C-1 Monocarrier™

C-2 MCM Series

C-3 MCH Series

Monocarrier™

BOOK

C-1 Monocarrier™

C-1-1 Features

NSK's Monocarrier is the culmination of technology and innovation in linear motion. This lightweight, compact single axis linear actuator integrates quality NSK ball screw, linear guide and support bearings into one unit.

4 Long term maintenance free

○Use of NSK K1 Lubrication Units and grease maintains a smooth lubricating performance for long periods in mechanical environments where lubrication is difficult to apply, where use of oil is not permitted because of hygienic issues, or where the mechanical equipment is subjected to frequent wash downs.
○NSK K1 lubrication unit is available for food processing machines and medical equipment.
○Grease for clean environments and for general machinery is available.

2 All -in-one structure

○The all-in-one structure integrates a ball screw, a linear guide and support bearings into a single unit to significantly reduce design and installation time.
○Multiple datum planes, the bottom and a lateral side of the rail, facilitate highly accurate installation.
○Immediate operation after installation and run-in is possible.
○A wide selection of fine to high helix leads are available.

1 Light weight, compact design

○Available in two different shapes of cross-section, depending on application.
Light weight type : MCM Series
Rigid type : MCH Series
The design has minimal space requirements.

3 Superb antirust capability

○Low temperature chrome plating is a standard feature for the bodies and sliders to control rusting in normal operating and storing environments. Fluoride low temperature chrome plating is optionally available for much higher rust prevention.

MONOCARRIER™

C-1-2 Classification and Series

Table 2.1

	Light Weight	Beam Rigidity	Moment Rigidity	Accuracy	Long Stroke	Size Variation
MCM Series	◎	○	○	◎	○	◎
MCH Series	○	◎	○	◎	◎	○

【MCM Series Cross-sections】

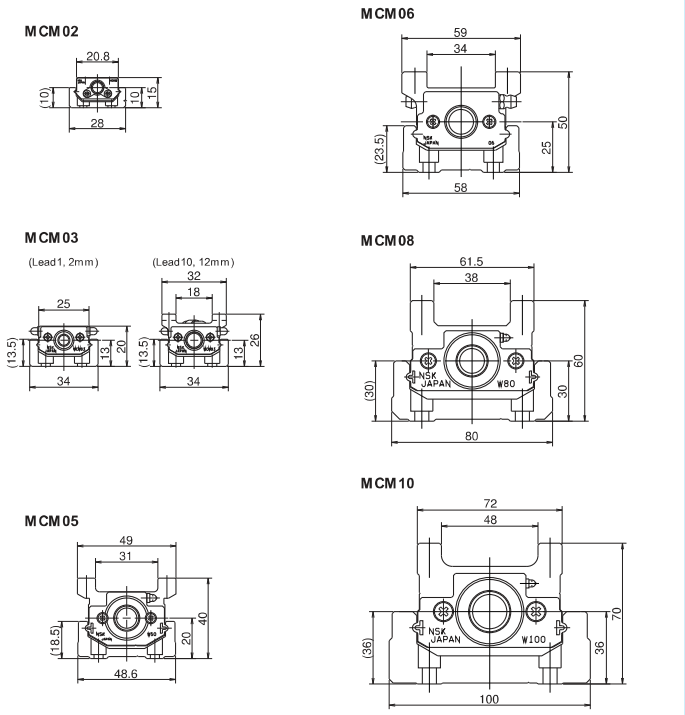

Fig. 2.1

【MCH Series Cross-sections】

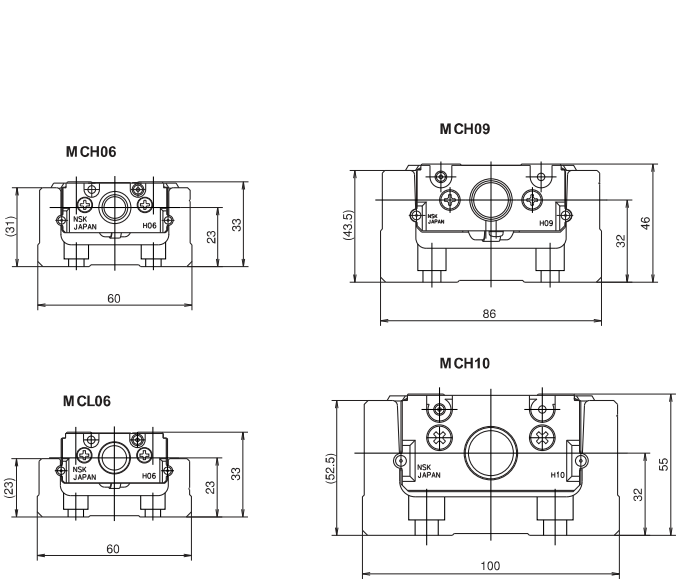

Fig. 2.2

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C-1-3 Optional Components

MCM Series

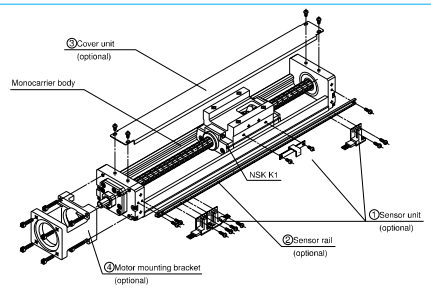

Fig. 3.1 Assembly Optional components for MCM10 (example)

① Sensor unit : Sensors, sensor mounting parts and a sensor dog are available in a set.
✻ When a sensor unit is used, the full cover unit cannot be used.
② Sensor rail : Rail for sensor mounting is available.
③ Cover unit : Top cover or full cover (included top cover and side cover) is available.
④ Motor bracket for motor mounting : Available for a variety of models.
Note: We assemble optional components upon request.

MCH Series

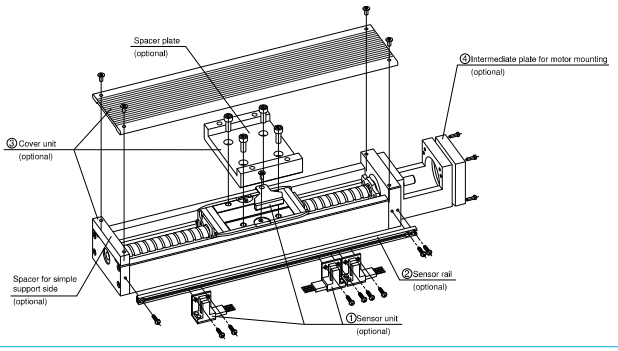

Fig. 3.2 Assembly Optional components for MCH10 (example)

① Sensor unit : Sensors, sensor mounting parts and a sensor dog are available in a set.
② Sensor rail : Rail for sensor mounting is available.
③ Cover unit : Top cover (included spacer plate and spacer for simple support side) is available.
④ Intermediate plate for motor mounting : Available for a variety of models.
Note: We assemble optional components upon request.

C-1-4 Selection of Monocarrier

C-1-4. 1 Procedures for Selecting Monocarrier

Select a reference type of Monocarrier based on stroke and rigidity (Refer to Fig. 4.2, 4.3).

↓

Select a ball screw lead referring to "C-1-4.3 Maximum Speed" so that the rotational speed does not exceed the limit.

↓

Study the loads to be applied to the linear guide and obtain the equivalent load (Fe) substituting them for equation ① or ② on Page C13. Obtain the mean effective load (Fm) substituting them for equation ③ on Page C14, then calculate the life.

↓

Study the loads to be applied to the ball screw and support unit. Obtain the mean effective load (Fm) substituting them for equation ③ on Page C14, then calculate the life.

C-1-4. 2 Rigidity

Rigidity of rail

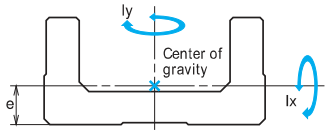

Fig. 4.1

Table 4.1 Rigidity of rail

Nominal size	Geometrical moment of inertia ×10⁴ (mm⁴)		Center of gravity (mm)	Mass (kg/ 100mm)
	Ix	Iy	e	w
MCM02	0.097	1.32	3.3	0.11
MCM03	0.30	3.3	4.5	0.18
MCM05	0.78	11.4	6.0	0.31
MCM06	2.14	26.1	7.0	0.57
MCM08	5.90	81.0	9.2	0.88
MCM10	15.6	219	12.2	1.52
MCH06	6.5	38.2	10.8	0.67
MCL06	2.58	29.6	7.8	0.56
MCH09	28.7	172	15.5	1.48
MCH10	54.0	307	18	1.93

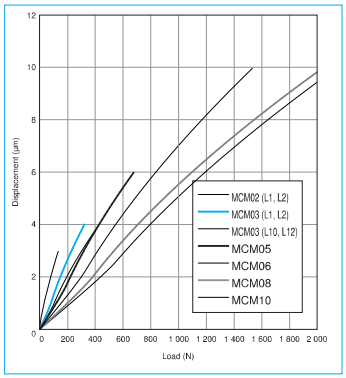

Fig. 4.2 MCM Series Rigidity in radial direction

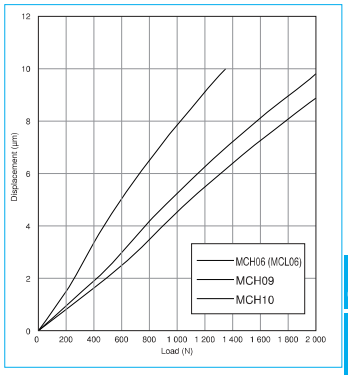

Fig. 4.3 MCH Series Rigidity in radial direction

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C-1-4. 3 Maximum Speed

(1) Maximum Speed of MCM Series

Maximum speed of the Monocarrier is determined by the critical speed of the ball screw shaft and the d · n value.
Do not exceed the maximum speeds on the table below.

Table 4.2

	Ball screw lead	stroke (mm)	Rail length L_2 (mm)	Maximum speed (mm/s)
MCM02 Single slider	1	50 – 100	100 – 150	50
		100 – 150	150 – 200	
		150	200	
	2	50 – 100	100 – 150	100
		100 – 150	150 – 200	
		150	200	
MCM03 Single slider	1	50 – 100	115 – 190	50
		100 – 150	190 – 240	
		150	240	
	2	50 – 100	115 – 190	100
		100 – 150	190 – 240	
		150	240	
	10	100 – 250	190 – 340	500
	12	100 – 250	190 – 340	600
MCM05 Single slider	5	50 – 200	180 – 330	250
	10	50 – 600	180 – 730	500
	20	300 – 600	430 – 730	1000
MCM05 Double slider	10	60 – 510	280 – 730	500
	20	210 – 510	430 – 730	1000
MCM06 Single slider	5	50 – 500	190 – 640	250
	10	50 – 600	190 – 740	500
		700	840	490
		800	940	390
	20	300 – 600	440 – 740	1000
		700	840	980
		800	940	770
MCM06 Double slider	5	110 – 410	340 – 640	250
	10	110 – 610	340 – 840	500
		710	940	490
	20	210 – 610	440 – 840	1000
		710	940	980
MCM08 Single slider	5	50 – 200	220 – 370	250
	10	100 – 700	270 – 870	500
		800	970	390
	20	300 – 700	470 – 870	1000
		800	970	780
MCM08 Double slider	10	80 – 680	370 – 970	500
	20	180 – 680	470 – 970	1000
MCM10 Single slider	10	200 – 800	380 – 980	500
		900	1080	440
		1000	1180	360
	20	300 – 800	480 – 980	1000
		900	1080	880
		1000	1180	720
MCM10 Double slider	10	70 – 670	380 – 980	500
		870	1180	440
	20	170 – 670	480 – 980	1000
		870	1180	880

Note: When operating the Monocarriers near the critical speed or exceeding the maximum speed in the table, please consult NSK.

(2) Maximum Speed of MCH Series

Maximum speed of the Monocarrier is determined by the critical speed of the ball screw shaft and the d · n value.
Do not exceed the maximum speeds on the table below.

Table 4.3

	Ball screw lead	stroke (mm)	Rail length L_2 (mm)	Maximum speed (mm/s)
MCH06 MCL06 Single slider	5	50 – 500	150 – 600	250
	10	50 – 500	150 – 600	500
	20	50 – 500	150 – 600	1000
MCH06 Double slider	5	100 – 400	300 – 600	250
	10	100 – 400	300 – 600	500
	20	100 – 400	300 – 600	1000
MCH09 Single slider	5	200 – 600	340 – 740	250
		800	940	210
	10	200 – 600	340 – 740	500
		800	940	410
	20	200 – 600	340 – 740	1000
		800	940	830
MCH09 Double slider	5	150 – 650	440 – 940	250
	10	150 – 650	440 – 940	500
	20	150 – 650	440 – 940	1000
MCH10 Single slider	10	400 – 800	580 – 980	500
		900	1080	440
		1000	1180	360
		1100	1280	300
		1200	1380	250
	20	400 – 800	580 – 980	1000
		900	1080	870
		1000	1180	720
		1100	1280	600
		1200	1380	510
MCH10 Double slider	10	250 – 750	580 – 1080	500
		850	1180	480
		950	1280	390
		1050	1380	320
	20	250 – 750	580 – 1080	1000
		850	1180	950
		950	1280	780
		1050	1380	650

Note: When operating the Monocarriers near the critical speed or exceeding the maximum speed in the table, please consult NSK.

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C-1-4. 4 Accuracy Grade

The accuracy grade of Monocarrier standard inventories is high grade (H), except for lead 1 and 2 of MCM02, and 03.

When you require strokes longer than 1200 mm, please consult NSK about the accuracy grade.

Table 4.4 (Unit : μm)

Grade	High grade			Precision			
Stroke (mm)	Repeatability	Running Parallelism (vertical)	Backlash	Repeatability	Positioning accuracy	Running Parallelism (vertical)	Backlash
– 200	±10	14	20 or less	±3	20	8	3 or less
– 400		16			25	10	
– 600		20			30	12	
– 700		23			30	15	
– 1000		23			35	15	
– 1200		30			40	20	

C-1-4. 5 Stroke and Ball Screw Lead

(1) MCM Series Standard Combinations of Stroke and Ball Screw Lead

Table 4.5 Single slider

(○mark, Standard inventory; ☆mark, Short-term delivery) (Unit : mm)

Nominal size / lead / stroke	MCM02		MCM03				MCM05			MCM06			MCM08			MCM10	
	1	2	1	2	10	12	5	10	20	5	10	20	5	10	20	10	20
50	○	○	○	○	☆	☆	○	○	☆	○	☆	☆	☆	☆			
100	○	○	○	○	○	○	○	○	☆	○	○	☆	☆	○	☆	☆	☆
150	○	○	☆	☆	☆	☆	☆	○	☆	☆	☆	☆	☆	☆	☆	☆	☆
200					○	☆	○	○	☆	○	○	☆	☆	○	☆	○	☆
250					☆	☆	☆	○	☆	☆	☆	☆	☆	☆	☆	☆	☆
300							☆	○	○	○	○	○	☆	○	○	○	○
400							☆	○	○	○	○	○	☆	○	○	○	○
500							☆	○	○	☆	○	○	☆	○	○	☆	☆
600							☆	○	○	☆	☆	☆	☆	○	☆	○	☆
700										☆	○	○	☆	☆	☆	☆	☆
800										☆	☆	☆	☆	☆	☆	○	☆
900																☆	☆
1000																☆	☆

Table 4.6 Double slider

(☆mark, Short-term delivery) (Unit : mm)

Nominal size / lead / stroke	MCM05		MCM06			MCM08		MCM10	
	10	20	5	10	20	10	20	10	20
60	☆								
70								☆	
80						☆			
110	☆		☆	☆					
160	☆								
170								☆	☆
180						☆	☆		
210	☆	☆	☆	☆	☆				
270								☆	☆
280						☆	☆		
310	☆	☆	☆	☆	☆				
370								☆	☆
380						☆	☆		
410	☆	☆	☆	☆	☆				
470								☆	☆
480						☆	☆		
510	☆	☆		☆	☆				
570								☆	☆
580						☆	☆		
610				☆	☆				
670								☆	☆
680						☆	☆		
710				☆	☆				
870								☆	☆

Note: Please consult NSK about double slider of MCM 02 and 03.

(2) MCH Series Standard Combinations of Stroke and Ball Screw Lead

Table 4.7 Single slider

(○mark, Standard inventory; ☆mark, Short-term delivery) (Unit : mm)

Nominal size / lead / stroke	MCH06			MCH09			MCH10	
	5	10	20	5	10	20	10	20
50	○	○	☆					
100	○	○	☆	☆	☆	☆	☆	☆
200	○	○	○	○	○	☆	☆	☆
300	☆	○	○	○	○	☆	☆	☆
400	☆	○	○	○	○	☆	○	○
500	☆	○	○	☆	○	○	○	○
600				☆	○	○	○	○
700				☆	☆	☆	○	○
800				☆	○	○	○	○
900							☆	○
1000							☆	○
1100							☆	☆
1200							☆	☆

Table 4.8 Double slider

(☆mark, Short-term delivery) (Unit : mm)

Nominal size / lead / stroke	MCH06			MCH09			MCH10	
	5	10	20	5	10	20	10	20
100	☆	☆						
150				☆	☆			
200	☆	☆						
250				☆	☆		☆	☆
300	☆	☆						
350				☆	☆		☆	☆
400		☆	☆					
450				☆	☆	☆	☆	☆
550							☆	☆
650				☆	☆	☆	☆	☆
750								☆
850								☆
950								☆
1050								☆

Table 4.9 Limitations

	Nominal size	lead (mm)	slider	stroke (mm)
MCM series	MCM02	1, 2	Single	150
	MCM03	1, 2	Single	150
		10, 12	Single	350
	MCM05	5, 10, 20	Single	900
			Double	810
	MCM06	5, 10, 20	Single	1000
			Double	910
	MCM08	5, 10, 20	Single	1000
			Double	880
	MCM10	10, 20	Single	1800
			Double	1670
MCH series	MCH06	5, 10, 20	Single	600
			Double	500
	MCH09	5, 10, 20	Single	1000
			Double	850
	MCH10	10, 20	Single	1800
			Double	1650
	MCL06	5, 10, 20	Single	500

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C-1-4. 6 Basic Load Rating

(1) MCM Series Basic Load Rating

Table 4.10 Basic Load Rating

Nominal size	Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw Ca	Linear guide C	Support unit Ca	Rated running distance L a (km)	Basic static load rating (N) Ball screw C0a	Linear guide C0	Support unit Limit load (N)
MCM02	1	φ6	340 (High grade) 405 (Precision)	4910	615	1	555 (High grade) 615 (Precision)	2120	490
	2		340 (High grade) 405 (Precision)	3900		2	555 (High grade) 615 (Precision)		
MCM03	1	φ6	735	10900	2670	1	1230	4900	1040
	2		735	8650		2			
	10	φ8	1230	6250		10	1690	6620	
	12		1230	5880		12			
MCM05	5	φ12	3760	15600	4400	5	6310	10900	1450
	10		2260	12400		10	3780		
	20		2260	9850		20	3780		
MCM06	5	φ16	7310	25200	6550	5	13500	17000	2730
	10	φ15	7060	20000		10	12700		
	20		4560	15900		20	7750		
MCM08	5	φ16	7310	30800	7100	5	13500	22800	3040
	10	φ15	7060	24400		10	12700		
	20		4560	19400		20	7750		
MCM10	10	φ20	10900	33500	7600	10	21700	29400	3380
	20		7060	26600		20	12700		

Notes: ●Basic dynamic and static load ratings indicate the values for one slider. ●Basic dynamic load rating of the linear guide is the load of perpendicular direction to the axis that allows 90% of a group of the same Monocarriers to operate " Rated running distance" in the table, that is equivalent to 1 million revolutions of the ball screw and the support unit, under the same condition without causing flaking by rolling contact fatigue. ●Basic dynamic load rating of the ball screw is a load to axial direction that allows 90% of ball screws of a group of the same Monocarriers to rotate 1 million revolutions under the same condition without causing flaking by rolling contact fatigue. ●Basic dynamic load rating of the support unit is a constant load to axial direction that allows 90% of support units of the same group of Monocarriers to rotate 1 million revolutions under the same condition without causing flaking by rolling contact fatigue. ●Basic static load rating is a load that results in combined permanent deformations at the contact points of balls and ball grooves of respective parts is 0.01% of the diameter.

Table 4.11 Basic static moment load of linear guide

Nominal size	Lead (mm)	Slider	Basic static moment (N · m) Rolling MRO	Pitching MPO	Yawing MYO
MCM02	1, 2	Single	24	8	8
MCM03	1, 2		68	28	28
	10, 12		92	51	51
MCM05	5, 10, 20	Single	229	89	89
		Double	455	765	765
MCM06	5, 10, 20	Single	415	174	174
		Double	825	1220	1220
MCM08	5, 10, 20	Single	770	300	300
		Double	1540	2050	2050
MCM10	10, 20	Single	1170	425	425
		Double	2340	2940	2940

Notes: ● Basic static moment of double slider is a value when two sliders equipped with NSK K1 are butted against each other.
● The basic static moment is the value when a rolling contact pressure of balls exceeds 4000 N/mm².
● If you plan to apply extremely heavy load, please consult NSK for estimation of fatigue life.

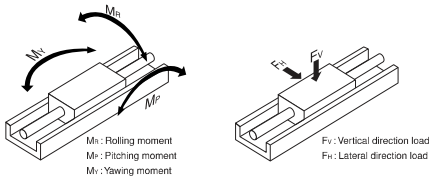

Fig. 4.4

(2) MCH Series Basic Load Rating

Table 4.12 Basic Load Rating

Nominal size	Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw Ca	Linear guide C	Support unit Ca	Rated running distance L a (km)	Basic static load rating (N) Ball screw C0a	Linear guide C0	Support unit Limit load (N)
MCH06 (MCL06)	5	φ12	3000 (High grade) 3760 (Precision)	22800	4400	5	5410 (High grade) 6310 (Precision)	16300	1450
	10		1930 (High grade) 2260 (Precision)	18100		10	3160 (High grade) 3780 (Precision)		
	20		1930 (High grade) 2260 (Precision)	14400		20	3160 (High grade) 3780 (Precision)		
MCH09	5	φ15	6820 (High grade) 7100 (Precision)	40600	7100	5	13200 (High grade) 13000 (Precision)	30500	3040
	10		5110 (High grade) 7060 (Precision)	32200		10	9290 (High grade) 12700 (Precision)		
	20		3290 (High grade) 4560 (Precision)	25500		20	5620 (High grade) 7750 (Precision)		
MCH10	10	φ20	8230 (High grade) 10900 (Precision)	44600	7600	10	17100 (High grade) 21700 (Precision)	42000	3380
	20		5300 (High grade) 7060 (Precision)	35400		20	10300 (High grade) 12700 (Precision)		

Notes: ●Basic dynamic and static load ratings indicate the values for one slider. ●Basic dynamic load rating of the linear guide is the load of perpendicular direction to the axis that allows 90% of a group of the same Monocarriers to operate " Rated running distance" in the table, that is equivalent to 1 million revolutions of the ball screw and the support unit, under the same condition without causing flaking by rolling contact fatigue. ●Basic dynamic load rating of the ball screw is a load to axial direction that allows 90% of ball screws of a group of the same Monocarriers to rotate 1 million revolutions under the same condition without causing flaking by rolling contact fatigue. ●Basic dynamic load rating of the support unit is a constant load to axial direction that allows 90% of support units of the same group of Monocarriers to rotate 1 million revolutions under the same condition without causing flaking by rolling contact fatigue. ●Basic static load rating is a load that results in combined permanent deformations at the contact points of balls and ball grooves of respective parts is 0.01% of the diameter.

Table 4.13 Basic static moment load of linear guide

Nominal size	Slider	Basic static moment (N · m) Rolling MRO	Pitching MPO	Yawing MYO
MCH06 (MCL06)	Single	335	133	133
	Double	770	730	730
MCH09	Single	890	385	385
	Double	1780	2070	2070
MCH10	Single	1460	610	610
	Double	2920	3430	3430

Notes: ● Basic static moment of double slider is a value when two sliders equipped with NSK K1 are butted against each other.
● The basic static moment is the value when a rolling contact pressure of balls exceeds 4000 N/mm².
● If you plan to apply extremely heavy load, please consult NSK for estimation of fatigue life.

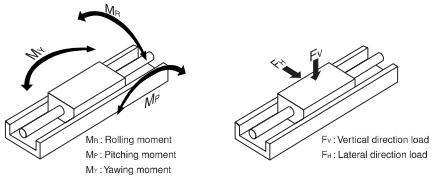

Fig. 4.5

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C-1-4. 7 Estimation of Life Expectancy

(1) Life of Linear Guide

Study the load to be applied to the linear guide of Monocarrier (Fig. 4.6). The equivalent load (Fe) is determined by substituting the load for equation ① (Eq.② : in case of the tightly coupled double slider type).

● In case of the single slider

$$Fe = Y_H F_H + Y_V F_V + Y_R \varepsilon_R M_R + Y_P \varepsilon_P M_P + Y_Y \varepsilon_Y M_Y \cdots ①$$

● In case of the double slider

$$Fe = \frac{Y_H F_H}{2} + \frac{Y_V F_V}{2} + Y_R \varepsilon_{Rd} M_R + Y_P \varepsilon_{Pd} M_P + Y_Y \varepsilon_{Yd} M_Y \cdots ②$$

F_H : Lateral direction load acting on the slider (N)
F_V : Vertical direction load acting on the slider (N)
M_R : Rolling moment acting on the slider (N · m)
M_P : Pitching moment acting on the slider (N · m)
M_Y : Yawing moment acting on the slider (N · m)
ε_R, ε_{Rd}
: Dynamic equivalent coefficient to rolling moment
ε_P, ε_{Pd}
: Dynamic equivalent coefficient to pitching moment
ε_Y, ε_{Yd}
: Dynamic equivalent coefficient to yawing moment
Refer to Table 4.14 about Dynamic equivalent coefficient.
Y_H, Y_V, Y_R, Y_P, Y_Y
: 1.0 or 0.5

At equations ① and ② for obtaining equivalent load Fe, among F_H, F_V, $\varepsilon_P M_P$, $\varepsilon_R M_R$, $\varepsilon_Y M_Y$, the maximum load is assumed to be 1.0, and others are to be 0.5.

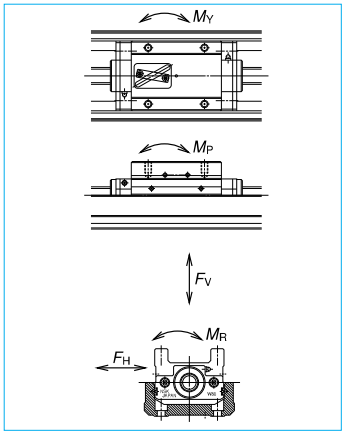

Fig. 4.6 Direction of load

Table 4.14 Dynamic equivalent coefficient

Nominal size	MCM02	MCM03 lead 1, 2	MCM03 lead 10, 12	MCM05	MCM06	MCM08	MCM10	MCH06 MCL06	MCH09	MCH10
ε_R	95.2	79.4	79.4	52.6	45.5	32.5	27.8	48.3	34.5	28.6
ε_P	174	113.9	84.2	81.3	65.1	48.8	45.2	75.1	47.9	41.0
ε_Y	174	113.9	84.2	81.3	65.1	48.8	45.2	75.1	47.9	41.0
ε_{Rd}	–	–	–	26.3	22.7	16.3	13.9	24.2	17.2	14.3
ε_{Pd}	–	–	–	10.4 (12.2)	9.7 (11.5)	7.6 (8.6)	7.1 (8.0)	11.4 (13.2)	8.11 (9.10)	6.98 (7.82)
ε_{Yd}	–	–	–	10.4 (12.2)	9.7 (11.5)	7.6 (8.6)	7.1 (8.0)	11.4 (13.2)	8.11 (9.10)	6.98 (7.82)

Note: Parenthesized figures are Dynamic equivalent coefficient in case of the Monocarrier without NSK K1.

In case when the load acting on the slider may fluctuate (In general, M_P, M_Y may fluctuate with the acceleration/deceleration of slider), the mean effective load is determined by Eq. ③.

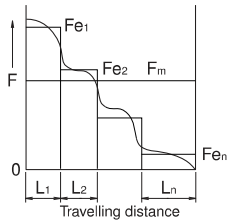

Fig. 4.7 Stepwise Fluctuating Load

Travelling distance under the equivalent load Fe_1 : L_1
Travelling distance under the equivalent load Fe_2 : L_2
. . . . . .
Travelling distance under the equivalent load Fe_n : L_n

$$Fm = \sqrt[3]{\frac{1}{L}(Fe_1^3 L_1 + Fe_2^3 L_2 + \cdots Fe_n^3 L_n)} \cdots ③$$

Fm : Mean effective load of fluctuating loads
L : Total travelling distance
The life of linear guide is calculated by Eq. ④

$$L = L_a \times \left(\frac{C}{f_W \cdot Fm}\right)^3 \cdots ④$$

L : Life of linear guide (km)
Fm : Mean effective load acting on the linear guide (N)
C : Basic dynamic load rating of the linear guide (N)
L_a : Travelling distance (km)
f_W : Load factor (Refer to Table 4.15)
When the estimated life does not clear the required life, the life of the linear guide is to be calculated again after the following measures are taken:
1. Change from the single slider type to double slider type.
2. Use a larger size Monocarrier.

(2) Life of Ball Screw (Support unit)

The mean effective load is determined from the axial loads.
For calculation of the mean effective load, use Eq.③.
The life of ball screw is calculated by Eq. ⑤.

$$L = \ell \times \left(\frac{C_a}{f_W \cdot Fm}\right)^3 \times 10^6 \cdots ⑤$$

ℓ : Lead of ball screw (mm)
L : Life of ball screw (mm)
C_a : Basic dynamic load rating of the ball screw (N)
Fm : Mean effective load acting on the ball screw (N)
f_W : Load factor (Refer to Table 4.15)

The life of a support unit is calculated by Eq. ⑤.
If the life of ball screw / support unit does not clear the required life, use a larger size Monocarrier.
After applying the calculations mentioned above, selection of the Monocarrier is completed.

Table 4.15 Values of load factor f_w

Operating conditions	Load factor f_W
At smooth operation with no mechanical shock	1.0 – 1.2
At normal operation	1.2 – 1.5
At operation with mechanical shock and vibrations	1.5 – 3.0

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C-1-4. 8 Example of Life Estimation

This section offers an example how to estimate the life of Monocarrier based on the life of each component.

<<Example of calculation-1>>

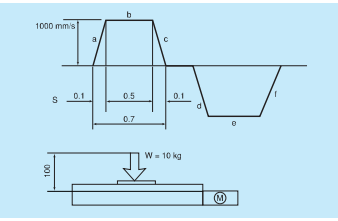

Fig. 4.8

1. Use condition

Stroke	: 600 mm
Maximum Speed	: 1000 mm/s
Load Mass	: W = 10 kg
Acceleration	: g = 9.8 m/s²
Setting Position	: Horizontal
Operating Profile	: See above figure

2. Selection of Nominal size (Interim Selection)
Firstly, select a greater ball screw lead as the maximum speed is 1000 mm/s. The interim selection is MCM06060H20K00, a single slider specification MCM06 that has 600 mm stroke, as the stroke is 600 mm.

3. Calculation
3-1. Linear guide
3-1-1. Fatigue life
Multiply the result of the Eq. ① by the dynamic equivalent coefficient (Table 4.14 single slider) to convert the load volume. From above operation profile,

i) Constant speed $Fe_1 = Y_V F_V = Y_V W_g = 1 \cdot 10 \cdot 9.8 = 98$ N

ii) Accelerating $Fe_2 = Y_V F_V + Y_P \varepsilon_P M_P = 0.5 \cdot 10 \cdot 9.8 + 1 \cdot 65.1 \cdot 0.1 \cdot 100 = 700$ N

iii) Decelerating $Fe_3 = Y_V F_V + Y_P \varepsilon_P M_P = 0.5 \cdot 10 \cdot 9.8 + 1 \cdot 65.1 \cdot 0.1 \cdot 100 = 700$ N

Mean effective load *Fm*

$$Fm = \sqrt[3]{\frac{1}{L}\left(Fe_1^3 \cdot L_1 + Fe_2^3 \cdot L_2 + Fe_3^3 \cdot L_3\right)}$$
$$= \sqrt[3]{\frac{1}{600}\left(98^3 \cdot 500 + 700^3 \cdot 50 + 700^3 \cdot 50\right)}$$
$$= 387 \text{ N}$$

$$L = \left(\frac{C}{f_w \cdot F_m}\right)^3 \times L_a$$
$$= \left(\frac{15900}{1.2 \cdot 387}\right)^3 \times 20$$
$$= 8.02 \times 10^5 \text{ km}$$

3-1-2. Static safety factor; Divide the basic static load rating by the maximum load.

$$F_S = \frac{C_0}{Fe} = \frac{C_0}{Fe_2} = \frac{17000}{700} = 24.2$$

3-2. Ball screw
3-2-1. Fatigue life; Obtain the axial load of each stage of operation referring to the operation profile, then calculate the mean load.
By the process above,

i) Constant speed
$Fe_1 = \mu \cdot W \cdot g = 0.01 \cdot 10 \cdot 9.8 = 0.98$

ii) Accelerating
$Fe_2 = Fe_1 + W\alpha = 101$ N

iii) Decelerating
$Fe_3 = Fe_1 - W\alpha = 99$ N

Axial mean effective load *Fm*

$$Fm = \sqrt[3]{\frac{1}{L}\left(Fe_1^3 \cdot L_1 + Fe_2^3 \cdot L_2 + Fe_3^3 \cdot L_3\right)}$$
$$= \sqrt[3]{\frac{1}{600}\left(0.98^3 \cdot 500 + 101^3 \cdot 50 + 99^3 \cdot 50\right)}$$
$$= 55 \text{ N}$$

$$L = \left(\frac{C_a}{f_w \cdot F_m}\right)^3 \times \ell \times 10^6$$
$$= \left(\frac{4560}{1.2 \cdot 55}\right)^3 \times 20 \times 10^6 \text{ (mm)}$$
$$= 6.5 \times 10^6 \text{ km}$$

3-2-2. Static safety factor; Divide the basic static load rating by the maximum axial load.

$$F_S = \frac{C_{0a}}{Fe} = \frac{C_{0a}}{Fe_2} = \frac{7750}{101} = 76.7$$

3-2-3. Maximum rotational speed; According to the table of maximum speed on page C7, MCM06 with 20 mm lead and 600 mm stroke, is possible to operate under the maximum speed of 1000 mm/s.

3-3. Support unit
3-3-1. Fatigue life; Use the axial load Fm = 55 N, that is the result of above calculation 3-2-1.

$$L = \left(\frac{C_a}{fw \cdot Fm}\right)^3 \times \ell \times 10^6 = \left(\frac{6550}{1.2 \times 55}\right)^3 \times 20 \times 10^6 \text{ (mm)}$$
$$= 1.95 \times 10^7 \text{ km}$$

3-3-2. Static safety factor; Divide the limit load by the maximum axial load.

$$F_S = \frac{C_{0a}}{Fe} = \frac{C_{0a}}{Fe_2} = \frac{2730}{101} = 27.0$$

3-4. Result

MCM06060H20K00	Linear guide	Ball screw	Support unit
Fatigue life	8.02×10^5 km	6.5×10^6 km	1.95×10^7 km
Static safety factor	24.2	76.7	27.0

In this case, the linear guide has the shortest fatigue life of the components. Therefore, the linear guide fatigue life is used as the life of the Monocarrier. The interim selection of MCM06060H20K00, that is chosen based on the use conditions, satisfies the required life.

<<Example of calculation-2>>

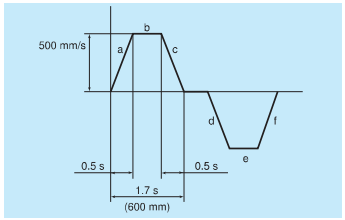

Fig. 4.9

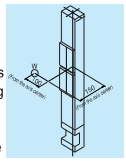

Fig. 4.10

1. Use condition

Stroke	: 600 mm
Maximum Speed	: 500 mm/s
Load Mass	: W = 20 kg
Acceleration	: 9.8 m/s²
Setting Position	: Vertical
Operating Profile	: See above figure

2. Selection of Nominal size (Interim Selection)
Select a 10 mm lead ball screw as the maximum speed is 500 mm/s.
The interim selection is MCM08068H10D00 as a double slider specification of MCM08 has 680 mm stroke, and the setting position is vertical.

3. Calculation
3-1. Linear guide
3-1-1. Fatigue life; Multiply the result of the Eq. ② by the dynamic equivalent coefficient (Table 4.14. double slider) to convert the load volume. From operation profile (Fig. 4.9), the acceleration is 1 m/s².

i) Constant speed $Fe_1 = Y_P \times \varepsilon_{Pd} \times M_P + Y_Y \times \varepsilon_{Yd} \times M_Y = 1 \cdot 7.6 \cdot 20 \cdot 9.8 \cdot 0.15 + 0.5 \cdot 7.6 \cdot 20 \cdot 9.8 \cdot 0.1 = 298$ N

ii) Accelerating $Fe_2 = Y_P \times \varepsilon_{Pd} \times M_P + Y_Y \times \varepsilon_{Yd} \times M_Y = 1 \cdot 7.6 \cdot 20 \cdot (9.8 + 0.15) \cdot 0.15 + 0.5 \cdot 7.6 \cdot 20 \cdot (9.8 + 1.0) \cdot 0.1 = 329$ N

iii) Decelerating $Fe_3 = Y_P \times \varepsilon_{Pd} \times M_P + Y_Y \times \varepsilon_{Yd} \times M_Y = 1 \cdot 7.6 \cdot 20 \cdot (9.8 - 1.0) \cdot 0.15 + 0.5 \cdot 7.6 \cdot 20 \cdot (9.8 - 1.0) \cdot 0.1 = 268$ N

Mean effective load *Fm*

$$Fm = \sqrt[3]{\frac{1}{L}\left(Fe_1^3 \cdot L_1 + Fe_2^3 \cdot L_2 + Fe_3^3 \cdot L_3\right)}$$
$$= \sqrt[3]{\frac{1}{600}\left(298^3 \cdot 350 + 329^3 \cdot 125 + 268^3 \cdot 125\right)}$$
$$= 300 \text{ N}$$

$$L = L_a \times \left(\frac{C}{f_w \cdot F_m}\right)^3$$
$$= 10 \times \left(\frac{24400}{1.2 \cdot 300}\right)^3$$
$$= 3.11 \times 10^6 \text{ km}$$

3-1-2. Static safety factor; Divide the basic static load rating by the maximum load.

$$F_S = \frac{C_0}{Fe} = \frac{C_0}{Fe_2} = \frac{22800}{329} = 69.3$$

3-2. Ball screw
3-2-1. Fatigue life; Obtain the axial load of each stage of operation referring to the operation profile, then calculate the mean load.

i) Constant speed
$Fe_1 = W \cdot g = 20 \cdot 9.8 = 196$ N

ii) Accelerating
$Fe_2 = Fe_1 + W \cdot \alpha = 196 + 20 \cdot 1 = 216$ N

iii) Decelerating
$Fe_3 = Fe_1 - W \cdot \alpha = 196 - 20 \cdot 1 = 176$ N

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Axial mean effective load *Fm*

$$Fm = \sqrt[3]{\frac{1}{L}\left(Fe_1^3 \cdot L_1 + Fe_2^3 \cdot L_2 + Fe_3^3 \cdot L_3\right)}$$
$$= \sqrt[3]{\frac{1}{600}\left(196^3 \cdot 350 + 216^3 \cdot 125 + 176^3 \cdot 125\right)}$$
$$= 197 \text{ N}$$

$$L = \ell \times \left(\frac{C_a}{f_w \cdot Fm}\right)^3 \times 10^6$$
$$= 10 \times \left(\frac{7060}{1.2 \cdot 197}\right)^3 \times 10^6$$
$$= 2.66 \times 10^5 \text{ km}$$

3-2-2. Static safety factor; Divide the basic static load rating by the maximum axial load.

$$F_S = \frac{C_{0a}}{Fe} = \frac{C_{0a}}{Fe_2} = \frac{12700}{216} = 58.7$$

C-1-5 Maintenance

C-1-5.1 Maintenance Method

1. For standard Monocarrier, we pack grease in the slider, linear guides and ball screw.
2. Monocarriers are equipped with NSK K1 Lubrication Unit as a standard feature, therefore, you may use it for 5 years or 10 000 km depending on your application, whichever comes first, without maintenance. However replenishment of preceded grease may extend its life substantially.
3. The NSK K1 Lubrication Unit is ideal in environments where oily dust exists. However, the life may be shorter than described in Clause 2 above. In such a case, it requires increasing the frequency of replenishment.

3-3. Support unit

3-3-1. Fatigue life; Use the axial load Fm = 197 N, that is the result of above calculation 3-2-1.

$$L = \ell \times \left(\frac{C_a}{fw \cdot Fm}\right)^3 \times 10^6 = 10 \times \left(\frac{7100}{1.2 \times 197}\right)^3 \times 10^6$$
$$= 2.70 \times 10^5 \text{ km}$$

3-3-2. Static safety factor; Divide the limit load by the maximum axial load.

$$F_S = \frac{C_{0a}}{Fe} = \frac{C_{0a}}{Fe_2} = \frac{3040}{216} = 14.0$$

3-4. Result

MCM08068H10D00	Linear guide	Ball screw	Support unit
Fatigue life	3.11 × 10^6 km	2.66 × 10^5 km	2.70 × 10^5 km
Static safety factor	69.3	58.7	14.0

4. A Nozzle for the NSK grease gun for MCH Monocarriers is available as an option.
   NSK reference number: NSK HGP NZ8

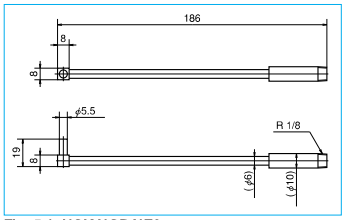

Fig. 5.1 NSK HGP NZ8

Precautions for handling

1. Please consult with NSK when the motor is coupled to the ball screw using a pulley because there is a restriction on allowable load to the end of ball screw shaft.
2. To extend high performance of NSK K1 lubrication unit, please observe the following.

1. Temperature range	Ambient temperature: 50°C Max. instantaneous temperature: 80°C
2. Use of chemicals	Never leave a Monocarrier in close proximity of grease removing organic solvents such as hexane or thinner. Never immerse it in an antirust solvent that contains kerosene.

Note: Other oils, such as water-based and oil based cutting oil, and grease do not cause any problems.

C-1-5. 2 NSK K1™ Lubricant Unit

NSK K1 lubrication unit exhibits outstanding features, confirmed by abundant experimental data, along with proven performance of linear guides and ball screws that are equipped with NSK K1.

(1) High-Speed Durability Test of Linear Guides without Lubricant

Results of high-speed durability testing of a linear guide without lubricant are shown in Fig. 5.2. While the linear guide cannot be operated without lubricant for even short periods without damage, the installation of the NSK K1 permits the linear guide to run over 25 000 km without any problem.

Conditions	Test piece: LH30AN (Preload Z1)
	Speed: 3.3 m/s
	Stroke: 1800 mm
No lubricant	All grease removed
NSK K1	All grease removed + NSK K1

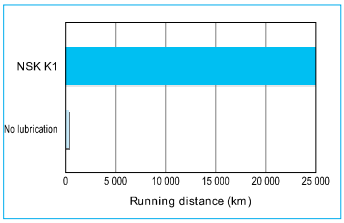

Fig. 5.2 Results of high-speed durability test of linear guides without lubricant

(2) High-Speed Durability Test of Ball Screws without Lubricant

Results of high-speed durability testing of ball screw without lubrication are shown in Fig.5.3. While the ball screw cannot be operated without a lubricant at 8.5 km without damage, the installation of the NSK K1 permits the ball screw to run over 21 000 km without any problem.

Conditions	Test piece: BS2020 (ball screw)
	Shaft diameter: 20 mm
	Lead: 20 mm
	Load: none
	Speed: 1.3 m/s (4 000 min^{-1})
	Stroke: 600 mm
No lubricant	All grease removed
NSK K1	All grease removed + NSK K1

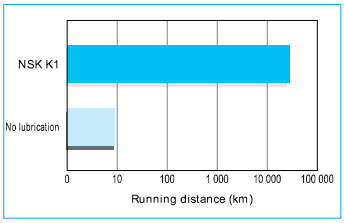

Fig. 5.3 Results of high-speed durability test of ball screws without lubricant

●NSK K1 Lubrication Units for food processing and medical devices are available.

For safety equipment of food processing and medical care, NSK provides the Monocarrier equipped with special NSK K1 Lubrication Unit that is made of materials approved by the FDA. Dimensions are the same as the standard NSK K1 Lubrication Unit, and special handling care is not required.

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C-1-6 NSK Clean Grease LG2 Specification

● **Features**

This grease was developed by NSK to be exclusively used for linear guides and ball screws in clean rooms. Compared to the fluoride grease which are commonly used in clean rooms, LG2 has several advantages such as: higher in lubrication function, longer lubrication life, more stable torque (resistant to wear), and higher rust prevention.
In dust generation, LG2 is more than equal to fluoride grease in keeping dust volume low. Since the base oil is not a special oil but a mineral oil, LG2 can be handled in the same manner as general grease.

● **Applications**

LG2 is lubrication grease for rolling contact machine components such as linear guides and ball screws for processing equipment for semiconductors and LCD which require highly clean environment at normal pressure in normal temperatures. It cannot be used in a vacuum environment.

● **Nature**

Thickener	Lithium soap base
Base oil	Mineral oil + Synthetic hydrocarbon oil
Consistency	207
Dropping point	200°C
Volume of evaporation	1.40% (99°C, 22 hr)
Copper plate corrosion test	Satisfactory (Method B, 100°C, 24 hr)
Oil separation	0.8% (100°C, 24 hr)
Base oil kinematic Viscosity	30 mm²/s (40°C)

C-1-7 Characteristics and Evaluation Method

C-1-7. 1 Positioning Accuracy

Perform successive positioning from the reference position in a specific direction. Measure the difference between the actual and desired travel distances for each point from the reference position. Repeat this measurement seven times to determine the average value. Measure such average value over the entire travel distance at the intervals specified for each model and take the maximum difference of the average values determined at respective positions as the measured value.

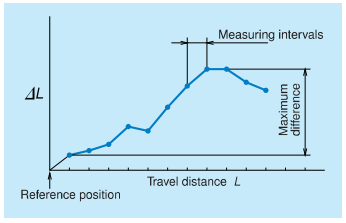


Fig. 7.1

C-1-7. 2 Repeatability

Repeat positioning at any point seven times from the same direction to measure the stopping position and determine one half of the maximum difference of readings. Repeat this measurement over the entire travel distance at the intervals specified for each model. Take the maximum difference of the determined values as the measured value. Express one half of the maximum difference with a plus-or-minus (±) sign.

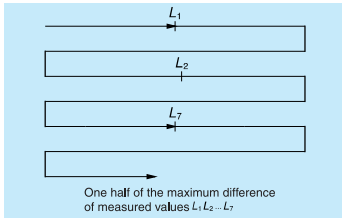


Fig. 7.2

C-1-7. 3 Running Parallelism (Vertical direction)

We specify the parallelism of slider to the datum bottom face of rail. An indicator is fixed on the slider making its stylus slightly touching on the rail bottom surface. The slider is moved in the axial direction for the checking. We define the total indicator reading as the running parallelism. During the checking, the rail is not fixed to the table base. Please be aware that, in general application, the rail is fixed to the machine base, and thus the wobbly rolling error will be added to the running parallelism.

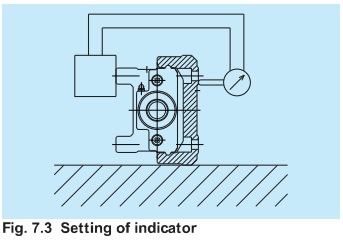


Fig. 7.3 Setting of indicator

C-1-8 Special Specifications

Please consult NSK if your requirement is not in the standard products.

(1) Surface Treatment

- Fluoride low temperature chrome plating

Note: Ball screw parts (including low temperature chrome plating.)

(2) Special Machining (Processing)

①Shaft end processing
- Key way processing
- One flat or two flats processing

②Pin hole processing
- Slider
- Rail

Note: Due to interference with the internal construction, the position of pin hole is limited. Please consult NSK for the pin position.

(3) Motor Bracket and Intermediate Plate for Motor Mounting

- We provide motor mounting brackets and intermediate plates that are not listed in the catalog.
- We assemble motor upon request, if the motor is provided in advance.

Note: Motion check of the motor is unavailable.

(4) Reversed Motor Mount

The reversed motor mount is available. Please consult NSK.

Notes: 1) We don't check motor running condition.
2) Please refer to the bottom of page C77 to 79 for the configuration of reversed motor mounting of the MCH series.

(5) Right and Left Turn Thread

Right and left turn ball screw is available. Please consult NSK for available leads.

(6) Ball-Screw-Less Specification (Only Linear Guide Part)

A ball-screw-less rail part with the same cross section of standard Monocarriers is available for a driven linear guide. It will lessen a height adjustment work compared with a construction with two standard Monocarriers.

Note: Height grinding adjustment of the two axes assembly is not available.

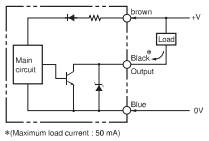
C-1-9 Sensor Specification

C-1-9. 1 Proximity Switch

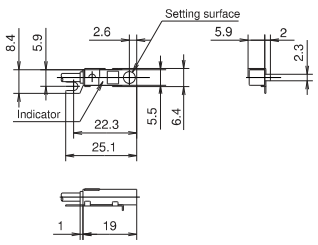
Use of OMRON E2S-W13, E2S-W14

Item	E2S–W13 type	E2S–W14 type
Setting surface	Front face	
Sensing distance	1.6 mm ±15%	
Setting distance	0 to 1.2 mm	
Differential travel	10% max. of sensing distance	
Detectable object type	Ferrous metal	
Standard sensing object	Iron,12 × 12 × 1 mm	
Response frequency	1 kHz min.	
Power supply voltage (operating voltage range)	12 to 24 VDC; ripple (p-p), 10% max (10 to 30 VDC)	
Current consumption	13 mA max. at 24 VDC with no load	
Control output (Switching Capacity)	NPN open collector output, 50 mA max. (30 VDC max.)	
Control output (Residual voltage)	1.0 V max. with a load current of 50 mA and a cable length of 1 m	
Indicator	Operation indicator (orange)	
Operating status (with sensing object approaching)	NO (a-contact)	NC (b-contact)
Wire lead length	1000 mm	

Notes: 1) Do not make a wrong connection.
2) Please contact NSK for PNP output type.

Movement mode	Output type	Type	Time chart	Output circuit
NO	NPN	E2S-W13 type		
NC		E2S-W14 type		

E2S-W13 (a-contact)
E2S-W14 (b-contact)
The external appearances are the same.
A connector is mounted to the sensor in the right figure.

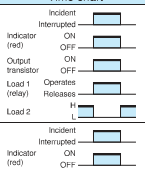
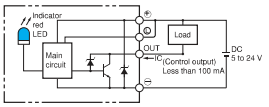
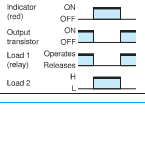


C-1-9. 2 Photo Sensor

Use of OMRON EE-SX674

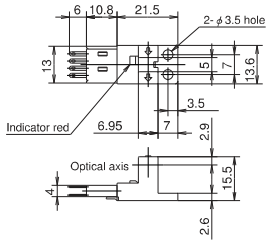
Item	EE-SX674 type
Slot width	5 mm
Standard reference object	Opaque, 2 × 0.8 mm
Differential distance	0.025 mm
Light source	GaAs infrared LED with a peak wavelength of 940 nm
Indicator(Without detecting object)	ON GaP red LED (peak emission wavelength, 690 nm)
Supply voltage	5 to 24 VDC ±10%; ripple (p-p), 10% max.
Current consumption	35 mA max.
Control output	NPN open collector output models, At 5 to 24 VDC, 100 mA load current
Response frequency	1 kHz max. (3 kHz typ.)
Ambient illumination	Fluorescent light, 1 000 lx max.
Ambient temperature	Operating, -25°C to 55°C (-13°F to 131°F); Storage, -30°C to 80°C (-22°F to 176°F)
Ambient humidity	Operating, 5 to 85% RH; Storage, 5 to 95% RH
Connecting method	EE-1001/1006 Connectors, soldering terminals

Notes: 1) Do not make a wrong connection.
2) Please contact NSK for PNP output type.

Type	Movement mode	Time chart	Connection terminal	Output circuit
EE-SX674 type	Light-ON		When terminals L and ⊕ are short circuited	
	Dark-ON		When terminals L and ⊕ are open circuited	

EE-SX674 (Sensor)
EE-1001 (Connector)

A connector is mounted to the sensor in the right figure.



C 22

MCM Series

C-2 MCM Series

C-2-1 MCM Series Reference Number Coding

[Body]

Reference number : MC M 08 040 H 10 K 0 0

- MC: Monocarrier
- M: M type: MCM Series
- 08: Nominal size (rail width, Unit: 10 mm)
- 040: Stroke (Unit: 10 mm)
- H: Accuracy grade (H, High grade; P, Precision grade)
- 10: Ball screw lead (mm)
- K: Slider specification K: Single slider (See page C9) D: Double slider
- 0: Grease specification: 0 (standard AS2)
- 0: Clean grease specification: B (LG2)
- NSK management number

[With Option part]

Reference number : MC E 08 040 H 10 K 0 0 K 0 0 0

- E: With MCM option part
- K: NSK management number
- 0: Sensor unit
- 0: Cover unit
- 0: Motor bracket

Note : Optional components are available separately.

Table 1 Sensor unit (See page C37)

Reference number code	Specification	Reference number
0	N/A	—
1	Proximity switch (b-contact 3 pieces)	MC – SRxx – 10
2	Proximity switch (a-contact 3 pieces)	MC – SRxx – 11
3	Proximity switch (a-contact 1 pieces, b-contact 2 pieces)	MC – SRxx – 12
4	Photo sensor 3 pieces	MC – SRxx – 13

xx: Reference number
Note: Sensor rail is not included in a sensor unit. If you require the rail, please request separately. (See page C38 to 40.)

Table 2 Cover unit (See page C41 – 42)

Reference number code	Specification	Reference number
0	N/A	—
1	With top cover	MC – CVxxxxx – 01 (02) ✻
2	Full cover	MC – CVxxxxx – 00

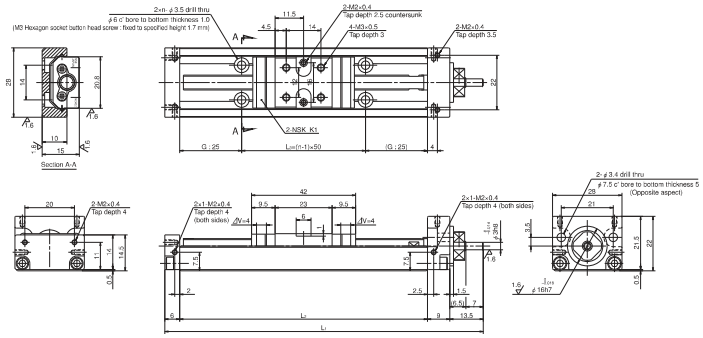
xxxxx: Reference number and stroke number
✻: Monocarrier "-02" is only used for MCM03
Note: When a sensor unit is used, the full cover unit cannot be used.

Table 3 The reference number of motor bracket (See page C43 – 58)

Reference number code	Reference number				
	MCM03	MCM05	MCM06	MCM08	MCM10
0	N/A	N/A	N/A	N/A	N/A
1	MC-BK03-146-00	MC-BK05-145-00	MC-BK06-145-00	MC-BK08-145-00	MC-BK10-170-00
2	MC-BK03-148-01	MC-BK05-146-00	MC-BK06-146-00	MC-BK08-146-00	MC-BK10-170-01
3	MC-BK03-231-00	MC-BK05-148-00	MC-BK06-148-00	MC-BK08-160-00	MC-BK10-190-00
4	—	MC-BK05-160-00	MC-BK06-160-00	MC-BK08-170-00	MC-BK10-270-00
5	—	MC-BK05-250-00	MC-BK06-170-00	MC-BK08-170-01	—
6	—	—	MC-BK06-170-01	MC-BK08-190-00	—
7	—	—	MC-BK06-250-00	MC-BK08-250-00	—
8	—	—	—	MC-BK08-270-00	—

C-2-2 MCM Series Dimension Table of Standard Products

MCM02



Dimension of MCM02 (Single slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit (mm)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia ×10⁻⁷ (kg·m²)	Mass (kg)
MCM02005H01K	50	58	1	128.5	100	50	2	0.93	0.26
MCM02005P01K									
MCM02005H02K			2						
MCM02005P02K									
MCM02010H01K	100	108	1	178.5	150	100	3	1.36	0.32
MCM02010P01K									
MCM02010H02K			2						
MCM02010P02K									
MCM02015H01K	150	158	1	228.5	200	150	4	1.81	0.39
MCM02015P01K									
MCM02015H02K			2						
MCM02015P02K									

Note: Items not marked are available from standard stock.

Monocarrier dynamic torque specification (N · cm)

Ball screw lead (mm)	High grade	Precision
1	0.1 – 1.3	0.2 – 1.6
2		

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (4 [margin] × 2)

Basic load rating

Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
1	φ6	340 (High grade) 405 (Precision)	4910	615	1	555 (High grade) 615 (Precision)	2120	490
2		340 (High grade) 405 (Precision)	3900		2	555 (High grade) 615 (Precision)		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	24	8	8

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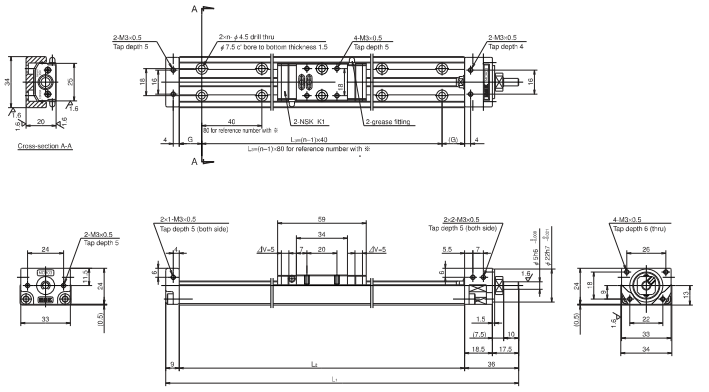
MCM03

Accuracy grade: Precision (P)

Ball screw lead 1 and 2



Dimension of MCM03 (Single slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	G	L_3	No. of mounting hole n	Inertia $\times 10^{-5}$ (kg · m²)	Mass (kg)
※MCM03005P01K00	50	56	1	160	115	17.5	80	2	0.015	0.6
※MCM03005P02K00		(66)	2						0.016	
MCM03010P01K00	100	131	1	235	190	15	160	5	0.021	0.7
MCM03010P02K00		(141)	2						0.022	
☆ MCM03015P01K00	150	181	1	285	240	20	200	6	0.025	0.8
☆ MCM03015P02K00		(191)	2						0.026	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Bolt hole pitch L_3 on the items marked with ※ is 80 mm.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	1	0.2 – 1.7
	2	

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Optional spacer is required, when using a cover unit, sensor unit or the both together in ball screw lead of 1 and 2 mm (See page C41).
5. Stroke limit = stroke + (3 [margin] × 2)

Basic load rating

Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_s (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
1	φ6	735	10900	2670	1	1230	4900	1040
2		735	8650		2			

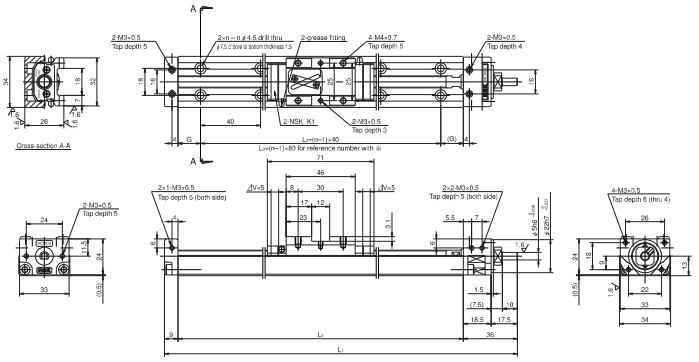
Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	68	28	28

MCM03

Accuracy grade: High grade (H)

Ball screw lead 10 and 12



Dimension of MCM03 (Single slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	G	L_3	No. of mounting hole n	Inertia $\times 10^{-5}$ (kg · m²)	Mass (kg)
☆※MCM03005H10K00	50	69	10	185	140	30	80	2	0.080	0.6
☆※MCM03005H12K00		(79)	12						0.097	
MCM03010H10K00	100	119	10	235	190	15	160	5	0.092	0.7
MCM03010H12K00		(129)	12						0.109	
☆ MCM03015H10K00	150	169	10	285	240	20	200	6	0.105	0.8
☆ MCM03015H12K00		(179)	12						0.122	
MCM03020H10K00	200	219	10	335	290	25	240	7	0.118	0.9
☆ MCM03020H12K00		(229)	12						0.135	
☆ MCM03025H10K00	250	269	10	385	340	30	280	8	0.131	1.0
☆ MCM03025H12K00		(279)	12						0.147	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Bolt hole pitch L_3 on the items marked with ※ is 80 mm.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	10	0.3 – 3.0
	12	

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (9.5 [margin] × 2)

Basic load rating

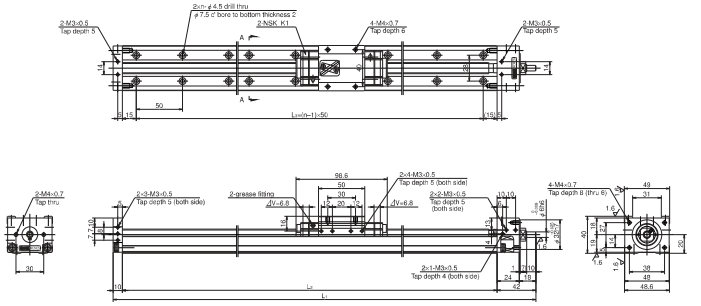
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_s (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
10	φ8	1230	6250	2670	10	1690	6620	1040
12		1230	5880		12			

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	92	51	51

MCM05

Accuracy grade: High grade (H)



Dimension of MCM05 (Single slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia $\times 10^{-4}$ (kg · m²)	Mass (kg)
MCM05005H05K00	50	80 (95)	5	232	180	150	4	0.025	1.4
MCM05005H10K00			10					0.035	
☆ MCM05005H20K00			20					0.073	
MCM05010H05K00	100	130 (145)	5	282	230	200	5	0.031	1.6
MCM05010H10K00			10					0.040	
☆ MCM05010H20K00			20					0.078	
☆ MCM05015H05K00	150	180 (195)	5	332	280	250	6	0.036	1.8
MCM05015H10K00			10					0.046	
☆ MCM05015H20K00			20					0.064	
MCM05020H05K00	200	230 (245)	5	382	330	300	7	0.042	2.0
MCM05020H10K00			10					0.051	
☆ MCM05020H20K00			20					0.089	
☆ MCM05025H05K00	250	280 (295)	5	432	380	350	8	0.047	2.2
MCM05025H10K00			10					0.057	
☆ MCM05025H20K00			20					0.095	
☆ MCM05030H05K00	300	330 (345)	5	482	430	400	9	0.053	2.3
MCM05030H10K00			10					0.063	
MCM05030H20K00			20					0.101	
☆ MCM05040H05K00	400	430 (445)	5	582	530	500	11	0.064	2.7
MCM05040H10K00			10					0.074	
MCM05040H20K00			20					0.112	
☆ MCM05050H05K00	500	530 (545)	5	682	630	600	13	0.076	3.1
MCM05050H10K00			10					0.085	
MCM05050H20K00			20					0.123	
☆ MCM05060H05K00	600	630 (645)	5	782	730	700	15	0.087	3.5
MCM05060H10K00			10					0.096	
MCM05060H20K00			20					0.134	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	5	1.0 – 4.8
	10	1.1 – 5.8
	20	1.6 – 7.9

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (15 [margin] × 2)

Basic load rating

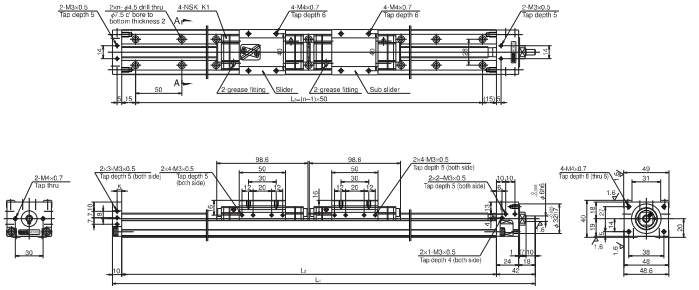
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	ϕ12	3760	15600	4400	5	6310	10900	1450
10		2260	12400		10	3780		
20		2260	9850		20	3780		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	229	89	89

MCM05 (Double slider)

Accuracy grade: High grade (H)



Dimension of MCM05 (Double slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia $\times 10^{-4}$ (kg · m²)	Mass (kg)
☆MCM05006H10D00	60	83 (110)	10	332	280	250	6	0.058	2.3
☆MCM05011H10D00	110	133 (160)	10	382	330	300	7	0.064	2.5
☆MCM05016H10D00	160	183 (210)	10	432	380	350	8	0.070	2.7
☆MCM05021H10D00	210	233 (260)	10	482	430	400	9	0.075	2.8
☆MCM05021H20D00			20					0.151	
☆MCM05031H10D00	310	333 (360)	10	582	530	500	11	0.086	3.2
☆MCM05031H20D00			20					0.162	
☆MCM05041H10D00	410	433 (460)	10	682	630	600	13	0.098	3.6
☆MCM05041H20D00			20					0.174	
☆MCM05051H10D00	510	533 (560)	10	782	730	700	15	0.109	4.2
☆MCM05051H20D00			20					0.185	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	10	1.5 – 7.6
	20	2.3 – 11.8

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (11.4 [margin] × 2)

Basic load rating

Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	ϕ12	3760	15600	4400	5	6310	10900	1450
10		2260	12400		10	3780		
20		2260	9850		20	3780		

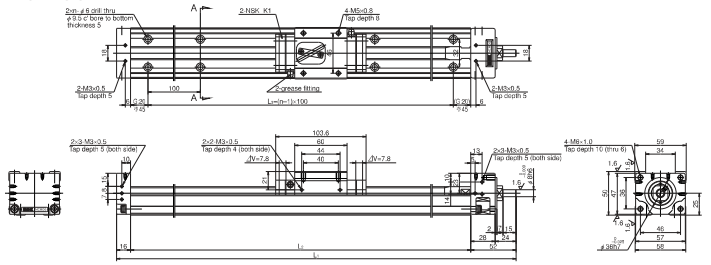
Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Double	455	765	765

C 30

MCM06

Accuracy grade: High grade (H)



Dimension of MCM06 (Single slider) ΔV is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia $\times 10^{-4}$ (kg · m²)	Mass (kg)
※MCM06005H05K00	50	85 (102)	5	258	190	100	2	0.083	2.7
☆※MCM06005H10K00			10					0.077	
☆※MCM06005H20K00			20					0.122	
MCM06010H05K00	100	135 (152)	5	308	240	200	3	0.103	3.0
MCM06010H10K00			10					0.092	
☆ MCM06010H20K00			20					0.137	
☆※MCM06015H05K00	150	185 (202)	5	358	290	200	3	0.122	3.5
☆※MCM06015H10K00			10					0.106	
☆※MCM06015H20K00			20					0.152	
MCM06020H05K00	200	235 (252)	5	408	340	300	4	0.142	3.8
MCM06020H10K00			10					0.121	
☆ MCM06020H20K00			20					0.167	
☆※MCM06025H05K00	250	285 (302)	5	458	390	300	4	0.161	4.2
☆※MCM06025H10K00			10					0.136	
☆※MCM06025H20K00			20					0.181	
MCM06030H05K00	300	335 (352)	5	508	440	400	5	0.180	4.5
MCM06030H10K00			10					0.150	
MCM06030H20K00			20					0.196	
MCM06040H05K00	400	435 (452)	5	608	540	500	6	0.219	5.2
MCM06040H10K00			10					0.180	
MCM06040H20K00			20					0.225	
☆ MCM06050H05K00	500	535 (552)	5	708	640	600	7	0.258	6.0
MCM06050H10K00			10					0.209	
MCM06050H20K00			20					0.255	
☆ MCM06060H05K00	600	635 (652)	5	808	740	700	8	0.297	6.7
☆ MCM06060H10K00			10					0.239	
☆ MCM06060H20K00			20					0.284	
☆ MCM06070H05K00	700	735 (752)	5	908	840	800	9	0.335	7.4
MCM06070H10K00			10					0.268	
MCM06070H20K00			20					0.314	
☆ MCM06080H05K00	800	835 (852)	5	1008	940	900	10	0.374	8.1
☆ MCM06080H10K00			10					0.298	
☆ MCM06080H20K00			20					0.343	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Dimension G is 45 for those marked with ※.

Monocarrier dynamic torque specification (N · cm)

Ball screw lead (mm)		
	5	1.9 – 7.4
	10	2.2 – 8.6
	20	2.8 – 11.0

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (17.5 [margin] × 2)

Basic load rating

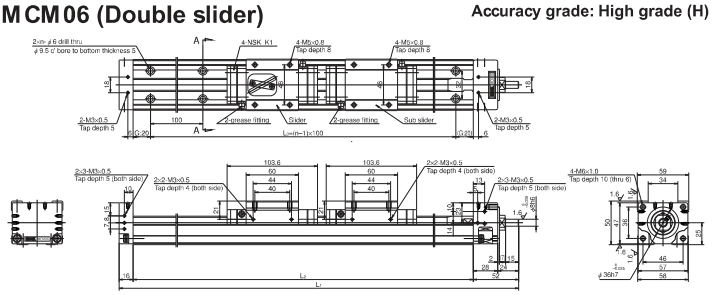
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	φ16	7310	25200	6550	5	13500	17000	2730
10	φ15	7060	20000		10	12700		
20		4560	15900		20	7750		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	415	174	174

MCM06 (Double slider)

Accuracy grade: High grade (H)



Dimension of MCM06 (Double slider) ΔV is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia $\times 10^{-4}$ (kg · m²)	Mass (kg)
☆MCM06011H05D00	110	133 (164)	5	408	340	300	4	0.145	4.4
☆MCM06011H10D00			10					0.136	
☆MCM06021H05D00	210	233 (264)	5	508	440	400	5	0.184	5.1
☆MCM06021H10D00			10					0.166	
☆MCM06021H20D00			20					0.257	
☆MCM06031H05D00	310	333 (364)	5	608	540	500	6	0.223	5.8
☆MCM06031H10D00			10					0.195	
☆MCM06031H20D00			20					0.286	
☆MCM06041H05D00	410	433 (464)	5	708	640	600	7	0.262	6.6
☆MCM06041H10D00			10					0.224	
☆MCM06041H20D00			20					0.316	
☆MCM06051H10D00	510	533 (564)	10	808	740	700	8	0.254	7.3
☆MCM06051H20D00			20					0.345	
☆MCM06061H10D00	610	633 (664)	10	908	840	800	9	0.283	8.0
☆MCM06061H20D00			20					0.375	
☆MCM06071H10D00	710	733 (764)	10	1008	940	900	10	0.313	8.7
☆MCM06071H20D00			20					0.404	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.

Monocarrier dynamic torque specification (N · cm)

Ball screw lead (mm)		
	5	2.3 – 8.5
	10	2.7 – 10.9
	20	4.0 – 15.9

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (11.4 [margin] × 2)

Basic load rating

Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	φ16	7310	25200	6550	5	13500	17000	2730
10	φ15	7060	20000		10	12700		
20		4560	15900		20	7750		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Double	825	1220	1220

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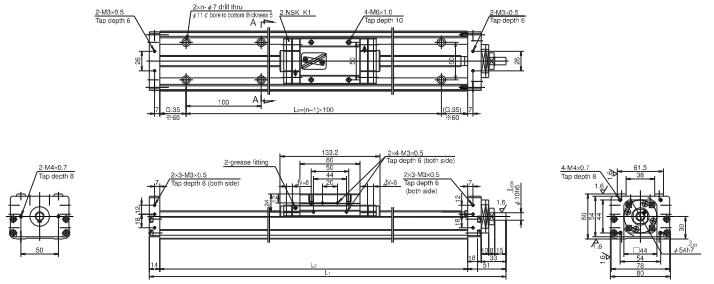
MCM08

Accuracy grade: High grade (H)



Dimension of MCM08 (Single slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia $\times 10^{-4}$ (kg · m^2)	Mass (kg)
☆※MCM08005H05K00	50	85 (101)	5	285	220	100	2	0.101	4.1
☆※MCM08005H10K00			10					0.100	
☆ MCM08010H05K00	100	135 (151)	5	335	270	200	3	0.120	4.6
MCM08010H10K00			10					0.114	
☆ MCM08010H20K00			20					0.190	
☆※MCM08015H05K00	150	185 (201)	5	385	320	200	3	0.139	5.1
☆※MCM08015H10K00			10					0.129	
☆※MCM08015H20K00			20					0.205	
☆ MCM08020H05K00	200	235 (251)	5	435	370	300	4	0.159	5.5
MCM08020H10K00			10					0.144	
☆ MCM08020H20K00			20					0.220	
☆※MCM08025H05K00	250	285 (301)	5	485	420	300	4	0.178	6.0
☆※MCM08025H10K00			10					0.159	
☆※MCM08025H20K00			20					0.235	
☆ MCM08030H05K00	300	335 (351)	5	535	470	400	5	0.198	6.5
MCM08030H10K00			10					0.173	
MCM08030H20K00			20					0.249	
☆ MCM08040H05K00	400	435 (451)	5	635	570	500	6	0.236	7.4
MCM08040H10K00			10					0.203	
MCM08040H20K00			20					0.279	
☆ MCM08050H05K00	500	535 (551)	5	735	670	600	7	0.275	8.4
MCM08050H10K00			10					0.232	
MCM08050H20K00			20					0.308	
☆ MCM08060H05K00	600	635 (651)	5	835	770	700	8	0.314	9.3
MCM08060H10K00			10					0.262	
☆ MCM08060H20K00			20					0.338	
☆ MCM08070H05K00	700	735 (751)	5	935	870	800	9	0.353	10.5
☆ MCM08070H10K00			10					0.291	
☆ MCM08070H20K00			20					0.367	
☆ MCM08080H05K00	800	835 (851)	5	1035	970	900	10	0.391	11.2
☆ MCM08080H10K00			10					0.320	
☆ MCM08080H20K00			20					0.396	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Dimension G is 60 for those marked with ※.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	5	1.0 – 5.9
	10	2.0 – 7.8
	20	2.5 – 10.8

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (17.5 [margin] × 2)

Basic load rating

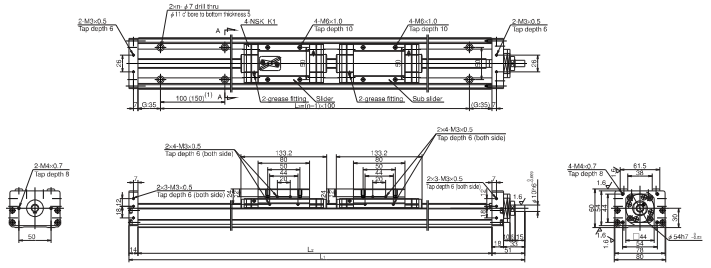
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	φ16	7310	30800	7100	5	13500	22800	3040
10	φ15	7060	24400		10	12700		
20		4560	19400		20	7750		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	770	300	300

MCM08 (Double slider)

Accuracy grade: High grade (H)



Dimension of MCM08 (Double slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia $\times 10^{-4}$ (kg · m^2)	Mass (kg)
☆※MCM08008H10D00	80	104 (136)	10	435	370	300	3	0.169	6.5
☆ MCM08018H10D00	180	204 (236)	10	535	470	400	5	0.199	7.5
☆ MCM08018H20D00			20					0.351	
☆ MCM08028H10D00	280	304 (336)	10	635	570	500	6	0.228	8.4
☆ MCM08028H20D00			20					0.380	
☆ MCM08038H10D00	380	404 (436)	10	735	670	600	7	0.257	9.4
☆ MCM08038H20D00			20					0.409	
☆ MCM08048H10D00	480	504 (536)	10	835	770	700	8	0.287	10.3
☆ MCM08048H20D00			20					0.439	
☆ MCM08058H10D00	580	604 (636)	10	935	870	800	9	0.316	11.5
☆ MCM08058H20D00			20					0.468	
☆ MCM08068H10D00	680	704 (736)	10	1035	970	900	10	0.346	12.2
☆ MCM08068H20D00			20					0.498	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Dimension (1) is 150mm for those marked with ※.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	10	2.5 – 10.8
	20	4.0 – 17.2

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (11.8 [margin] × 2)

Basic load rating

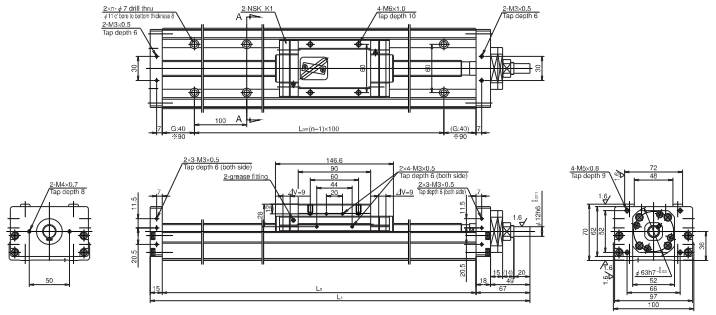
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	φ16	7310	30800	7100	5	13500	22800	3040
10	φ15	7060	24400		10	12700		
20		4560	19400		20	7750		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Double	1540	2050	2050

MCM10

Accuracy grade: High grade (H)



Dimension of MCM10 (Single slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia $\times 10^{-4}$ (kg · m²)	Mass (kg)
☆ MCM10010H10K00	100	130 (151)	10	362	280	200	3	0.332	7.8
☆ MCM10010H20K00			20					0.446	
☆◇MCM10015H10K00	150	180 (201)	10	412	330	300	4	0.378	8.7
☆◇MCM10015H20K00			20					0.492	
MCM10020H10K00	200	230 (251)	10	462	380	300	4	0.425	9.5
☆ MCM10020H20K00			20					0.539	
☆◇MCM10025H10K00	250	280 (301)	10	512	430	400	5	0.472	10.4
☆◇MCM10025H20K00			20					0.586	
MCM10030H10K00	300	330 (351)	10	562	480	400	5	0.519	11.2
MCM10030H20K00			20					0.633	
MCM10040H10K00	400	430 (451)	10	662	580	500	6	0.612	13.0
MCM10040H20K00			20					0.726	
☆ MCM10050H10K00	500	530 (551)	10	762	680	600	7	0.706	14.6
☆ MCM10050H20K00			20					0.820	
MCM10060H10K00	600	630 (651)	10	862	780	700	8	0.800	16.3
☆ MCM10060H20K00			20					0.914	
☆ MCM10070H10K00	700	730 (751)	10	962	880	800	9	0.893	18.0
☆ MCM10070H20K00			20					1.007	
MCM10080H10K00	800	830 (851)	10	1062	980	900	10	0.987	19.7
☆ MCM10080H20K00			20					1.101	
☆ MCM10090H10K00	900	930 (951)	10	1162	1080	1000	11	1.081	21.4
☆ MCM10090H20K00			20					1.195	
☆※MCM10100H10K00	1000	1030 (1051)	10	1262	1180	1000	11	1.174	23.1
☆※MCM10100H20K00			20					1.288	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Dimension G is 90 for those marked with ※.
4. Dimension G is 15 for those marked with ◇.

Monocarrier dynamic torque specification (N · cm)

Ball screw lead (mm)		
	10	2.7 – 10.8
	20	3.1 – 12.7

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (15 [margin] × 2)

Basic load rating

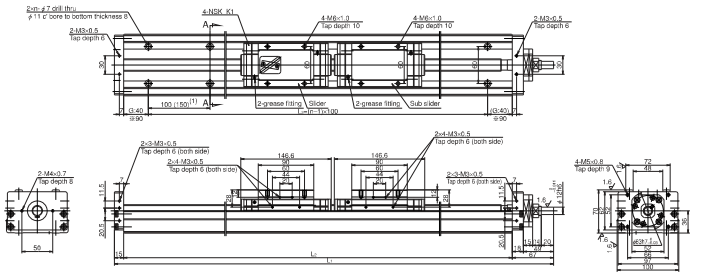
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
10	φ20	10900	33500	7600	10	21700	29400	3380
20		7060	26600		20	12700		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	1170	425	425

MCM10 (Double slider)

Accuracy grade: High grade (H)



Dimension of MCM10 (Double slider) ⊿V is thickness of NSK K1

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	No. of mounting hole n	Inertia $\times 10^{-4}$ (kg · m²)	Mass (kg)
☆◇MCM10007H10D00	70	86 (122)	10	462	380	300	3	0.463	11.0
☆ MCM10017H10D00	170	186 (222)	10	562	480	400	5	0.557	12.7
☆ MCM10017H20D00			20					0.785	
☆ MCM10027H10D00	270	286 (322)	10	662	580	500	6	0.650	13.4
☆ MCM10027H20D00			20					0.878	
☆ MCM10037H10D00	370	386 (422)	10	762	680	600	7	0.744	15.1
☆ MCM10037H20D00			20					0.972	
☆ MCM10047H10D00	470	486 (522)	10	862	780	700	8	0.838	17.8
☆ MCM10047H20D00			20					1.066	
☆ MCM10057H10D00	570	586 (622)	10	962	880	800	9	0.931	19.5
☆ MCM10057H20D00			20					1.159	
☆ MCM10067H10D00	670	686 (722)	10	1062	980	900	10	1.025	21.2
☆ MCM10067H20D00			20					1.253	
☆※MCM10087H10D00	870	886 (922)	10	1262	1180	1000	11	1.212	23.6
☆※MCM10087H20D00			20					1.440	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Dimension G is 90 for those marked with ※.
4. Dimension (1) is 150mm for those marked with ◇.

Monocarrier dynamic torque specification (N · cm)

Ball screw lead (mm)		
	10	4.2 – 15.6
	20	5.0 – 19.6

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.
4. Stroke limit = stroke + (8.4 [margin] × 2)

Basic load rating

Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
10	φ20	10900	33500	7600	10	21700	29400	3380
20		7060	26600		20	12700		

Basic static moment load of linear guide

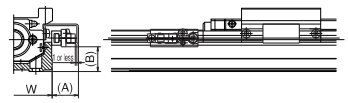
Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Double	2340	2940	2940

C-2-3 MCM Series Option Part

C-2-3. 1 Sensor Unit

Standard stock

●Proximity switch



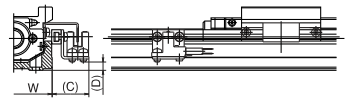
(Example of assembly)

Type		Reference number			Dimension (A) (mm)	Dimension (B) (mm)	Body width W (mm)
MCM02		MC-SR02-00	MC-SR02-01	MC-SR02-02	17	2	28
MCM03		MC-SR03-10	MC-SR03-11	MC-SR03-12	17	3	34
MCM05		MC-SR05-10	MC-SR05-11	MC-SR05-12	17	15	48.6
MCM06		MC-SR06-10	MC-SR06-11	MC-SR06-12	17	19	58
MCM08		MC-SR08-10	MC-SR08-11	MC-SR08-12	16	27	80
MCM10		MC-SR10-10	MC-SR10-11	MC-SR10-12	16	35	100
Quantity	Proximity switch (a-contact)	—	3	1	E2S-W13 (OMRON Corp.)		
	Proximity switch (b-contact)	3	—	2	E2S-W14 (OMRON Corp.)		

Note: 1. See page C21 for specification of proximity switch. 2. A sensor unit consists of sensors, a sensor dog and sensor mounting parts.

You require an optional spacer plate when you use a cover unit or a sensor unit for an MCM03 with the lead of 1 or 2 mm. (Refer to page C41.)

●Photo sensor



(Example of assembly)

Type	Reference number	Dimension (C) (mm)	Dimension (D) (mm)	Body width W (mm)	Remarks
MCM03	MC-SR03-13	24	0.5	34	
MCM05	MC-SR05-13	24	5	48.6	EE-SX674 (OMRON Corp.)
MCM06	MC-SR06-13	24	9	58	3 sets
MCM08	MC-SR08-13	23	17	80	(EE-1001 connector attachment)
MCM10	MC-SR10-13	22	24	100	

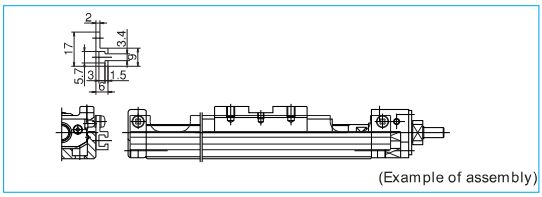
Note: 1. See page C22 for specification of photo sensor. 2. A sensor unit consists of sensors, a sensor dog and sensor mounting parts.

You require an optional spacer plate when you use a cover unit or a sensor unit for an MCM03 with the lead of 1 or 2 mm. (Refer to page C41.)

(1) Sensor Rail

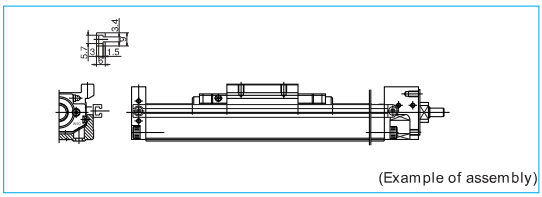
Standard stock

Sensor rail for MCM03: MC-SRL3-＊＊＊＊



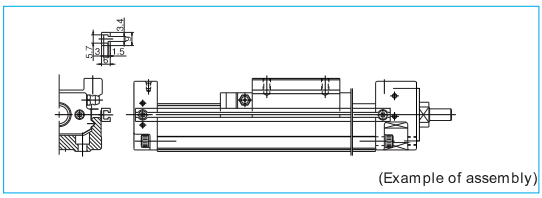
(Example of assembly)

Sensor rail for MCM05: MC-SRL5-＊＊＊＊



(Example of assembly)

Sensor rail for MCM02: MC-SRL2-＊＊＊＊
Sensor rail for MCM06: MC-SRL6-＊＊＊＊
Sensor rail for MCM08: MC-SRL8-＊＊＊＊
Sensor rail for MCM10: MC-SRL1-＊＊＊＊



(Example of assembly)

＊＊＊＊ is the same as rail dimension L_2

Please place and assemble the seat during the attachment of the sensor rail and the support unit attaching part for MCM03, MCM05, MCM06 and MCM08.

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Body of MCM Series and Sensor Rail Combination Table

Table 4

Nominal size	Body length L_2 (mm)	Reference number	Sensor rail reference number
MCM02	100	MCM02005H01K MCM02005P01K MCM02005H02K MCM02005P02K	MC-SRL2-0100
	150	MCM02010H01K MCM02010P01K MCM02010H02K MCM02010P02K	MC-SRL2-0150
	200	MCM02015H01K MCM02015P01K MCM02015H02K MCM02015P02K	MC-SRL2-0200
MCM03	115	MCM03005P01K00 MCM03005P02K00	MC-SRL3-0115
	140	MCM03005H10K00 MCM03005H12K00	MC-SRL3-0140
	190	MCM03010P01K00 MCM03010P02K00 MCM03010H10K00 MCM03010H12K00	MC-SRL3-0190
	240	MCM03015P01K00 MCM03015P02K00 MCM03015H10K00 MCM03015H12K00	MC-SRL3-0240
	290	MCM03020H10K00 MCM03020H12K00	MC-SRL3-0290
	340	MCM03025H10K00 MCM03025H12K00	MC-SRL3-0340
MCM05	180	MCM05005H05K00 MCM05005H10K00 MCM05005H20K00	MC-SRL5-0180
	230	MCM05010H05K00 MCM05010H10K00 MCM05010H20K00	MC-SRL5-0230
	280	MCM05015H05K00 MCM05015H10K00 MCM05015H20K00 MCM05006H10D00	MC-SRL5-0280
	330	MCM05020H05K00 MCM05020H10K00 MCM05020H20K00 MCM05011H10D00	MC-SRL5-0330
	380	MCM05025H05K00 MCM05025H10K00 MCM05025H20K00 MCM05016H10D00	MC-SRL5-0380
	430	MCM05030H05K00 MCM05030H10K00 MCM05030H20K00 MCM05021H10D00 MCM05021H20D00	MC-SRL5-0430
	530	MCM05040H05K00 MCM05040H10K00 MCM05040H20K00 MCM05031H10D00 MCM05031H20D00	MC-SRL5-0530
	630	MCM05050H05K00 MCM05050H10K00 MCM05050H20K00 MCM05041H10D00 MCM05041H20D00	MC-SRL5-0630
	730	MCM05060H05K00 MCM05060H10K00 MCM05060H20K00 MCM05051H10D00 MCM05051H20D00	MC-SRL5-0730
MCM06	190	MCM06005H05K00 MCM06005H10K00 MCM06005H20K00	MC-SRL6-0190
	240	MCM06010H05K00 MCM06010H10K00 MCM06010H20K00	MC-SRL6-0240
	290	MCM06015H05K00 MCM06015H10K00 MCM06015H20K00	MC-SRL6-0290
	340	MCM06020H05K00 MCM06020H10K00 MCM06020H20D00 MCM06011H05D00 MCM06011H10D00	MC-SRL6-0340
	390	MCM06025H05K00 MCM06025H10K00 MCM06025H20K00	MC-SRL6-0390
	440	MCM06030H05K00 MCM06030H10K00 MCM06030H20K00 MCM06021H05D00 MCM06021H10D00 MCM06021H20D00	MC-SRL6-0440
	540	MCM06040H05K00 MCM06040H10K00 MCM06040H20K00 MCM06031H05D00 MCM06031H10D00 MCM06031H20D00	MC-SRL6-0540
	640	MCM06050H05K00 MCM06050H10K00 MCM06050H20K00 MCM06041H05D00 MCM06041H10D00 MCM06041H20D00	MC-SRL6-0640
	740	MCM06060H05K00 MCM06060H10K00 MCM06060H20K00 MCM06051H10D00 MCM06051H20D00	MC-SRL6-0740
	840	MCM06070H05K00 MCM06070H10K00 MCM06070H20K00 MCM06061H10D00 MCM06061H20D00	MC-SRL6-0840
	940	MCM06080H05K00 MCM06080H10K00 MCM06080H20K00 MCM06071H10D00 MCM06071H20D00	MC-SRL6-0940

Nominal size	Body length L_2 (mm)	Reference number	Sensor rail reference number
MCM08	220	MCM08005H05K00 MCM08005H10K00	MC-SRL8-0220
	270	MCM08010H05K00 MCM08010H10K00 MCM08010H20K00	MC-SRL8-0270
	320	MCM08015H05K00 MCM08015H10K00 MCM08015H20K00	MC-SRL8-0320
	370	MCM08020H05K00 MCM08020H10K00 MCM08020H20K00 MCM08008H10D00	MC-SRL8-0370
	420	MCM08025H05K00 MCM08025H10K00 MCM08025H20K00	MC-SRL8-0420
	470	MCM08030H05K00 MCM08030H10K00 MCM08030H20K00 MCM08018H10D00 MCM08018H20D00	MC-SRL8-0470
	570	MCM08040H05K00 MCM08040H10K00 MCM08040H20K00 MCM08028H10D00 MCM08028H20D00	MC-SRL8-0570
	670	MCM08050H05K00 MCM08050H10K00 MCM08050H20K00 MCM08038H10D00 MCM08038H20D00	MC-SRL8-0670
	770	MCM08060H05K00 MCM08060H10K00 MCM08060H20K00 MCM08048H10D00 MCM08048H20D00	MC-SRL8-0770
	870	MCM08070H05K00 MCM08070H10K00 MCM08070H20K00 MCM08058H10D00 MCM08058H20D00	MC-SRL8-0870
	970	MCM08080H05K00 MCM08080H10K00 MCM08080H20K00 MCM08068H10D00 MCM08068H20D00	MC-SRL8-0970

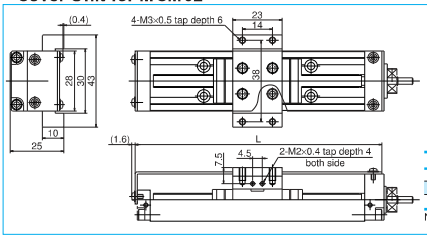
Nominal size	Body length L_2 (mm)	Reference number	Sensor rail reference number
MCM10	280	MCM10010H10K00 MCM10010H20K00	MC-SRL1-0280
	330	MCM10015H10K00 MCM10015H20K00	MC-SRL1-0330
	380	MCM10020H10K00 MCM10020H20K00 MCM10007H10D00	MC-SRL1-0380
	430	MCM10025H10K00 MCM10025H20K00	MC-SRL1-0430
	480	MCM10030H10K00 MCM10030H20K00 MCM10017H10D00 MCM10017H20D00	MC-SRL1-0480
	580	MCM10040H10K00 MCM10040H20K00 MCM10027H10D00 MCM10027H20D00	MC-SRL1-0580
	680	MCM10050H10K00 MCM10050H20K00 MCM10037H10D00 MCM10037H20D00	MC-SRL1-0680
	780	MCM10060H10K00 MCM10060H20K00 MCM10047H10D00 MCM10047H20D00	MC-SRL1-0780
	880	MCM10070H10K00 MCM10070H20K00 MCM10057H10D00 MCM10057H20D00	MC-SRL1-0880
	980	MCM10080H10K00 MCM10080H20K00 MCM10067H10D00 MCM10067H20D00	MC-SRL1-0980
	1080	MCM10090H10K00 MCM10090H20K00	MC-SRL1-1080
	1180	MCM10100H10K00 MCM10100H20K00 MCM10087H10D00 MCM10087H20D00	MC-SRL1-1180

C 40

C-2-3. 2 Cover Unit

Standard stock

Cover Unit for MCM02



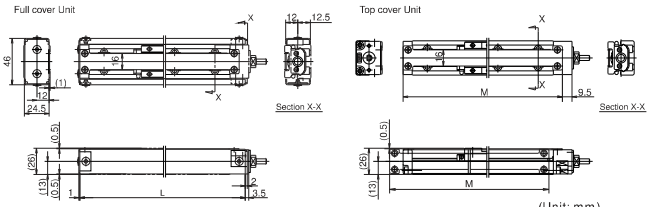
(Unit: mm)

Stroke	Reference number	Length(*L*)
50	**MC-CV02005-00**	115
100	**MC-CV02010-00**	165
150	**MC-CV02015-00**	215

Note: Height of screw head is not included.

Cover Unit for MCM03

· Optional spacer (MC-SP03-00) is required for a main unit with ball screw lead of 1 and 2 mm.

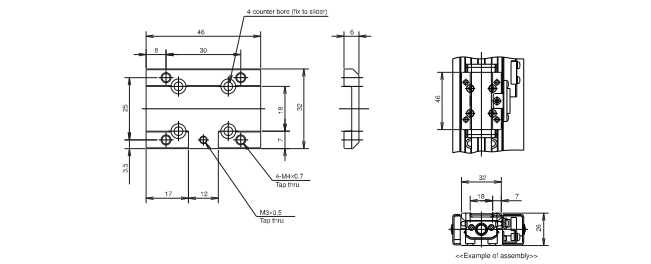


(Unit: mm)

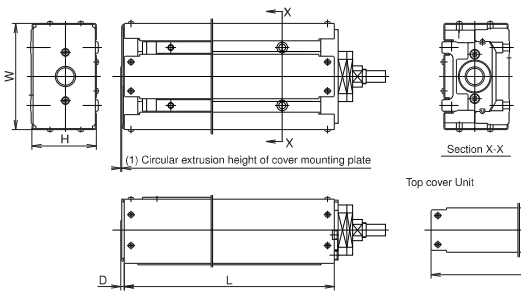
Stroke	Reference number		Cover Length	
	Top cover Unit	Full cover Unit	Length (*L*)	Length (*M*)
50 (lead 1, 2)	**MC-CV03005-02**	✻**MC-CV03005-01**	139	133
50 (lead 10, 12)	**MC-CV03005-02A**	✻**MC-CV03005-01A**	164	158
100	**MC-CV03010-02**	✻**MC-CV03010-01**	214	208
150	**MC-CV03015-02**	✻**MC-CV03015-01**	264	258
200	**MC-CV03020-02**	✻**MC-CV03020-01**	314	308
250	**MC-CV03025-02**	✻**MC-CV03025-01**	364	358

Notes: 1. The full-cover unit cannot be used when the sensor unit is used. 2. Height of screw head is not included.

Spacer for MCM03 (Optional) MC-SP03-00 (for ball screw lead 1 and 2 mm)



Cover Unit for MCM05, 06, 08, and 10



Note: A cover mounting plate is not used to MCM06.

(Unit: mm)

Reference number	Stroke		Cover unit Reference number		Cover length			
	Single slider	Double slider	Top cover Unit	✻Full cover Unit	Length (L)	Height (H)	Width (W)	End part (D)
MCM05	50	—	MC-CV05005-01	MC-CV05005-00	200	38.5	65	2.6
	100	—	MC-CV05010-01	MC-CV05010-00	250			
	150	60	MC-CV05015-01	MC-CV05015-00	300			
	200	110	MC-CV05020-01	MC-CV05020-00	350			
	250	160	MC-CV05025-01	MC-CV05025-00	400			
	300	210	MC-CV05030-01	MC-CV05030-00	450			
	400	310	MC-CV05040-01	MC-CV05040-00	550			
	500	410	MC-CV05050-01	MC-CV05050-00	650			
	600	510	MC-CV05060-01	MC-CV05060-00	750			
MCM06	50	—	MC-CV06005-01	MC-CV06005-00	225	48.5	75	—
	100	—	MC-CV06010-01	MC-CV06010-00	275			
	150	—	MC-CV06015-01	MC-CV06015-00	325			
	200	110	MC-CV06020-01	MC-CV06020-00	375			
	250	—	MC-CV06025-01	MC-CV06025-00	425			
	300	210	MC-CV06030-01	MC-CV06030-00	475			
	400	310	MC-CV06040-01	MC-CV06040-00	575			
	500	410	MC-CV06050-01	MC-CV06050-00	675			
	600	510	MC-CV06060-01	MC-CV06060-00	775			
	700	610	MC-CV06070-01	MC-CV06070-00	875			
	800	710	MC-CV06080-01	MC-CV06080-00	975			
MCM08	50	—	MC-CV08005-01	MC-CV08005-00	248	56.5	90	2.6
	100	—	MC-CV08010-01	MC-CV08010-00	298			
	150	—	MC-CV08015-01	MC-CV08015-00	348			
	200	80	MC-CV08020-01	MC-CV08020-00	398			
	250	—	MC-CV08025-01	MC-CV08025-00	448			
	300	180	MC-CV08030-01	MC-CV08030-00	498			
	400	280	MC-CV08040-01	MC-CV08040-00	598			
	500	380	MC-CV08050-01	MC-CV08050-00	698			
	600	480	MC-CV08060-01	MC-CV08060-00	798			
	700	580	MC-CV08070-01	MC-CV08070-00	898			
	800	680	MC-CV08080-01	MC-CV08080-00	998			
MCM10	100	—	MC-CV10010-01	MC-CV10010-00	308	66.5	110	3.6
	150	—	MC-CV10015-01	MC-CV10015-00	358			
	200	70	MC-CV10020-01	MC-CV10020-00	408			
	250	—	MC-CV10025-01	MC-CV10025-00	458			
	300	170	MC-CV10030-01	MC-CV10030-00	508			
	400	270	MC-CV10040-01	MC-CV10040-00	608			
	500	370	MC-CV10050-01	MC-CV10050-00	708			
	600	470	MC-CV10060-01	MC-CV10060-00	808			
	700	570	MC-CV10070-01	MC-CV10070-00	908			
	800	670	MC-CV10080-01	MC-CV10080-00	1008			
	900	—	MC-CV10090-01	MC-CV10090-00	1108			
	1000	870	MC-CV10100-01	MC-CV10100-00	1208			

✻When a sensor unit is used, the full-cover unit cannot be used. Not include height such as screw

Note: The dimensions of cover shown above do not include the head height of fixing machine screws. Add the head of machine screws of approximately 2.5 mm to the outer measurement of a cover unit. Set a margin for mechanical interference with surrounding components.

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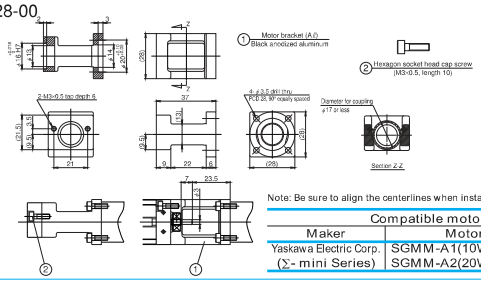
C-2-3. 3 Motor Bracket

●Motor models are subject to change at the motor manufacturers. For details, please contact the manufacture.

Motor Bracket for MCM02

■Reference number

MC-BK02-128-00

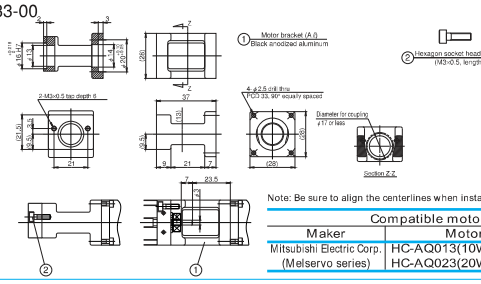


Note: Be sure to align the centerlines when installing the motor.

Compatible motor	
Maker	Motor models
Yaskawa Electric Corp. (Σ- mini Series)	SGMM-A1(10W) SGMM-A2(20W)

■Reference number

MC-BK02-133-00

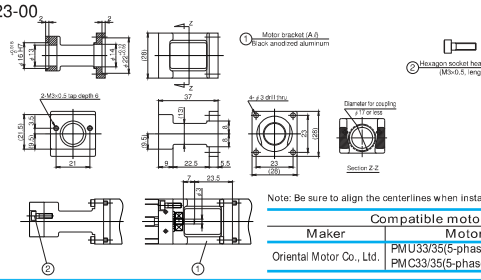


Note: Be sure to align the centerlines when installing the motor.

Compatible motor	
Maker	Motor models
Mitsubishi Electric Corp. (Melservo series)	HC-AQ013(10W) HC-AQ023(20W)

■Reference number

MC-BK02-223-00



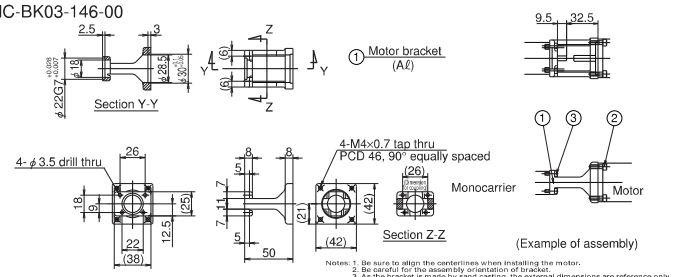
Note: Be sure to align the centerlines when installing the motor.

Compatible motor	
Maker	Motor models
Oriental Motor Co., Ltd.	PMU33/35(5-phase stepping motor) PMC33/35(5-phase stepping motor)

Motor Bracket for MCM03

■Reference number

MC-BK03-146-00



② Hexagon socket head cap screw (M4, length 12)

③ Hexagon socket head cap screw (M3, length 10)

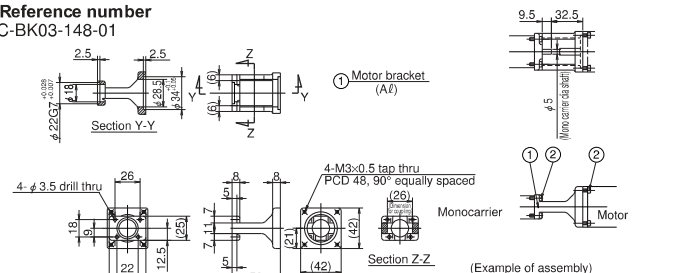
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Yaskawa Electric Corp.	SGMAH-A3(30W), SGMJV-A5A(50W), SGMAV-A5A(50W) SGMJV-01A(100W), SGMAV-01A(100W), SGMAV-C2A(150W)
Mitsubishi Electric Corp.	HF-KP053(50W), HF-MP053(50W), HC-KFS053(50W), HC-MFS053(50W) HF-KP13(100W), HF-MP13(100W), HC-KFS13(100W), HC-MFS13(100W)
OMRON Corp.	R88M-W03(30W), R88M-W05(50W), R88M-W10(100W)
Sanyo Denki Co., Ltd.	P30B04003(30W), P30B04005(50W), P30B04006(60W), P30B04010(100W)

Motor Bracket for MCM03

■Reference number

MC-BK03-148-01



② Hexagon socket head cap screw (M3, length 10)

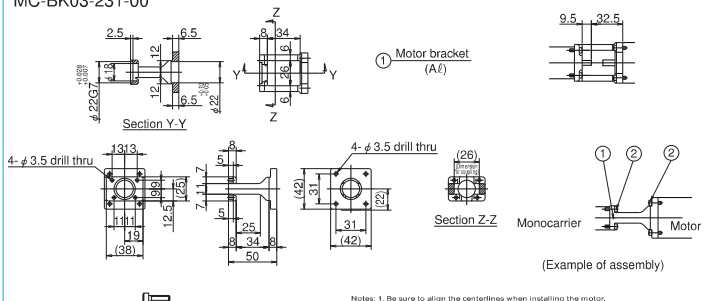
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	P50B04040(60W), P50B04010(100W)

Motor Bracket for MCM03

Standard stock

■Reference number
MC-BK03-231-00



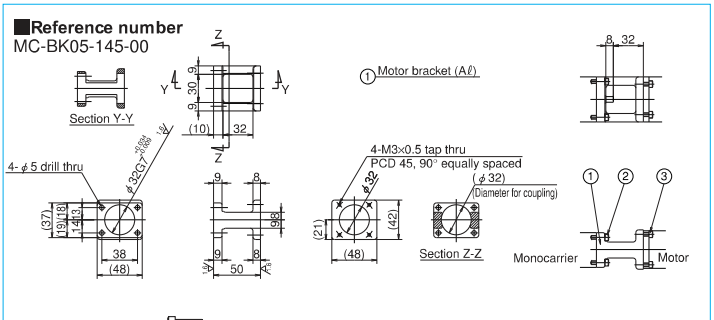
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	PBM423xxx, 103F55xx
Oriental Motor Co., Ltd.	AS46, ASC46, UPK54x, PK54x, CSK54x, CFK54x UMK24x, CSK24x, PK24x

Motor Bracket for MCM05

Standard stock

■Reference number
MC-BK05-145-00



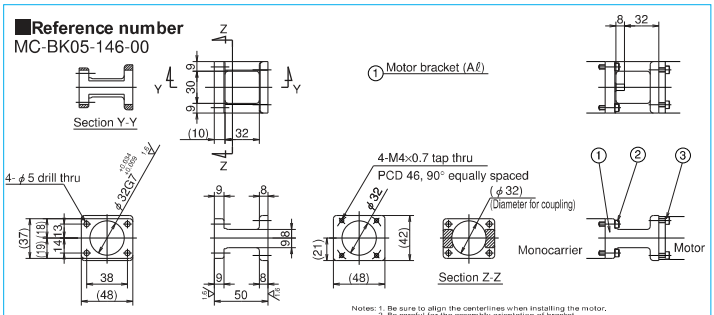
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Matsushita Electric Co., Ltd.	MSMD5A(50W), MSMD01(100W)

Motor Bracket for MCM05

Standard stock

■Reference number
MC-BK05-146-00



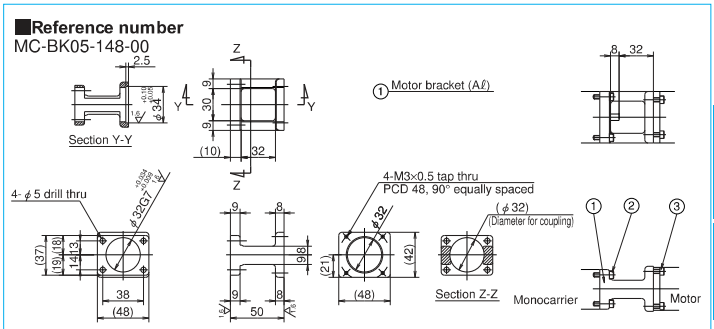
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Yaskawa Electric Corp.	SGMAH-A3(30W), SGMJV-A5A(50W), SGMAV-A5A(50W) SGMJV-01A(100W), SGMAV-01A(100W), SGMAV-C2A(150W)
Mitsubishi Electric Corp.	HF-KP053(50W), HF-MP053(50W), HC-KFS053(50W), HC-MFS053(50W) HF-KP13(100W), HF-MP13(100W), HC-KFS13(100W), HC-MFS13(100W)
OMRON Corp.	R88M-W03(30W), R88M-W05(50W), R88M-W10(100W)
Sanyo Denki Co., Ltd.	P30B04003(30W), P30B04005(50W), P30B04006(60W), P30B04010(100W)

Motor Bracket for MCM05

Standard stock

■Reference number
MC-BK05-148-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Matsushita Electric Co., Ltd.	MAMA01(100W)

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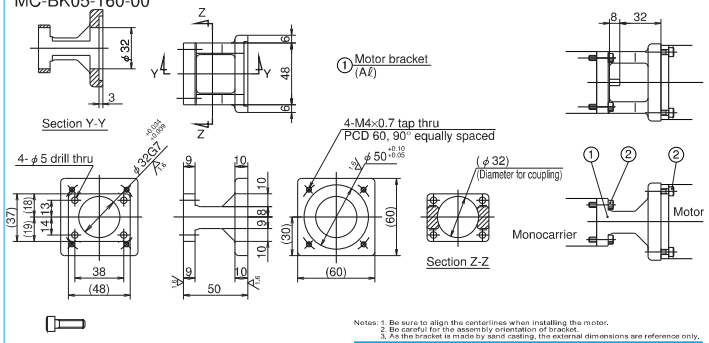
Motor Bracket for MCM05

Standard stock

■Reference number

MC-BK05-160-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor

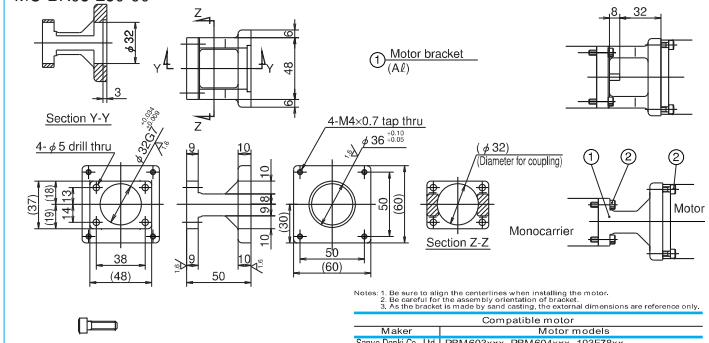
Maker	Motor models
Sanyo Denki Co., Ltd.	P50B05005(50W), P50B05010(100W), P50B05020(200W)

Motor Bracket for MCM05

Standard stock

■Reference number

MC-BK05-250-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor

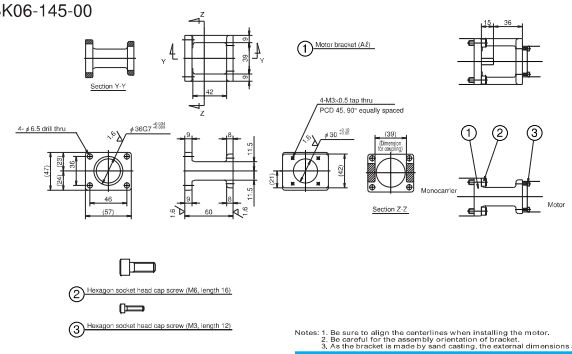
Maker	Motor models
Sanyo Denki Co., Ltd.	PBM603xxx, PBM604xxx, 103F78xx
Oriental Motor Co., Ltd.	AS66, ASC66, UPK56x, UFK56x PK56x, CSK56x, CFK56x

Motor Bracket for MCM06

Standard stock

■Reference number

MC-BK06-145-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor

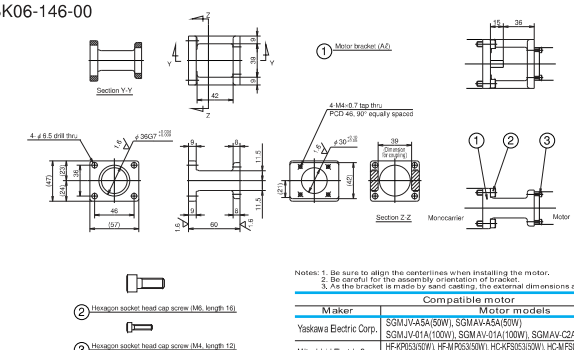
Maker	Motor models
Mitsubishi Electric Industrial Co., Ltd.	MSMD5A(50W), MSMD01(100W)

Motor Bracket for MCM06

Standard stock

■Reference number

MC-BK06-146-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

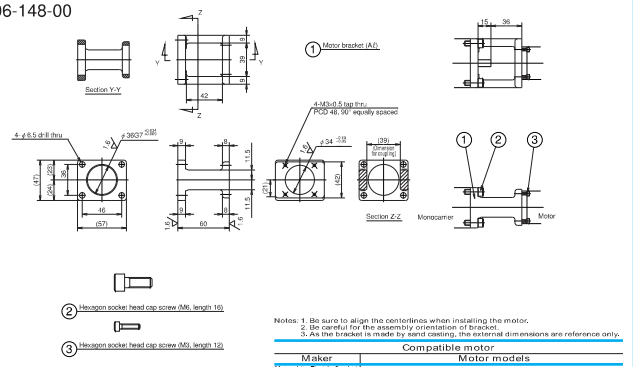
Compatible motor

Maker	Motor models
Yaskawa Electric Corp.	SGMJV-A5A(50W), SGMAV-A5A(50W) SGMJV-01A(100W), SGMAV-01A(100W), SGMAV-C2A(150W)
Mitsubishi Electric Corp.	HF-KP053(50W), HF-MP053(50W), HC-KFS053(50W), HC-MFS053(50W) HF-KP13(100W), HF-MP13(100W), HC-KFS13(100W), HC-MFS13(100W)
OMRON Corp.	R88M-W03(30W), R88M-W05(50W), R88M-W10(100W)
Sanyo Denki Co., Ltd.	P30B04003(30W), P30B04005(50W), P30B04010(100W)

Motor Bracket for MCM06

Standard stock

■Reference number
MC-BK06-148-00



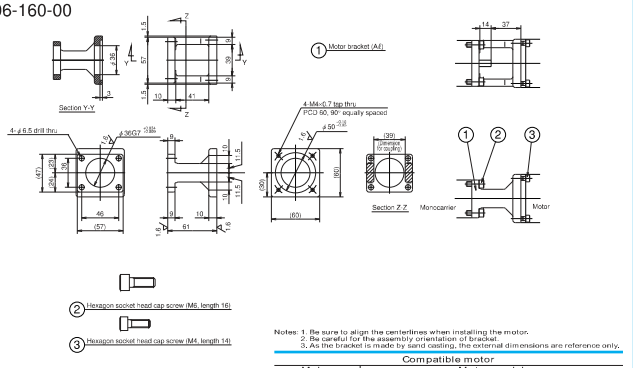
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Matsushita Electric Co., Ltd.	MAMA01(100W)
Sanyo Denki Co., Ltd.	P50B04040(60W), P50B04010(100W)

Standard stock

Motor Bracket for MCM06

■Reference number
MC-BK06-160-00



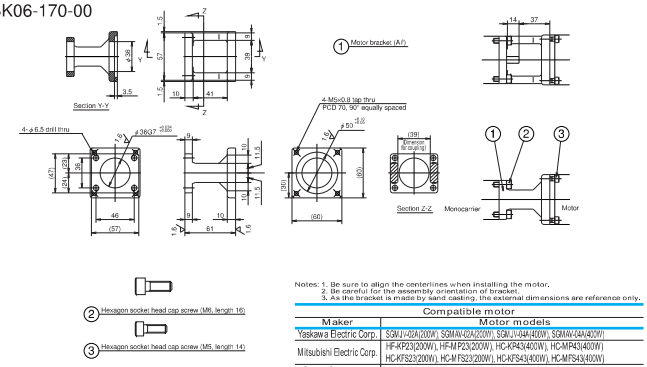
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	P50B05005(50W), P50B05010(100W), P50B05020(200W)

Motor Bracket for MCM06

Standard stock

■Reference number
MC-BK06-170-00



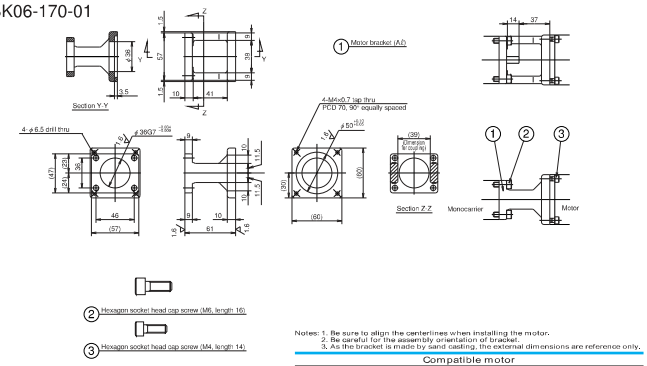
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Yaskawa Electric Corp.	SGMJV-02A(200W), SGMAV-02A(200W), SGMJV-04A(400W), SGMAV-04A(400W)
Mitsubishi Electric Corp.	HF-KP23(200W), HF-MP23(200W), HC-KP43(400W), HC-MP43(400W) HC-KFS23(200W), HC-MFS23(200W), HC-KFS43(400W), HC-MFS43(400W)
OMRON Corp.	R88M-W20(200W), R88M-W40(400W)
Sanyo Denki Co., Ltd.	P30B06020(200W), P30B06040(400W)

Standard stock

Motor Bracket for MCM06

■Reference number
MC-BK06-170-01



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Matsushita Electric Industrial Co., Ltd.	MSMD022(200W), MAMA022(200W), MSMD042(400W), MAMA042(400W)

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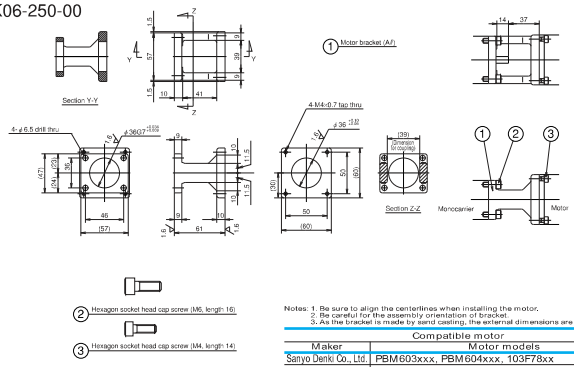
Motor Bracket for MCM06

Standard stock

■Reference number
MC-BK06-250-00



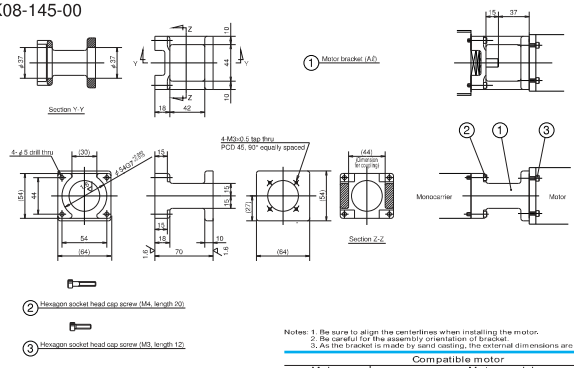
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	PBM603xxx, PBM604xxx, 103F78xx
Oriental Motor Co., Ltd.	AS66, ASC66, UPK56x, PK56x, CSK56x CFK56x, UMK56x, UFK56x

Motor Bracket for MCM08

Standard stock

■Reference number
MC-BK08-145-00



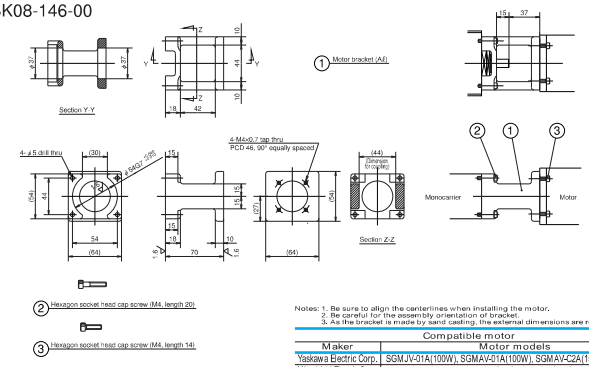
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Matsushita Electric Industrial Co., Ltd.	MSMD01(100W)

Motor Bracket for MCM08

Standard stock

■Reference number
MC-BK08-146-00



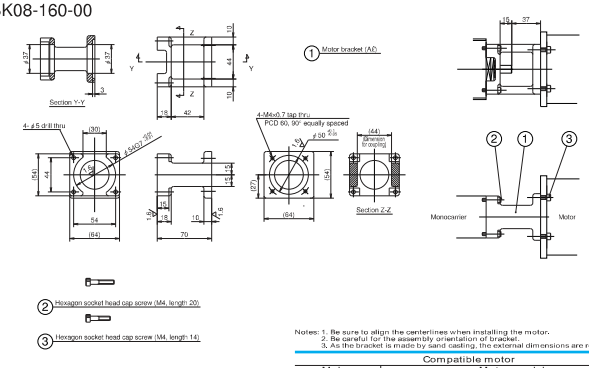
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Yaskawa Electric Corp.	SGMJV-01A(100W), SGMAV-01A(100W), SGMAY-C2A(150W)
Mitsubishi Electric Corp.	HF-KP13(100W), HF-MP13(100W), HC-KFS13(100W), HC-MFS13(100W)
Sanyo Denki Co., Ltd.	P50B0403(30W), P30B0405(50W), P50B0409(60W), P30B0401(100W)

Motor Bracket for MCM08

Standard stock

■Reference number
MC-BK08-160-00



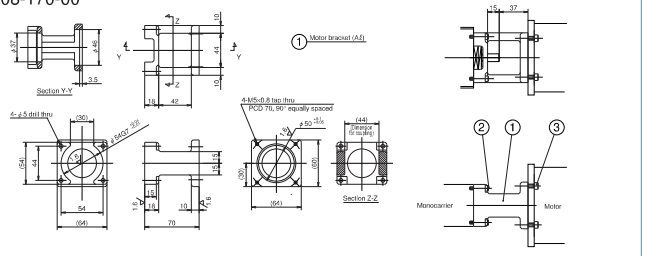
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	P50B05005(50W), P50B05010(100W), P50B05020(200W)

Motor Bracket for MCM08

Standard stock

■Reference number
MC-BK08-170-00



② Hexagon socket head cap screw (M4, length 20)
③ Hexagon socket head cap screw (M5, length 14)

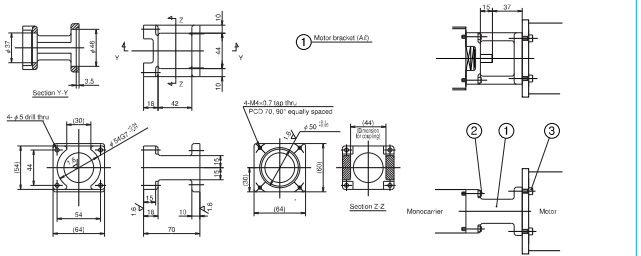
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Yaskawa Electric Corp.	SGMJV-02A(200W), SGMAV-02A(200W), SGMJV-04A(400W), SGMAV-04A(400W)
Mitsubishi Electric Corp.	HF-KP23(200W), HF-MP23(200W), HF-KP43(400W), HF-MP43(400W) HC-KFS23(200W), HC-MFS23(200W), HC-KFS43(400W), HC-MFS43(400W)
OMRON Corp.	R88M-W20(200W), R88M-W40(400W)
Sanyo Denki Co., Ltd.	P30B06020(200W), P30B06040(400W)

Motor Bracket for MCM08

Standard stock

■Reference number
MC-BK08-170-01



② Hexagon socket head cap screw (M4, length 20)
③ Hexagon socket head cap screw (M4, length 14)

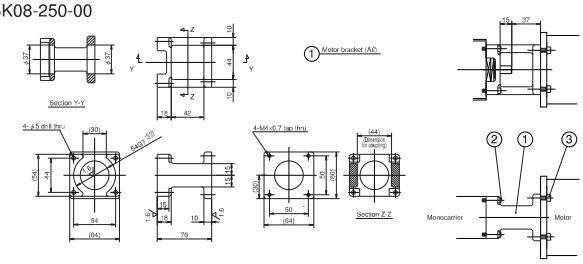
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Matsushita Electric Industrial Co., Ltd.	MSMD02(200W), MAMA02(200W), MSMD04(400W), MAMA04(400W)

Motor Bracket for MCM08

Standard stock

■Reference number
MC-BK08-250-00



② Hexagon socket head cap screw (M4, length 20)
③ Hexagon socket head cap screw (M4, length 14)

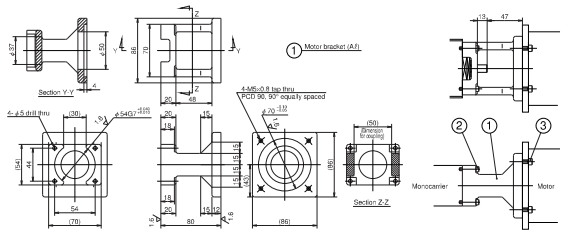
Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	PBM603xxx, PBM604xxx, 103F78xx
Oriental Motor Co., Ltd	AS66, ASC66, UPK56xx, PK56xx, CSK56x CFK56x, UMK56x, UFK56x

Motor Bracket for MCM08

Standard stock

■Reference number
MC-BK08-190-00



② Hexagon socket head cap screw (M4, length 22)
③ Hexagon socket head cap screw (M5, length 18)

Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	P50B07020(200W), P50B07030(300W), P50B07040(400W)

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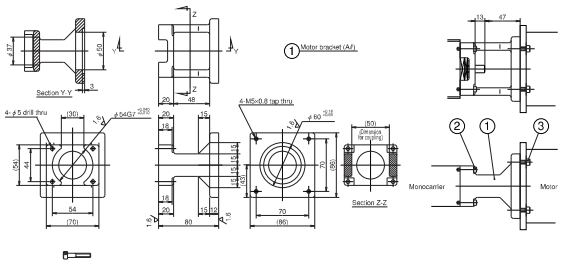
Motor Bracket for MCM08

Standard stock

■Reference number
MC-BK08-270-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

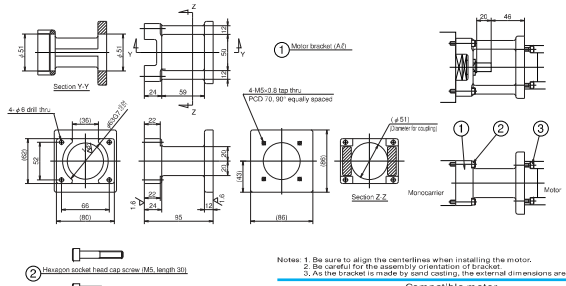
Compatible motor

Maker	Motor models
Oriental Motor Co., Ltd.	AS98, ASC98, UPK59x, PK59x CSK59x, CFK59x, UMK59x, UFK59x
Sanyo Denki Co., Ltd.	103F85xx

Motor Bracket for MCM10

Standard stock

■Reference number
MC-BK10-170-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

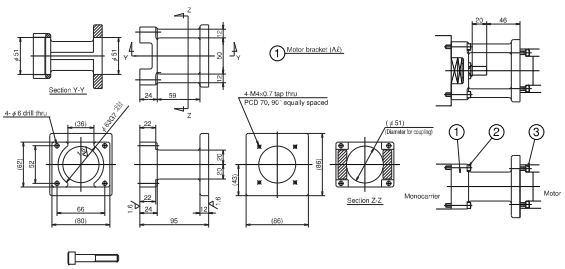
Compatible motor

Maker	Motor models
Yaskawa Electric Corp.	SGMJV-02A(200W), SGMAV-02A(200W), SGMJV-04A(400W), SGMAV-04A(400W)
Mitsubishi Electric Corp.	HF-KP23(200W), HF-MP23(200W), HF-KP43(400W), HF-MP43(400W) HC-KFS23(200W), HC-MFS23(200W), HC-KFS43(400W), HC-MFS43(400W)
OMRON Corp.	R88M-W20(200W), R88M-W40(400W)
Sanyo Denki Co., Ltd.	P30B06020(200W), P30B06040(400W)

Motor Bracket for MCM10

Standard stock

■Reference number
MC-BK10-170-01



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

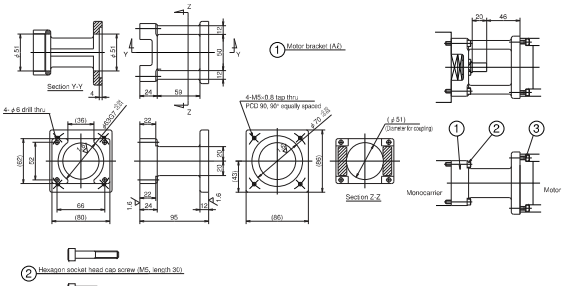
Compatible motor

Maker	Motor models
Mitsubishi Electric Industrial Co., Ltd.	MSMD02(200W), MAMA02(200W), MSMD04(400W), MAMA04(400W)

Motor Bracket for MCM10

Standard stock

■Reference number
MC-BK10-190-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor

Maker	Motor models
Mitsubishi Electric Industrial Co., Ltd.	MSMD08(750W), MAMA08(750W)
Sanyo Denki Co., Ltd.	P50B07020(200W), P50B07030(300W), P50B07040(400W)

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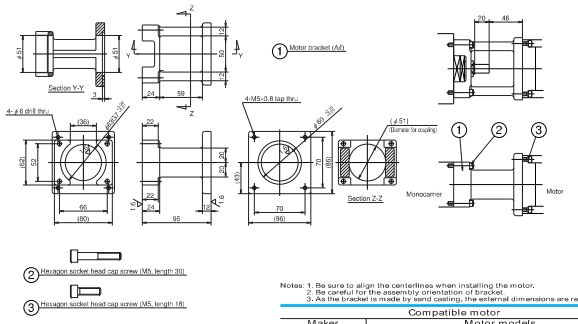
Standard stock

Motor Bracket for MCM10

■Reference number
MC-BK10-270-00



Notes: 1. Be sure to align the centerlines when installing the motor.
2. Be careful for the assembly orientation of bracket.
3. As the bracket is made by sand casting, the external dimensions are reference only.

Compatible motor

Maker	Motor models
Sanyo Denki Co., Ltd.	103F85xx
Oriental Motor Co., Ltd.	AS98, ASC98, UPK59x, PK59x, CSK59x CFK59x, UMK59x, UFK59x

Availability Motor Table of Motor Bracket for MCM Series

Table 5

Nominal size	Reference number/ size	Motor bracket reference number	Motor manufacturer	Stepping motor model number	Wattage of AC servo motor										
					10	20	30	50	60	100	150	200	300	400	750
MCM02	1	MC-BK02-128-00	Yaskawa Electric Corp.		SGMM-A1	SGMM-A2									
	2	MC-BK02-133-00	Mitsubishi Electric Corp.		HC-AQ0*3	HC-AQ023									
	3	MC-BK02-223-00	Oriental Motor Co., Ltd.	PI/U33/35 (5-phase) PMC33/35 (5-phase)											
MCM03	1	MC-BK03-146-00	Yaskawa Electric Corp.				SGMAH-A3	SGMJV-A5A SGMAV-A5A		SGMJV-01A SGMAV-01A	SGMAV-C2A				
			Mitsubishi Electric Corp.					HF-KP053 HF-MP053 HC-KFS053 HC-MFS053		HF-KP13 HF-MP13 HC-KFS13 HC-MFS13					
			OMRON Corp.				R88M-W03	R88M-W05		R88M-W10					
			Sanyo Denki Co., Ltd.				P50B04003	P50B04005	P30B04006	P30B04010					
	2	MC-BK03-148-01	Sanyo Denki Co., Ltd.						P50B04040	P50B04010					
	3	MC-BK03-231-00	Sanyo Denki Co., Ltd.	PBM423xxx											
			Sanyo Denki Co., Ltd.	103F59xx											
			Oriental Motor Co., Ltd.	AS46, ASC46 UPK54x, PK54x CSK54x, CPK54x UMK24x, CSK24x PK24x											
MCM05	1	MC-BK05-145-00	Matsushita Electric Industrial Co., Ltd.					MSMD05A		MSMD01					
	2	MC-BK05-146-00	Yaskawa Electric Corp.				SGMAH-A3	SGMJV-A5A SGMAV-A5A		SGMJV-01A SGMAV-01A	SGMAV-C2A				
			Mitsubishi Electric Corp.					HF-KP053 HF-MP053 HC-KFS053 HC-MFS053		HF-KP13 HF-MP13 HC-KFS13 HC-MFS13					
			OMRON Corp.				R88M-W03	R88M-W05		R88M-W10					
			Sanyo Denki Co., Ltd.				P50B04003	P50B04005	P30B04006	P30B04010					
	3	MC-BK05-148-00	Matsushita Electric Industrial Co., Ltd.					MAMA01							
	4	MC-BK05-160-00	Sanyo Denki Co., Ltd.					P50B05005		P50B05010		P50B05020			
	5	MC-BK05-250-00	Sanyo Denki Co., Ltd.	PBM603xx, PBM604xx											
			Sanyo Denki Co., Ltd.	103F78xx											
			Oriental Motor Co., Ltd.	AS66, ASC66 UPK56x, UPK56x PK56x, CSK56x, CFK56x											
MCM06	1	MC-BK06-145-00	Matsushita Electric Industrial Co., Ltd.					MSMD05A		MSMD01					
	2	MC-BK06-146-00	Yaskawa Electric Corp.					SGMJV-A5A SGMAV-A5A		SGMJV-01A SGMAV-01A	SGMAV-C2A				
			Mitsubishi Electric Corp.					HF-KP053 HF-MP053 HC-KFS053 HC-MFS053		HF-KP13 HF-MP13 HC-KFS13 HC-MFS13					
			OMRON Corp.				R88M-W03	R88M-W05		R88M-W10					
			Sanyo Denki Co., Ltd.				P50B04003	P50B04005	P30B04006	P30B04010					
	3	MC-BK06-148-00	Sanyo Denki Co., Ltd.						P50B04040	P50B04010					
			Matsushita Electric Industrial Co., Ltd.					MAMA01							
	4	MC-BK06-160-00	Sanyo Denki Co., Ltd.					P50B05005		P50B05010		P50B05020			
	5	MC-BK06-170-00	Yaskawa Electric Corp.									SGMJV-02A SGMAV-02A		SGMJV-04A SGMAV-04A	
			Mitsubishi Electric Corp.									HF-KP23 HF-MP23 HC-KFS23 HC-MFS23		HF-KP43 HF-MP43 HC-KFS43 HC-MFS43	
			OMRON Corp.									R88M-W20		R88M-W40	
			Sanyo Denki Co., Ltd.									P30B06020		P30B06040	
	6	MC-BK06-170-01	Matsushita Electric Industrial Co., Ltd.									MSMD02 MAMA02		MSMD04 MAMA04	
	7	MC-BK06-250-00	Sanyo Denki Co., Ltd.	PBM603xxx, PBM604xxx											
			Sanyo Denki Co., Ltd.	103F78xx											
			Oriental Motor Co., Ltd.	AS66, ASC66 UPK56x, PK56x CSK56x, CPK56x UMK56x, UFK56x											

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Nominal size	Reference number code	Motor bracket reference number	Motor manufacturer	Stepping motor model number	Wattage of AC servo motor										
					10	20	30	50	60	100	150	200	300	400	750
MCM08	1	MC-BK08-145-00	Matsushita Electric Industrial Co., Ltd.							MSMD01					
	2	MC-BK08-146-00	Yaskawa Electric Corp.							SGMJV-01A SGMAV-01A	SGMAV-C2A				
			Mitsubishi Electric Corp.							HF-KP13 HF-MP13 HC-KFS13 HC-MFS13					
			Sanyo Denki Co., Ltd.				P30B04003	P30B04005	P30B04006	P30B04010					
	3	MC-BK08-160-00	Sanyo Denki Co., Ltd.					P50B05005		P50B05010		P50B05020			
	4	MC-BK08-170-00	Yaskawa Electric Corp.									SGMJV-02A SGMAV-02A		SGMJV-04A SGMAV-04A	
			Mitsubishi Electric Corp.									HF-KP23 HF-MP23 HC-KFS23 HC-MFS23		HF-KP43 HF-MP43 HC-KFS43 HC-MFS43	
			OMRON Corp.									R88M-W20		R88M-W40	
			Sanyo Denki Co., Ltd.									P30B06020		P30B06040	
	5	MC-BK08-170-01	Matsushita Electric Industrial Co., Ltd.									MSMD02 MAMA02		MSMD04 MAMA04	
	6	MC-BK08-190-00	Sanyo Denki Co., Ltd.									P50B07020	P50B07030	P50B07040	
	7	MC-BK08-250-00	Sanyo Denki Co., Ltd.	PBM603xxx, PBM604xxx											
			Sanyo Denki Co., Ltd.	103F78xx											
			Oriental Motor Co., Ltd.	AS66, ASC66 UPK56x, PK56x CSK56x, CFK56x UMK56x, UFK56x											
	8	MC-BK08-270-00	Sanyo Denki Co., Ltd.	103F85xx											
			Oriental Motor Co., Ltd.	AS98, ASC98 UPK59x, PK59x CSK59x, CFK59x UMK59x, UFK59x											
MCM10	1	MC-BK10-170-00	Yaskawa Electric Corp.									SGMJV-02A SGMAV-02A		SGMJV-04A SGMAV-04A	
			Mitsubishi Electric Corp.									HF-KP23 HF-MP23 HC-KFS23 HC-MFS23		HF-KP43 HF-MP43 HC-KFS43 HC-MFS43	
			OMRON Corp.									R88M-W20		R88M-W40	
			Sanyo Denki Co., Ltd.									P30B06020		P30B06040	
	2	MC-BK10-170-01	Matsushita Electric Industrial Co., Ltd.									MSMD02 MAMA02		MSMD04 MAMA04	
	3	MC-BK10-190-00	Matsushita Electric Industrial Co., Ltd.												MSMD08 MAMA08
			Sanyo Denki Co., Ltd.									P50B07020	P50B07030	P50B07040	
	4	MC-BK10-270-00	Sanyo Denki Co., Ltd.	103F85xx											
			Oriental Motor Co., Ltd.	AS98, ASC98 UPK59x, PK59x CSK59x, CFK59x UMK59x, UFK59x											

MCH Series

C-3 MCH Series

C-3-1 MCH Series Reference Number Coding

[Body]

Reference number : MC H 06 040 H 10 K (B0) ※1

- Monocarrier
- H Type: MCH Series
- L Type: MCH Series low profile rail (only for 06 size)
- Nominal size (rail width, Unit: 10mm)
- Stroke (Unit: 10mm)
- Accuracy grade (H, High grade; P, Precision grade).
- Special specification
- Grease specification: B (LG2)(See page C19)
- Slider specification K: Single slider
- (See page C10) D: Double slider
- Ball screw lead (mm)

※1 : These two code fields shall be added when non-standard grease is used. The coding of an MCH Monocarrier with standard grease shall have 12 characters as shown above.

[With Option part]

Reference number : MC S 06 040 H 10 K 00K 0 0 0

- S : With MCH optional components
- R : With MCL optional components
- NSK management number
- Sensor unit
- Cover unit
- Intermediate plate for motor bracket

Note : Optional components are available separately.

Table 1 Sensor unit (See page C71)

Reference number code	Specification	Reference number
0	N/A	—
1	Proximity switch (b-contact 3 pieces)	MC—SRHxx—10
2	Proximity switch (a-contact 3 pieces)	MC—SRHxx—11
3	Proximity switch (a-contact 1 piece, b-contact 2 pieces)	MC—SRHxx—12
4	Photo sensor 3 pieces	MC—SRHxx—13

xx: Reference number
Note: Sensor rail is not included in a sensor unit. If you require the rail, please request separately. (See page C71 to 72.)

Table 2 Cover unit (See page C73 – 75)

Reference number code	Specification	Reference number
0	N/A	—
1	For single slider	MC—HVxxxxx—00
	For double slider	MC—HVxxxxxD00

xxxxx: Reference number and stroke number

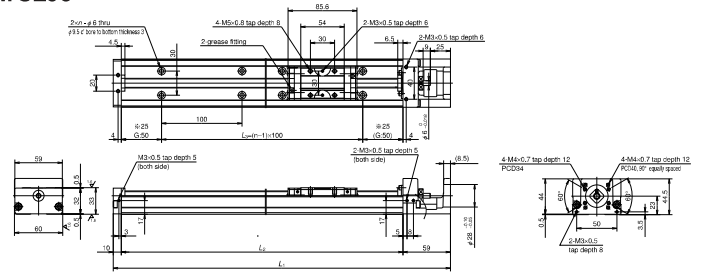
Table 3 Intermediate plate for motor bracket (See page C77 – 80)

Reference number code	Type		
	MCH06 (MCL06)	MCH09	MCH10
0	N/A	N/A	N/A
1	MC-BKH06-145-00	MC-BKH09-145-00	MC-BKH10-170-00
2	MC-BKH06-146-00	MC-BKH09-146-00	MC-BKH10-170-01
3	MC-BKH06-231-00	MC-BKH09-170-00	MC-BKH10-190-00
4	MC-BKH06-250-00	MC-BKH09-170-01	MC-BKH10-190-01
5	—	MC-BKH09-231-00	MC-BKH10-250-00
6	—	MC-BKH09-250-00	MC-BKH10-270-00

C-3-2 MCH Series Dimension Table of Standard Products

MCL06

Accuracy grade: High grade (H)



- The rail of MCL 06 is made lighter than that of MCH 06 by lowering the rail height. The weight ratio between the MCH 06 and MCL 06 is 5 to 4.
- Double slider specification is also available for the MCL 06.
- Combinations of stroke and ball screw lead of the MCL 06 are the same as those of the MCH 06.

Dimension of MCL06 (Single slider)

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	n	Inertia $\times 10^{-6}$(kg · m²)	Mass (kg)
☆※MCL06005H05K	50	53 (65)	5	219	150	100	2	2.38	1.0
☆※MCL06005H10K			10					3.45	
☆ MCL06010H05K	100	103 (115)	5	269	200	100	2	3.17	1.3
☆ MCL06010H10K			10					4.12	
☆ MCL06020H05K	200	203 (215)	5	369	300	200	3	4.51	1.9
☆ MCL06020H10K			10					5.46	
☆ MCL06030H10K	300	303 (315)	10	469	400	300	4	6.80	2.6
☆ MCL06030H20K			20					10.6	
☆ MCL06040H10K	400	403 (415)	10	569	500	400	5	8.13	3.2
☆ MCL06040H20K			20					11.9	
☆ MCL06050H10K	500	503 (515)	10	669	600	500	6	9.47	3.9
☆ MCL06050H20K			20					13.3	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Dimension of G is 25 instead of 50 for those marked with ※.

Monocarrier dynamic torque specification (N · cm)

Ball screw lead (mm)		
	5	1.0 – 4.8
	10	1.1 – 5.8
	20	1.6 – 7.9

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.

Basic load rating

Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	ϕ12	3000 (High grade) 3760 (Precision)	22800	4400	5	5410 (High grade) 6310 (Precision)	10900	1450
10		1930 (High grade) 2260 (Precision)	18100		10	3160 (High grade) 3780 (Precision)		
20		1930 (High grade) 2260 (Precision)	14400		20	3160 (High grade) 3780 (Precision)		

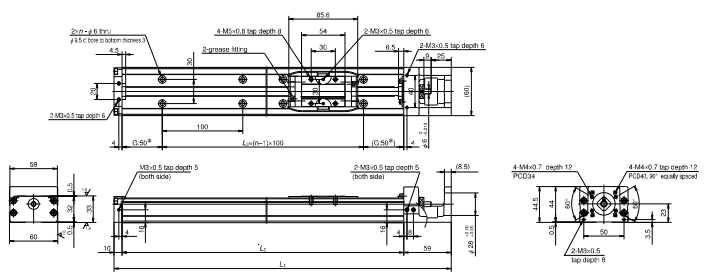
Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	335	133	133

C 64

MCH06

Accuracy grade: High grade (H)



Dimension of MCH06 (Single slider)

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	n	Inertia $\times 10^{-6}$(kg · m²)	Mass (kg)
※ MCH06005H05K	50	53 (65)	5	219	150	100	2	2.38	1.8
※ MCH06005H10K			10					3.45	
☆※ MCH06005H20K			20					7.25	
MCH06010H05K	100	103 (115)	5	269	200	100	2	3.17	2.2
MCH06010H10K			10					4.12	
☆ MCH06010H20K			20					7.92	
MCH06020H05K	200	203 (215)	5	369	300	200	3	4.51	3.0
MCH06020H10K			10					5.46	
MCH06020H20K			20					9.26	
☆ MCH06030H05K	300	303 (315)	5	469	400	300	4	5.85	3.7
MCH06030H10K			10					6.80	
MCH06030H20K			20					10.6	
☆ MCH06040H05K	400	403 (415)	5	569	500	400	5	7.18	4.5
MCH06040H10K			10					8.13	
MCH06040H20K			20					11.9	
☆ MCH06050H05K	500	503 (515)	5	669	600	500	6	8.52	5.2
MCH06050H10K			10					9.47	
MCH06050H20K			20					13.3	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.
3. Dimension of G is 25 instead of 50 for those marked with ※.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	5	1.0 – 4.8
	10	1.1 – 5.8
	20	1.6 – 7.9

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.

Basic load rating

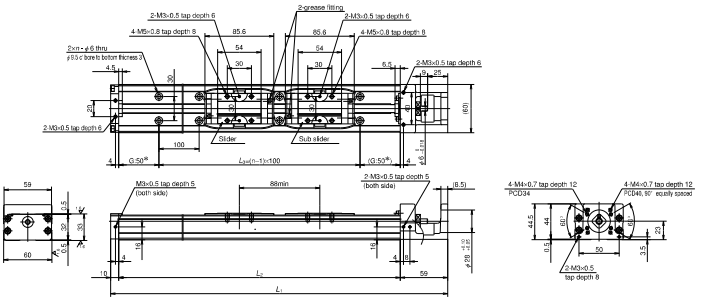
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	φ12	3000 (High grade) 3760 (Precision)	22800	4400	5	5410 (High grade) 6310 (Precision)	16300	1450
10		1930 (High grade) 2260 (Precision)	18100		10	3160 (High grade) 3780 (Precision)		
20		1930 (High grade) 2260 (Precision)	14400		20	3160 (High grade) 3780 (Precision)		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	335	133	133

MCH06 (Double slider)

Accuracy grade: High grade (H)



Dimension of MCH06 (Double slider)

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	n	Inertia $\times 10^{-6}$(kg · m²)	Mass (kg)
☆MCH06010H05D	100	115 (139)	5	369	300	200	3	4.82	3.5
☆MCH06010H10D			10					6.72	
☆MCH06020H05D	200	215 (239)	5	469	400	300	4	8.06	4.2
☆MCH06020H10D			10					15.7	
☆MCH06030H05D	300	315 (339)	5	569	500	400	5	9.40	5.0
☆MCH06030H10D			10					17.0	
☆MCH06040H10D	400	415 (439)	10	669	600	500	6	10.7	5.7
☆MCH06040H20D			20					18.3	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	5	1.2 – 5.2
	10	1.5 – 9.6
	20	2.3 – 11.8

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.

Basic load rating

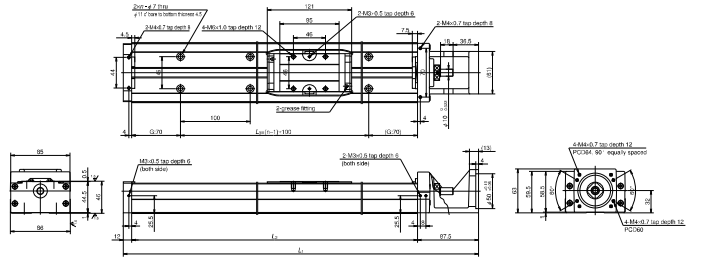
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	φ12	3000 (High grade) 3760 (Precision)	22800	4400	5	5410 (High grade) 6310 (Precision)	16300	1450
10		1930 (High grade) 2260 (Precision)	18100		10	3160 (High grade) 3780 (Precision)		
20		1930 (High grade) 2260 (Precision)	14400		20	3160 (High grade) 3780 (Precision)		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Double	770	730	730

MCH09

Accuracy grade: High grade (H)



Dimension of MCH09 (Single slider)

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	n	Inertia $\times 10^{-6}$(kg · m²)	Mass (kg)
☆MCH09010H05K	100	107 (121)	5	339.5	240	100	2	9.2	5.0
☆MCH09010H10K			10					10.7	
☆MCH09010H20K			20					16.8	
MCH09020H05K	200	207 (221)	5	439.5	340	200	3	12.4	6.5
MCH09020H10K			10					13.9	
☆MCH09020H20K			20					20.0	
MCH09030H05K	300	307 (321)	5	539.5	440	300	4	15.6	8.1
MCH09030H10K			10					17.1	
☆MCH09030H20K			20					23.2	
MCH09040H05K	400	407 (421)	5	639.5	540	400	5	18.8	9.7
MCH09040H10K			10					20.3	
☆MCH09040H20K			20					26.4	
☆MCH09050H05K	500	507 (521)	5	739.5	640	500	6	22.0	11
MCH09050H10K			10					23.5	
MCH09050H20K			20					29.6	
☆MCH09060H05K	600	607 (621)	5	839.5	740	600	7	25.2	13
MCH09060H10K			10					26.7	
MCH09060H20K			20					32.8	
☆MCH09070H05K	700	707 (721)	5	939.5	840	700	8	28.4	14.5
☆MCH09070H10K			10					30.0	
☆MCH09070H20K			20					36.0	
☆MCH09080H05K	800	807 (821)	5	1 039.5	940	800	9	31.6	16
MCH09080H10K			10					33.2	
MCH09080H20K			20					39.2	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.

Monocarrier dynamic torque specification (N · cm)

Ball screw lead (mm)		
	5	1.0 – 5.9
	10	2.0 – 7.8
	20	2.0 – 10.8

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.

Basic load rating

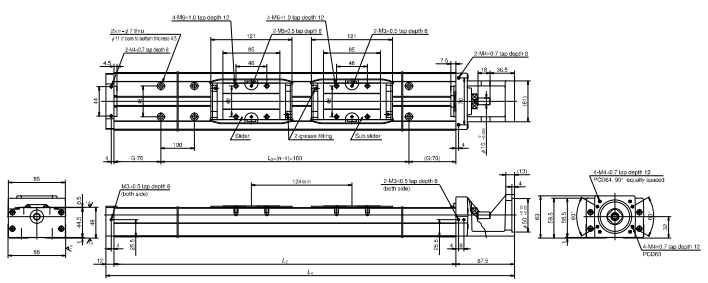
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_s (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	ϕ15	6820 (High grade) 7100 (Precision)	40600	7100	5	13200 (High grade) 13000 (Precision)	30500	3040
10		5110 (High grade) 7060 (Precision)	32200		10	9290 (High grade) 12700 (Precision)		
20		3290 (High grade) 4560 (Precision)	25500		20	5620 (High grade) 7750 (Precision)		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	890	385	385

MCH09 (Double slider)

Accuracy grade: High grade (H)



Dimension of MCH09 (Double slider)

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	L_3	n	Inertia $\times 10^{-6}$(kg · m²)	Mass (kg)
☆MCH09015H05D	150	183 (211)	5	539.5	440	300	4	16.1	8.9
☆MCH09015H10D			10					19.2	
☆MCH09025H05D	250	283 (311)	5	639.5	540	400	5	19.3	11
☆MCH09025H10D			10					22.4	
☆MCH09035H05D	350	383 (411)	5	739.5	640	500	6	22.5	12
☆MCH09035H10D			10					25.6	
☆MCH09045H10D	450	483 (511)	10	839.5	740	600	7	28.8	14
☆MCH09045H20D			20					40.9	
☆MCH09065H10D	650	683 (711)	10	1 039.5	940	800	9	35.2	17
☆MCH09065H20D			20					47.3	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.

Monocarrier dynamic torque specification (N · cm)

Ball screw lead (mm)		
	5	1.5 – 7.0
	10	2.5 – 10.8
	20	4.0 – 17.2

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.

Basic load rating

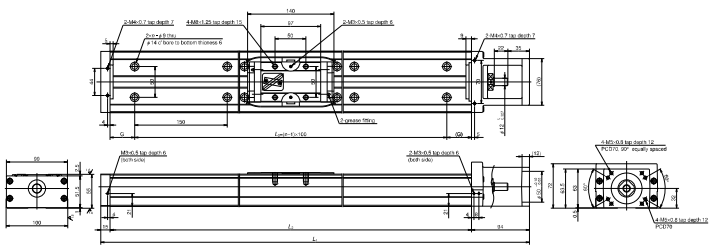
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_s (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
5	ϕ15	6820 (High grade) 7100 (Precision)	40600	7100	5	13200 (High grade) 13000 (Precision)	30500	3040
10		5110 (High grade) 7060 (Precision)	32200		10	9290 (High grade) 12700 (Precision)		
20		3290 (High grade) 4560 (Precision)	25500		20	5620 (High grade) 7750 (Precision)		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Double	1780	2070	2070

MCH10

Accuracy grade: High grade (H)



Dimension of MCH10 (Single slider)

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	G	L_3	n	Inertia $\times 10^{-6}$(kg · m^2)	Mass (kg)
☆MCH10010H10K	100	126 (142)	10	389	280	65	150	2	33.2	7.3
☆MCH10010H20K			20						41.1	
☆MCH10020H10K	200	226 (242)	10	489	380	40	300	3	43.4	9.5
☆MCH10020H20K			20						51.3	
☆MCH10030H10K	300	326 (342)	10	589	480	15	450	4	53.7	12
☆MCH10030H20K			20						61.6	
MCH10040H10K	400	426 (442)	10	689	580	65	450	4	62.4	14
MCH10040H20K			20						71.8	
MCH10050H10K	500	526 (542)	10	789	680	40	600	5	74.7	16
MCH10050H20K			20						82.3	
MCH10060H10K	600	626 (642)	10	889	780	15	750	6	84.9	19
MCH10060H20K			20						92.5	
MCH10070H10K	700	726 (742)	10	989	880	65	750	6	95.1	21
MCH10070H20K			20						103	
MCH10080H10K	800	826 (842)	10	1 089	980	40	900	7	105	23
MCH10080H20K			20						113	
☆MCH10090H10K	900	926 (942)	10	1 189	1 080	15	1 050	8	116	25
☆MCH10090H20K			20						123	
☆MCH10100H10K	1 000	1 026 (1 042)	10	1 289	1 180	65	1 050	8	126	27
MCH10100H20K			20						133	
☆MCH10110H10K	1 100	1 126 (1 142)	10	1 389	1 280	40	1 200	9	136	29
☆MCH10110H20K			20						143	
☆MCH10120H10K	1 200	1 226 (1 242)	10	1 489	1 380	15	1 350	10	146	32
☆MCH10120H20K			20						154	

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	10	2.7 – 10.8
	20	3.1 – 12.7

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.

Basic load rating

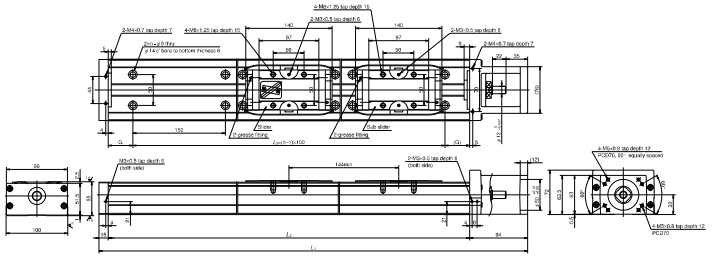
Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
10	φ20	8230 (High grade) 10900 (Precision)	44600	7600	10	17100 (High grade) 21700 (Precision)	42000	3380
20		5300 (High grade) 7060 (Precision)	35400		20	10300 (High grade) 12700 (Precision)		

Basic static moment load of linear guide

Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Single	1460	610	610

MCH10 (Double slider)

Accuracy grade: High grade (H)



Dimension of MCH10 (Double slider)

Reference number	Nominal stroke (mm)	Stroke limit(mm) (K1 is not equipped)	Ball screw lead (mm)	Body length (mm) L_1	L_2	G	L_3	n	Inertia $\times 10^{-6}$(kg · m^2)	Mass (kg)
☆MCH10025H10D	250	282 (314)	10	689	580	65	450	4	67.1	15
☆MCH10025H20D			20						82.4	
☆MCH10035H10D	350	382 (414)	10	789	680	40	600	5	77.3	17
☆MCH10035H20D			20						92.5	
☆MCH10045H10D	450	482 (514)	10	889	780	15	750	6	87.5	20
☆MCH10045H20D			20						103	
☆MCH10055H10D	550	582 (614)	10	989	880	65	750	6	97.7	22
☆MCH10055H20D			20						113	
☆MCH10065H10D	650	682 (714)	10	1 089	980	40	900	7	108	24
☆MCH10065H20D			20						123	
☆MCH10075H20D	750	782(814)	20	1 189	1 080	15	1 050	8	133	26
☆MCH10085H20D	850	882(914)	20	1 289	1 180	65	1 050	8	143	28
☆MCH10095H20D	950	982(1 014)	20	1 389	1 280	40	1 200	9	154	30
☆MCH10105H20D	1 050	1 082(1 114)	20	1 489	1 380	15	1 350	10	164	33

Notes: 1. Items not marked are available from standard stock.
2. Items marked with ☆ are designated as "quick delivery item" upon request.

Monocarrier dynamic torque specification (N · cm)		
Ball screw lead (mm)	10	4.2 – 15.6
	20	5.0 – 19.6

Notes:
1. Frictional resistance of NSK K1 is included in the dynamic torque in the table.
2. Grease is packed into ball screw, linear guide parts and support unit.
3. Consult NSK for life estimates under large moment loads.

Basic load rating

Lead ℓ (mm)	Shaft dia d (mm)	Basic dynamic load rating (N) Ball screw C_a	Linear guides C	Support unit C_a	Rated running distance L_a (km)	Basic static load rating (N) Ball screw C_{0a}	Linear guides C_0	Support unit load limit (N)
10	φ20	8230 (High grade) 10900 (Precision)	44600	7600	10	17100 (High grade) 21700 (Precision)	42000	3380
20		5300 (High grade) 7060 (Precision)	35400		20	10300 (High grade) 12700 (Precision)		

Basic static moment load of linear guide

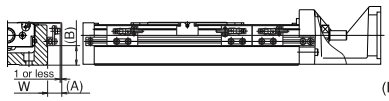
Slider	Basic static moment load (N · m) Rolling M_{RO}	Pitching M_{PO}	Yawing M_{YO}
Double	2920	3430	3430

C-3-3 MCH Series Option Part

C-3-3. 1 Sensor Unit

Standard stock

●Proximity switch

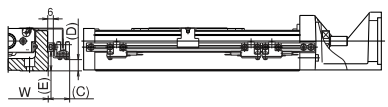


(Example of assembly)

Type		Reference number			Dimension(A) (mm)	Dimension(B) (mm)	Body width W (mm)
MCH06		MC-SRH06-10	MC-SRH06-11	MC-SRH06-12	17	10	60
MCH09		MC-SRH09-10	MC-SRH09-11	MC-SRH09-12	16	21	86
MCH10		MC-SRH10-10	MC-SRH10-11	MC-SRH10-12	16	16	100
Quantity	Proximity switch (a-contact)	—	3	1	E2S-W13 (OMRON Corp.)		
	Proximity switch (b-contact)	3	—	2	E2S-W14 (OMRON Corp.)		

Notes: 1. See page C21 for specification of proximity switch. 2. A sensor unit consists of sensors, a sensor dog and sensor mounting parts.

●Photo sensor



(Example of assembly)

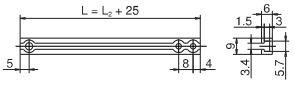
Type	Reference number	Dimension(C) (mm)	Dimension(D) (mm)	Dimension(E) (mm)	Body width W (mm)	Remarks
MCH06	MC-SRH06-13	24	2	11	60	EE-SX674 (OMRON Corp.)
MCH09	MC-SRH09-13	23	12	21	86	3 sets
MCH10	MC-SRH10-13	23	29	16	100	(EE-1001 connector atachment)

Notes: 1. See page C22 for specification of photo sensor. 2. A sensor unit consists of sensors, a sensor dog and sensor mounting parts.

●Sensor rail

Reference number : MC-SRL-＊＊＊＊

● ＊＊＊＊ is the same as rail dimension L_2.



Body of MCH Series and Sensor Rail Combination Table

Table 4

Nominal size	Body length L_2 (mm)	Reference number	Sensor rail reference number
MCH06	150	MCH06005H05K MCH06005H10K MCH06005H20K	MC-SRL-0150
	200	MCH06010H05K MCH06010H10K MCH06010H20K	MC-SRL-0200
	300	MCH06020H05K MCH06020H10K MCH06020H20K MCH06010H05D MCH06010H10D	MC-SRL-0300
	400	MCH06030H05K MCH06030H10K MCH06030H20K MCH06020H05D MCH06020H10D	MC-SRL-0400
	500	MCH06040H05K MCH06040H10K MCH06040H20K MCH06030H05D MCH06030H10D	MC-SRL-0500
	600	MCH06050H05K MCH06050H10K MCH06050H20K MCH06040H10D MCH06040H20D	MC-SRL-0600
MCL06	150	MCL06005H05K MCL06005H10K	MC-SRL-0150
	200	MCL06010H05K MCL06010H10K	MC-SRL-0200
	300	MCL06020H05K MCL06020H10K	MC-SRL-0300
	400	MCL06030H10K MCL06030H20K	MC-SRL-0400
	500	MCL06040H10K MCL06040H20K	MC-SRL-0500
	600	MCL06050H10K MCL06050H20K	MC-SRL-0600
MCH09	240	MCH09010H05K MCH09010H10K MCH09010H20K	MC-SRL-0240
	340	MCH09020H05K MCH09020H10K MCH09020H20K	MC-SRL-0340
	440	MCH09030H05K MCH09030H10K MCH09030H20K MCH09015H05D MCH09015H10D	MC-SRL-0440
	540	MCH09040H05K MCH09040H10K MCH09040H20K MCH09025H05D MCH09025H10D	MC-SRL-0540
	640	MCH09050H05K MCH09050H10K MCH09050H20K MCH09035H05D MCH09035H10D	MC-SRL-0640
	740	MCH09060H05K MCH09060H10K MCH09060H20K MCH09045H10D MCH09045H20D	MC-SRL-0740

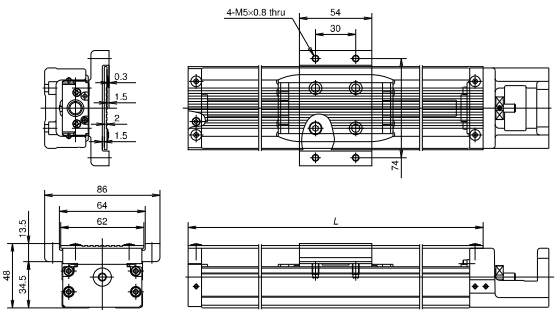
Nominal size	Body length L_2 (mm)	Reference number	Sensor rail reference number
MCH09	840	MCH09080H05K MCH09080H10K MCH09080H20K	MC-SRL-0840
	940	MCH09080H05K MCH09080H10K MCH09080H20K MCH09065H10D MCH09065H20D	MC-SRL-0940
MCH10	280	MCH10010H10K MCH10010H20K	MC-SRL-0280
	380	MCH10020H10K MCH10020H20K	MC-SRL-0380
	480	MCH10030H10K MCH10030H20K	MC-SRL-0480
	580	MCH10040H10K MCH10025H10D	MC-SRL-0580
	680	MCH10050H10K MCH10050H20K MCH10035H10D MCH10035H20D	MC-SRL-0680
	780	MCH10060H10K MCH10060H20K MCH10045H10D MCH10045H20D	MC-SRL-0780
	880	MCH10070H10K MCH10070H20K MCH10055H10D MCH10055H20D	MC-SRL-0880
	980	MCH10080H10K MCH10080H20K MCH10065H10D MCH10065H20D	MC-SRL-0980
	1080	MCH10090H10K MCH10090H20K MCH10075H20D	MC-SRL-1080
	1180	MCH10100H10K MCH10100H20K MCH10085H20D	MC-SRL-1180
	1280	MCH10110H10K MCH10110H20K MCH10095H20D	MC-SRL-1280
	1380	MCH10120H10K MCH10120H20K MCH10105H20D	MC-SRL-1380

C 72

C-3-3. 2 Cover Unit

Standard stock

Cover unit for MCH06
Cover unit for MCL06

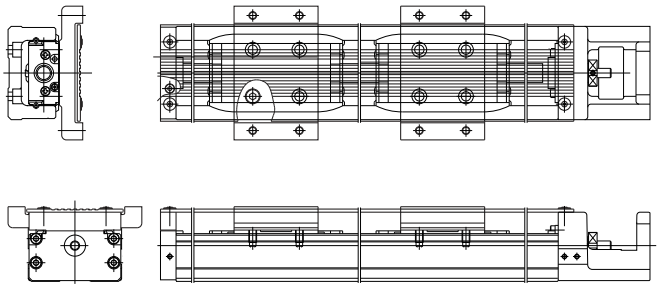


(Unit: mm)

Single slider		Double slider		Top cover length
Stroke	Reference number	Stroke	Reference number	*L*
50	MC-HV06005-00	–	–	170
100	MC-HV06010-00	–	–	220
200	MC-HV06020-00	100	MC-HV06010D00	320
300	MC-HV06030-00	200	MC-HV06020D00	420
400	MC-HV06040-00	300	MC-HV06030D00	520
500	MC-HV06050-00	400	MC-HV06040D00	620

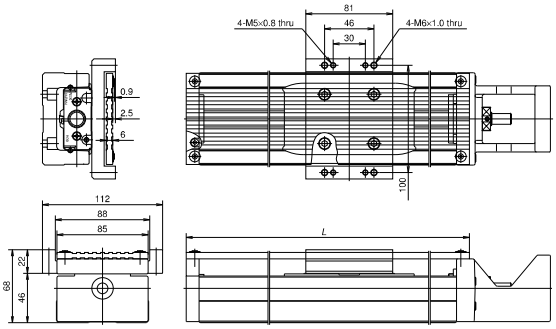
●Cover unit for double sliders (reference drawing)

Two spacers are attached for the double slider.



Standard stock

Cover unit for MCH09

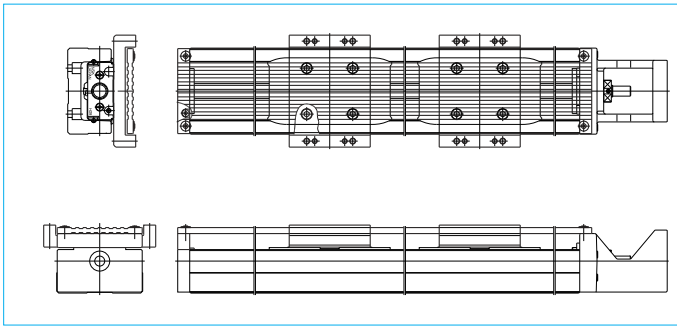


(Unit: mm)

Single slider		Double slider		Top cover length
Stroke	Reference number	Stroke	Reference number	*L*
100	MC-HV09010-00	–	–	264
200	MC-HV09020-00	–	–	364
300	MC-HV09030-00	150	MC-HV09015D00	464
400	MC-HV09040-00	250	MC-HV09025D00	564
500	MC-HV09050-00	350	MC-HV09035D00	664
600	MC-HV09060-00	450	MC-HV09045D00	764
700	MC-HV09070-00	–	–	864
800	MC-HV09080-00	650	MC-HV09065D00	964

●Cover unit for double sliders (reference drawing)

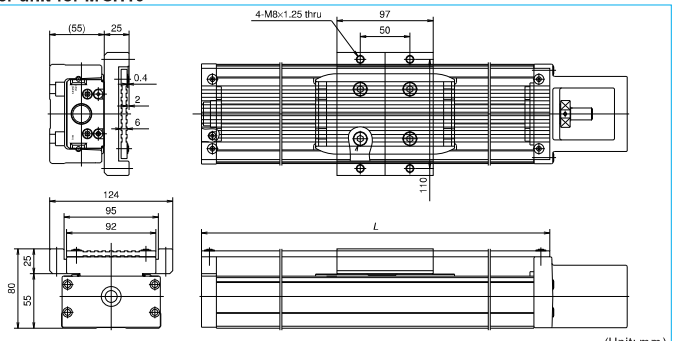
Two spacers are attached for the double slider.



C 74

Standard stock

Cover unit for MCH10

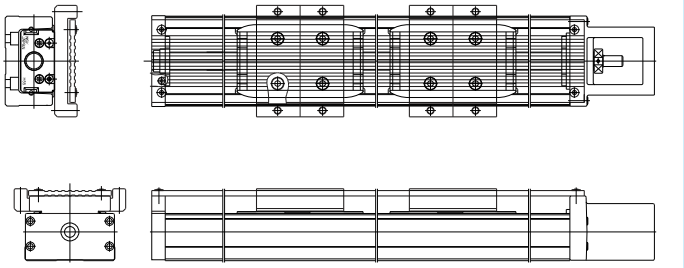


(Unit: mm)

Single slider		Double slider		Top cover length
Stroke	Reference number	Stroke	Reference number	*L*
100	MC-HV10010-00	–	–	310
200	MC-HV10020-00	–	–	410
300	MC-HV10030-00	–	–	510
400	MC-HV10040-00	250	MC-HV10025D00	610
500	MC-HV10050-00	350	MC-HV10035D00	710
600	MC-HV10060-00	450	MC-HV10045D00	810
700	MC-HV10070-00	550	MC-HV10055D00	910
800	MC-HV10080-00	650	MC-HV10065D00	1010
900	MC-HV10090-00	750	MC-HV10075D00	1110
1000	MC-HV10100-00	850	MC-HV10085D00	1210
1100	MC-HV10110-00	950	MC-HV10095D00	1310
1200	MC-HV10120-00	1050	MC-HV10105D00	1410

●Cover unit for double sliders (reference drawing)

Two spacers are attached for the double slider.



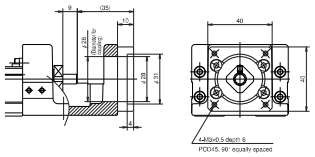
C-3-3. 3 Intermediate Plate for Motor

Standard stock

●Please ask NSK for a motor that is not listed in the compatible motor list.
●In case of motor indirect mount, please consult with NSK. ●Be sure to align the center lines when installing the motor.
●Motor models are subject to change at the motor manufacturers. For details, please contact the manufacture.

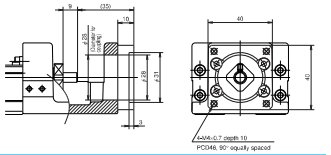
Motor Bracket for MCH06 and MCL06

Reference number : MC-BKH06-145-00



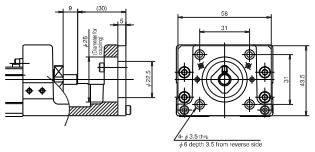
Compatible motor	
Maker	Motor models
Mitsubishi Electric Industrial Co., Ltd.	MSMD5A(50W), MSMD01(100W)

Reference number : MC-BKH06-146-00



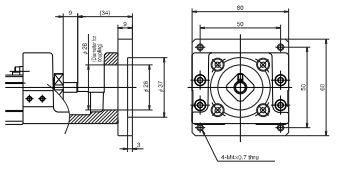
Compatible motor	
Maker	Motor models
Yaskawa Electric Corp.	SGMAH-A3(30W), SGMJV-A5A(50W), SGMAV-A5A(50W) SGMJV-01A(100W), SGMAV-01A(100W)
Mitsubishi Electric Corp.	HF-KP053(50W), HF-MP053(50W), HC-KFS053(50W) HC-MFS053(50W), HF-KP13(100W), HF-MP13(100W) HC-KFS13(100W), HC-MFS13(100W)
OMRON Corp.	R88M-W03(30W), R88M-W05(50W), R88M-W10(100W)
Sanyo Denki Co., Ltd.	P30B04xxx P Series

Reference number : MC-BKH06-231-00



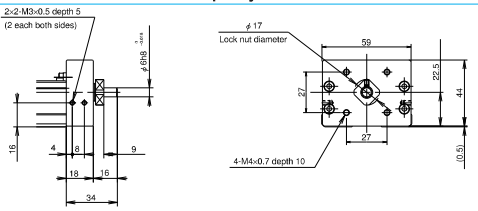
Compatible motor	
Maker	Motor models
Oriental Motor Co., Ltd.	AS46, ASC46, UPK54x, PK54x, CSK54x, CFK54x, UMK24x, CSK24x, PK24x
Sanyo Denki Co., Ltd.	PBM423xxx, 103F55xx

Reference number : MC-BKH06-250-00



Compatible motor	
Maker	Motor models
Oriental Motor Co., Ltd.	AS66, ASC66, UPK56x, UFK56x, PK56x, CSK56x, CFK56x MUMS02(200W), MUMS04(400W)
Sanyo Denki Co., Ltd.	PBM603xx, PBM604xx, 103F78xx

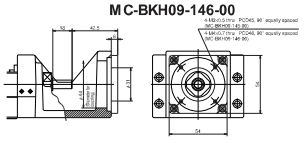
Diameter of ball screw shaft end to install a pulley for indirect motor mount of MCH06



Standard stock

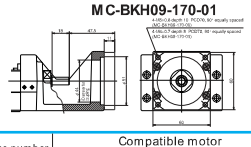
Motor Bracket for MCH09

Reference number : MC-BKH09-145-00
MC-BKH09-146-00



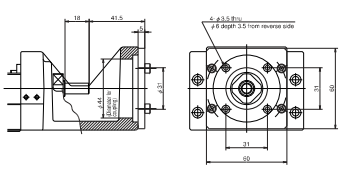
Reference number	Compatible motor	
	Maker	Motor models
MC-BKH09-145-00	Mitsubishi Electric Industrial Co., Ltd.	MSMD5A(50W), MSMD01(100W)
MC-BKH09-146-00	Yaskawa Electric Corp.	SGMJV-A5A(50W), SGMAV-A5A(50W) SGMJV-01A(100W), SGMAV-01A(100W)
	Mitsubishi Electric Corp.	HF-KP053(50W), HF-MP053(50W), HC-KFS053(50W) HC-MFS053(50W), HF-KP13(100W), HF-MP13(100W) HC-KFS13(100W), HC-MFS13(100W)
	OMRON Corp.	R88M-W05(50W), R88M-W10(100W)
	Sanyo Denki Co., Ltd.	P30B04xxx P Series

Reference number : MC-BKH09-170-00
MC-BKH09-170-01



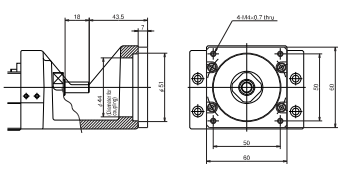
Reference number	Compatible motor	
	Maker	Motor models
MC-BKH09-170-00	Yaskawa Electric Corp.	SGMJV-02A(200W), SGMAV-02A(200W) SGMJV-04A(400W), SGMAV-04A(400W)
	Mitsubishi Electric Corp.	HF-KP23(200W), HF-MP23(200W), HF-KP43(400W) HF-MP43(400W), HC-KFS23(200W), HC-MFS23(200W) HC-KFS43(400W), HC-MFS43(400W)
	OMRON Corp.	R88M-W20(200W), R88M-W40(400W)
	Sanyo Denki Co., Ltd.	P30B06xxx P Series
MC-BKH09-170-01	Mitsubishi Electric Industrial Co., Ltd.	MSMD02(200W), MSMA02(200W) MSMA04(400W), MSMD04(400W)

Reference number : MC-BKH09-231-00



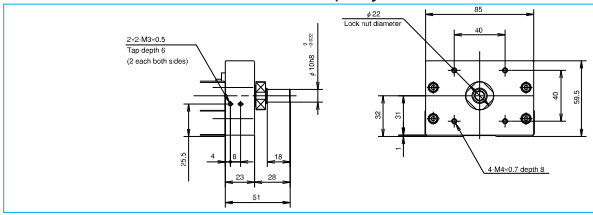
Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	PBM423xxx, 103F55xx
Oriental Motor Co., Ltd.	AS46, ASC46, UPK54x, PK54x, CSK54x, CFK54x UMK24x, CSK24x, PK24x

Reference number : MC-BKH09-250-00



Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	PBM603xx, PBM604xx, 103F78xx
Oriental Motor Co., Ltd.	AS66, ASC66, UPK56x, UFK56x, PK56x CSK56x, CFK56x

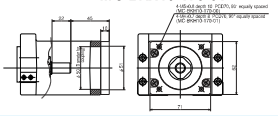
Diameter of ball screw shaft end to install a pulley for indirect motor mount of MCH09



Standard stock

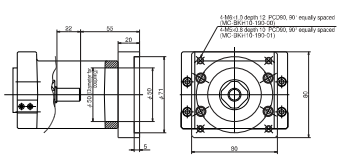
Motor Bracket for MCH10

Reference number : MC-BKH10-170-00 MC-BKH10-170-01



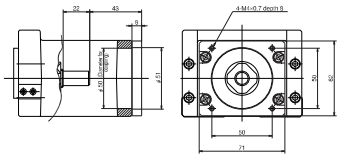
Reference number	Compatible motor	
	Maker	Motor models
MC-BKH10-170-00	Yaskawa Electric Corp.	SGMJV-02A(200W), SGMAV-02A(200W) SGMJV-04A(400W), SGMAV-04A(400W)
	Mitsubishi Electric Corp.	HF-KP23(200W), HF-MP23(200W), HF-KP43(400W) HF-MP43(400W), HC-KFS23(200W), HC-MFS23(200W) HC-KFS43(400W), HC-MFS43(400W)
	OMRON Corp.	R88M-W20(200W), R88M-W40(400W)
	Sanyo Denki Co., Ltd.	P30B06xxx P Series
MC-BKH10-170-01	Matsushita Electric Industrial Co., Ltd.	MSMD02(200W), MSMA02(200W) MSMD04(400W), MSMA04(400W)

Reference number : MC-BKH10-190-00 MC-BKH10-190-01



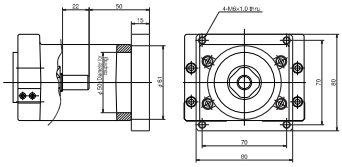
Reference number	Compatible motor	
	Maker	Motor models
MC-BKH10-190-00	Mitsubishi Electric Corp.	HC-KFS73(750W), HC-MFS73(750W) HF-KP73(750W), HF-MP73(750W)
MC-BKH10-190-01	Sanyo Denki Co., Ltd.	P50B07xxx P Series

Reference number : MC-BKH10-250-00



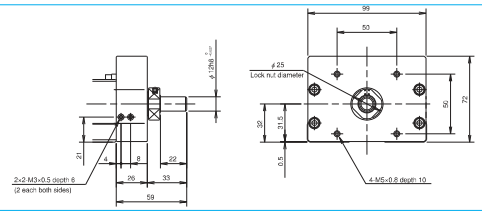
Compatible motor	
Maker	Motor models
Sanyo Denki Co., Ltd.	PBM603xx, PBM604xx, 103F78xx
Oriental Motor Co., Ltd.	AS66, ASC66, UPK56x, PK56x, CSK56x, CFK56x UMK56x, UFK56X

Reference number : MC-BKH10-270-00



Compatible motor	
Maker	Motor models
Oriental Motor Co., Ltd.	AS98, ASC98, UPK59x, PK59x, CSK59x, CFK59x UMK59x, UFK59x

Diameter of ball screw shaft end to install a pulley for indirect motor mount of MCH10



Availability Motor Table of Intermediate Plate for MCH Series

Table 5

Nominal size	Reference number code	Motor bracket reference number	Motor manufacturer	Stepping motor model number	Wattage of AC servo motor					
					30	50	100	200	400	750
MCH06 MCL06	1	MC-BKH06-145-00	Matsushita Electric Industrial Co., Ltd.			MSMD5A	MSMD01			
	2	MC-BKH06-146-00	Yaskawa Electric Corp.		SGMAH-A3	SGMJV-A5A SGMAV-A5A	SGMJV-01A SGMAV-01A			
			Mitsubishi Electric Corp.			HF-KP053 HF-MP053 HC-KFS053 HC-MFS053	HF-KP13 HF-MP13 HC-KFS13 HC-MFS13			
			OMRON Corp.		R88M-W03	R88M-W05	R88M-W10			
			Sanyo Denki Co., Ltd.	P30B04xxx (P Series)						
	3	MC-BKH06-231-00	Sanyo Denki Co., Ltd.	PBM423xxx 103F55xx						
			Oriental Motor Co., Ltd.	AS46 , ASC46 UPK54x , PK54x CSK54x , CFK54x UMK24x , CSK24x PK24x						
	4	MC-BKH06-250-00	Sanyo Denki Co., Ltd.	PBM603xx PBM604xx 103F78xx						
			Oriental Motor Co., Ltd.	AS66 , ASC66 UPK56x , UFK56x PK56x , CSK56x CFK56x				MUMS02	MUMS04	
MCH09	1	MC-BKH09-145-00	Matsushita Electric Industrial Co., Ltd.			MSMD5A	MSMD01			
	2	MC-BKH09-146-00	Yaskawa Electric Corp.			SGMJV-A5A SGMAV-A5A	SGMJV-01A SGMAV-01A			
			Mitsubishi Electric Corp.			HF-KP053 HF-MP05 HC-KFS053 HC-MFS053	HF-KP13 HF-MP13 HC-KFS13 HC-MFS13			
			OMRON Corp.			R88M-W05	R88M-W10			
			Sanyo Denki Co., Ltd.	P30B04xxx (P Series)						
	3	MC-BKH09-170-00	Yaskawa Electric Corp.					SGMJV-02A SGMAV-02A	SGMJV-04A SGMAV-04A	
			Mitsubishi Electric Corp.					HF-KP23 HF-MP23 HC-KFS23 HC-MFS23	HF-KP43 HF-MP43 HC-KFS43 HC-MFS43	
			OMRON Corp.					R88M-W20	R88M-W40	
			Sanyo Denki Co., Ltd.	P30B06xxx (P Series)						
	4	MC-BKH09-170-01	Matsushita Electric Industrial Co., Ltd.					MSMD02 MSMA02	MSMD04 MSMA04	
	5	MC-BKH09-231-00	Sanyo Denki Co., Ltd.	PBM423xxx 103F55xx						
			Oriental Motor Co., Ltd.	AS46 , ASC46 UPK54x , PK54x CSK54x , CFK54x UMK24x , CSK24x PK24x						
	6	MC-BKH09-250-00	Sanyo Denki Co., Ltd.	PBM603xx PBM604xx 103F78xx						
			Oriental Motor Co., Ltd.	AS66 , ASC66 UPK56x , UFK56x PK56x , CSK56x CFK56x						
MCH10	1	MC-BKH10-170-00	Yaskawa Electric Corp.					SGMJV-02A SGMAV-02A	SGMJV-04A SGMAV-04A	
			Mitsubishi Electric Corp.					HF-KP23 HF-MP23 HC-KFS23 HC-MFS23	HF-KP43 HF-MP43 HC-KFS43 HC-MFS43	
			OMRON Corp.					R88M-W20	R88M-W40	
			Sanyo Denki Co., Ltd.	P30B06xxx (P Series)						
	2	MC-BKH10-170-01	Matsushita Electric Industrial Co., Ltd.					MSMD02 MSMA02	MSMD04 MSMA04	
	3	MC-BKH10-190-00	Mitsubishi Electric Corp.							HC-KFS73 HC-MFS73 HF-KP73 HF-MP73
	4	MC-BKH10-190-01	Sanyo Denki Co., Ltd.	P50B07xxx (P Series)						
	5	MC-BKH10-250-00	Sanyo Denki Co., Ltd.	PBM603xx PBM604xx 103F78xx						
			Oriental Motor Co., Ltd.	AS66 , ASC66 UPK56x , PK56x CSK56x , CFK56x UMK56x , UFK56x						
	6	MC-BKH10-270-00	Oriental Motor Co., Ltd.	AS98 , ASC98 UPK59x , PK59x CSK59x , CFK59x UMK59x , UFK59x						

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