MF20/MF20D

Can be used for wall-mount

Note. When the weight per carrier exceeds 20 kg, special parameters are applicable.

Ordering method

Single carriage model

MF20

Model	Cable carrier entry location	Optional cable carrier for users Note 2	Origin position change		Grease type	Stroke	Cable length Note 3
MF20: Incremental MF20A: Semi-absolute Note 1	RH: Horizontal, right LH: Horizontal, left RW: Wall mount, right LW: Wall mount, left	No entry: None S: S type M: M type L: L type	Hori-zontal	No entry: L side (Standard) Z: R side	No entry: Standard GC: Clean	150 to 4050 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) Note 4
			Wall	No entry: R side (Standard) Z: L side			

TSP		R		
Positioner Note 5	Driver: Power-supply voltage / Power capacity	Regenerative unit	LCD monitor	I/O selection
TS-P	110: 100V/200W 210: 200V/200W	R: With RGT	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ GW: No I/O board Note 6

SR1-P	10		R	
Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection
	10: 200W	No entry: Standard E: CE marking	R: With RG1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS

RDV-P	2	10	RBR1
Driver	Power-supply voltage	Driver: Power capacity	Regenerative unit
	2: AC200V	10: 200W or less	

Note 1. When RDV-P is selected, the semi-absolute specifications cannot be selected.
Note 2. For models with a 2,050mm or longer stroke, optional L type cable carriers can only be used.
Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.692 for details on robot cable.
Note 4. If a flexible cable is needed for the SR1-P, TS-P, or RDV-P, then select 3K/5K/10K.
Note 5. These controllers can be mounted on DIN rails. See P.600 for details.
Note 6. Select this selection when using the gateway function.
Note. It is possible to provide the model without a cable carrier. To find information on wiring (cable terminals) within the cable carrier see P.703.

Double carriage model

MF20D

Model	Installing direction	Optional cable carrier for users Note 2	Grease type	Stroke	Cable length	Controller
MF20D: Incremental MF20AD: Semi-absolute Note 1	H: Horizontal installation W: Wall mount installation	No entry: None S: S type M: M type L: L type	No entry: Standard GC: Clean	150 to 3850 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) Note 4	RCX320 SR1-P (2 units) TS-P (2 units) RDV-P (2 units)

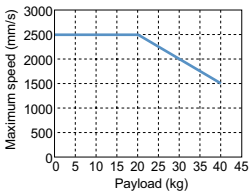
Note. Specify various controller setting items.

Specifications Note

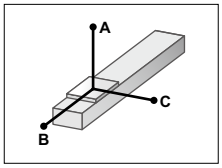
Model	MF20	MF20D
Driving method	Steel cored linear motor with falt magnet	
Repeatability (μm)	+/-5	
Scale (μm)	Magnetic type: resolution of 1	
Maximum speed Note 2 (mm/sec)	2500	
Rated thrust (N)	86	
Maximum payload Note 1 (kg)	40	
Stroke (mm)	150 to 4050 (100mm pitch)	150 to 3850 (100mm pitch)
Linear guide	4 rows of circular arc grooves × 2 rail	
Maximum cross-section outside dimensions (mm)	W150 × H80 (except the cable carrier section)	
Total length (mm)	Stroke+260	Stroke+460
Cable length (m)	Standard: 3.5 / Option: 5,10	

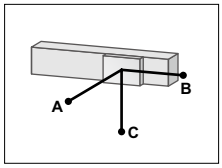
Note. A vertical model (with brake) is not available with the PHASER series.
Note. The basic specifications of semi-absolute model are the same as those of the incremental model.
Note 1. Payload per carrier. When the weight exceeds 20 kg, special parameters are applicable. Please consult our sales office or sales representative.
Note 2. Table of maximum speed

Payload (kg)	Maximum speed (mm/s)
20 or less	2500
25	2300
30	2000
35	1800
40	1500



Allowable overhang Note





Horizontal installation (Unit: mm)

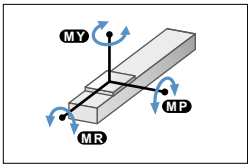
	A	B	C
10kg	3156	1747	1196
15kg	2811	1176	883
20kg	2679	890	717
25kg	2190	720	505
30kg	1830	605	370
35kg	1580	525	275
40kg	1390	465	225

Wall installation (Unit: mm)

	A	B	C
10kg	1220	1320	2540
15kg	870	850	2200
20kg	670	610	2030
25kg	485	400	1280
30kg	350	325	1050
35kg	265	270	890
40kg	235	230	765

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

Static loading moment



(Unit: N·m)

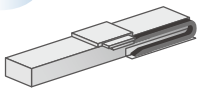
MY	MP	MR
373	373	328

Controller

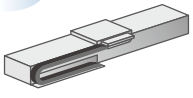
Controller	Operating method
SR1-P10-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320-R RCX340	
TS-P110-R TS-P210-R	I/O point trace / Remote command
RDV-P210-RBR1	Pulse train control

Cable carrier entry location

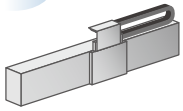
RH Horizontal, right



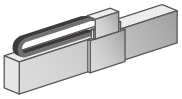
LH Horizontal, left



RW Wall mounted, right



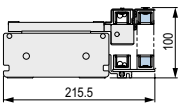
LW Wall mounted, left

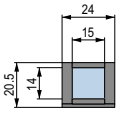


Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.

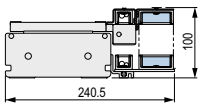
Optional cable carrier for users

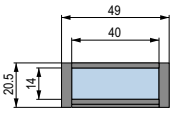
S type



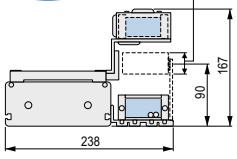


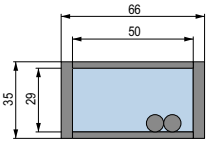
M type





L type



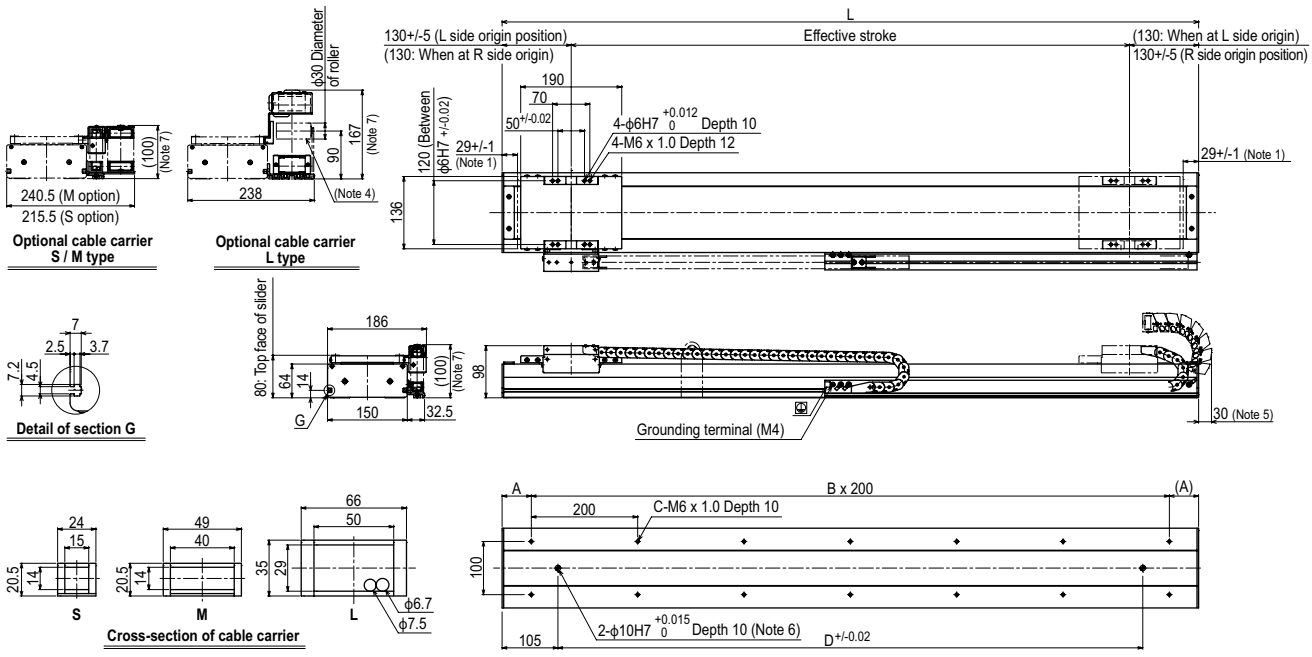


Cable and air tube guide

S: ϕ8 flexible cable x 1, ϕ4 air tube x 1
M: ϕ8 flexible cable x 2, ϕ6 air tube x 2
L: ϕ8 flexible cable x 2, ϕ6 air tube x 3

Space for optional cable for users

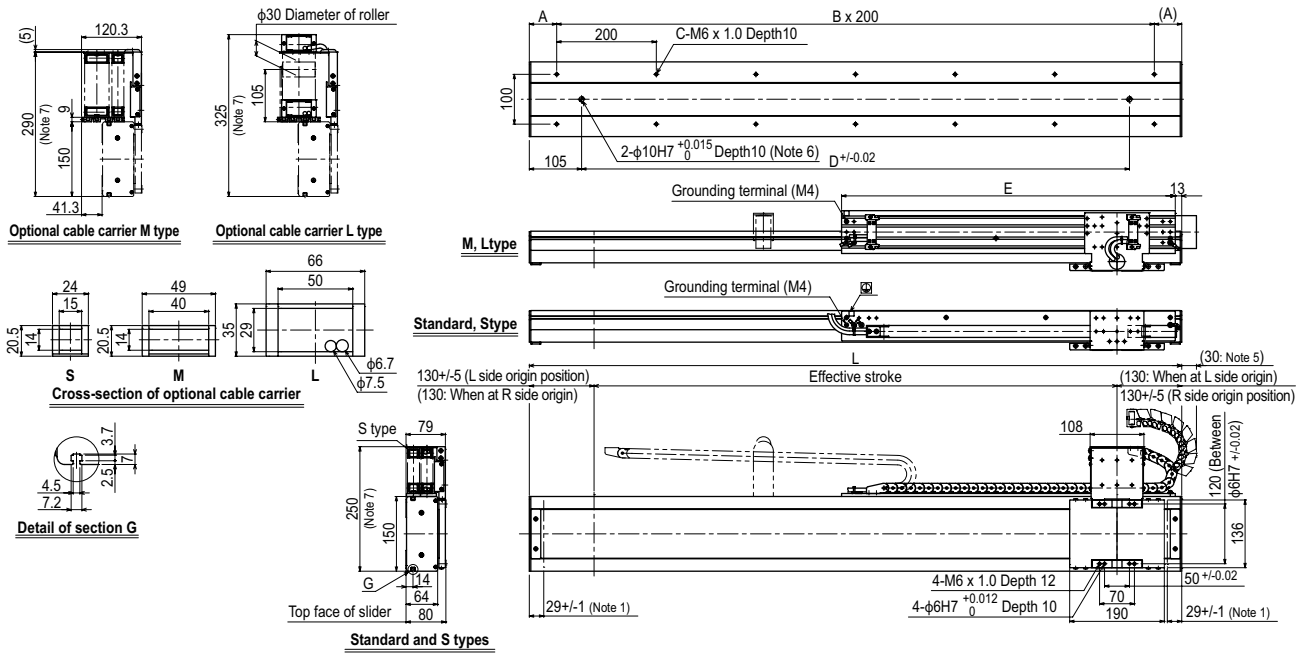
MF20 single carriage horizontal mount model RH



Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. The origin is set on the L side at the time of shipment. It can be changed to the R side by parameter setting.
Note 3. For models with a 2,050mm or longer stroke, optional L type cable carriers can only be used.
Note 4. For models with a 3,050mm or longer stroke and an optional L type cable carrier, a roller is installed to prevent the cable carrier from sagging.
Note 5. Protrusion is the distance the cable carrier extends from the edge of unit when an optional L type cable carrier is used.
Note 6. When using φ10 H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.
Note 7. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	3150	3250	3350	3450	3550	3650	3750	3850	3950	4050
L	410	510	610	710	810	910	1010	1110	1210	1310	1410	1510	1610	1710	1810	1910	2010	2110	2210	2310	2410	2510	2610	2710	2810	2910	3010	3110	3210	3310	3410	3510	3610	3710	3810	3910	4010	4110	4210	4310
A	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55
B	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21
C	4	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44
D	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100
Weight (kg)	8.4	10.1	11.7	13.3	15.0	16.6	18.2	19.8	21.5	23.1	24.7	26.4	28.0	29.6	31.3	32.9	34.5	36.1	37.8	39.4	41.0	42.7	44.3	45.9	47.6	49.2	50.8	52.4	54.1	55.7	57.3	59.0	60.6	62.2	63.9	65.5	67.1	68.7	70.4	72.0

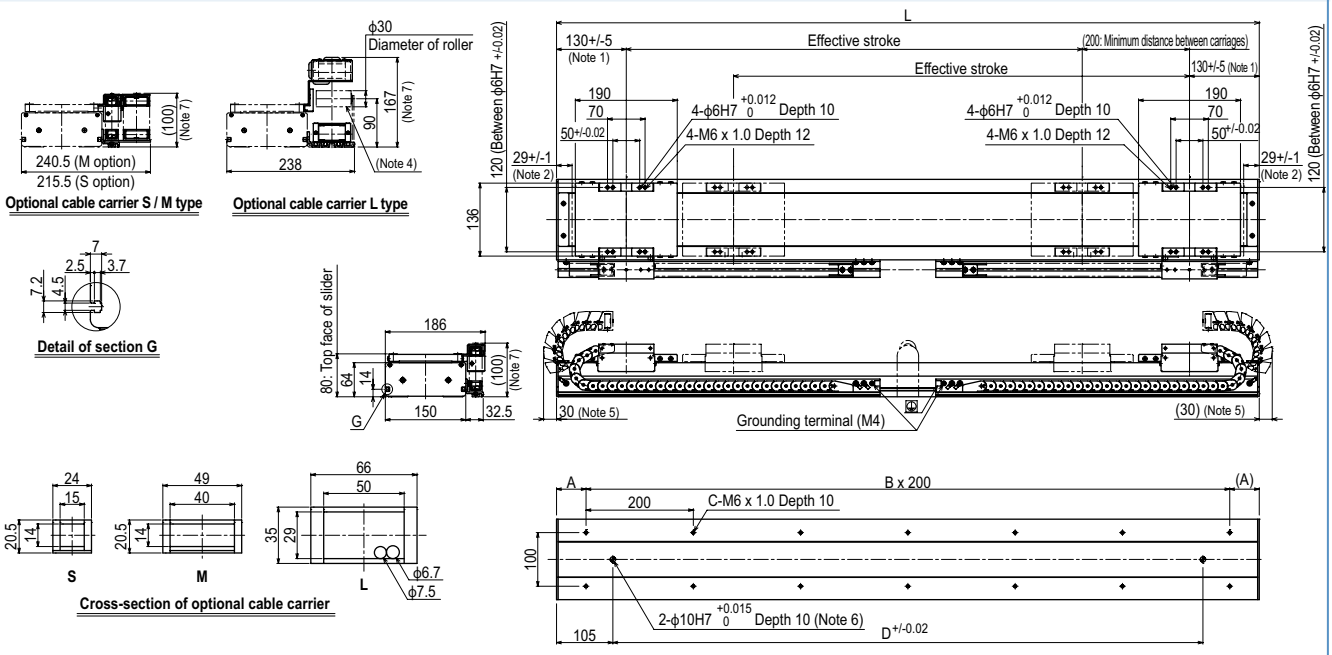
MF20 single carriage wall mount model RW



Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. The origin is set on the R side at the time of shipment. It can be changed to the L side by parameter setting.
Note 3. For models with a 2,050mm or longer stroke, optional L type cable carriers can only be used.
Note 4. For models with a 3,050mm or longer stroke and an optional L type cable carrier, a roller is installed to prevent the cable carrier from sagging.
Note 5. Protrusion is the distance the cable carrier extends from the edge of unit when an optional L type cable carrier is used.
Note 6. When using φ10 H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.
Note 7. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	3150	3250	3350	3450	3550	3650	3750	3850	3950	4050
L	410	510	610	710	810	910	1010	1110	1210	1310	1410	1510	1610	1710	1810	1910	2010	2110	2210	2310	2410	2510	2610	2710	2810	2910	3010	3110	3210	3310	3410	3510	3610	3710	3810	3910	4010	4110	4210	4310
A	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55
B	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21
C	4	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44
D	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100
E	220	270	320	370	420	470	520	570	620	670	720	770	820	870	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
Weight (kg)	8.4	10.1	11.7	13.3	15.0	16.6	18.2	19.8	21.5	23.1	24.7	26.4	28.0	29.6	31.3	32.9	34.5	36.1	37.8	39.4	41.0	42.7	44.3	45.9	47.6	49.2	50.8	52.4	54.1	55.7	57.3	59.0	60.6	62.2	63.9	65.5	67.1	68.7	70.4	72.0

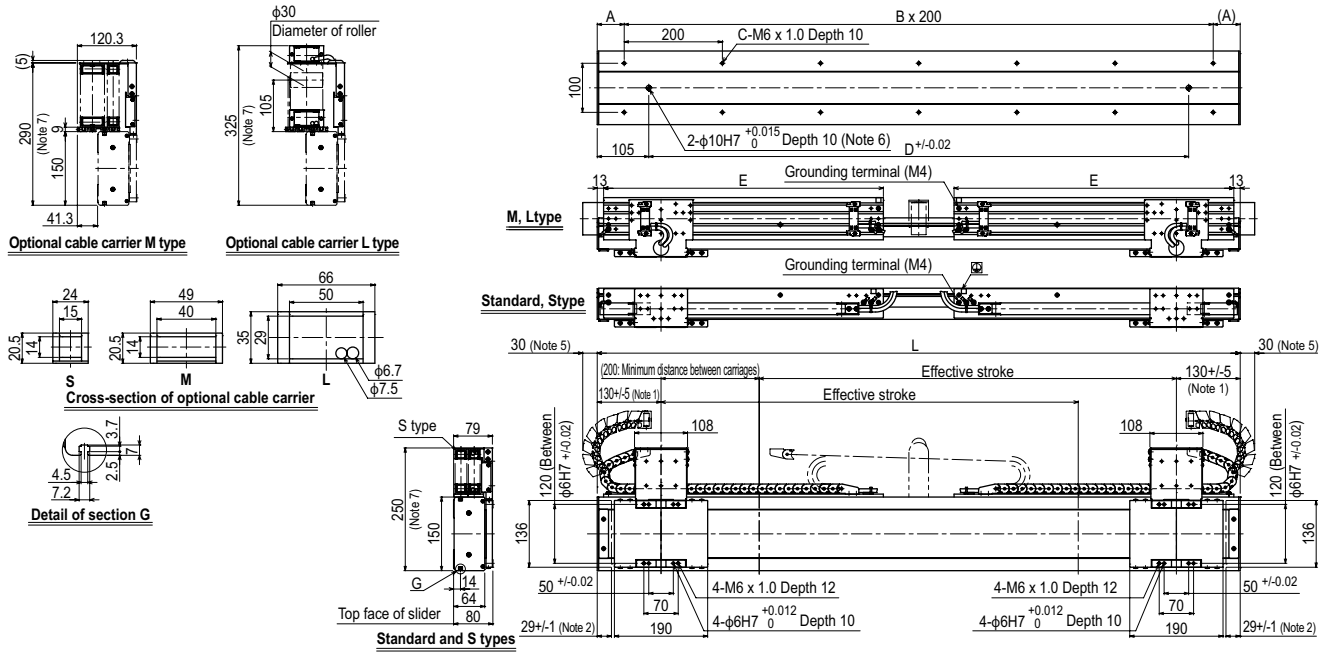
MF20D double carriage horizontal mount model H



Note 1. Position of table carriage when returned to the origin.
Note 2. Stop positions are determined by the mechanical stoppers at both ends.
Note 3. For models with a 2,050mm or longer stroke, optional L type cable carriers can only be used.
Note 4. For models with a 3,050mm or longer stroke and an optional L type cable carrier, a roller is installed to prevent the cable carrier from sagging.
Note 5. Protrusion is the distance the cable carrier extends from the edge of unit when an optional L type cable carrier is used.
Note 6. When using ϕ10 H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.
Note 7. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	3150	3250	3350	3450	3550	3650	3750	3850
L	610	710	810	910	1010	1110	1210	1310	1410	1510	1610	1710	1810	1910	2010	2110	2210	2310	2410	2510	2610	2710	2810	2910	3010	3110	3210	3310	3410	3510	3610	3710	3810	3910	4010	4110	4210	4310
A	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55
B	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21
C	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44
D	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100
Weight (kg)	14.9	16.6	18.3	20.0	21.7	23.5	25.2	26.9	28.6	30.3	32.0	33.7	35.4	37.2	38.9	40.6	42.3	44.0	45.7	47.4	49.1	50.8	52.6	54.3	56.0	57.7	59.4	61.1	62.8	64.5	66.3	68.0	69.7	71.4	73.1	74.8	76.5	78.2

MF20D double carriage wall mount model W



Note 1. Position of table carriage when returned to the origin.
Note 2. Stop positions are determined by the mechanical stoppers at both ends.
Note 3. For models with a 2,050mm or longer stroke, optional L type cable carriers can only be used
Note 4. For models with a 3,050mm or longer stroke and an optional L type cable carrier, a roller is installed to prevent the cable carrier from sagging.
Note 5. Protrusion is the distance the cable carrier extends from the edge of unit when an optional L type cable carrier is used.
Note 6. When using ϕ10 H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.
Note 7. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	3150	3250	3350	3450	3550	3650	3750	3850
L	610	710	810	910	1010	1110	1210	1310	1410	1510	1610	1710	1810	1910	2010	2110	2210	2310	2410	2510	2610	2710	2810	2910	3010	3110	3210	3310	3410	3510	3610	3710	3810	3910	4010	4110	4210	4310
A	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55
B	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21
C	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44
D	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100
E	220	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170	1220	1270	1320	1370	1420	1470	1520	1570	1620	1670	1720	1770	1820	1870	1920	1970	2020	2070
Weight (kg)	14.9	16.6	18.3	20.0	21.7	23.5	25.2	26.9	28.6	30.3	32.0	33.7	35.4	37.2	38.9	40.6	42.3	44.0	45.7	47.4	49.1	50.8	52.6	54.3	56.0	57.7	59.4	61.1	62.8	64.5	66.3	68.0	69.7	71.4	73.1	74.8	76.5	78.2