



SH3040●●●●●●●●4●●●, SH3055●●●●●●●●4●●●, SH3070●●●●●●●●4●●●,
SH3100●●●●●●●●4●●●, SH3140●●●●●●●●4●●● (1)
One-Motor Cable connectivity



SH3040●●●●●●●●4●●●, SH3055●●●●●●●●3●●●, SH3070●●●●●●●●3●●●,
SH3100●●●●●●●●3●●●, SH3140●●●●●●●●3●●●, SH3205●●●●●●●●3●●●
(1)
Two-Motor Cable connectivity

Presentation

Lexium SH3 servo motors are an excellent solution to the need for dynamic performance, covering a continuous stall torque range from 0.2 to 94.4 Nm (0.15 to 69.62 lbf ft) for speeds up to 9,000 rpm.

Thanks to their new winding technology based on salient poles, Lexium SH3 servo motors are far more compact and offer a higher power density than conventional servo motors.

Lexium SH3 servo motors are UL Recognized  and conform to UL1004 as well as European directives (CE and UKCA marking).

They are available with the following variants:

- 6 flange sizes: 40, 55, 70, 100, 140 and 205 mm (1.57, 2.28, 2.76, 3.94, 5.51, and 8.071 in)
- 2 degrees of protection for the shaft end:
 - IP 54 or IP 65 in accordance with IEC/EN 60529
 - The degree of protection provided by the casing is IP 65 (IP 67 with the conformity kit, which is available as an option).
- With or without holding brake
- Integrated single-turn or multi-turn Hiperface® SinCos encoder (medium or high resolution)
- Two types of connectors are available on motors: angular or straight connectors
- Smooth or keyed shaft end

Flexible connectivity

Two connection technologies are proposed between servo drives and SH3 servo motors:

- **One-Motor Cable connectivity** with references SH3040, SH3055, SH3070, SH3100 and SH3140: Using a single cable, an hybrid cable including Motor and Encoder, to connect a motor to a Lexium 62 servo drive. The use of hybrid cables reduces effort for cable installation and cleaning.
- **Two-Motor Cable connectivity** with references SH3040, SH3055, SH3070, SH3100, SH3140, SH3205: Using two separate cables (Motor and Encoder cables) to connect a motor to a Lexium 62 or a Lexium 52 servo drive.

Hybrid cables, Motor cables, and Encoder cables are to be ordered separately, for connection to Lexium 52 and Lexium 62 servo drives. See [pages 12 to 15](#).

Schneider Electric has taken particular care with the compatibility of Lexium SH3 servo motors and Lexium 52/62 servo drives. This compatibility is enhanced when using equipped cables sold by Schneider Electric.

Special features

Lexium SH3 servo motors have been developed to comply with the following main specifications:

- Ambient operating temperature: - 20...+ 40 °C (- 4...+ 104 °F) without derating, in accordance with IEC 60721-3-3, category 3K3, and up to 55 °C (131 °F) with derating of 1% of the nominal output power per additional °C above 40 °C (104 °F)
- Maximum operating altitude: 1,000 m (3,280 ft) without derating, 2,000 m (6,561 ft) with k = 0.86, and 3,000 m (9,842 ft) with k = 0.8 (2).
- The relative humidity that the servo motor can withstand is in line with IEC 60721-3-3, categories 3K3, 3Z12, and 3Z2.
- The windings are insulation class F (maximum temperature for windings 155 °C (311 °F), in accordance with IEC 60034-1.
- All mounting positions are permitted (horizontal mounting (IMB5) or vertical mounting (IMV1 with shaft end at the top and IMV3 with shaft end at the bottom) in accordance with IEC 60034-7.

(1) For a complete reference, replace ● with digits or letters, see Reference table on page PD304/4

(2) k: derating factor

Presentation (continued)

Integrated encoder

Lexium SH3 servo motors are equipped with a single-turn (131,072 points/turn) (1) or multi-turn (131,072 points/turn x 4,096 turns) (1) Hiperface® SinCos high-resolution absolute encoder, giving an angular shaft position that is precise to less than ± 1.3 arc minutes.

This encoder performs the following functions:

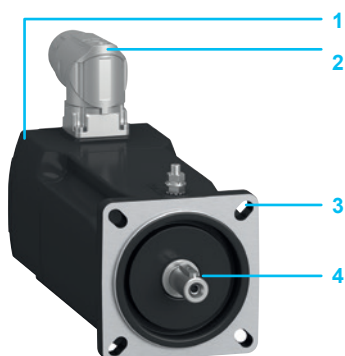
- Gives the absolute position of the motor to allow flow synchronization
- Measures the servo motor speed via the associated Lexium 52 or Lexium 62 servo drive (this information is used by the servo drive's speed controller)
- Measures the position information for the servo drive's position controller
- Sends data from the servo motor to the servo drive, which provides automatic identification of the motor when the servo drive starts

Free choice of Hiperface® SinCos and Hiperface® DSL encoders, with related motor connectivity: classic with Two-Motor Cable connection or DSL with One-Motor Cable connectivity

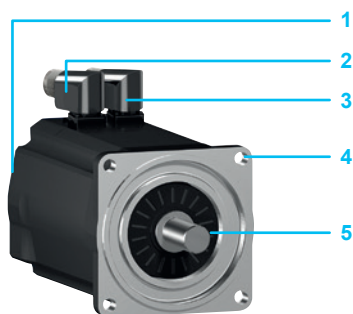
Holding brake

Lexium SH3 servo motors can be equipped with an electromagnetic holding brake.

⚠ Do not use the holding brake as a dynamic brake for deceleration, as this will quickly damage the brake.



SH3070●●●●●●4●●● (2) servo motors



SH3070●●●●●●2●●● (2) servo motors

Description

■ One-Motor Cable connectivity

Lexium SH3 servo motors, with a 3-phase stator and a 6 to 10-pole rotor (depending on model) with Neodymium-Iron-Borium (NdFeB) magnets, consist of:

- 1 Casing with RAL 9005 opaque black paint protective coating
- 2 Threaded sealed male angular connector for the hybrid cable (3)
- 3 4-point axial mounting flange
- 4 Smooth or keyed shaft end (depending on the model)

■ Two-Motor Cable connectivity

Lexium SH3 servo motors, with a 3-phase stator and a 6 to 10-pole rotor (depending on model) with Neodymium-Iron-Borium (NdFeB) magnets, consist of:

- 1 Casing with RAL 9005 opaque black paint protective coating
- 2 Threaded sealed male angular connector for the Motor cable (2)
- 5 Threaded sealed male angular connector for the Encoder cable (control) (2)
- 4 4-point axial mounting flange
- 5 Smooth or keyed shaft end (depending on the model)

(1) Encoder resolution given for use with Lexium 52/62 servo drives.

(1) For a complete reference, replace ● with digits or letters, see Reference table on page PD304/4

(3) For other model with angular connector, see page 12 (One-Motor Cable connectivity) and 16 (Two-Motor Cable connectivity).

Lexium SH3 servo motors – References

To order a Lexium SH3 servo motor, complete each reference with:

		SH3	●●●	●	●	●	●	●	●	●	●●
Flange Size	40 mm (1.575 in)	040									
	55 mm (2.165 in)	055									
	70 mm (2.756 in)	070									
	100 mm (3.937 in)	100									
	140 mm (5.512 in)	140									
	205 mm (8.071 in)	205									
Stack Length	One stack (all flange sizes)	1									
	Two stacks (all flange sizes)	2									
	Three stacks (flange size 70, 100, 140, 205 only)	3									
	Four stacks (flange size 100, 140 only)	4									
Winding	Medium speed (480 VAC) (1)							P			
	Low speed, current optimized (2)							M			
Shaft end	Smooth shaft	0									
	Keyed shaft	1									
Encoder system	Absolute SinCos Single Turn - 128 traces per turn (SKS 36)	1									
	Absolute SinCos Multi Turn - 128 traces per turn (SKM 36)	2									
	Absolute SinCos Single Turn - 16 traces per turn (SEK 37)	6									
	Absolute SinCos Multi Turn - 16 traces per turn (SEL 37)	7									
	One-Motor Cable connectivity										
	Absolute Single Turn (Hiperface® DSL 18 bit EKS36) (not for SH3040)	A									
Holding brake	Absolute Multi Turn (Hiperface® DSL 18 bit EKM36) (not for SH3040)	B									
	Absolute Single Turn Hiperface® DSL 15 bit EES37 (for SH3040 only)	C									
	Absolute Multi Turn Hiperface® DSL 15 bit EEM37 (for SH3040 only)	D									
	Without brake								A		
Connection	With brake								F		
	Two-Motor Cable connectivity										
	Straight connectors									1	
	Angular connectors									2	
Degree of protection	One-Motor Cable connectivity										
	Straight connector (for SH3070 and SH3100)									3	
Motor type	(DSL cable + Quick lock connector)										
	Angular turnable connector									4	
Shaft IP54 without shaft sealing ring, housing IP65, convection										0	
	Shaft IP65 with shaft sealing ring, housing IP65, convection									1	
Standard: 00/Custom versions: 01...99											00

Lexium SH3 servo motors – Dimensions

One-Motor Cable connectivity and Two-Motor Cable connectivity

Servo motors	Flange		W x H x D (3)			
			Without holding brake		With holding brake	
	mm	in	mm	in	mm	in
SH30401●●●●●●●●	40 x 40	1.57 x 1.57	40 x 73.4 x 98.4	1.57 x 2.88 x 3.87	40 x 99.4 x 124.4	1.57 x 3.91 x 4.89
SH30402●●●●●●●●	40 x 40	1.57 x 1.57	40 x 93.4 x 118.4	1.57 x 3.67 x 4.66	40 x 119.4 x 144.4	1.57 x 4.70 x 5.68
SH30551●●●●●●●●	55 x 55	2.16 x 2.16	55 x 94.5 x 132.5	2.16 x 3.72 x 5.22	55 x 94.5 x 159	2.16 x 3.72 x 6.26
SH30552●●●●●●●●	55 x 55	2.16 x 2.16	55 x 94.5 x 154.5	2.16 x 3.72 x 6.08	55 x 94.5 x 181	2.16 x 3.72 x 7.13
SH30553●●●●●●●●	55 x 55	2.16 x 2.16	55 x 94.5 x 176.5	2.16 x 3.72 x 6.95	55 x 94.5 x 203	2.16 x 3.72 x 7.99
SH30701●●●●●●●●	70 x 70	2.76 x 2.76	70 x 111.5 x 154	2.76 x 4.39 x 6.06	70 x 111.5 x 180	2.76 x 4.39 x 7.09
SH30702●●●●●●●●	70 x 70	2.76 x 2.76	70 x 111.5 x 187	2.76 x 4.39 x 7.36	70 x 111.5 x 213	2.76 x 4.39 x 8.39
SH30703●●●●●●●●	70 x 70	2.76 x 2.76	70 x 111.5 x 220	2.76 x 4.39 x 8.66	70 x 111.5 x 254	2.76 x 4.39 x 10.00
SH31001●●●●●●●●	100 x 100	3.94 x 3.94	100 x 138.5 x 169	3.94 x 5.45 x 6.65	100 x 138.5 x 200	3.94 x 5.45 x 7.87
SH31002●●●●●●●●	100 x 100	3.94 x 3.94	100 x 138.5 x 205	3.94 x 5.45 x 8.07	100 x 138.5 x 236	3.94 x 5.45 x 9.29
SH31003●●●●●●●●	100 x 100	3.94 x 3.94	100 x 138.5 x 241	3.94 x 5.45 x 9.49	100 x 138.5 x 272	3.94 x 5.45 x 10.71
SH31004●●●●●●●●	100 x 100	3.94 x 3.94	100 x 138.5 x 277	3.94 x 5.45 x 10.91	100 x 138.5 x 308	3.94 x 5.45 x 12.13
SH31401●●●●●●●●	140 x 140	5.51 x 5.51	140 x 178 x 218	5.51 x 7.01 x 8.58	140 x 178 x 256	5.51 x 7.01 x 10.08
SH31402●●●●●●●●	140 x 140	5.51 x 5.51	140 x 192.5 (4) x 273	5.51 x 7.58 (4) x 10.75	140 x 192.5 (4) x 311	5.51 x 7.58 (4) x 12.24
SH31403●●●●●●●●	140 x 140	5.51 x 5.51	140 x 192.5 (4) x 328	5.51 x 7.58 (4) x 12.91	140 x 192.5 (4) x 366	5.51 x 7.58 (4) x 14.41
SH31404●●●●●●●●	140 x 140	5.51 x 5.51	140 x 192.5 (4) x 383	5.51 x 7.58 (4) x 15.08	140 x 192.5 (4) x 421	5.51 x 7.58 (4) x 16.58
SH32051●●●●●●●●	205 x 205	8.07 x 8.07	205 x 259 x 321	8.07 x 10.20 x 12.64	205 x 259 x 370.5	8.07 x 10.20 x 14.59
SH32052●●●●●●●●	205 x 205	8.07 x 8.07	205 x 259 x 405	8.07 x 10.20 x 15.94	205 x 259 x 454.5	8.07 x 10.20 x 17.89
SH32053●●●●●●●●	205 x 205	8.07 x 8.07	205 x 259 x 489	8.07 x 10.20 x 19.25	205 x 259 x 538.5	8.07 x 10.20 x 21.20

(1) Motors with P winding are available with the two technologies of connectivity: One-Motor Cable and Two-Motor Cable.

(2) Motors with M winding are only available with Two-Motor Cable connectivity.

(3) D = motor length (excluding shaft end).

(4) 192.5 mm (7.58 in) with straight connector, 198.5 mm (7.82 in) with rotatable angular connector.

Lexium SH3 servo motors – Characteristics

The Lexium SH3 servo motors shown below are supplied without a gearbox. For GBX and GBY gearboxes, Please refer to our catalog Ref. [DIA3ED2160313EN](#).

Technical data													
Nominal servo motor output power		Continuous stall torque		Peak stall torque		Rated torque		Rated speed		Rotor moment of inertia without holding brake (with holding brake)	Reference	Weight without holding brake (with holding brake)	
Pn		M0		Mmax		Mn		Nn	Nmax	Jm			
kW	hp	Nm	ft-lbf	Nm	ft-lbf	Nm	ft-lbf	rpm	rpm	kgcm²		kg	lb
0.17	0.2	0.21	0.2	0.75	0.55	0.18	0.1	9000	10000	0.0232 (0.0400)	SH30401P●●●●●●●● (1)	0.430 (0.580)	0.94 (1.27)
0.29	0.4	0.39	0.29	1.5	1.11	0.31	0.23	9000	10000	0.0419 (0.0588)	SH30402P●●●●●●●● (1)	0.570 (0.720)	1.25 (1.58)
0.29	0.4	0.42	0.31	1.5	1.1	0.35	0.29	8000	9000	0.057 (0.079)	SH30551P●●●●●●●● (1)	1.200 (1.350)	2.64 (2.97)
0.53	0.7	0.71	0.52	2.5	1.8	0.63	0.46	8000	9000	0.093 (0.115)	SH30552P●●●●●●●● (1)	1.500 (1.650)	3.31 (3.63)
0.68	0.92	1.05	0.77	3.5	2.6	0.81	0.60	8000	9000	0.130 (0.152)	SH30553P●●●●●●●● (1)	1.800 (1.950)	3.96 (4.29)
0.69	0.93	1.25	1.0	3.5	2.6	1.1	0.81	6000	8000	0.205 (0.318)	SH30701P●●●●●●●● (1)	2.100 (2.500)	4.62 (5.51)
1.13	1.54	2.04	1.5	7.6	5.6	1.8	1.32	6000	8000	0.351 (0.464)	SH30702P●●●●●●●● (1)	2.800 (3.200)	6.17 (7.05)
1.33	1.81	2.94	2.17	11.3	8.3	2.12	1.56	6000	8000	0.503 (0.616)	SH30703P●●●●●●●● (1)	3.600 (4.000)	7.93 (8.81)
1.19	1.62	2.94	2.77	9.6	7.1	2.27	.67	5000	6000	1.100 (1.613)	SH31001P●●●●●●●● (1)	4.400 (4.900)	9.70 (10.80)
1.9	2.5	5.8	4.3	18.3	13.5	4.6	3.4	4000	6000	1.909 (2.422)	SH31002P●●●●●●●● (1)	5.900 (6.600)	13.00 (14.55)
2.4	3.2	8.0	5.9	28.3	20.8	5.7	4.2	4000	6000	2.718 (3.521)	SH31003P●●●●●●●● (1)	7.500 (8.200)	16.53 (18.07)
2.5	3.4	10.0	7.4	40.5	29.9	7.9	5.8	3000	6000	3.613 (4.416)	SH31004P●●●●●●●● (1)	9.100 (9.800)	20.06 (21.60)
2.9	3.9	11.1	8.2	27	1.5	9.2	6.8	3000	4000	6.941 (8.542)	SH31401P●●●●●●●● (1)	11.200 (12.600)	24.69 (27.77)
3.9	5.2	19.5	14.4	60.1	44.3	12.3	9.1	3000	4000	12.162 (14.824)	SH31402P●●●●●●●● (1)	16.100 (17.400)	35.49 (38.36)
4.05	5.4	27.8	20.5	90.2	66.5	12.9	9.5	3000	4000	17.383 (21.559)	SH31403P●●●●●●●● (1)	21.300 (23.200)	46.95 (51.14)
4.04	5.5	33.4	24.6	131.9	97.3	12.86	9.48	3000	4000	22.604 (26.794)	SH31404P●●●●●●●● (1)	26.300 (28.400)	57.98 (62.61)
5.5	7.4	36.9	27.2	110	81.1	17.5	12.9	3000	3800	71.40 (87.40)	SH32051P●●●●●●●● (1)	35.000 (38.600)	77.16 (85.1)
7.9	10.7	64.9	47.9	220	162.3	38.1	28.1	2000	3800	129 (145)	SH32052P●●●●●●●● (1)	50.000 (53.600)	110.23 (118.2)
10.6	14.2	94.4	69.6	330	243.4	50.7	37.4	2000	3800	190 (206)	SH32053P●●●●●●●● (1)	67.000 (70.600)	147.71 (155.65)
0.64	0.9	2.04	1.5	7.6	5.6	2.03	1.50	3000	8000	0.351 (0.464)	SH30702M●●●●●●●● (2)	2.800 (3.200)	6.17 (7.05)
0.83	1.1	2.94	2.17	11.3	8.3	2.63	1.94	3000	8000	0.503 (0.616)	SH30703M●●●●●●●● (2)	3.600 (4.000)	7.93 (8.81)
0.66	0.9	2.94	2.17	9.6	7.1	2.52	1.86	2500	6000	1.100 (1.613)	SH31001M●●●●●●●● (2)	4.300 (5.000)	9.47 (11.02)
1.1	1.5	5.8	4.3	18.3	13.5	5.2	3.4	2000	6000	1.909 (2.422)	SH31002M●●●●●●●● (2)	5.900 (6.600)	13.00 (14.55)
1.5	2.0	8	5.9	28.3	20.9	7	5.2	2000	6000	2.718 (3.521)	SH31003M●●●●●●●● (2)	7.500 (8.200)	16.53 (18.07)
1.7	2.3	11.1	8.2	27	19.9	10.6	7.8	1500	4000	6.941 (8.542)	SH31401M●●●●●●●● (2)	11.200 (12.600)	24.69 (27.77)

(1) Motors with **P** winding are available with the two technologies of connectivity: One-Motor Cable and Two-Motor Cable.

(2) Motors with **M** winding are only available with Two-Motor Cable connectivity.

Lexium SH3 servo motor and Lexium 62 servo drive – Combinations												
Lexium 62 Servo Drives						Servo motors			Motor			
Reference						Reference				I _o A	I _{nom} A	I _{peak} A
	I _{nom}		I _{peak}		Size	Winding						
	A @ 4 kHz	A @ 8 kHz	A @ 16 kHz	A								
LXM62DU60C21000	2	2	1.2	6	SH3	0401	P		1.12	1.025	4.7	
LXM62DU60D21000						0402	P		1.5	1.17	6	
LXM62DU60E21000						0551	P		0.73	0.62	2.9	
LXM62DU60F21000						0552	P		1.2	1.1	4.8	
LXM62DU60G21000						0702	M		1.5	1.5	6	
						0553	P	(1)	1.7	1.35	6.5	
						0701	P		1.8	1.6	5.7	
LXM62DD15C21000	5	5	3.5	15	SH3	0702	P		2.9	2.6	11.8	
LXM62DD15D21000												
LXM62DD15E21000												
LXM62DD15F21000												
LXM62DD15G21000												
LXM62DU60C21000	2	2	1.2	6	SH3	0703	M	(1)+(2)	2.1	1.9	8.7	
LXM62DU60D21000						1001	M	(1)	1.8	1.6	6.3	
LXM62DU60E21000												
LXM62DU60F21000												
LXM62DU60G21000												
LXM62DD15C21000	5	5	3.5	15	SH3	1002	M		2.5	2.3	9	
LXM62DD15D21000						0703	P	(1)	4.1	3	17	
LXM62DD15E21000						1001	P		3.5	2.8	12	
LXM62DD15F21000						1002	P	(1)	4.8	3.8	17.1	
LXM62DD15G21000						1003	M		3.4	3.1	14.7	
						1401	M		4	4	10.8	
LXM62DD27C21000	9	7	4	27	SH3	1003	P	(1)	6.6	4.9	28.3	
LXM62DD27D21000						1004	P	(1)	6.2	5.3	32.3	
LXM62DD27E21000						1401	P		7.8	6.8	20.8	
LXM62DD27F21000												
LXM62DD27G21000												
LXM62DD45C21000	20	15	8	45	SH3	1402	P		13.2	8.9	44.1	
LXM62DD45E21000						1403	P	(1)	17.6	8.7	61	
LXM62DD45G21000												
LXM62DC13C21000	50	50	30	130	SH3	1404	P		21.3	9.2	95.6	
LXM62DC13E21000						2051	P		21	11.5	87.2	
or												
LXM62DD45C21000												
LXM62DD45E21000												
LXM62DD45G21000												
(1)												
LXM62DC13C21000	50	50	30	130	SH3	2052	P		25.7	17.8	96.8	
LXM62DC13E21000						2053	P	(1)	33.2	20.4	136.1	

(1) Drive peak current lower than motor peak current

(2) Continuous torque limited by nominal drive current

Lexium SH3 servo motor and Lexium 52 servo drive – Combinations								
Lexium 52 Servo drives			Servo motors			Motor		
Reference	Reference		Size	Winding	Io	Inom	Ipeak	
	Inom	Ipeak						
	A @ 8 kHz	A				A	A	A
LXM52DU60C41000	1.5	6	SH3	0401	P	1.12	1.025	4.7
				0402	P	1.5	1.17	6
				0551	P	0.73	0.62	2.9
				0552	P	1.2	1.1	4.8
				0702	M	1.5	1.5	6
LXM52DD12C41000	3	12	SH3	0553	P	1.7	1.35	6.5
				0701	P	1.8	1.6	5.7
				0702	P	2.9	2.6	11.8
				0703	M	2.1	1.9	8.7
				1001	M	1.8	1.6	6.3
				1002	M	2.5	2.3	9
LXM52DD18C41000	6	18	SH3	0703	P	4.1	3	17
				1001	P	3.5	2.8	12
				1002	P	4.8	3.8	17.1
				1003	M	3.4	3.1	14.7
				1401	M	4	4	10.8
LXM52DD30C41000	10	30	SH3	1003	P	6.6	4.9	28.3
				1004	P (1)	6.2	5.3	32.3
				1401	P	7.8	6.8	20.8
LXM52DD72C41000	24	72	SH3	1004	P	6.2	5.3	32.3
				1402	P	13.2	8.9	44.1
				1403	P	17.6	8.7	61
				1404	P (1)	21.3	9.2	95.6
				2051	P (1)	21	11.5	87.2
				2052	P (1)+(2)	25.7	17.8	96.8
				2053	P (1)+(2)	33.2	20.4	136.1

(1) Drive peak current lower than motor peak current

(2) Continuous torque limited by nominal drive current

Lexium SH3 servo motor and Lexium 62 ILD detached servo drive – Combinations								
Lexium 62 ILD detached servo drives			Servo motors			Motor		
Reference			Reference					
	Inom	Ipeak		Size	Winding	Io	Inom	Ipeak
	A @ 8 kHz	A				A	A	A
ILM62DDD24A1000	5	24	SH3	0401	P	1.12	1.025	4.7
ILM62DDD24C1000	6 (with cold plate)	24		0402	P	1.5	1.17	6
ILM62DDD24B1000	2,7	24		0551	P	0.73	0.62	2.9
ILM62DDD24D1000	4.4/6 (with cold plate)	24		0552	P	1.2	1.1	4.8
				0702	M	1.5	1.5	6
				0553	P	1.7	1.35	6.5
				0701	P	1.8	1.6	5.7
				0702	P	2.9	2.6	11.8
				0703	M	2.1	1.9	8.7
				1001	M	1.8	1.6	6.3
				1002	M	2.5	2.3	9
				0703	P	4.1	3	17
				1001	P	3.5	2.8	12
				1002	P	4.8	3.8	17.1
				1003	M	3.4	3.1	14.7
				1401	M	4	4	10.8