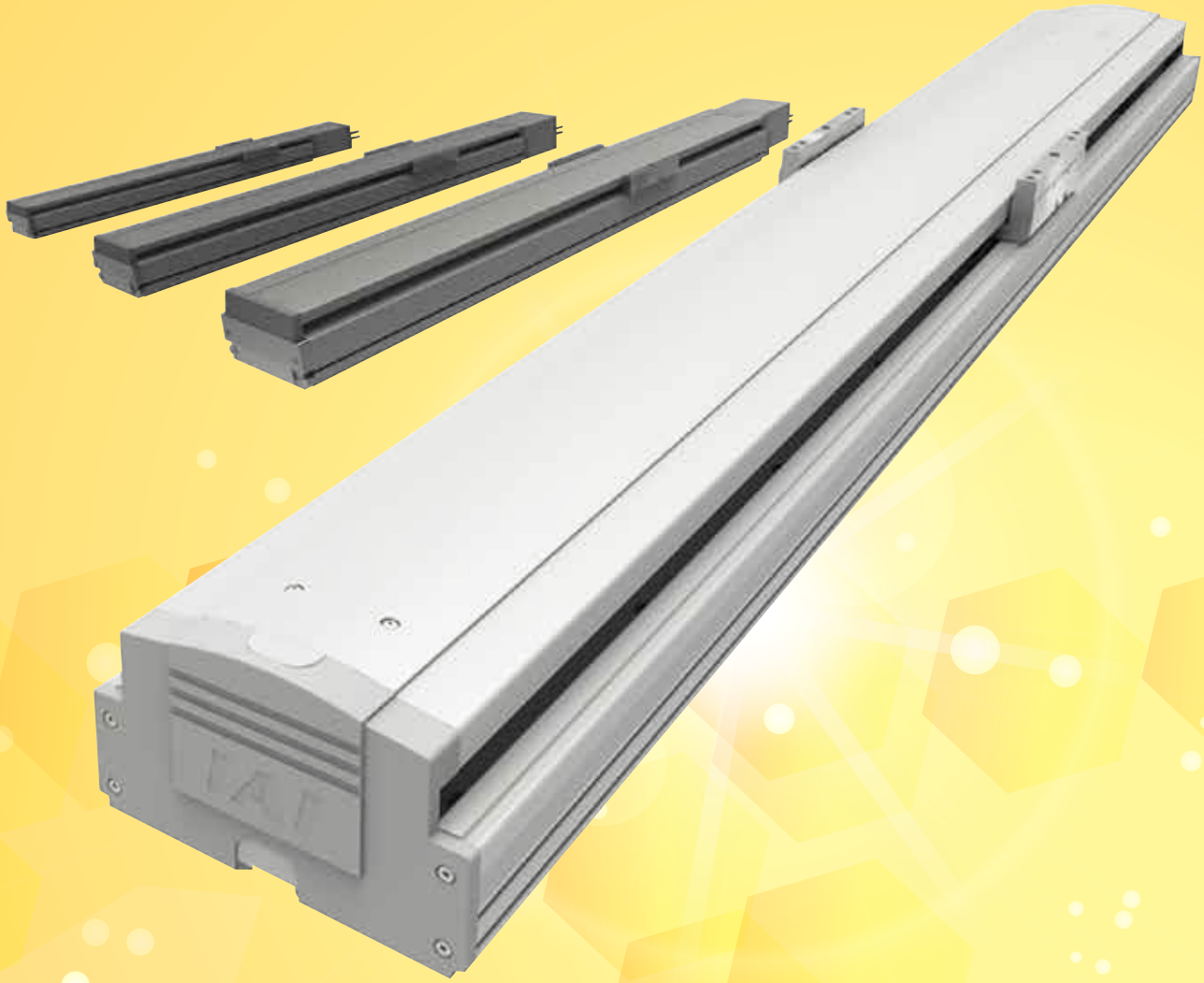
IAI
Quality and Innovation

IS(P)B-WXM
IS(P)B-WXMX

Large Single-Axis Robot



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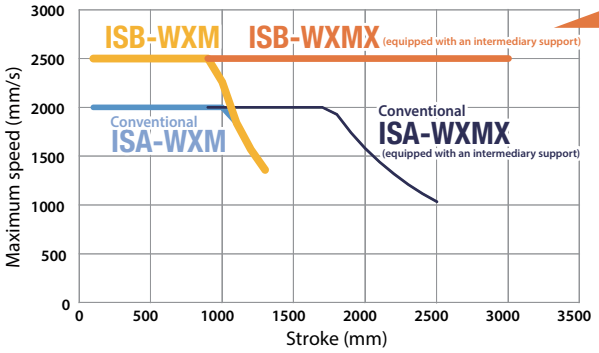
Wider applications for the ISB Series

Large types with a **400kg horizontal payload** are available now !

Feature 1 Long stroke and Ultra high speed

Maximum stroke 3000 mm*1
Maximum speed 2500 mm/s
Maximum acceleration/deceleration 1.2G

Stroke and Maximum Speed



*1 **In the case of ISB-WXMX type (equipped with intermediary support).**
Intermediary support:
Suppresses deflection of the ball screw, making high-speed operations possible.
Only horizontal mounting is possible for the intermediary support type.

NEW

Equipped with a newly designed intermediary support.
No speed slowdown due to long stroke!

* Patent pending

Feature 2 High payload setting

Maximum payload capacity
Horizontal 400kg *2 Vertical 70kg *2

*2 In the case of ISPB-WXM Lead 10 and the high payload setting (HLA) are selected.

Feature 3 Equipped standard with battery-less absolute encoder

Home-return is not needed, shortening the start-up time for long-stroke operations.

Feature 4 Improved maintainability

Grease lubrication can be made from both sides of the slider without removing the main cover and other objects attached on the slider.

ISB-WXM-750
ISPB-WXM-750

±10μm Standard | ±5μm high-precision | Battery-less Absolute | Body Width 200 mm | 750 W

■ Model Specification Items

ISB / ISPB Series	WXM Type	WA Encoder Type	750 Motor Type	□ Lead	□ Stroke	□ Applicable Controllers	□ Cable Length	□ Options
		WA: Battery-less absolute	750 : 750W	50 : 50mm 25 : 25mm 10 : 10mm	100 : 100mm ~ 1300 : 1,300mm (50mm increments)	T2 : SCON SSEL XSEL-P/Q XSEL-RA/SA T4 : RCON RSEL	N : None S : 3m M : 5m X□□ : Specified Length	Please refer to the option table below

CE RoHS

Horizontal | Vertical | Side | Ceiling

Stroke

Stroke (mm)	ISB	ISPB
100	○	○
150/200	○	○
250/300	○	○
350/400	○	○
450/500	○	○
550/600	○	○
650/700	○	○
750/800	○	○
850/900	○	○
950/1,000	○	○
1,050/1,100	○	○
1,150/1,200	○	○
1,250/1,300	○	○

POINT Selection Notes

(Note 1) The payload specified in the "Main Specifications" shows the maximum value. Refer to the "Payload Table by Speed and Acceleration/Deceleration" for details.

(Note 2) The guideline of usable duty varies depending on operating conditions (e.g. payload and acceleration/deceleration).

(Note 3) Attention depending on the mounting orientation.

(Note 4) Guideline for overhang length is 900mm in the Ma, Mb and Mc directions.

Options

Type	Model	Ref. Page	
Cable exits from the left side	**A1**	P4	○
Cable exits from the right side	**A3**	P4	○
AQ seal (Standard equipment) (*1)	**AQ**	P8	○
Brake	**B**	P8	○
High payload setting (Note 2)	**HLA**	P8	○
Home limit switch	**L**	P8	○
Master axis specified	**LM**	P8	○
Non-motor end spec	**NM**	P8	○
Slave axis specified	**S**	P8	○

(Note 1) Make sure to specify in the option column of the model specification item.
(Note 2) Only the ISPB Lead 10 can be selected.

Cable Length

Type	Cable code	T2		T4	
		Standard	With LS	Standard	With LS
Standard type	**S** (3m)	○			
	M (5m)	○			
Specified length	**X06** (6m) ~**X10** (10m)	○		○	
	X11 (11m) ~**X15** (15m)	○		○	
	X16 (11m) ~**X20** (20m)	○		○	

(Note) Robot cables.
(Note) When the cable length is over 20m up to 30m, specify the actuator type cable length as "N" and place an order for a motor cable (CB-X-MA □□□) and encoder cable (CB-X1-PA □□□ -AWG24), or encoder cable with LS (CB-X1-PLA □□□ -AWG24) separately.

Main specifications

Item			Details			
Lead		Ball screw lead (mm)	50	25	10	10 (high payload setting)
Horizontal	Payload	Maximum payload (kg)	80	160	200	100 - 400 (Note 3)
	Speed/ acceleration/ deceleration	Maximum speed (mm/s)	2500	1250	600	600
		Rated acceleration/ deceleration (G)	0.3	0.3	0.3	0.2
		Maximum acceleration/ deceleration (G)	1.2	1.2	0.6	0.6
Vertical	Payload	Maximum payload (kg)	14	29	65	40 - 70 (Note 3)
	Speed/ acceleration/ deceleration	Maximum speed (mm/s)	2500	1250	600	600
		Rated acceleration/ deceleration (G)	0.3	0.3	0.3	0.2
		Maximum acceleration/ deceleration (G)	1	1	0.5	0.5
Thrust		Rated thrust (N)	255	510	1021	1021
Brake		Brake specification	Non-excited operation electromagnetic brake			
		Brake retaining force (kgf)	14	29	70	70
Stroke		Minimum stroke (mm)	100	100	100	100
		Maximum stroke (mm)	1300	1300	1300	1300
		Stroke pitch (mm)	50	50	50	50

(Note 3) The figure is for the high payload setting option (HLA).
For stable operations, use the actuator with a payload of 100kg or more for horizontal operations, and 40kg or more for vertical operations.

Item	Details
Drive method	Ball screw Lead 10: φ20mm, Lead 25 and 50: φ25mm Rolled C10 [C5 or equiv.]
Positioning repeatability	±0.01mm [±0.005mm]
Lost motion	0.05mm or less [0.02mm or less]
Base	Material: Aluminum white alumite treatment
Linear guide	Linear motion endlessly circulating type
Static allowable moment	Ma : 774 N:m
	Mb : 1106 N:m
	Mc : 2175 N:m
Dynamic allowable moment(Note 4)	Ma : 162 N:m
	Mb : 231 N:m
	Mc : 455 N:m
Ambient operating air temperature, humidity	0 to 40℃, 85%RH max. (no condensation)
Protection class	—
Vibration resistance/shock resistance	4.9m/s^2
Overseas standard compliance	CE Marking, RoHS Directive
Motor type	AC servo motor (200 V)
Encoder type	Battery-less absolute (17-bit)
Encoder pulse count	131072 pulse/rev

(Note 4) Based on the assumption of a standard rated life of 10,000 km. The traveling life varies depending on the operating conditions and installation conditions
(Note) Figures in [ ] are for ISPB.

Slider type moment direction

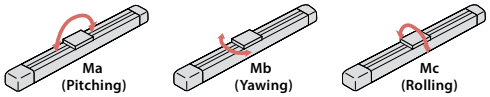


Table of payload by speed/acceleration

Payload shown in units of kg. Operations are not possible in the blank positions.

Orientation		Horizontal											Vertical								
Lead (mm)	max.Speed (mm/s)	Acceleration (G)																			
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
50	2500	80	80	60	48	40	34	30	27	23	18	15	14	14	14	14	14	13	12	11	10
25	1250	160	160	120	96	80	68	60	54	46	36	30	29	29	29	29	29	26	24	22	20
10	600	200	200	150	120	100							65	65	60	50					
10 (High payload setting)	600	400	265	200	160	135							70	70	68	64					

Stroke and maximum speed

Lead \ Stroke	100~800	850	900	950	1000	1050	1100	1150	1200	1250	1300
50	2500			2260		1840		1570		1360	
25	1250			1130		920		785		680	
10	600	460		380		320		270		235	

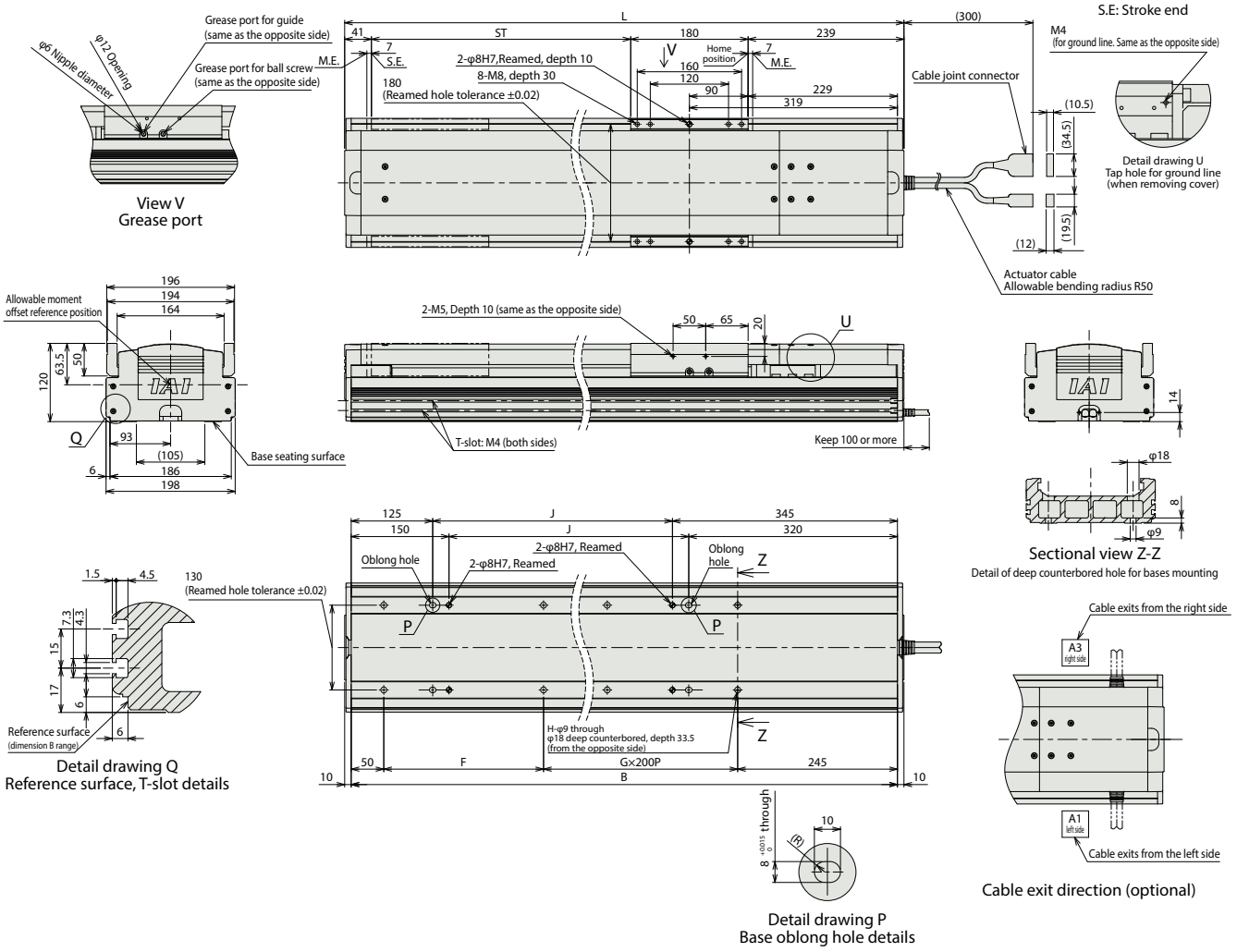
(Unit: mm/s)

Dimensions

(Note) A motor cable and an encoder cable are connected to the cable joint connector.
(Note) When the slider is returning to its home position, be careful of interference with surrounding objects, as it will travel until it reaches the M.E.
(Note) Changing the home direction will require the actuator to be returned to IAI for adjustment.
(Note) The external dimensions are the same as for the with-brake specification.

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

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



■ Dimensions by Stroke

Stroke	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
L	560	610	660	710	760	810	860	910	960	1010	1060	1110	1160	1210	1260	1310	1360	1410	1460	1510	1560	1610	1660	1710	1760
B	540	590	640	690	740	790	840	890	940	990	1040	1090	1140	1190	1240	1290	1340	1390	1440	1490	1540	1590	1640	1690	1740
F	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245
G	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6
H	4	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16
J	70	120	170	220	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170	1220	1270

■ Mass by Stroke

Stroke		100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
Mass (kg)	w/o brake	18.3	19.3	20.4	21.5	22.5	23.6	24.6	25.7	26.8	27.8	28.9	29.9	31.0	32.0	33.1	34.2	35.2	36.3	37.3	38.4	39.5	40.5	41.6	42.6	43.7
	w/brake	18.8	19.8	20.9	22.0	23.0	24.1	25.1	26.2	27.3	28.3	29.4	30.4	31.5	32.5	33.6	34.7	35.7	36.8	37.8	38.9	40.0	41.0	42.1	43.1	44.2

Applicable Controllers

The ISB series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Type	External view	Max. number of controlled axes	Power supply voltage	Control method				Maximum number of positioning points	Ref. page
				Positioner	Pulse-train	Program	Network *Option		
RCON		16	DC24V Single-phase 200VAC Three-phase 200VAC	●	–	–	DeviceNet, CC-Link, PROFIBUS, CompoNet, MECHATROLINK, EtherCAT, EtherNet/IP, PROFINET	128 points	Please contact IAI for more details
RSEL		8		–	–	●		36, 000 points	
SCON-CB/CGB		1	Single-phase 200VAC	●	●	–		512 points (768 for network spec.)	
SSEL-CS		2		●	–	●		20,000	
XSEL-P/Q		6	Single-phase 200VAC Three-phase 200VAC	–	–	●		20,000	
XSEL-RA/SA		8		–	–	●		55,000 (depending on the type)	

Note: The type of compatible networks will vary depending on the controller.
Please contact IAI for more details.

ISB-WXMX-750
ISPB-WXMX-750

±10μm Standard | ±5μm high-precision | Battery-less Absolute | Intermediary support | Body Width 200 mm | 750 W

■ Model Specification Items

ISB / ISPB	WXMX	WA	750	□	□	□	□	□
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
		WA: Battery-less absolute	750 : 750W	50 : 50mm 25 : 25mm	900 : 900mm ~ 3,000 : 3,000mm (50mm increments)	T2 : SCON SSEL XSEL-P/Q XSEL-RA/SA T4 : RCON RSEL	N : None S : 3m M : 5m X□□ : Specified Length	Please refer to the option table below

CE RoHS

Horizontal | Vertical | Side | Ceiling

Stroke

Stroke (mm)	ISB	ISPB
900	○	○
950/1,000	○	○
1,050/1,150	○	○
1,150/1,200	○	○
1,250/1,300	○	○
1,350/1,400	○	○
1,450/1,500	○	○
1,550/1,600	○	○
1,650/1,700	○	○
1,750/1,800	○	○
1,850/1,900	○	○
1,950/2,000	○	○
2,050/2,100	○	○
2,150/2,200	○	○
2,250/2,300	○	○
2,350/2,400	○	○
2,450/2,500	○	○
2,550/2,600	○	○
2,650/2,700	○	○
2,750/2,800	○	○
2,850/2,900	○	○
2,950/3,000	○	○

POINT Selection Notes

(Note 1) The payload specified in the "Main Specifications" shows the maximum value. Refer to the "Payload Table by Speed and Acceleration/Deceleration" for details.

(Note 2) The guideline of usable duty varies depending on operating conditions (e.g. payload and acceleration/deceleration).

(Note 3) Attention depending on the mounting orientation.

(Note 4) Guideline for overhang length is 900mm in the Ma, Mb and Mc directions.

Options

Type	Model	Ref. Page	
Cable exits from the left side	**A1**	P7	○
Cable exits from the right side	**A3**	P7	○
AQ seal (Standard equipment) (*1)	**AQ**	P8	○
Home limit switch	**L**	P8	○
Master axis specified	**LM**	P8	○
Non-motor end spec	**NM**	P8	○
Slave axis specified	**S**	P8	○

(Note 1) Make sure to specify in the option column of the model specification item.

Cable Length

Type	Cable code	T2		T4	
		Standard	With LS	Standard	With LS
Standard type	**S** (3m)	○			
	M (5m)	○			
Specified length	**X06** (6m) ~**X10** (10m)	○		○	
	X11 (11m) ~**X15** (15m)	○		○	
	X16 (11m) ~**X20** (20m)	○		○	

(Note) Robot cables.

(Note) When the cable length is over 20m up to 30m, specify the actuator type cable length as "N" and place an order for a motor cable (CB-X-MA □□□) and encoder cable (CB-X1-PA □□□ -AWG24), or encoder cable with LS (CB-X1-PLA □□□ -AWG24) separately.

Main specifications

Item			Details	
Lead		Ball screw lead (mm)	50	25
Horizontal	Payload	Maximum payload (kg)	80	160
	Speed/ acceleration/ deceleration	Maximum speed (mm/s)	2500	1250
		Rated acceleration/ deceleration (G)	0.3	0.3
		Maximum acceleration/ deceleration (G)	1.2	1.2
Vertical	Payload	Maximum payload (kg)	—	—
	Speed/ acceleration/ deceleration	Maximum speed (mm/s)	—	—
		Rated acceleration/ deceleration (G)	—	—
		Maximum acceleration/ deceleration (G)	—	—
Thrust		Rated thrust (N)	255	510
Stroke		Minimum stroke (mm)	900	900
		Maximum stroke (mm)	3000	3000
		Stroke pitch (mm)	50	50

(Note 3) The figure is for the high payload setting option (HLA).
For stable operations, use the actuator with a payload of 100kg or more for horizontal operations, and 40kg or more for vertical operations.

Item	Details
Drive method	Ball screw Lead10: Φ20, Lead25.50: Φ25mm rolled C10 equivalent **[**C5 or equiv.**]**
Positioning repeatability	±0.01mm **[**±0.005mm**]**
Lost motion	0.05mm or less **[**0.02mm or less**]**
Base	Material: Aluminum white alumite treatment
Linear guide	Linear motion endlessly circulating type
Static allowable moment	Ma : 774 N:m
	Mb : 1106 N:m
	Mc : 2175 N:m
Dynamic allowable moment(Note 4)	Ma : 162 N:m
	Mb : 231 N:m
	Mc : 455 N:m
Ambient operating air temperature, humidity	0 to 40°C, 85%RH max. (no condensation)
Protection class	—
Vibration resistance/shock resistance	4.9m/s^2
Overseas standard compliance	CE Marking, RoHS Directive
Motor type	AC servo motor (200 V)
Encoder type	Battery-less absolute
Encoder pulse count	131072 pulse/rev

(Note 4) Based on the assumption of a standard rated life of 10,000 km. The traveling life varies depending on the operating conditions and installation conditions
(Note) Figures in **[ ]** are for ISPB.

Slider type moment direction

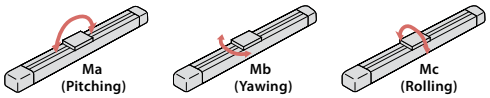


Table of payload by speed/acceleration

Payload shown in units of kg. Operations are not possible in the blank positions.

Orientation		Horizontal										
Lead (mm)	max.Speed (mm/s)	Acceleration (G)										
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
50	2500	80	80	60	48	40	34	30	27	23	18	15
25	1250	160	160	120	96	80	68	60	54	46	36	30

Stroke and maximum speed

Lead \ Stroke	900~3000
50	2500
25	1250

(Unit: mm/s)

Dimensions

(Note) A motor cable and an encoder cable are connected to the cable joint connector.
(Note) When the slider is returning to its home position, be careful of interference with surrounding objects, as it will travel until it reaches the M.E.
(Note) Changing the home direction will require the actuator to be returned to IAI for adjustment.

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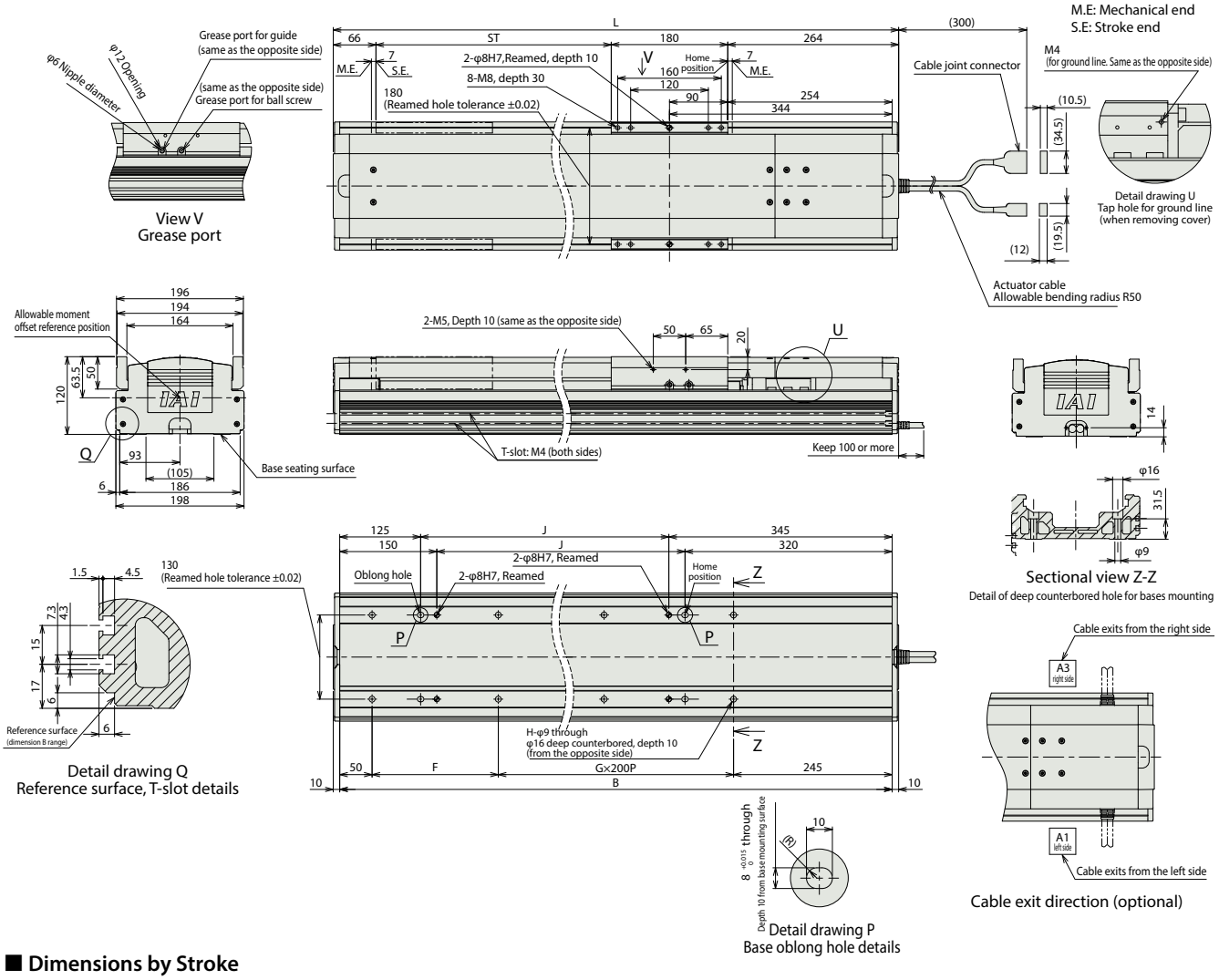
2D CAD 3D CAD

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



■ Dimensions by Stroke

Stroke	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000
L	1410	1460	1510	1560	1610	1660	1710	1760	1810	1860	1910	1960	2010	2060	2110	2160	2210	2260	2310	2360	2410	2460	2510	2560	2610	2660	2710	2760	2810	2860	2910	2960	3010	3060	3110	3160	3210	3260	3310	3360	3410	3460	3510
B	1390	1440	1490	1540	1590	1640	1690	1740	1790	1840	1890	1940	1990	2040	2090	2140	2190	2240	2290	2340	2390	2440	2490	2540	2590	2640	2690	2740	2790	2840	2890	2940	2990	3040	3090	3140	3190	3240	3290	3340	3390	3440	3490
F	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195	245	295	145	195
G	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	13	13	13	13	14	14	14	14	15	15
H	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	22	22	22	22	24	24	24	24	26	26	26	26	28	28	28	28	30	30	30	30	32	32	32	32	34	34
J	920	970	1020	1070	1120	1170	1220	1270	1320	1370	1420	1470	1520	1570	1620	1670	1720	1770	1820	1870	1920	1970	2020	2070	2120	2170	2220	2270	2320	2370	2420	2470	2520	2570	2620	2670	2720	2770	2820	2870	2920	2970	3020

■ Mass by Stroke

Stroke	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000
Mass(kg)	38.4	39.5	40.5	41.6	42.7	43.7	44.8	45.8	46.9	48.0	49.0	50.1	51.2	52.2	54.2	55.3	56.4	57.4	58.5	59.6	60.6	61.7	62.7	63.8	64.9	65.9	67.0	68.1	69.1	70.2	71.3	72.3	73.4	74.5	76.5	77.5	78.6	79.7	80.7	81.8	82.8	83.9	85.0

Applicable Controllers

The ISB series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Type	External view	Max. number of controlled axes	Power supply voltage	Control method				Maximum number of positioning points	Ref. page
				Positioner	Pulse-train	Program	Network *Option		
RCON		16	DC24V Single-phase 200VAC Three-phase 200VAC	●	–	–	DeviceNet CC-Link PROFIBUS CompoNet MECHATROLINK EtherCAT EtherNet/IP PROFINET	128 points	Please contact IAI for more details
RSEL		8		–	–	●		36, 000 points	
SCON-CB/CGB		1	Single-phase 200VAC	●	●	–		512 points (768 for network spec.)	
SSEL-CS		2		●	–	●		20,000	
XSEL-P/Q		6	Single-phase 200VAC Three-phase 200VAC	–	–	●		20,000	
XSEL-RA/SA		8		–	–	●		55,000 (depending on the type)	

Note: The type of compatible networks will vary depending on the controller.
Please contact IAI for more details.

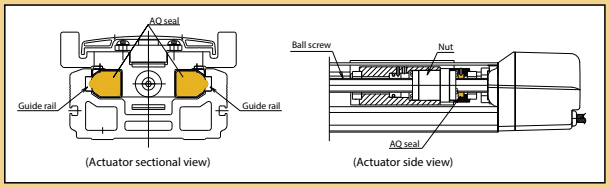
Options

AQ seal

Option code **AQ**

Description

AQ seal is a lubricant unit that uses a lubricating member made of lubricating oil solidified with resin.
Because it is a porous member that contains a large amount of lubricating oil, the oil seeps out on the surface through capillary action. Lubricating oil is supplied by pressing the AQ seal on the surface of the guide and ball screw (steel ball rolling surface), enabling long-term use without maintenance in a synergistic effect by the combined use of the grease.



Brake

Option code **B**

Description

This is a holding mechanism that prevents the slider from falling and damaging any attached fittings when the power or servo is turned off.

Setting of high payload setting

Option code **HLA**

Description

This option increases payload capacity. In the case of the rated acceleration/deceleration (0.2G), the maximum payload is 400kg for horizontal operations and 70kg for vertical operations.
(Note) Setting is available only for ISPB-WXM Lead 10.
For stable operations, use the actuator with a payload of 100kg or more for horizontal operations, and 40kg or more for vertical operations.

Home limit switch

Option code **L** (Standard) **LL** (Mounted on opposite side)

Description

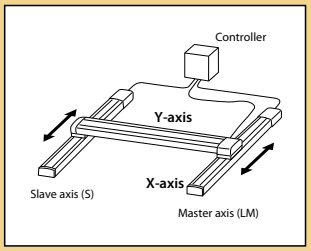
When performing home-return, the pressing method determines the home position upon pressing against the mechanical end and reversing. This is an option for triggering the reversion using the sensor.
When L option is specified, 3 proximity sensors including HOME (for home detection), +OT (overtravel on opposite motor side) and -OT (overtravel on the motor side) will be installed. (HOME and -OT are integrated twin sensors)
Use it to fine-tune the inverted position or enhance the certitude.
(Please note that moving the home sensor excessively may shorten the stroke)
The home limit switch and mounting position of the cover is by default at the right side of the actuator body as viewed from the motor side (Option code: L).
When installing a sensor on the opposite side, be sure to select LL (mounting position on opposite side).

Master axis specification/Slave axis specification in synchronous operation

Option code **LM** (Limit master axis specification) **LLM** (Mounted on opposite side) **S** (Slave axis specified)

Description

One of the features of the XSEL controller is "synchronous operation".
This feature is used to operate the two axes of actuators at the same time. With one axis used as the master (M) and another as the slave (S), the slave follows the master in ultra-high-speed control in order to operate at the same time.
Two axes of actuators that run synchronously need to have the same specifications (type, lead, motor wattage and stroke).
When performing synchronous operation, the master axis needs to have the limit switch specification. Be sure to specify LM (limit specification master axis) for the option code of master axis and S for slave axis. The mounting position of the limit switch and cover is standardly at the right side of the actuator body as viewed from the motor side. When installing the limit switch of the master axis on the opposite side (symmetrically opposite), be sure to select LLM.



Non-motor end specification

Option code **NM**

Description

The normal home position is set to the motor side, but this is the option to set the home position on the other side in order to accommodate variations in equipment layout, etc. (Please note that changing the home position after the actuators are shipped may require the products to be sent back to IAI for re-setting.)

Catalog No. CE0276-1A (2020SEP)

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