

EC-S7

EC-DS7

<With digital speed controller>

Simple Dust-proof

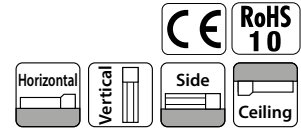
Straight Motor

Body Width 70 mm

24v Stepper Motor

Model Specification Items

EC		Series		Type		Lead		Stroke		Power / I/O cable length		Options	
S7		Standard		S		24mm		50		50mm		Refer to "Power / I/O Cable Length" below	
DS7		Digital speed controller		H		16mm		500		500mm (Every 50mm)		Refer to "Options" below	
				M		8mm							
				L		4mm							



Stroke

Stroke (mm)	S7	DS7	Stroke (mm)	S7	DS7
50	○	○	300	○	○
100	○	○	350	○	○
150	○	○	400	○	○
200	○	○	450	○	○
250	○	○	500	○	○

Options * Please check the Options reference pages to confirm each option.

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	2-373
Brake	B	2-373
Specified grease specification (Note 2)	G1/G5	2-381
Foot bracket	FT	2-377
Non-motor end specification	NM	2-384
PNP specification	PN	2-384
Slider part roller specification (Note 3)	SR	2-386
split motor and controller power supply specification	TMD2	2-387
Double slider specification (Note 2) (Note 3) (Note 4)	W	2-117
Battery-less absolute encoder specification	WA	2-388
Wireless communication specification	WL	2-388
Wireless axis operation specification	WL2	2-388

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
 (Note 2) Double slider specification (W) and specified grease specification (G1/G5) cannot be used together.
 (Note 3) When the slider part roller specification (SR) and double slider specification (W) are used together, the price for the slider part roller specification (SR) becomes double.
 (Note 4) There are some non-selectable leads. See P. 2-117 for details.

POINT Selection Notes

- The actuator specifications display the payload's maximum value, but it will vary depending on the acceleration and speed. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for more details.
- If performing push-motion operations, refer to the "Correlation between Torque and Current Limit" diagram. The torques listed are only reference values.
- Duty must be restricted depending on the ambient operating temperature.
- Pay close attention to the installation orientation.
- Reference value of the overhang load length is under 280mm (under 560mm for double slider specification) in the direction of Ma, Mb and Mc.
- The center of gravity of the attached object should be less than 1/2 of the overhang distance. Even when the overhang distance and load moment are within the allowable range, operating conditions should be moderated if some abnormal vibration or noise is observed.

Power / I/O Cable Length

Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 6) (with connectors on both ends)
		CB-EC-PWBIO□□□-RB supplied	CB-REC-PWBIO□□□-RB supplied
0	No cable	○ (Note 5)	○
1 ~ 3	1 ~ 3m	○	○
4 ~ 5	4 ~ 5m	○	○
6 ~ 7	6 ~ 7m	○	○
8 ~ 10	8 ~ 10m	○	○

(Note 5) Only terminal block connector is supplied. Please refer to P. 2-394 for details.
 (Note 6) If RCON-EC connection specification (ACR) is selected as an option.
 (Note) The robot cable is standard.

Four-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 7) (with connectors on both ends)
		CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○	○
S4 ~ S5	4 ~ 5m	○	○
S6 ~ S7	6 ~ 7m	○	○
S8 ~ S10	8 ~ 10m	○	○

(Note 7) If RCON-EC connection specification (ACR) is selected as an option.
 (Note) The robot cable is standard.

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Main Specifications

Item		Description				
Lead	Ball screw lead (mm)	24	16	8	4	
Horizontal	Payload	Max. payload (kg) (energy-saving disabled)	37	46	51	51
		Max. payload (kg) (energy-saving enabled)	18	35	40	40
	Speed / acceleration / deceleration	Max. speed (mm/s)	860	700	420	210
		Min. speed (mm/s)	30	20	10	5
Vertical	Payload	Max. payload (kg) (energy-saving disabled)	3	8	16	19
		Max. payload (kg) (energy-saving enabled)	2	5	10	15
	Speed / acceleration / deceleration	Max. speed (mm/s)	860	700	420	175
		Min. speed (mm/s)	30	20	10	5
Push	Max. push force (N)	Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	1	1	1	1
	Max. push speed (mm/s)	Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5
		Max. push force (N)	139	209	418	836
Brake	Brake specification	Non-excitation actuating solenoid brake				
	Brake holding force (kgf)	3	8	16	19	
Stroke	Min. stroke (mm)	50	50	50	50	
	Max. stroke (mm)	500	500	500	500	
	Stroke pitch (mm)	50	50	50	50	

Item	Description
Driving system	Ball screw, φ12mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Base	Dedicated aluminum extruded material (A6063S5-T5 equivalent), black alumite treatment
Linear guide	Linear motion infinite circulating type
Static allowable moment	Ma: 79.7N-m
	Mb: 114N-m
	Mc: 157N-m
Dynamic allowable moment (Note 8)	Ma: 17.7N-m
	Mb: 25.3N-m
	Mc: 34.9N-m
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (Non-condensing)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s ²
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor (□56)
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 8) Based on the standard rated operation life of 5,000km. Operation life varies according to operating and mounting conditions.

Slider type moment direction

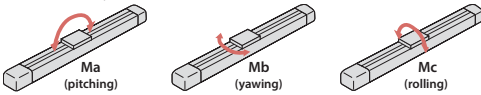


Table of Payload by Speed/Acceleration

Energy-saving setting disabled (The unit for payload is kg. If blank, operation is not possible.)

Lead 24

Orientation	Horizontal		Vertical	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	37	22 16 14	3	3
200	37	22 16 14	3	3
420	34	20 16 14	3	3
640	20	15 10 9	3	3
860	12	10 7 4	3	2.5

Lead 16

Orientation	Horizontal		Vertical	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	46	35 28 27	8	8
140	46	35 28 27	8	8
280	46	35 25 24	8	8
420	34	25 15 10	5	4.5
560	20	15 10 6	4	3
700	15	10 5 3	3	2

Lead 8

Orientation	Horizontal		Vertical	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	51	45 40 40	16	16
70	51	45 40 40	16	16
140	51	40 38 35	16	16
210	51	35 30 24	10	9.5
280	40	28 20 15	8	7
350	30	9 4	5	4
420	7		2	

Lead 4

Orientation	Horizontal		Vertical	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	51	45 40 40	19	19
35	51	45 40 40	19	19
70	51	45 40 40	19	19
105	51	45 40 35	19	19
140	45	35 30 25	14	12
175	30	18	9	7.5
210	6			

Energy-saving setting enabled (The unit for payload is kg.)

Lead 24

Orientation	Horizontal		Vertical	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	18	10	2	
200	18	10	2	
420	18	10	2	
640	10	2	1	
800	5	0.5	0.5	

Lead 16

Orientation	Horizontal		Vertical	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	35	20	5	
140	35	20	5	
280	25	12	3	
420	15	6	1.5	
560	7	0.5	0.5	

Lead 8

Orientation	Horizontal		Vertical	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	40	25	10	
70	40	25	10	
140	40	25	7	
210	25	14	4	
280	10	1	1.5	

Lead 4

Orientation	Horizontal		Vertical	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	40	30	15	
35	40	30	15	
70	40	30	15	
105	40	30	8	
140	15	6	2	

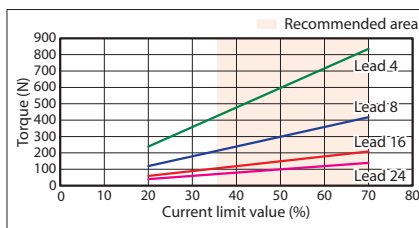
Stroke and Max Speed

Lead (mm)	Energy-saving setting	50 ~ 300 (Every 50mm)	350 (mm)	400 (mm)	450 (mm)	500 (mm)
24	Disabled	860	774	619	506	
	Enabled	800	774	619	506	
16	Disabled	700	631	492	395	323
	Enabled	560	492	395	323	
8	Disabled	420	322	251	200	164
	Enabled	280	251	200	164	
4	Disabled	210 <175>	163	126	101	83
	Enabled	140	126	101	83	

(Unit: mm/s)

(Note) Values in brackets < > are for vertical use.

Correlation between Torque and Current Limit



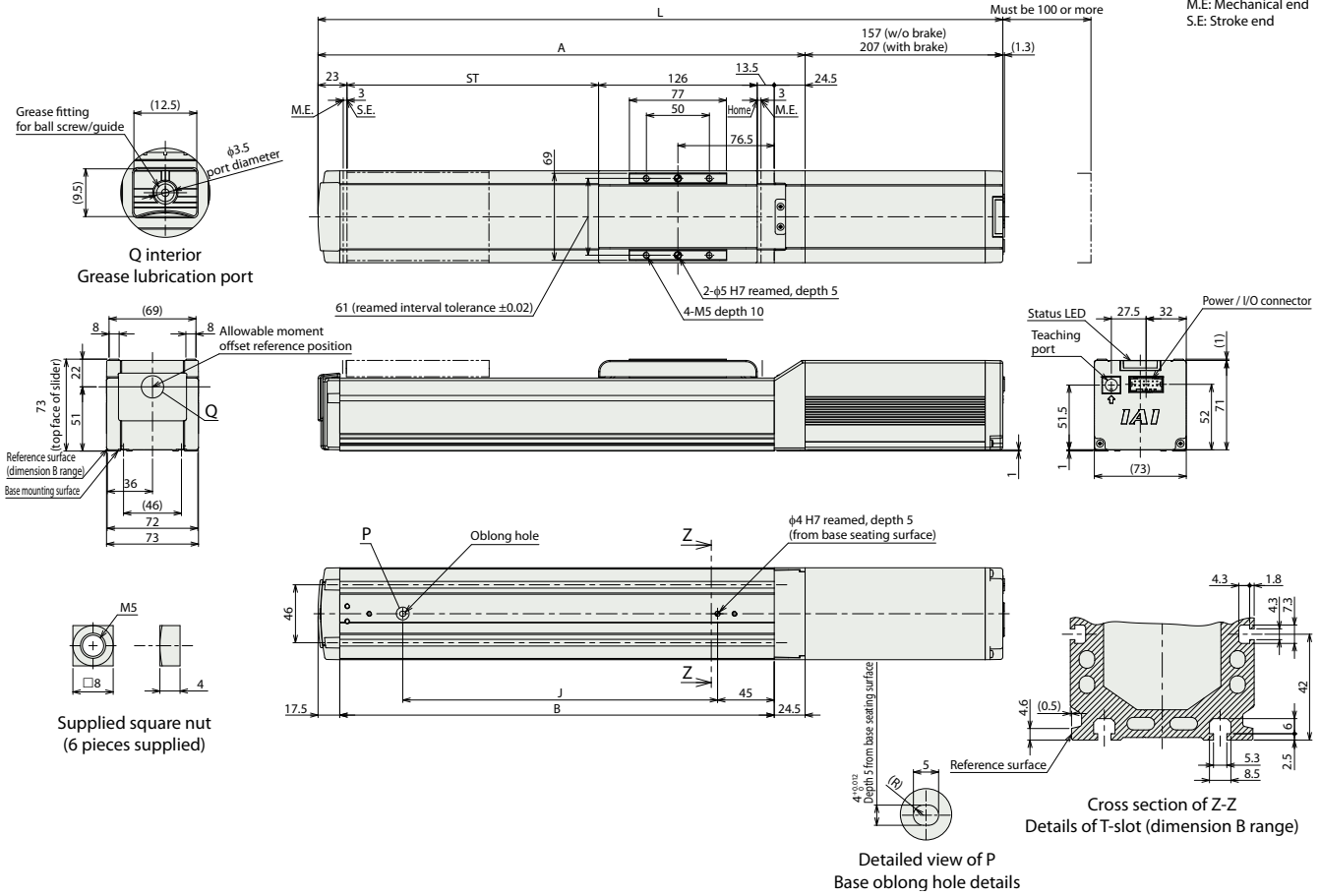
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■ EC-S7

(Note) When the slider is returning to its home position, be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

ST: Stroke
M.E: Mechanical end
S.E: Stroke end



■ Dimensions by stroke

Stroke	50	100	150	200	250	300	350	400	450	500	
L	Without brake	394	444	494	544	594	644	694	744	794	844
	With brake	444	494	544	594	644	694	744	794	844	894
A	237	287	337	387	437	487	537	587	637	687	
B	195	245	295	345	395	445	495	545	595	645	
J	100	150	200	250	300	350	400	450	500	550	

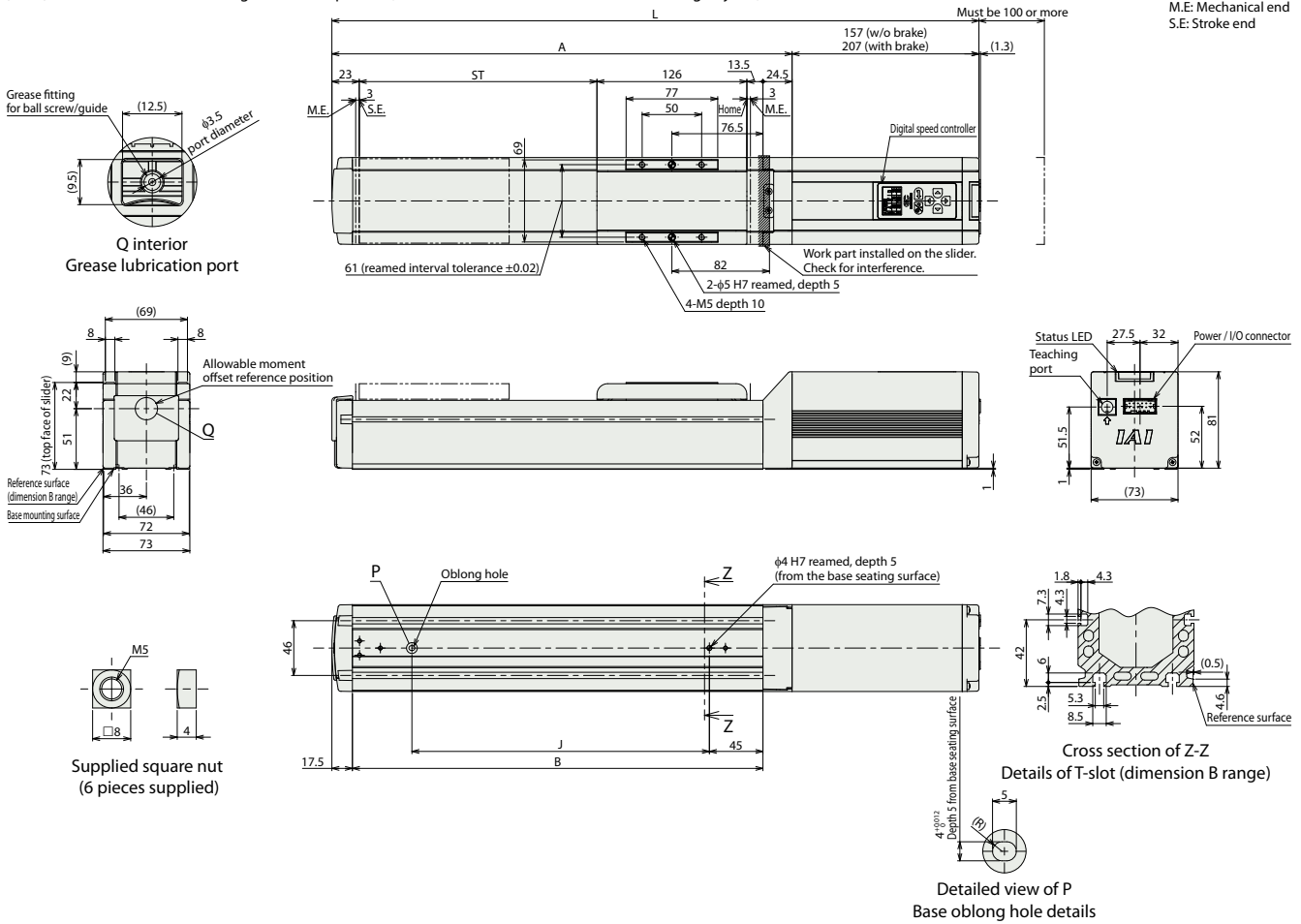
■ Mass by stroke

Stroke	50	100	150	200	250	300	350	400	450	500
Mass (kg)	Without brake	3.4	3.6	3.9	4.2	4.4	4.7	5.0	5.5	5.8
	With brake	3.8	4.1	4.4	4.6	4.9	5.2	5.4	5.7	6.2

■ EC-DS7 <with digital speed controller>

(Note) When the slider is returning to its home position, be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

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■ Dimensions by stroke

Stroke	50	100	150	200	250	300	350	400	450	500	
L	Without brake	394	444	494	544	594	644	694	744	794	844
	With brake	444	494	544	594	644	694	744	794	844	894
A	237	287	337	387	437	487	537	587	637	687	
B	195	245	295	345	395	445	495	545	595	645	
J	100	150	200	250	300	350	400	450	500	550	

■ Mass by stroke

Stroke	50	100	150	200	250	300	350	400	450	500	
Mass (kg)	Without brake	3.5	3.7	4.0	4.3	4.5	4.8	5.1	5.3	5.6	5.9
	With brake	4.1	4.3	4.6	4.9	5.1	5.4	5.7	5.9	6.2	6.5

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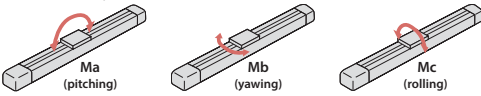
Option

Main Specifications (double slider specification)

Item		Description		
Lead	Ball screw lead (mm)	16	8	4
	Horizontal	Max. payload (kg) (energy-saving disabled)	44	49
Max. payload (kg) (energy-saving enabled)		33	38	38
Speed / acceleration / deceleration	Max. speed (mm/s)	560	420	175
	Min. speed (mm/s)	20	10	5
	Rated acceleration/deceleration (G)	0.3	0.3	0.3
	Max. acceleration/deceleration (G)	1	1	1
	Vertical	Max. payload (kg) (energy-saving disabled)	—	14
Vertical	Max. payload (kg) (energy-saving enabled)	—	8	13
	Max. speed (mm/s)	—	350	175
	Min. speed (mm/s)	—	10	5
	Rated acceleration/deceleration (G)	—	0.3	0.3
	Max. acceleration/deceleration (G)	—	0.5	0.5
Push	Max. push force (N)	209	418	836
	Max. push speed (mm/s)	20	20	20
Brake	Brake specification	Non-excitation actuating solenoid brake		
	Brake holding force (kgf)	8	16	19
Stroke	Min. nominal stroke (mm)	200	200	200
	Min. effective stroke (mm)	50	50	50
	Max. nominal stroke (mm)	500	500	500
	Max. effective stroke (mm)	350	350	350
	Stroke pitch (mm)	50	50	50

(Note) Nominal stroke: Stroke shown in the model number.
Effective stroke: Stroke available for actual operation.
(Note) Lead 16 cannot be mounted vertically.

Slider type moment direction



Item	Description
Driving system	Ball screw, φ10mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Base	Dedicated aluminum extruded material (A6063SS-T5 equivalent), black alumite treatment
Linear guide	Linear motion infinite circulating type
Static allowable moment	Ma: 441N-m
	Mb: 630N-m
	Mc: 209N-m
Dynamic allowable moment (Note 9)	Ma: 119N-m
	Mb: 171N-m
	Mc: 56.7N-m
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (Non-condensing)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s ²
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor (□56)
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 9) Based on the standard rated operation life of 5,000km. Operation life varies according to operating and mounting conditions.

Table of Payload by Speed/Acceleration (double slider specification)

Energy-saving setting disabled (The unit for payload is kg. If blank, operation is not possible.)

Lead 16

Orientation	Horizontal			Vertical		
	Acceleration (G)					
Speed (mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	44	33	26	25		
140	44	33	26	25		
280	44	32	22	20		
420	30	20	10	6		
560	10	6	4	2		

Lead 8

Orientation	Horizontal			Vertical		
	Acceleration (G)					
Speed (mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	49	43	38	38	14	14
70	49	43	38	38	14	14
140	49	38	36	33	14	14
210	49	33	28	20	8	7
280	36	24	16	10	5	4
350	14	4	1		1	
420	3					

Lead 4

Orientation	Horizontal			Vertical		
	Acceleration (G)					
Speed (mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	49	43	38	38	17	17
35	49	43	38	38	17	17
70	49	43	38	38	17	17
105	49	43	38	33	17	17
140	40	30	25	20	9	7
175	25	8			4	1

Energy-saving setting enabled (The unit for payload is kg.)

Lead 16

Orientation	Horizontal		Vertical
	Acceleration (G)		
Speed (mm/s)	0.3	0.7	0.3
0	33	18	
140	33	18	
280	23	10	
420	10	3	

Lead 8

Orientation	Horizontal		Vertical
	Acceleration (G)		
Speed (mm/s)	0.3	0.7	0.3
0	38	23	8
70	38	23	8
140	38	23	5
210	20	10	2
280	5		

Lead 4

Orientation	Horizontal			Vertical
	Acceleration (G)			
Speed (mm/s)	0.3	0.7	0.3	
0	38	28	13	
35	38	28	13	
70	38	28	13	
105	36	26	4	
140	6			

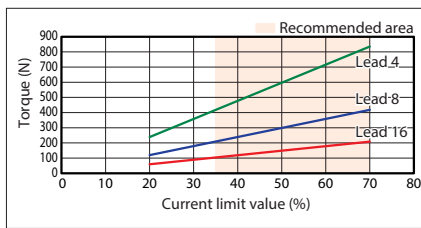
Stroke and Max Speed (double slider specification)

Lead	Nominal stroke	200-300	350	400	450	500
		Effective stroke	50~150	200	250	300
(mm)	Energy-saving setting	(Every 50mm)	(mm)	(mm)	(mm)	(mm)
		16	Disabled	560		
	Enabled	420				
8	Disabled	420<350>				322
	Enabled	280<210>				
4	Disabled	175				163
	Enabled	140<105>				

(Unit: mm/s)

(Note) Values in brackets <> are for vertical use.
(Note) Nominal stroke: Stroke shown in the model number.
Effective stroke: Stroke available for actual operation.

Correlation between Torque and Current Limit (double slider specification)



(Note) Same values as single slider specification.

■ Dimensions (double slider specification)

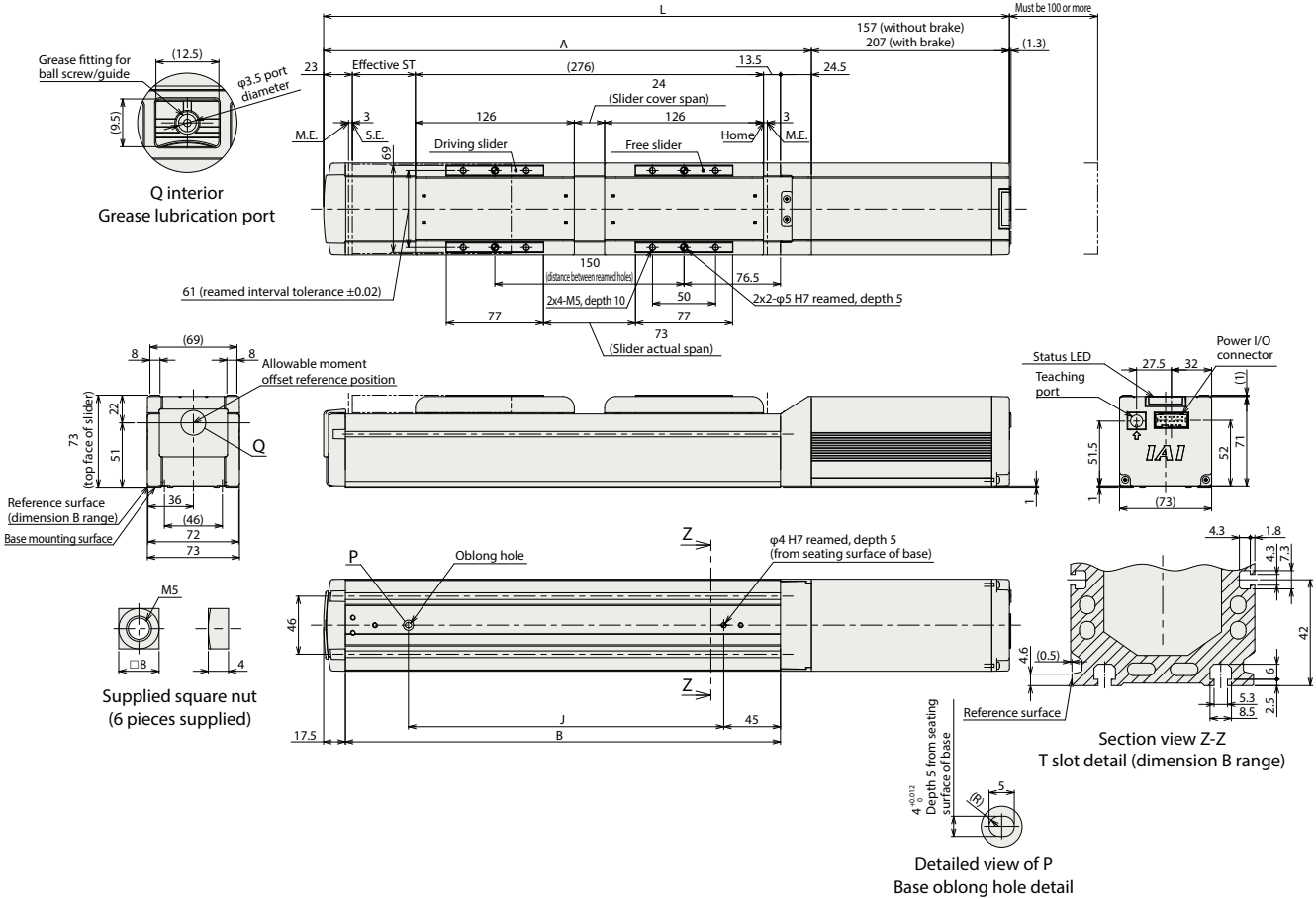
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(Note) When the slider is returning to its home position, be careful of interference from surrounding objects, as it will travel until it reaches the M.E.
 (Note) External view of the motor differs for product with a digital speed controller.
 Refer to the external view for single slider with digital speed controller for details.
 (Note) Connect the slider according to the slider cover span or distance between reamed holes shown in the drawing.

CAD drawings can be downloaded from our website.
www.intelligentactuator.com



ST: Stroke
 M.E: Mechanical end
 S.E: Stroke end



■ Dimensions by stroke

	Nominal stroke	200	250	300	350	400	450	500
	Effective stroke	50	100	150	200	250	300	350
L	Without brake	544	594	644	694	744	794	844
	With brake	594	644	694	744	794	844	894
	A	387	437	487	537	587	637	687
	B	345	395	445	495	545	595	645
	J	250	300	350	400	450	500	550

■ Mass by stroke

	Nominal stroke	200	250	300	350	400	450	500	
	Effective stroke	50	100	150	200	250	300	350	
Mass (kg)	Without digital speed controller	Without brake	4.65	4.85	5.15	5.45	5.65	5.95	6.25
		With brake	5.05	5.35	5.65	5.85	6.15	6.45	6.65
	With digital speed controller	Without brake	4.75	4.95	5.25	5.55	5.75	6.05	6.35
		With brake	5.35	5.55	5.85	6.15	6.35	6.65	6.95

(Note) Mass is added by 0.45kg of additional slider to the single slider specification.

■ Applicable Controllers

(Note) EC series is equipped with a built-in controller. Please refer to P. 2-391 for details on built-in controllers.

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