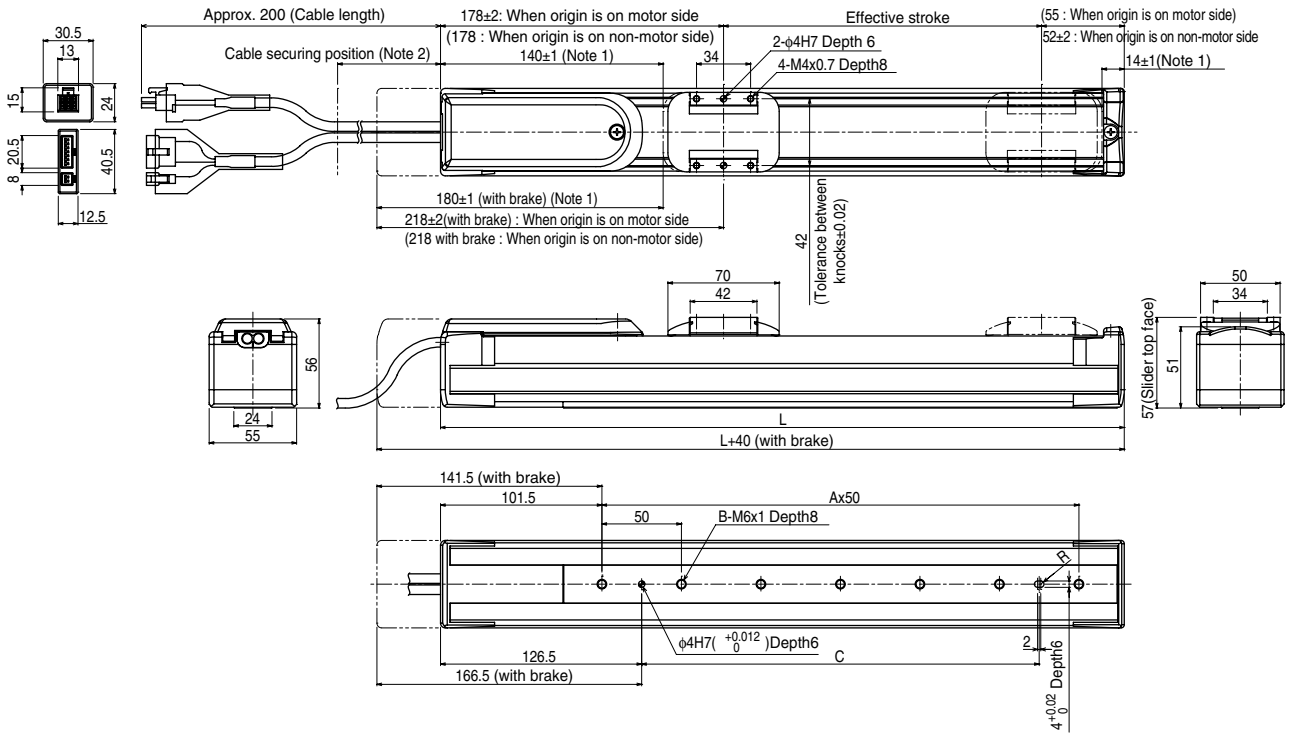
(Unit: N.m)

MY	MP	MR
25	33	30

Controller

Controller	Operation method
TS-S	Point trace

SS05



Effective stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L		280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030
A		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C		100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg) (See note 4)		2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0
Maximum speed for each stroke (mm / sec) (Note 5)	Lead 20	1000												933	833	733	633
	Lead 12	600												560	500	440	380
	Lead 6	300												280	250	220	190
	Speed setting	-												93%	83%	73%	63%

Note 1. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 3. The cable's minimum bend radius is R30.
Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
Note 5. When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table at the left.

SS05H

High lead: Lead 20 | Medium stroke | CE compliance

Ordering Method

SS05H - [ ] - **S** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - **S** - [ ]

Robot	Lead	Type	Brake	Origin position	Grease option	Stroke	Cable length*1	Controller	I/O
	20 : 20mm 12 : 12mm 6 : 6mm	S: Straight	B: With brake N: With no brake	N: Standard origin position Z: Bon-motor side	N: Standard grease C: Clean room grease	50 to 800 (50mm pitch)	1L : 1m 3L : 3m 5L : 5m	S : TS-S	NP : NPN PN : PNP CC : CC-Link DN : DeviceNet

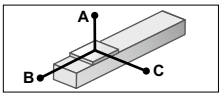
*1: Brake-equipped models can be selected only when the lead is 12mm or 6mm.
*2: The robot cable is flexible and resists bending.

Basic specifications

Motor		42 ☐ Step motor		
Repeated positioning accuracy*1 (mm)		±0.02		
Deceleration mechanism		Ball screw ϕ12(Class C10)		
Ball screw lead (mm)		20	12	6
Maximum speed (mm/sec)	Horizontal installation	1000	600	300
	Vertical installation	–	500	250
Maximum payload (kg)	Horizontal installation	6	8	12
	Vertical installation	–	2	4
Max. pressing force (N)		36	60	120
Stroke (mm)		50 to 800 (50 pitch)		
Overall length (mm)	Horizontal installation	Stroke+286		
	Vertical installation	Stroke+331		
Maximum outside dimension of body cross-section		W55×H56		
Cable length (m)		Standard : 1 / Option : 3, 5		

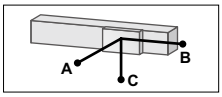
*1: Positioning repeatability in one direction.
*2: When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, reduce the speed by referring to the maximum speeds shown in the table under the dimensional drawing.

Allowable overhang*



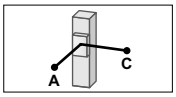
Horizontal installation (Unit: mm)

		A	B	C
Lead20	2kg	599	225	291
	4kg	366	109	148
	6kg	352	71	104
Lead12	4kg	500	118	179
	6kg	399	79	118
	8kg	403	56	88
Lead6	6kg	573	83	136
	8kg	480	61	100
	10kg	442	47	78
	12kg	465	39	64



Wall installation (Unit: mm)

		A	B	C
Lead20	2kg	262	203	554
	4kg	118	88	309
	6kg	71	49	262
Lead12	4kg	146	96	449
	6kg	85	55	334
	8kg	55	34	305
Lead6	6kg	101	62	519
	8kg	64	39	413
	10kg	43	26	355
	12kg	28	17	338

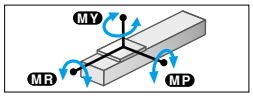


Vertical installation (Unit: mm)

		A	C
Lead12	1kg	458	459
	2kg	224	224
Lead6	2kg	244	245
	4kg	113	113

* Service life is calculated for 600mm stroke models.

Static loading moment



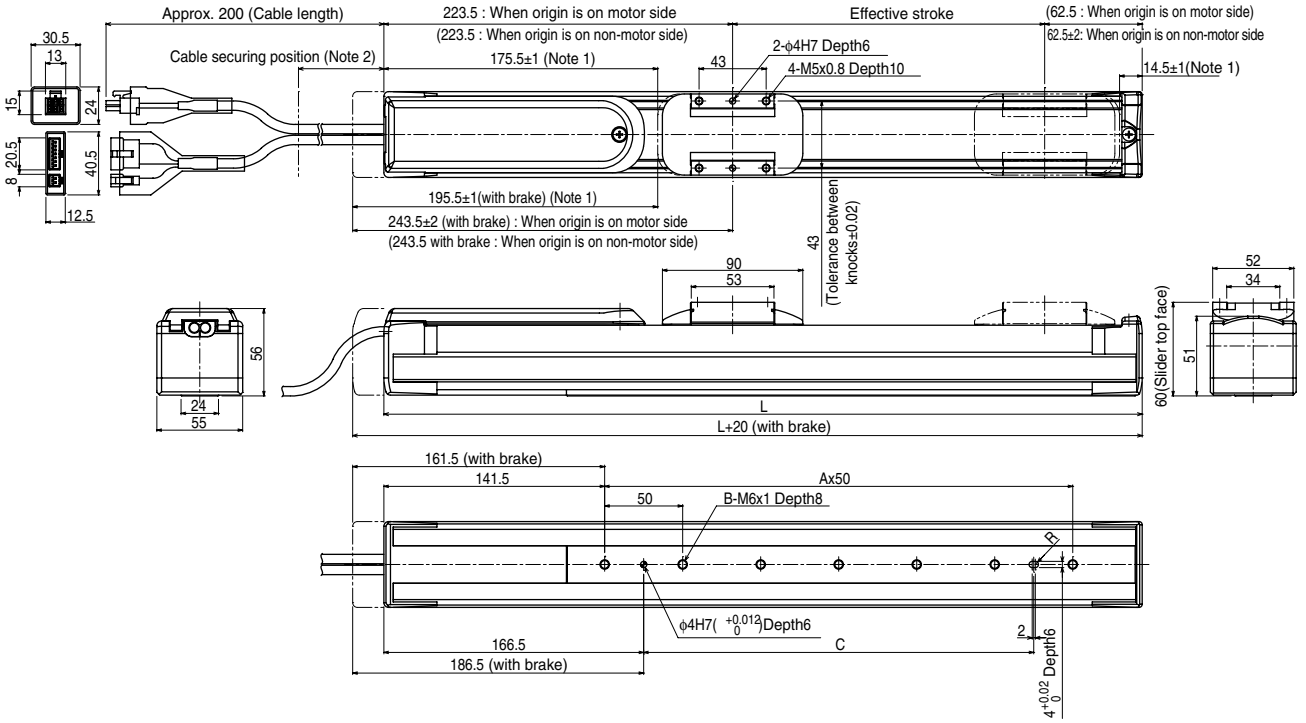
(Unit: N.m)

MY	MP	MR
32	38	34

Controller

Controller	Operation method
TS-S	Point trace

SS05H



Effective stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L		336	386	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
A		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C		100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg) (See note 4)		2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.3
Maximum speed for each stroke (mm / sec) (Note 5)	Lead 20	1000												933	833	733	633
	Lead 12 (Horizontal)	600												560	500	440	380
	Lead 12 (Vertical)	500														440	380
	Lead 6 (Horizontal)	300												280	250	220	190
	Lead 6 (Vertical)	250														220	190

Note 1. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 3. The cable's minimum bend radius is R30.
Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
Note 5. When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table at the left.

SSC04

Medium stroke | CE compliance

Ordering Method

Robot	Lead	Type	Brake	Direction of air coupler installation	Origin position	Stroke	Cable length*1	Controller	I/O
SSC04	12 : 12mm 6 : 6mm 2 : 2mm	S S: Straight	B: With brake N: With no brake	RJ : Right (standard) LJ : Left	N: Standard origin position Z: Bon-motor side	50 to 400 (50mm pitch)	1L : 1m 3L : 3m 5L : 5m	S S : TS-S	NP : NPN PN : PNP CC : CC-Link DN : DeviceNet

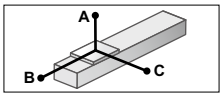
*1: The robot cable is flexible and resists bending.

Basic specifications

Motor		42 □ Step motor		
Repeated positioning accuracy*1 (mm)		±0.02		
Deceleration mechanism		Ball screw ϕ8(Class C10)		
Maximum motor torque		0.27		
screw lead (mm)		12	6	2
Maximum speed (mm/sec)		600	300	100
Maximum payload (kg)	Horizontal installation	2	4	6
	Vertical installation	1	2	4
Max. pressing force (N)		45	90	150
Stroke (mm)		50 to 400 (50 pitch)		
Overall length (mm)	Horizontal installation	Stroke+216		
	Vertical installation	Stroke+261		
Maximum outside dimension of body cross-section		W49×H59		
Cable length (m)		Standard : 1 / Option : 3, 5		
Cleanliness class		CLASS 10*2		
Suction amount Air		Lead 12	Lead 6	Lead 2
		50	30	15

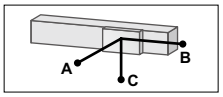
*1: Positioning repeatability in one direction.
*2: Per 1cf (0.1μm base), when suction blower is used.

Allowable overhang*



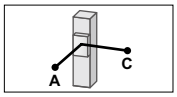
Horizontal installation (Unit: mm)

		A	B	C
Lead12	1kg	807	218	292
	2kg	667	107	152
Lead6	2kg	687	116	169
	3kg	556	76	112
	4kg	567	56	84
Lead2	4kg	869	61	92
	6kg	863	40	60



Wall installation (Unit: mm)

		A	B	C
Lead12	1kg	274	204	776
	2kg	133	93	611
Lead6	2kg	149	102	656
	3kg	92	62	516
	4kg	63	43	507
Lead2	4kg	72	48	829
	6kg	39	29	789

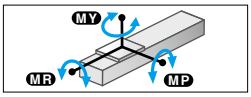


Vertical installation (Unit: mm)

		A	C
Lead12	0.5kg	407	408
	1kg	204	204
Lead6	1kg	223	223
	2kg	107	107
Lead2	2kg	118	118
	4kg	53	53

* Service life is calculated for 400mm stroke models.

Static loading moment



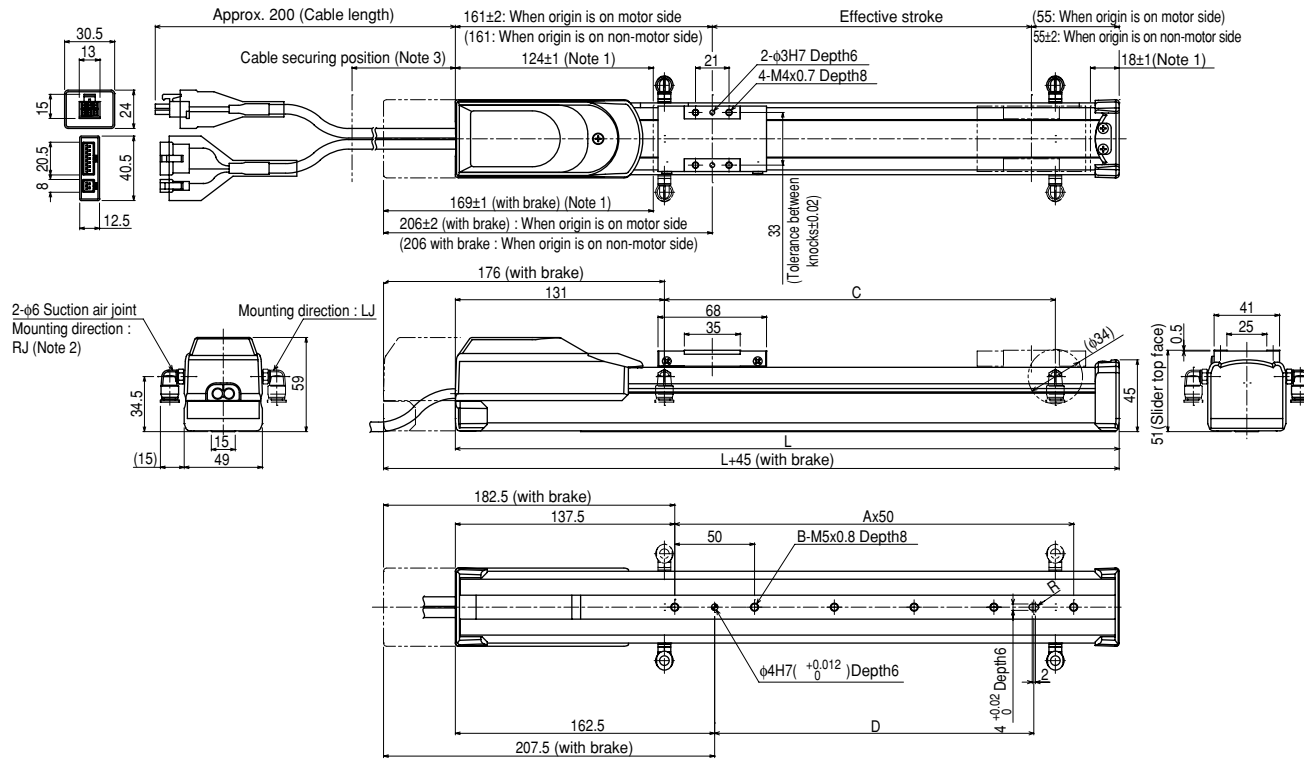
(Unit: N.m)

MY	MP	MR
16	19	17

Controller

Controller	Operation method
TS-S	Point trace

SSC04



Effective stroke	50	100	150	200	250	300	350	400
L	266	316	366	416	466	516	566	616
A	2	3	4	5	6	7	8	9
B	3	4	5	6	7	8	9	10
C	50	100	150	200	250	300	350	400
Weight (See note 5)	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3

Note 1. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 2. Either right or left can be selected for the installation direction for 6 suction air coupler. This drawing shows the RJ (standard) direction of air coupler installation.
Note 3. Secure the cable with a tie-band100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 4. The cable's minimum bend radius is R30.
Note 5. These are the weights without a brake. The weights are 0.2kgheavier when equipped with a brake.

SSC05

Medium stroke | CE compliance

Ordering Method

SSC05 - [ ] - **S** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - **S** - [ ]

Robot	Lead	Type	Brake	Direction of air coupler installation	Origin position	Stroke	Cable length*1	Controller	I/O
	20 : 20mm 12 : 12mm 6 : 6mm	S: Straight	B: With brake N: With no brake	RJ : Right (standard) LJ : Left	N: Standard origin position Z: Bon-motor side	50 to 800 (50mm pitch)	1L : 1m 3L : 3m 5L : 5m	S : TS-S	NP : NPN PN : PNP CC : CC-Link DN : DeviceNet

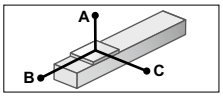
*1: The robot cable is flexible and resists bending.

Basic specifications

Motor		42 □ Step motor		
Repeated positioning accuracy*1 (mm)		±0.02		
Deceleration mechanism		Ball screw ϕ12(Class C10)		
Maximum motor torque		0.27		
Ball screw lead (mm)		20	12	6
Maximu mspeed (mm/sec)*2		1000	600	300
Maximum payload (kg)	Horizontal installation	4	6	10
	Vertical installation	–	1	2
Max. pressing force (N)		27	45	90
Stroke (mm)		50 to 800 (50 pitch)		
Overall length (mm)	Horizontal installation	Stroke+230		
	Vertical installation	Stroke+275		
Maximum outside dimension of body cross-section		W55×H56		
Cable length (m)		Standard : 1 / Option : 3, 5		
Cleanliness class		CLASS 10*3		
Suction amount Air		Lead 20	Lead 6	Lead 2
		80	50	30

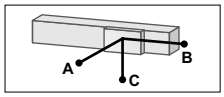
*1: Positioning repeatability in one direction.
*2: When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, reduce the speed by referring to the maximum speeds shown in the table under the dimensional drawing. maximum speeds shown in the table under the dimensional drawing.
*3: Per 1cf (0.1μm base), when suction blower is used.

Allowable overhang*



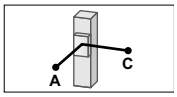
Horizontal installation (Unit: mm)

		A	B	C
Lead20	2kg	413	139	218
	4kg	334	67	120
Lead12	4kg	347	72	139
	6kg	335	47	95
Lead6	4kg	503	78	165
	8kg	332	37	79
	10kg	344	29	62



Wall installation (Unit: mm)

		A	B	C
Lead20	2kg	192	123	372
	4kg	92	51	265
Lead12	4kg	109	57	300
	6kg	63	31	263
Lead6	4kg	134	63	496
	6kg	76	35	377
	8kg	47	22	355

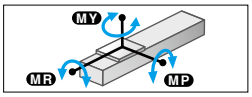


Vertical installation (Unit: mm)

		A	C
Lead12	0.5kg	578	579
	1kg	286	286
Lead6	1kg	312	312
	2kg	148	148

* Service life is calculated for 600mm stroke models.

Static loading moment



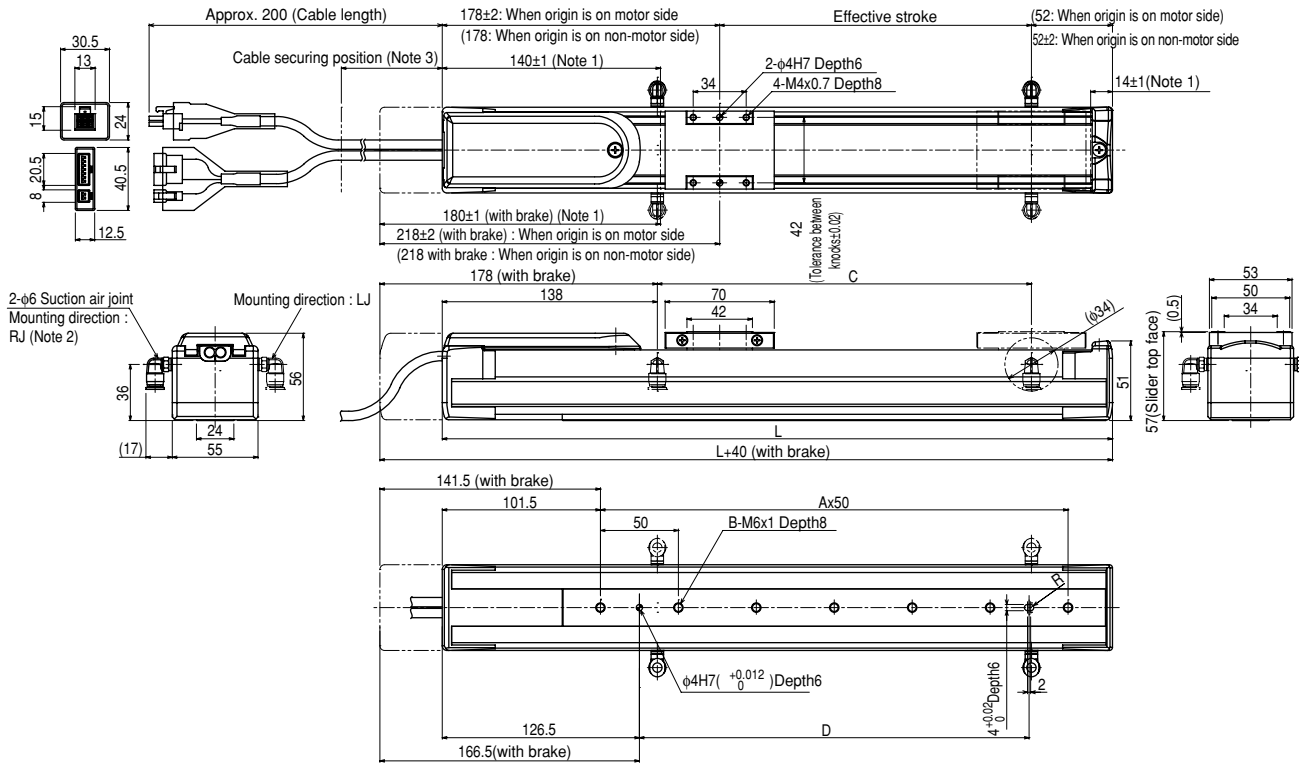
(Unit: N.m)

MY	MP	MR
25	33	30

Controller

Controller	Operation method
TS-S	Point trace

SSC05



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030
A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (See note 5)	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0
Maximum speed for each stroke (mm / sec) (Note 6) Lead 20	1000												933	833	733	633
Lead 12	600												560	500	440	380
Lead 6	300												280	250	220	190

Note 1. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 2. Either right or left can be selected for the installation direction for 6 suction air coupler. This drawing shows the RJ (standard) direction of air coupler installation.
Note 3. Secure the cable with a tie-band100mm or less from unit's end face to prevent thecable from being subjected to excessive loads.
Note 4. The cable's minimum bend radius is R30.
Note 5. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
Note 6. When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table at the left.

SSC05H

High lead: Lead 20 | Medium stroke | CE compliance

Ordering Method

SSC05H - [ ] - **S** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - **S** - [ ]

Robot	Lead	Type	Brake	Direction of air coupler installation	Origin position	Stroke	Cable length*1	Controller	I/O
	20 : 20mm 12 : 12mm 6 : 6mm	S: Straight	B: With brake N: With no brake	RJ : Right (standard) LJ : Left	N: Standard origin position Z: Bon-motor side	50 to 800 (50mm pitch)	1L : 1m 3L : 3m 5L : 5m	S : TS-S	NP : NPN PN : PNP CC : CC-Link DN : DeviceNet

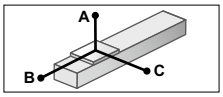
*1: The robot cable is flexible and resists bending.

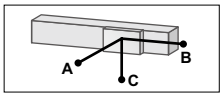
Basic specifications

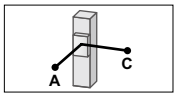
Motor		42 □ Step motor		
Repeated positioning accuracy*1 (mm)		±0.02		
Deceleration mechanism		Ball screw ϕ12(Class C10)		
Maximum motor torque		0.47		
Ball screw lead (mm)		20	12	6
Maximum speed (mm/sec)*2	Horizontal installation	1000	600	300
	Vertical installation	–	500	250
Maximum payload (kg)	Horizontal installation	6	8	12
	Vertical installation	–	2	4
Max. pressing force (N)		36	60	120
Stroke (mm)		50 to 800 (50 pitch)		
Overall length (mm)	Horizontal installation	Stroke+286		
	Vertical installation	Stroke+331		
Maximum outside dimension of body cross-section		W55×H56		
Cable length (m)		Standard : 1 / Option : 3, 5		
Cleanliness class		CLASS 10*3		
Suction amount Air		Lead 20	Lead 6	Lead 2
		80	50	30

*1: Positioning repeatability in one direction.
*2: When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, reduce the speed by referring to the maximum speeds shown in the table under the dimensional drawing. maximum speeds shown in the table under the dimensional drawing.
*3: Per 1cf (0.1μm base), when suction blower is used.

Allowable overhang*







Horizontal installation (Unit: mm)

		A	B	C
Lead20	2kg	599	225	291
	4kg	366	109	148
	6kg	352	71	104
Lead12	4kg	500	118	179
	6kg	399	79	118
	8kg	403	56	88
Lead6	6kg	573	83	136
	8kg	480	61	100
	10kg	442	47	78
	12kg	465	39	64

Wall installation (Unit: mm)

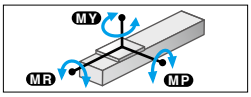
		A	B	C
Lead20	2kg	262	203	554
	4kg	118	88	309
	6kg	71	49	262
Lead12	4kg	146	96	449
	6kg	85	55	334
	8kg	55	34	305
Lead6	6kg	101	62	519
	8kg	64	39	413
	10kg	43	26	355
	12kg	28	17	338

Vertical installation (Unit: mm)

		A	C
Lead12	1kg	458	459
	2kg	224	224
Lead6	2kg	244	245
	4kg	113	113

* Service life is calculated for 600mm stroke models.

Static loading moment



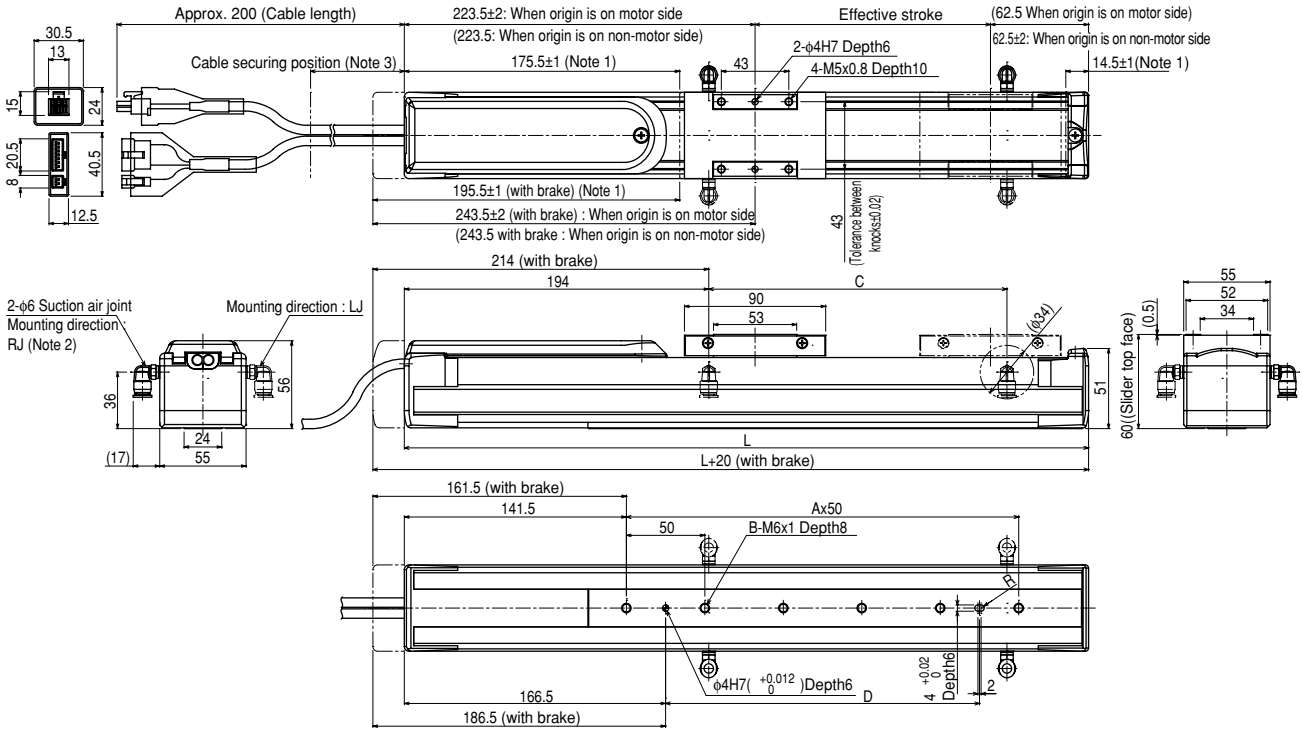
(Unit: N.m)

MY	MP	MR
32	38	34

Controller

Controller	Operation method
TS-S	Point trace

SSC05H



Effective stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L		336	386	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
A		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C		100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (See note 5)		2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.3
Maximum speed for each stroke (mm / sec) (Note 6)	Lead 20	1000												933	833	733	633
	Lead 12 (Horizontal)	600												560	500	440	380
	Lead 12 (Vertical)	500														440	380
	Lead 6 (Horizontal)	300												280	250	220	190
	Lead 6 (Vertical)	250														220	190

Note 1. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
Note 2. Either right or left can be selected for the installation direction for 6 suction air coupler. This drawing shows the RJ (standard) direction of air coupler installation.
Note 3. Secure the cable with a tie-band100mm or less from unit's end face to prevent thecable from being subjected to excessive loads.
Note 4. The cable's minimum bend radius is R30.
Note 5. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
Note 6. When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table at the left.

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● Specifications and appearance are subject to change without prior notice.

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