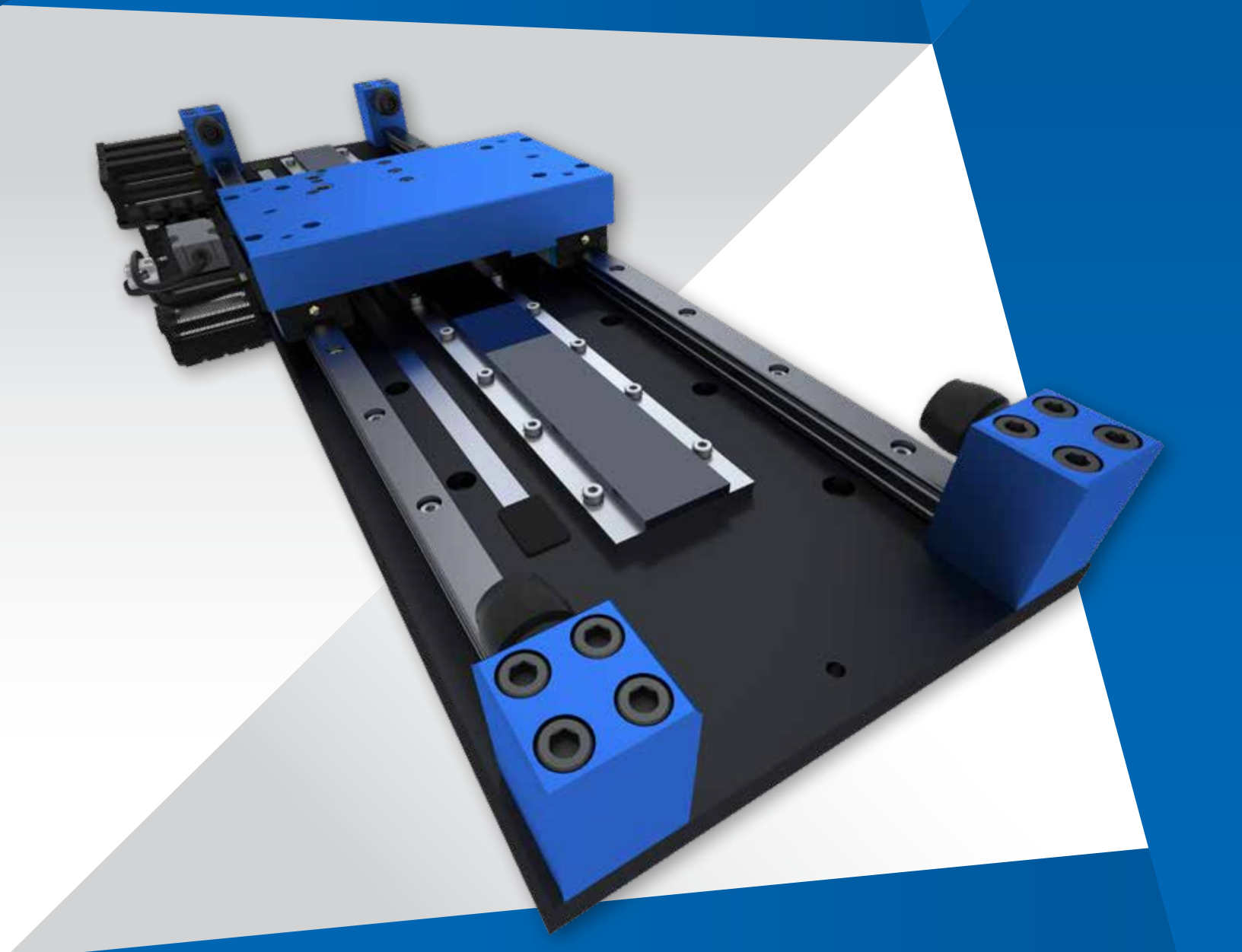
YASKAWA

Sigma Trac II

Linear Motion Made Easy



yaskawa.com

Ready To Run

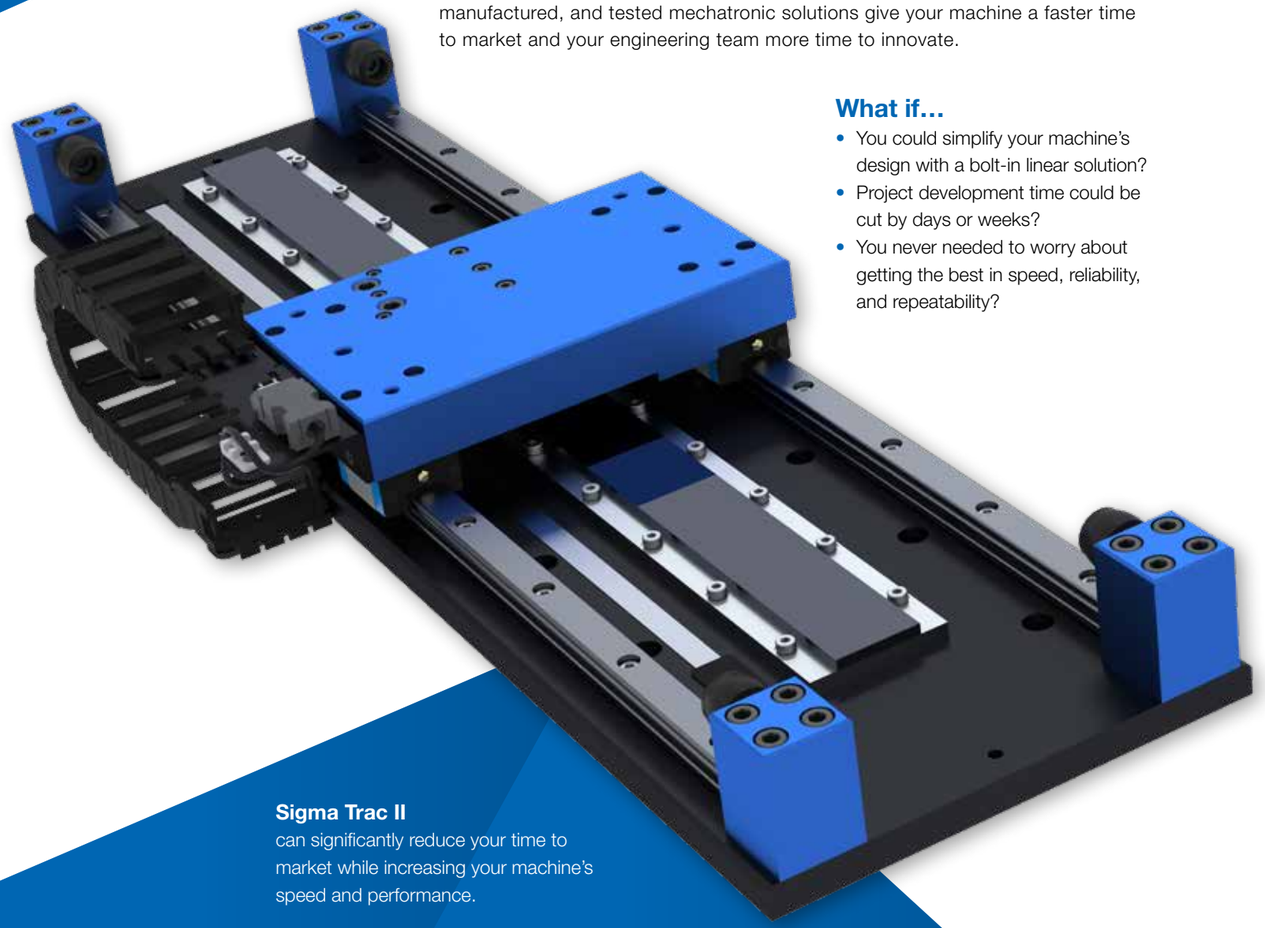
Turnkey linear stages, built-to-order and fully tested. Bolt it down, connect it up, and enjoy world class linear motion immediately.

Faster motion, Faster time to market

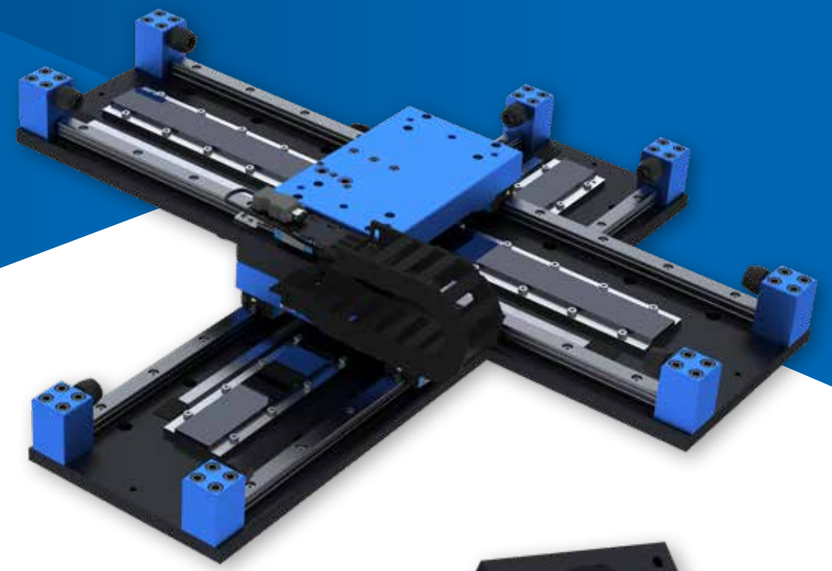
Need precise, high speed and repeatable linear motion, without the time-consuming process of designing your own linear stages? Use Yaskawa's motion engineering expertise to spare your overworked engineers the effort of specifying, designing and sourcing components, assembly jigs, and test equipment. Our expertly designed, manufactured, and tested mechatronic solutions give your machine a faster time to market and your engineering team more time to innovate.

What if…

- You could simplify your machine's design with a bolt-in linear solution?
- Project development time could be cut by days or weeks?
- You never needed to worry about getting the best in speed, reliability, and repeatability?



Sigma Trac II
can significantly reduce your time to market while increasing your machine's speed and performance.



Complete Linear Motion Solution

Each component in Sigma Trac II is fully assembled and tested:

- Coil and magnets
- Bearings
- Encoder
- Cables
- Cable management
- Optional bellows
- Optional X-Y mounting kit

Simply provide a flat mounting surface and bolt on your payload.

X-Y Mounting Kit

An available X-Y mounting kit simplifies design, installation of 2-axis Cartesian systems for pick and place, machining, and additive manufacturing operations

Improve Machine Performance

Minimize cycle times and maximize productivity with speeds up to 5m/s, and peak force output up to 540 N

Reliability

We've eliminate gears, belts, and screws, resulting in a 10 million double-stroke design life

Cable Management

Carefully controlling cable flex maximizes cable life. Use additional space in the cable carrier for cables and hoses to your payload

Repeatability

Coupling the load directly to the motor and encoder yields positioning repeatability of ±2µm

Absolute Encoder Feedback

Absolute encoder feedback simplifies wiring and requires no homing routines, even after removing power from the equipment

Bellows

Optional bellows protect magnets and encoder scale from dust, loose debris, and the occasional dropped tool

Zero Maintenance

Integrated bearing lubrication technology for long-term maintenance-free operation

Wide Range of Sizes

With three motor sizes and 13 base lengths, there is a linear stage for nearly any application. All are available for use with 200V or 400V power

Balanced Thrust

Yaw accuracy is optimized by centering the coil, balancing the thrust equally between the bearings

SigmaTRAC II

Model Designations

Sigma Trac II Linear Stage

ST2 F - A1 A 1340 - A 1 L B

Product Series

Σ7 Series Linear Stage

Motor Type

Code	Specification
F	SGLF2 Iron Core

Motor Size

Code	Specification
A1	SGLF2-30□070
A2	SGLF2-30□120
A3	SGLF2-30□230

Voltage

Code	Specification
A	200V
D	400V

Base Length

Code	Specification
0390	390 mm
0565	565 mm
0655	655 mm
0745	745 mm
0835	835 mm
0925	925 mm
1015	1015 mm
1105	1105 mm
1195	1195 mm
1285	1285 mm
1375	1375 mm
1465	1465 mm
1555	1555 mm

Bellows

Code	Specification
B	With Bellows
N	Without Bellows

Cable Carrier

Code	Specification
L	Left Side
R	Right Side
N	None

Feedback Device

Code	Specification
1	Optical Absolute Scale (9.765nm)

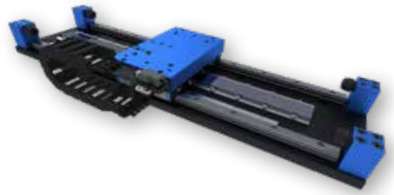
Design Revision

Code	Specification
A	Design Revision A

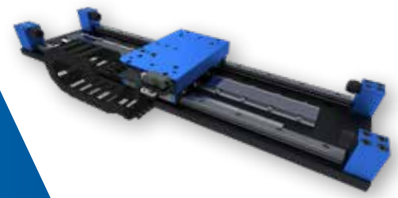
This information is provided to explain model numbers. It is not meant to imply that models are available for all combinations of codes.

With Bellows

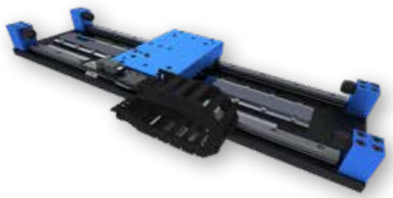
Left Side Cable Carrier



Without Bellows



Right Side Cable Carrier



Ratings & Specifications

Ratings

Linear Stage Model	ST2F-	A1A	A2A	A3A		A1D	A2D	A3D
Mounted Linear Motor	SGLFW2-	30A070	30A120	30A230		30D070	30D120	30D230
Power Supply	V	100V / 200V	100V / 200V	100V / 200V		400V	400V	400V
Rated Speed *1	m/s	4.0	4.0	4.0		4.0	4.0	4.0
Maximum Speed *1	m/s	5.0	5.0	5.0		5.0	5.0	5.0
Rated Force *1,*2	N	45	90	180	170	45	90	180
Maximum Force *1	N	135	270	540	500	135	270	540
Force Constant	N/A_{rms}	33.3	64.5	64.5		33.3	64.5	129.0
Motor Constant	$N/\sqrt{W}$	11.3	17.3	24.4		11.3	17.3	24.4
Magnetic Attraction	N	200	630	1250		200	650	1260
Maximum Payload	kg	3.7	6.4	30.2	16.2	3.7	6.4	30.2
Maximum Payload (with dynamic brake resistor)	kg	3.7	8.0	30.2	16.2	3.7	8.0	30.2
Moving Mass	kg	2.4	3.9	5.5		2.4	3.9	5.5
Applicable SERVOPACK	SGD7S-	1R6A, 2R1F		3R8A	2R8A, 2R8F	1R9D		
	SGD7W-	1R6A		-	2R8A, 2R8F	2R6D		
Repeatability	μm	±2						
Flatness	μm	TBD						
Straightness	μm/m	TBD						

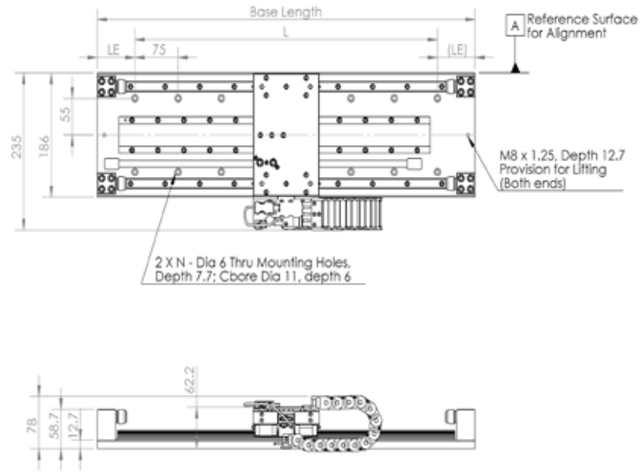
*1 These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for the other items are at 20°C. These are typical values.

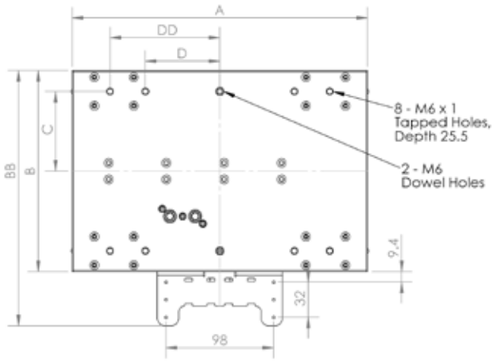
*2 The rated forces are the continuous allowable force values at a surrounding air temperature of 40°C with an aluminum heat sink of the following dimensions:
- 150 mm x 100 mm x 10 mm: ST2F-A1A and ST2F-A1D
- 254mm x 254 mm x 25mm: ST2F-A2A, ST2F-A2D, ST2F-A3A, and ST2F-A3D

Specifications

Linear Stage Model	ST2F-	A1A	A2A	A3A	A1D	A2D	A3D
Mounted Linear Motor	SGLFW2-	30A070	30A120	30A230	30D070	30D120	30D230
Time Rating		Continuous					
Thermal Class		B					
Insulation Resistance		500 VDC, 10 MΩ min.					
Withstand Voltage		1,500 VAC for 1 minute			1,800 VAC for 1 minute		
Excitation		Permanent Magnet					
Cooling Method		Self-cooled					
Protective Structure		IP00					
Environmental Conditions	Surrounding Air Temperature	0°C to 40°C (with no freezing)					
	Surrounding Air Humidity	20% to 80% relative humidity (with no condensation)					
	Installation Site	• Must be indoors and free of corrosive and explosive gases. • Must be well-ventilated and free of dust and moisture • Must facilitate inspection and cleaning • Must have an altitude of 1,000 m or less • Must be free of strong magnetic fields.					
Shock Resistance	Impact Acceleration Rate	196 m/s^2					
	Number of Impacts	2 times					
Vibration Resistance	Vibration Acceleration Rate	49 m/s^2 (vertical, side-to-side, and front-to-back)					

Dimensions





Carriage Dimensions

Linear Stage Model	Units	A	B	BB	C	D	DD
ST2F-A1	mm	114	183	232.3	72.5	67.85	-
ST2F-A2	mm	176	183	232.3	72.5	67.85	-
ST2F-A3	mm	269	183	232.3	72.5	67.85	100

Base Dimensions

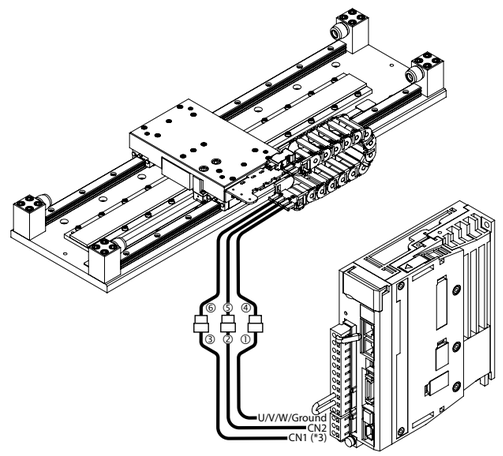
Base Length	L	LE	N	ST2F-A1		ST2F-A2		ST2F-A3	
				Stroke Length without / with Bellows	Mass without / with Bellows	Stroke Length without / with Bellows	Mass without / with Bellows	Stroke Length without / with Bellows	Mass without / with Bellows
mm	mm	mm	holes	mm	kg	mm	kg	mm	kg
390	300	45.0	5	170 / 160	8.8 / 9.0	110 / 110	10.3 / 10.5	- / -	- / -
565	450	57.5	7	345 / 300	11.3 / 11.6	285 / 250	12.8 / 13.1	190 / 180	14.5 / 14.7
655	525	65.0	8	435 / 375	12.6 / 13.0	375 / 325	14.1 / 14.4	280 / 250	15.8 / 16.1
745	600	72.5	9	525 / 450	13.9 / 14.3	465 / 400	15.4 / 15.8	370 / 320	17.1 / 17.4
835	750	42.5	11	615 / 525	15.2 / 15.7	555 / 475	16.7 / 17.1	460 / 395	18.4 / 18.8
925	825	50.0	12	705 / 600	16.5 / 17.0	645 / 550	18.0 / 18.5	550 / 470	19.7 / 20.1
1015	900	57.5	13	795 / 675	17.8 / 18.4	735 / 625	19.3 / 19.8	640 / 545	21.0 / 21.5
1105	975	65.0	14	885 / 745	19.1 / 19.7	825 / 700	20.6 / 21.2	730 / 620	22.3 / 22.8
1195	1050	72.5	15	975 / 820	20.4 / 21.1	915 / 770	21.9 / 22.5	820 / 695	23.6 / 24.2
1285	1200	42.5	17	1065 / 895	21.7 / 22.4	1005 / 845	23.2 / 23.8	910 / 765	24.9 / 25.5
1375	1275	50.0	18	1155 / 970	23.0 / 23.8	1095 / 915	24.5 / 25.2	1000 / 840	26.2 / 26.9
1465	1350	57.5	19	1245 / 1045	24.3 / 25.1	1185 / 995	25.8 / 26.5	1090 / 915	27.5 / 28.2
1555	1425	65.0	20	1335 / 1120	25.6 / 26.4	1275 / 1065	27.1 / 27.9	1180 / 990	28.8 / 29.5

Cables & Accessories

Cables

Figure Number	Type	Linear Stage Model	Length	Order Number
❶	Power Cable Extension (High Flex)	ST2F-A1A ST2F-A1D ST2F-A2A ST2F-A2D ST2F-A3A ST2F-A3D	3 m	JZSP-CLN11-03-E
			5 m	JZSP-CLN11-05-E
			10 m	JZSP-CLN11-10-E
			15 m	JZSP-CLN11-15-E
			20 m	JZSP-CLN11-20-E
❷	Encoder Cable Extension (Standard)		3 m	JZSP-CMP00-03-E
			5 m	JZSP-CMP00-05-E
			10 m	JZSP-CMP00-10-E
			15 m	JZSP-CMP00-15-E
			20 m	JZSP-CMP00-20-E
❸	Encoder Cable Extension (High Flex)		3 m	JZSP-CMP10-03-E
			5 m	JZSP-CMP10-05-E
			10 m	JZSP-CMP10-10-E
			15 m	JZSP-CMP10-15-E
			20 m	JZSP-CMP10-20-E
❹	Thermal Cable Extension (High Flex) *3		3 m	ST2TCBL1-03
			5 m	ST2TCBL1-05
			10 m	ST2TCBL1-15
			15 m	ST2TCBL1-15
			20 m	ST2TCBL1-20
❹	Internal Power Cable (High Flex, Small Radius) *1, *2		2820 mm	ST2IPCBL1
❺	Internal Encoder Cable (High Flex, Small Radius) *1, *2		2750 mm	ST2IECBL1
❻	Internal Thermal Cable (High Flex, Small Radius) *1, *2		2800 mm	ST2ITCBL1

*1 This cable is included with the linear stage and is offered as a replacement part
*2 Cable length is measured from connector to connector. The amount of cable extending beyond the cable carrier depends on stroke length
*3 This cable has flying leads at the SERVOPACK end. Connect to SERVOPACK CN1 via terminal block or I/O cable



Accessories

Type	Linear Stage Models	Order Number
X-Y Adapter Kit	Fixed Axis: ST2F-A2, ST2F-A3 Moving Axis: ST2F-A1, ST2F-A2, ST2F-A3	ST2-XYA

Yaskawa is the leading global manufacturer of low and medium voltage variable frequency drives, servo systems, machine controllers and industrial robots. Our standard products, as well as tailor-made solutions, are well known and have a high reputation for outstanding quality and reliability.

Yaskawa America, Inc.
Drives & Motion Division
yaskawa.com

1-800-YASKAWA
Email: info@yaskawa.com

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