

Les axes TRANSERVO : que savez vous d'eux ?

Vous utilisez probablement déjà des axes pour toutes sortes d'applications, avec des fonctions de positionnement ou de bridage / poussée. Les axes TRANSERVO sont de nouveaux types d'axes qui combinent les meilleures caractéristiques des moteurs pas-à-pas et des servomoteurs.

Depuis quelques années, le secteur de la machine automatisée est sujet à des demandes de plus en plus poussées, en terme de spécifications, coûts, délais d'approvisionnement... Les axes TRANSERVO apportent une réponse à toutes ces questions.

Nouvelle méthode de contrôle :

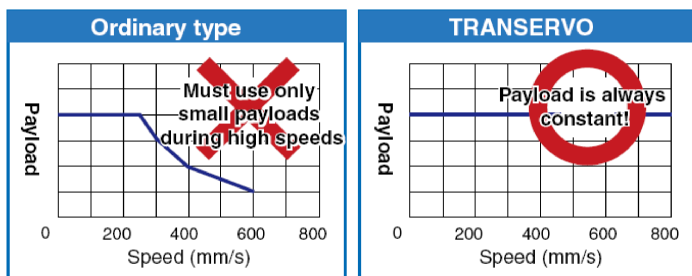
Les moteurs pas-à-pas ont de très bonnes caractéristiques comme leur coût réduit, et leur absence de vibration à l'arrêt. Ils ont aussi des défauts comme leur chute de couple à haute vitesse, et leur consommation électrique importante à l'arrêt.

Les axes TRANSERVO par YAMAHA éliminent tous ces problèmes en adoptant une innovante méthode de contrôle par vecteur. En effet, les axes TRANSERVO permettent les mêmes fonctions que les servomoteurs, tout en utilisant des moteurs pas-à-pas, d'un coût réduit.



Opérations à haute vitesse

Les axes TRANSERVO se déplacent rapidement, même avec une charge lourde, car la charge est constante jusqu'à leur vitesse maximum. Sur les équipements ordinaires ayant un contrôle conventionnel, le déplacement rapide avec charge lourde impose le sur-dimensionnement de l'axe. Ce problème n'existe pas avec les axes TRANSERVO.



Réduction de consommation — Arrêt parfait

Le contrôle est identique au contrôle d'un servomoteur, donc la consommation de puissance est réduite au minimum, ce qui permet une réduction des dépenses énergétique et des émissions de CO₂. Un arrêt parfait peut aussi être réalisé si besoin, comme avec un moteur pas-à-pas.

Fonctionnement silencieux—identique à un servomoteur

Les axes utilisant des moteurs pas-à-pas ordinaires produisent un bruit caractéristique pendant l'utilisation. Les axes TRANSERVO sont extrêmement silencieux, comme les servomoteurs.

Moteur pas-à-pas	Servomoteur
- Design simple & faible coût. - Pas de vibration à l'arrêt.	- Mouvement fluide. - Couple constant.
Combine les meilleures caractéristiques des 2 types	
- Bruit de fonctionnement. - Chute du couple à haute vitesse.	- Faibles vibrations à l'arrêt. - Coût élevé.

Utilisation d'un résolveur éprouvé

Le résolveur utilisé ici pour détecter la position du moteur est de même type que ceux utilisés sur la gamme courante d'axes YAMAHA (serie X). Il offre une détection stable de la position, même dans des conditions d'utilisation difficiles : huile, poussières... De plus, il offre une résolution de 20480 pulses par tour.

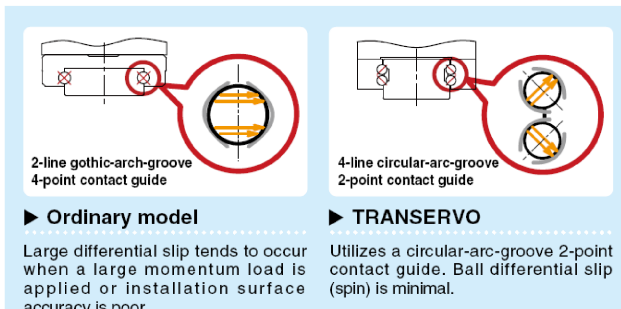


Le résolveur est un détecteur de position magnétique. Sa structure est simple, sans composant électronique ou optique.

De grandes quantités de résolveurs sont utilisées dans des domaines comme l'aviation ou l'industrie automobile, où la fiabilité est un critère essentiel.

Nouveau guidage très rigide

Le nouveau guidage linéaire appelé '4 line circular arc groove' à 2 points de contact a de nombreux avantages, comme le faible frottement sous forte charge, et l'ajustement automatique ; ce qui permet d'éviter des fonctionnements anormaux.



Série d'axes TRANSERVO : course maximum 800mm

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			

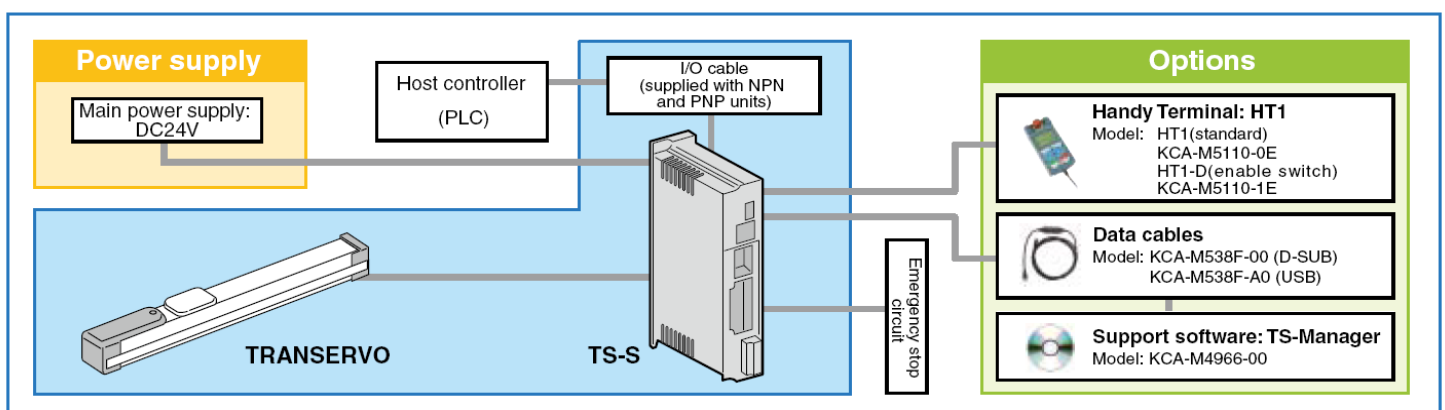
TRANSERVO Basic Specifications

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

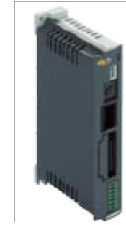
Model No.	TS-S
Number of controllable axes	1
Controllable robots	TRANSERVO
Dimensions	W30xH162xD82mm
Weight	Approx. 200g
Input power supply voltage	DC24V±10%
Power capacity	70VA
Resolution	20480 pulses/rev
Control method	Closed loop, vector control method
Number of points	255
Number of error logs	50
Operating temperature / storage temperature	0 to 40°C / -10 to 65°C

TS-S system configuration



Contrôleur dédié : TS-S

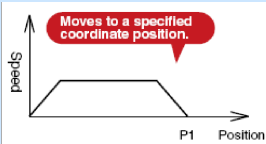
Le TS-S est un contrôleur d'axe pour la série TRANSERVO qui n'exécute que des 'déplacements au point'. Aucun programme n'est nécessaire. L'utilisation est simple. Après avoir renseigné les informations du ou des points à atteindre, spécifier le n° du point à atteindre, et envoyer un START depuis un contrôleur maître (un automate par exemple). Le déplacement ou l'opération de bridage commence alors.



Principaux déplacement possibles

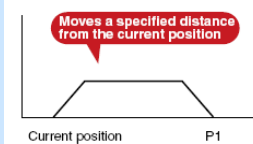
Opération normale

Déplacement absolu



Se déplacer vers une position relative à la position d'origine, et compléter le positionnement.

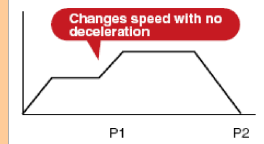
Déplacement relatif



Se déplacer à partir de la position courante, d'une distance spécifiée dans la table de points, et terminer le positionnement.

Opération combinée

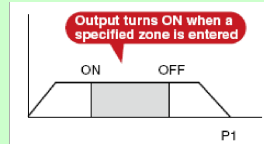
Opération combinée



Se déplacer vers plusieurs points. Si les vitesses spécifiées sont différentes, le mouvement est continu sans décélération.

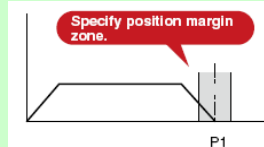
Activation sortie

Sortie 'Zone'



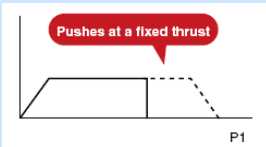
Une sortie peut être activée lorsque l'axe pénètre dans une zone spécifiée.

Sortie 'Proche de'



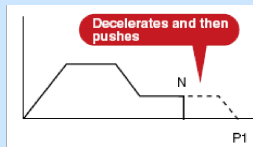
Une sortie peut être activée lorsque le positionnement est proche du point spécifié.

Opération de poussée



Se déplacer en poussant à une force pré-réglée.

Pousser après décélération



L'opération de poussée commence après décélération à une distance définie avant le point final.

Principales fonctions du contrôleur TS

Données détaillées pour chaque point

Des paramètres comme l'accélération, la décélération, la taille des zones 'proche de'... peuvent être défini pour chaque point. Différentes opérations sont possibles en combinant ces paramètres aux principaux déplacements possibles.

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 (+)	Specifies upper and lower limits of "personal zone" for each point data.
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.

Accélération maxi automatique

L'accélération est un paramètre critique qui détermine la durée de vie de l'axe. Dans les cas les plus critiques, régler une accélération trop importante peut conduire à une panne mécanique de l'axe après une courte période d'utilisation.

Sur la série TS, l'accélération maximum est réglée précisément en tenant compte de la durée de vie du moteur et des guidages, de la charge transportée, pour chaque axe. Cela élimine le risque d'un mauvais réglage de l'accélération par erreur.

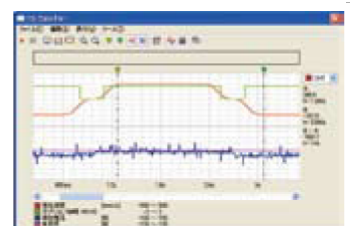
Nombreuses informations

Le logiciel TS-Manager a été développé exclusivement pour le contrôleur de la série TS. En plus de l'édition des points, du paramétrage et des sauvegardes de données possibles, ce logiciel permet de simuler le temps de cycle de l'application, et permet de visualiser différentes informations.

Un compteur de distance parcourue est aussi inclus, qui permet de planifier les opérations de maintenance.

Main monitor displays

- Position
- Speed
- Current
- Load factor
- Voltage
- Temperature
- Input information
- Output information



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)

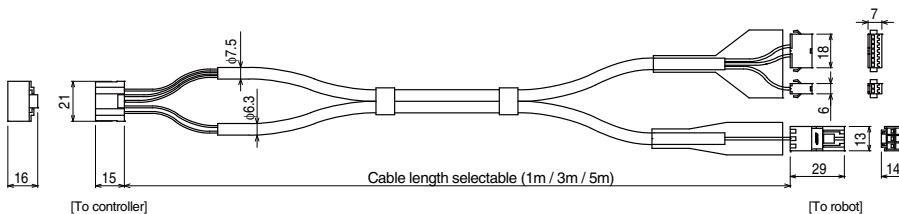
I/O cables (for maintenance tasks)



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

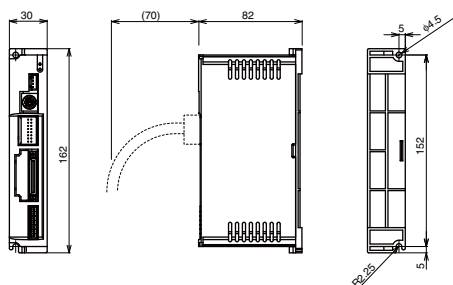
TRANSERVO robot cable (flexible cable) (Cable specifically designed to connect TS-S to SS04/SS05/SS05H/SSC04/SSC05/SSC05H)



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

Robot	Lead	Type	Brake	Origin position	Grease option	Stroke	Cable length ^{*1}	Controller	I/O
SS04	12 : 12mm 6 : 6mm 2 : 2mm	S: Straight	B: With brake N: With no brake	N: Standard origin position Z: Non-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
	Vertical installation	1	2
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	W49xH59		
Cable length (m)	Standard : 1 / Option : 3, 5		

*1: Positioning repeatability in one direction.

Allowable overhang^{*}

Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)			
Lead	A	B	C	Lead	A	B	C	Lead	A	C	
Lead12	1kg 807	218	292	Lead12	1kg 274	204	776	Lead12	0.5kg 407	408	
	2kg 667	107	152		2kg 133	93	611		1kg 204	204	
Lead6	2kg 687	116	169	Lead6	2kg 149	102	656	Lead6	1kg 223	223	
	3kg 556	76	112		3kg 92	62	516		2kg 107	107	
	4kg 567	56	84		4kg 63	43	507		2kg 118	118	
Lead2	4kg 869	61	92	Lead2	4kg 72	48	829	Lead2	4kg 53	53	
	6kg 863	40	60		6kg 39	29	789				

* Service life is calculated for 400mm stroke models.

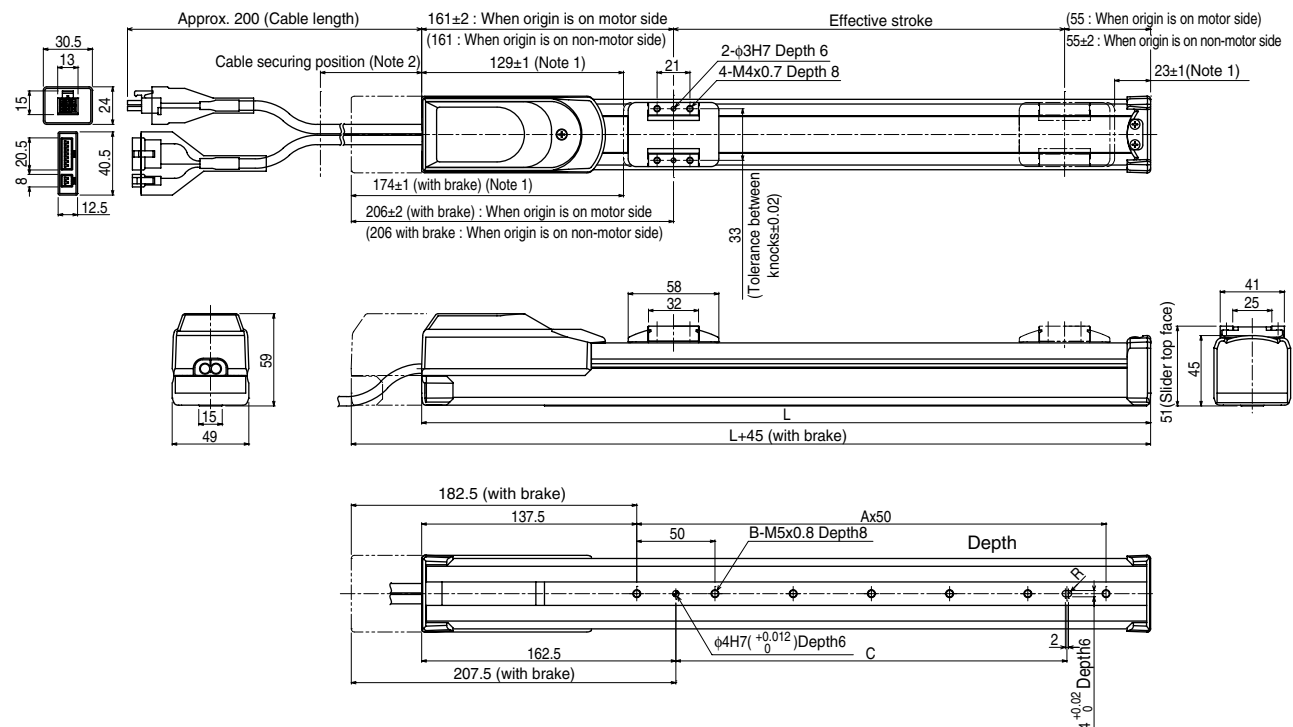
Static loading moment

(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
	Vertical installation	—	1
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*

The image contains three diagrams illustrating different installation methods for a device. Each diagram shows a 3D perspective view of the device with points A, B, and C marked on it, connected by lines to indicate measurement points.

- Horizontal installation (Unit: mm):** The device is mounted horizontally. Point A is at the top center, B is at the bottom left, and C is at the bottom right.
- Wall installation (Unit: mm):** The device is mounted vertically on a wall. Point A is at the top left, B is at the top right, and C is at the bottom center.
- Vertical installation (Unit: mm):** The device is mounted vertically. Point A is at the top left, and C is at the top right.

Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)					
	A	B	C		A	B	C		A	C			
Lead20	2kg	413	139	218	Lead20	2kg	192	123	372	Lead20	0.5kg	578	579
	4kg	334	67	120		4kg	92	51	265		1kg	286	286
Lead12	4kg	347	72	139	Lead12	4kg	109	57	300	Lead12	1kg	312	312
	6kg	335	47	95		6kg	63	31	263		2kg	148	148
Lead6	4kg	503	78	165	Lead6	4kg	134	63	496	Lead6			
	8kg	332	37	79		6kg	76	35	377				
	10kg	344	29	62		8kg	47	22	355				

* Service life is calculated for 600mm stroke models.

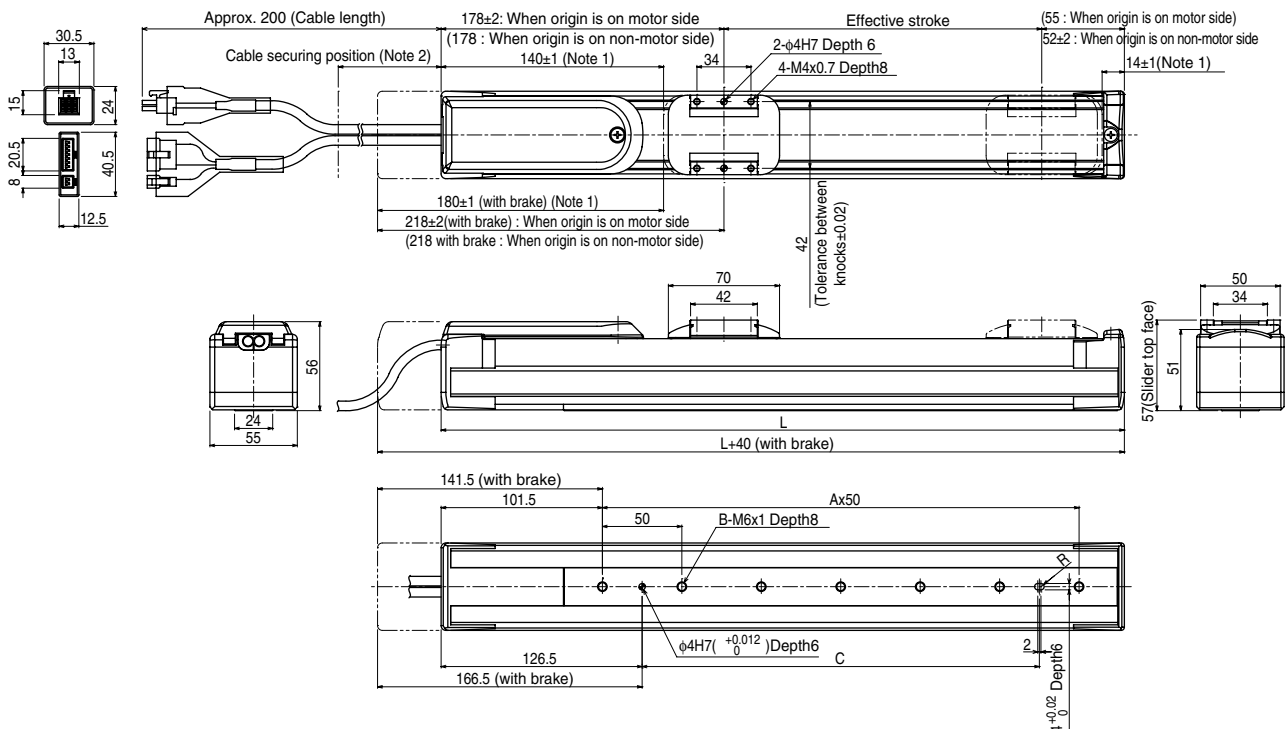
Static loading moment

(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: Non-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		W55xH56		
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)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)		
	A	B	C		A	B	C		A	C
Lead20	2kg	599	225	291	2kg	262	203	554	1kg	458
	4kg	366	109	148	4kg	118	88	309	2kg	224
	6kg	352	71	104	6kg	71	49	262	2kg	244
Lead12	4kg	500	118	179	4kg	146	96	449	4kg	113
	6kg	399	79	118	6kg	85	55	334		
	8kg	403	56	88	8kg	55	34	305		
Lead6	6kg	573	83	136	6kg	101	62	519		
	8kg	480	61	100	8kg	64	39	413		
	10kg	442	47	78	10kg	43	26	355		
	12kg	465	39	64	12kg	28	17	338		

* Service life is calculated for 600mm stroke models.

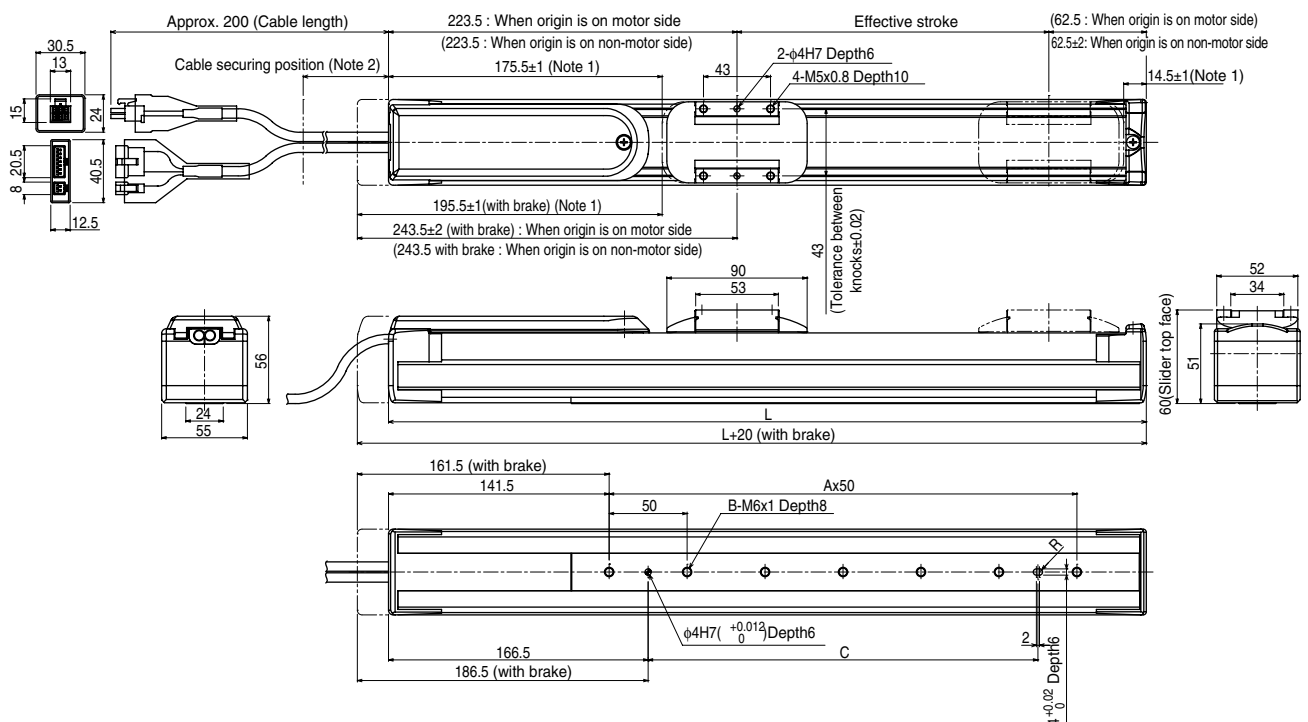
Static loading moment

(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: Straight	B: With brake N: With no brake	RJ: Right (standing) LJ: Left	N: Standard origin position Z: Bon-motor side	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)		
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)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)			
	A	B	C		A	B	C		A	C	
Lead12	1kg 807	218	292	Lead12	1kg 274	204	776	Lead12	0.5kg 407	408	
	2kg 667	107	152		2kg 133	93	611		1kg 204	204	
Lead6	2kg 687	116	169	Lead6	2kg 149	102	656	Lead6	1kg 223	223	
	3kg 556	76	112		3kg 92	62	516		2kg 107	107	
	4kg 567	56	84		4kg 63	43	507		2kg 118	118	
Lead2	4kg 869	61	92	Lead2	4kg 72	48	829	Lead2	4kg 53	53	
	6kg 863	40	60		6kg 39	29	789				

* Service life is calculated for 400mm stroke models.

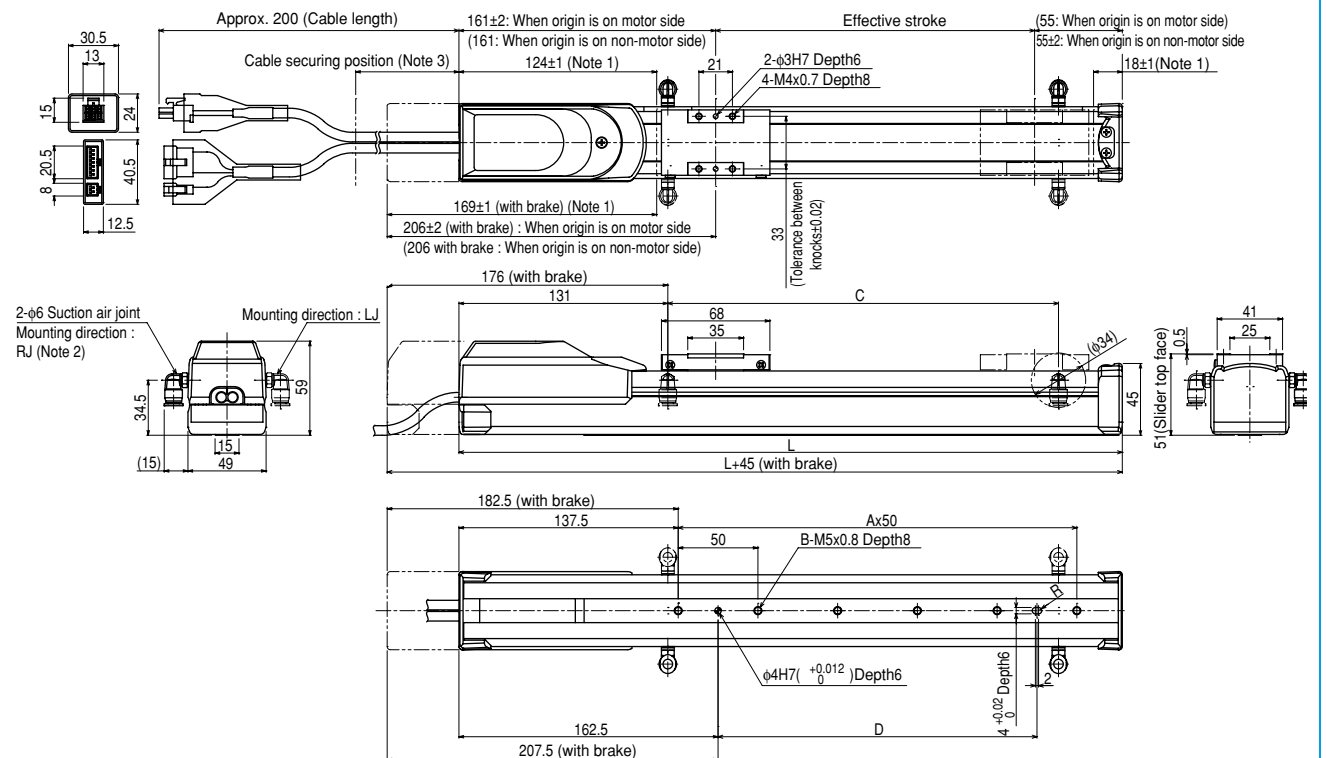
Static loading moment

(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-band 100mm 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 0.2kg heavier 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 ^{*)}	Controller	I/O
	20 : 20mm 12 : 12mm 6 : 6mm	S: Straight	B: With brake N: With no brake	RJ: Right (standing) 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
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		
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.

*3: Per 1cf (0.1μm base), when suction blower is used.

Allowable overhang^{*}

Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)			
	A	B	C		A	B	C		A	C	
Lead20	2kg 413	139	218	Lead20	2kg 192	123	372	Lead12	0.5kg 578	579	
	4kg 334	67	120		4kg 92	51	265		1kg 286	286	
Lead12	4kg 347	72	139	Lead12	4kg 109	57	300	Lead6	1kg 312	312	
	6kg 335	47	95		6kg 63	31	263		2kg 148	148	
Lead6	4kg 503	78	165	Lead6	4kg 134	63	496				
	8kg 332	37	79		6kg 76	35	377				
	10kg 344	29	62		8kg 47	22	355				

* Service life is calculated for 600mm stroke models.

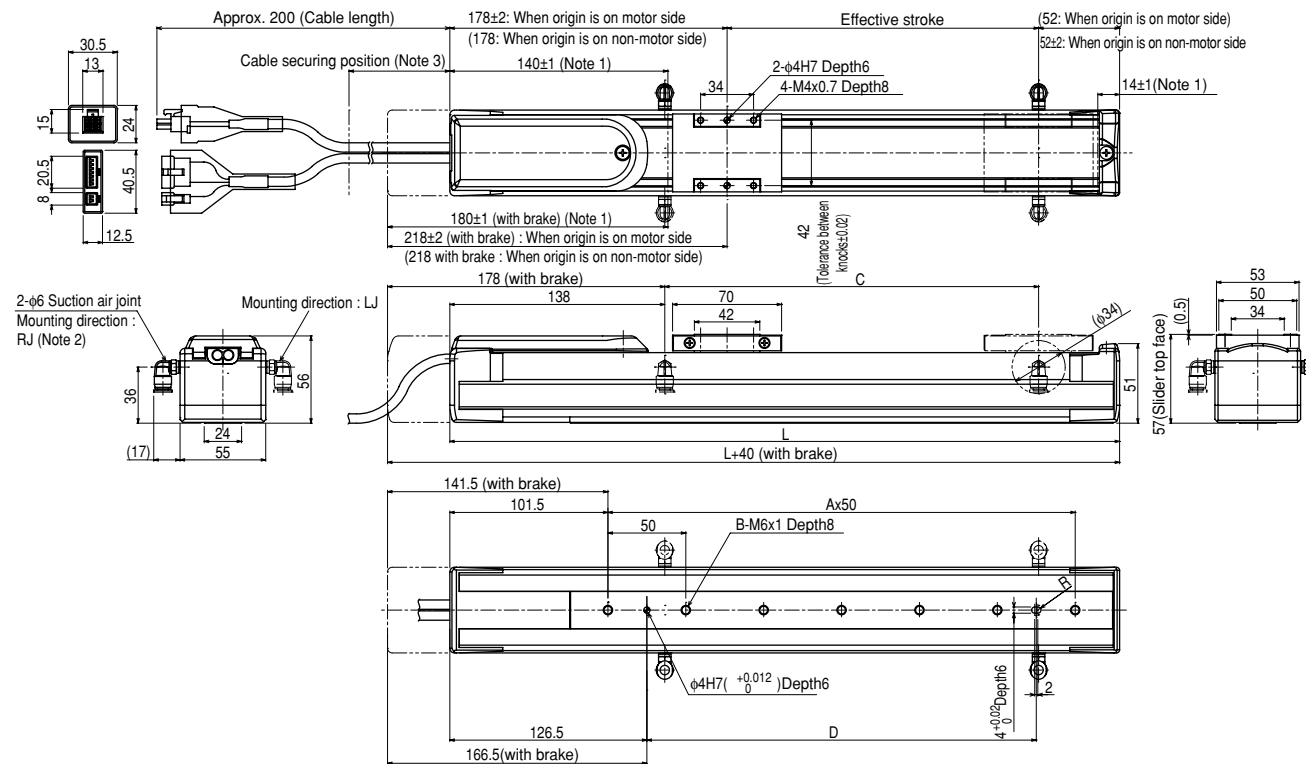
Static loading moment

(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.

Note 3. 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 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.

- High lead: Lead 20
- Medium stroke
- CE compliance

Ordering Method

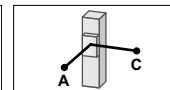
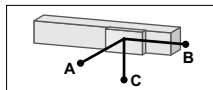
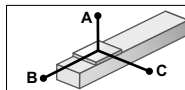
SSC05H		S						S	
Robot	Lead	Type	Brake	Default of output module	Origin position	Stroke	Cable length¹⁾	Controller	I/O
	20 : 20mm 12 : 12mm 6 : 6mm	S: Straight	B: With brake N: With no brake	RJ: Right (standard) LJ: Left	N: Standard origin position Z: Bon-motor side	50 to 800 (50mm pitch)	1L : 1m 3L : 3m 5L : 5m	S : TS-S	NP : NPN PNP : 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	

■ **Allowable overhang***



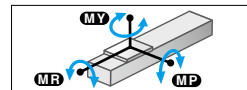
Horizontal installation (Unit: mm)				
		A	B	C
Lead20	2kg	599	225	291
	4kg	366	109	148
	6kg	352	71	104
Lead12	4kg	500	118	179
	6kg	399	79	118
	8kg	403	56	88
Lead6	6kg	573	83	136
	8kg	480	61	100
	10kg	442	47	78
	12kg	465	39	64

Wall installation		(Unit: mm)		
		A	B	C
Lead20	2kg	262	203	55
	4kg	118	88	30
	6kg	71	49	26
Lead12	4kg	146	96	44
	6kg	85	55	33
	8kg	55	34	30
Lead6	6kg	101	62	51
	8kg	64	39	41
	10kg	43	26	35
	12kg	28	17	33

Vertical installation (Unit: mm)		A	C
Lead 12	1kg	458	459
	2kg	224	224
Lead 6	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**

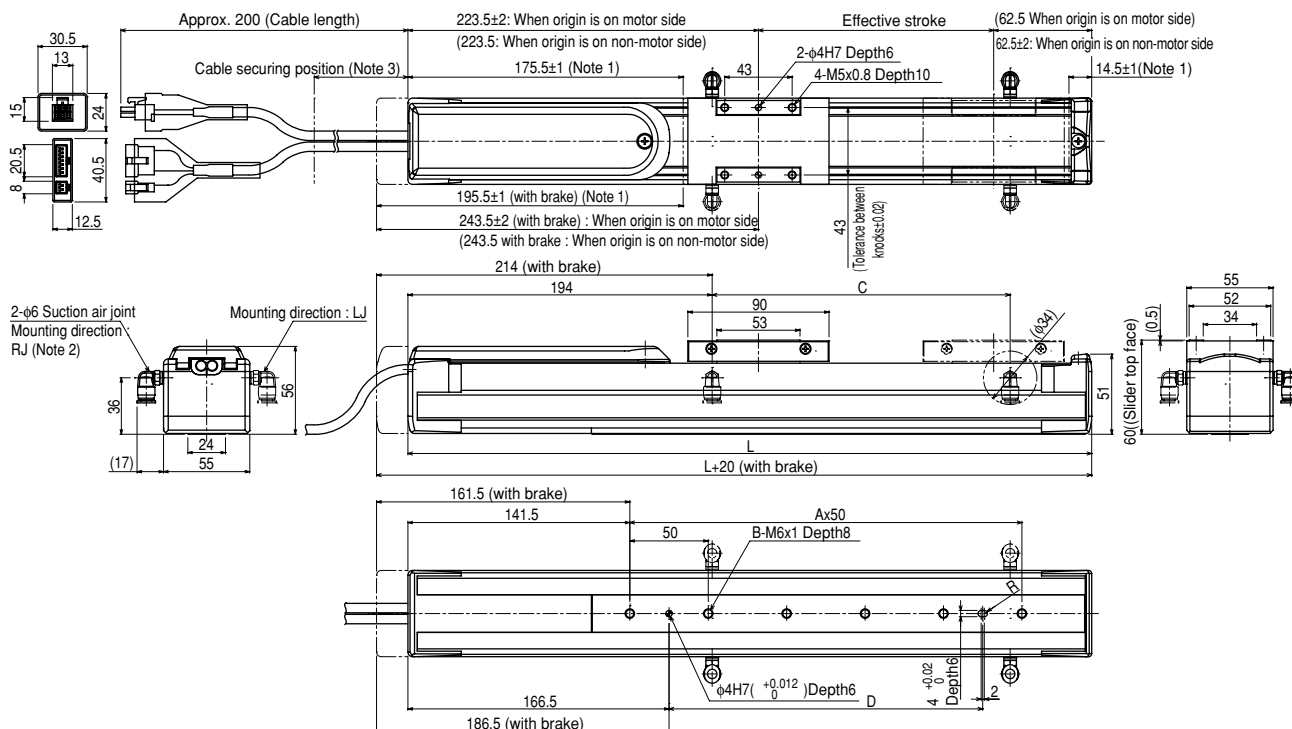
Controller	Operation method
TS-S	Point trace

*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.

*3: Per 1cf (0.1µm base), when suction blower is used.

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													933	833	733	633
	Lead 12 (Horizontal)													560	500	440	380
	Lead 12 (Vertical)															440	380
	Lead 6 (Horizontal)													280	250	220	190
	Lead 6 (Vertical)															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-band 100mm 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 0.2kg 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.

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

(June 2009)



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