

Mitsubishi General-Purpose AC Servo

Sales and Service

No. 10-26E

Transition to Made-to-order Production for General-purpose AC Servo MR-C Series

Thank you for your continued patronage of the Mitsubishi general-purpose AC servo and FA products. The MR-C series has been manufactured based on market requirements for 13 years since its release. However, we have difficulty to maintain the production system since some parts of the MR-C series are obsolete. Therefore, the MR-C series will be only available as a made-to-order product. We ask for your understanding in this matter.

1. Target Models

Servo amplifier

MR-C-10A, MR-C-20A, MR-C-40A, MR-C-10A1, MR-C-20A1

Servo motor

HC-PQ033(B), HC-PQ053(B)(G1/G2), HC-PQ13(B)(G1/G2), HC-PQ23(B)(G1/G2),
HC-PQ43(B)(G1/G2)
HC-KQ053(B), HC-KQ13(B), HC-KQ23(B), HC-KQ43(B)

2. Schedule

Transition to made-to-order production: April 2011

The products can be delivered in eight to ten weeks after receipt of order.

3. Others

The MR-JN series is available as an alternative to the MR-C series. Please consider replacing the MR-C series with the MR-JN series.

Item	Target model	Alternative model	Remarks
Servo amplifier	MR-C: 100 to 400W (200VAC input) 100 to 200W (100VAC input)	MR-JN: 100 to 400W (200VAC input) 100 to 200W (100VAC input)	With mounting compatibility
Servo motor	HC-PQ: 30 to 400W HC-KQ: 50 to 400W	HF-KN: 50 to 400W HF-KP: 50 to 400W (Note)	With mounting compatibility

Note. The HF-KP has a reduction gear.

Date of issue	November 2010	Title	Transition to Made-to-order Production for General-purpose AC Servo MR-C Series	Mitsubishi Electric Corp., Nagoya Works 5-1-14 Yada-minami, Higashi-ku, Nagoya 461-8670 Tel.: +81 (52) 721-2111 Main line
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Precautions for Replacing MR-C Series with Alternative MR-JN Series

1. Overview

The functions and the performance of the MR-JN series has greatly improved compared to the MR-C series, and the both series have mounting compatibility.

2. Alternative Models

The following tables show the standard replacement examples when the servo amplifier and the servo motor are replaced in sets.

<Servo amplifier>

Type	Target model	Alternative model	Mounting compatibility	Precautions
Single-phase 200V general-purpose interface (International standards compliance (Note))	MR-C-10A (MR-C-10A-UE)	MR-JN-10A	○	For differences in the detailed specifications and in the functions, refer to Chapter 3.
	MR-C-20A (MR-C-20A-UE)	MR-JN-20A		
	MR-C-40A (MR-C-40A-UE)	MR-JN-40A		
Single-phase 100V general-purpose interface (International standards compliance (Note))	MR-C-10A1 (MR-C-10A1-UE)	MR-JN-10A1	○	
	MR-C-20A1 (MR-C-20A1-UE)	MR-JN-20A1		

Note. The MR-JN series complies with the international standards as standard.

<Servo motor>

Type	Target model	Alternative model	Mounting compatibility	Precautions
Without a reduction gear	HC-PQ033	HF-KN053	○	The encoder and the power supply connector must be changed.
	HC-PQ053	HF-KN053		
	HC-PQ13	HF-KN13		
	HC-PQ23	HF-KN23		
	HC-PQ43	HF-KN43		
Without a reduction gear	HC-KQ053	HF-KN053	○	The encoder and the power supply connector must be changed.
	HC-KQ13	HF-KN13		
	HC-KQ23	HF-KN23		
	HC-KQ43	HF-KN43		

<Servo motor>

Type	Target model	Alternative model	Mounting compatibility	Precautions
With a reduction gear, for general industrial machinery	HC-PQ053G1 1/5	HF-KP053G1 1/5	○	The encoder and the power supply connector must be changed.
	HC-PQ053G1 1/12	HF-KP053G1 1/12		
	HC-PQ053G1 1/20	HF-KP053G1 1/20		
	HC-PQ13G1 1/5	HF-KP13G1 1/5		
	HC-PQ13G1 1/12	HF-KP13G1 1/12		
	HC-PQ13G1 1/20	HF-KP13G1 1/20		
	HC-PQ23G1 1/5	HF-KP23G1 1/5		
	HC-PQ23G1 1/12	HF-KP23G1 1/12		
	HC-PQ23G1 1/20	HF-KP23G1 1/20		
	HC-PQ43G1 1/5	HF-KP43G1 1/5		
	HC-PQ43G1 1/12	HF-KP43G1 1/12		
	HC-PQ43G1 1/20	HF-KP43G1 1/20		
With a reduction gear, for general industrial machinery	HC-PQ053G2 1/5	HF-KP053G7 1/5	×	a) No compatibility regarding the flange mounting and the output shaft mounting (If making a change to the machinery is difficult, consult us.) b) The encoder and the power supply connector must be changed.
	HC-PQ053G2 1/12	HF-KP053G7 1/11		
	HC-PQ053G2 1/20	HF-KP053G7 1/21		
	HC-PQ053G2 1/29	HF-KP053G7 1/33		
	HC-PQ13G2 1/5	HF-KP13G7 1/5		
	HC-PQ13G2 1/12	HF-KP13G7 1/11		
	HC-PQ13G2 1/20	HF-KP13G7 1/21		
	HC-PQ13G2 1/29	HF-KP13G7 1/33		
	HC-PQ23G2 1/5	HF-KP23G7 1/5		
	HC-PQ23G2 1/12	HF-KP23G7 1/11		
	HC-PQ23G2 1/20	HF-KP23G7 1/21		
	HC-PQ23G2 1/29	HF-KP23G7 1/33		
	HC-PQ43G2 1/5	HF-KP43G7 1/5		
	HC-PQ43G2 1/12	HF-KP43G7 1/11		
	HC-PQ43G2 1/20	HF-KP43G7 1/21		
	HC-PQ23G2 1/29	HF-KP43G7 1/33		

<Inertia moment ratio>

Target model		Alternative model	
Model	Inertia moment J ($\times 10^{-4} \text{kg} \cdot \text{m}^2$)	Model	Inertia moment J ($\times 10^{-4} \text{kg} \cdot \text{m}^2$)
HC-PQ033	0.014	HF-KN053	0.052
HC-PQ053	0.019	HF-KN053	0.052
HC-PQ13	0.030	HF-KN13	0.088
HC-PQ23	0.088	HF-KN23	0.240
HC-PQ43	0.143	HF-KN43	0.420
HC-KQ053	0.053	HF-KN053	0.052
HC-KQ13	0.084	HF-KN13	0.088
HC-KQ23	0.260	HF-KN23	0.240
HC-KQ43	0.460	HF-KN43	0.420

3. Comparisons on Outline Dimensions and Installation Dimensions

<Servo amplifier>

Since the MR-JN series has smaller dimensions compared to the MR-C series, the both series have mounting compatibility.

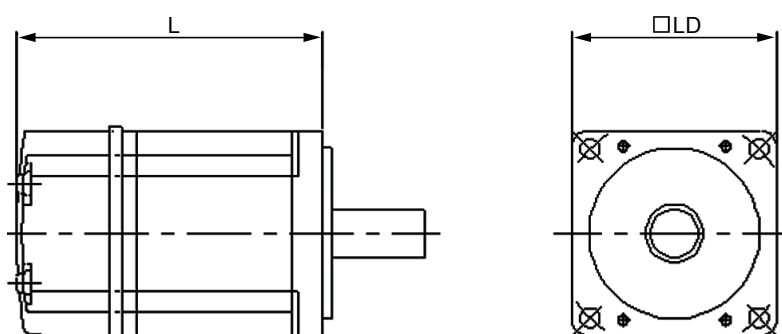
Comparison of outline dimensions (with the same rated output capacity)

[Unit: mm]

Model		Height in common	Width		Depth	
MR-C series	MR-JN series		MR-C	MR-JN	MR-C	MR-JN
MR-C-10(A/A1)(-UE)	MR-JN-10(A/A1)	130	40		100	135 (Note)
MR-C-20(A/A1)(-UE)	MR-JN-20(A/A1)					
MR-C-40A(-UE)	MR-JN-40A		60	50	104	

Note. The depth of the MR-JN series is larger than that of the MR-C series.

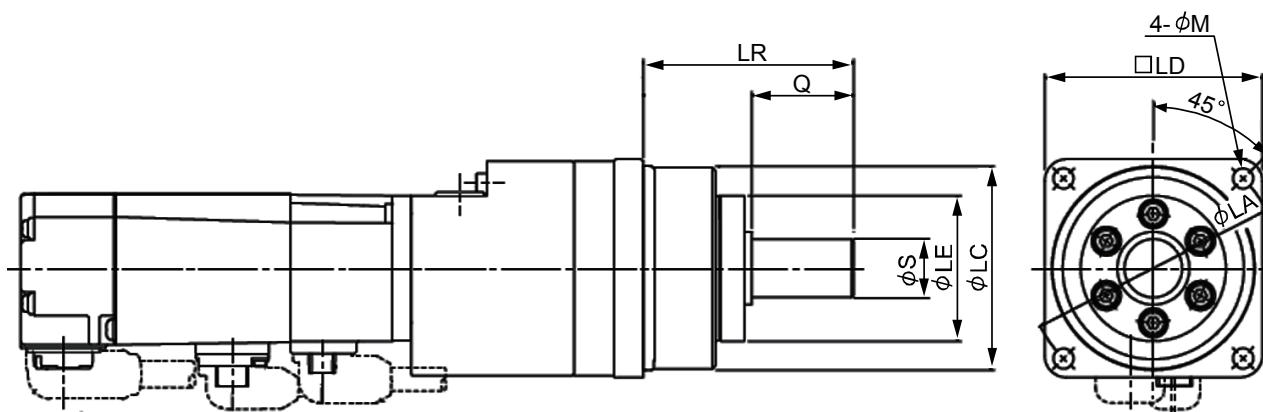
<Servo motor>



[Unit: mm]

Target model			Alternative model		
Model	L	LD	Model	L	LD
HC-PQ033	65.5	40	HF-KN053	72	40
HC-PQ053	71.5	40	HF-KN053	72	40
HC-PQ13	86.5	40	HF-KN13	87	40
HC-PQ23	89	60	HF-KN23	88.2	60
HC-PQ43	114	60	HF-KN43	110.2	60
HC-KQ053	71.5	40	HF-KN053	72	40
HC-KQ13	86.5	40	HF-KN13	87	40
HC-KQ23	89	60	HF-KN23	88.2	60
HC-KQ43	114	60	HF-KN43	110.2	60

Note. The dimensions of the HC-KQ are the same as those of the HC-PQ.



[Unit: mm]

Model	Reduction gear ratio	Inertia moment J ($\times 10^{-4} \text{kg} \cdot \text{m}^2$)	Variable dimensions							
			LA	LC	LD	LE	S	Q	LR	M
HC-PQ053G2	1/5	0.067	80	65h7	70	48	16h6	25	55	6.6
	1/9	0.060								
	1/20	0.069								
	1/29	0.057								
HF-PQ13G2	1/5	0.078	100	80h7	85	65	20h6	35	75	6.6
	1/9	0.072								
	1/20	0.122								
	1/29	0.096								
HF-PQ23G2	1/5	0.191	80	65h7	70	48	16h6	25	55	6.6
	1/9	0.208	100	80h7	85	65	20h6	35	75	6.6
	1/20	0.357	115	95h7	100	75	25h6	40	85	9
	1/29	0.276								
HF-PQ43G2	1/5	0.295	100	80h7	85	65	20h6	35	75	6.6
	1/9	0.323	115	95h7	100	75	25h6	40	85	9
	1/20	0.426	135	110h7	115	90	32h6	50	100	11
	1/29	0.338								

[Unit: mm]

Model	Reduction gear ratio	Inertia moment J ($\times 10^{-4} \text{kg} \cdot \text{m}^2$)	Variable dimensions							
			LA	LC	LD	LE	S	Q	LR	M
HF-KP053G7	1/5	0.126	70	56h6	60	40	16h6	28	58	5.5
	1/11	0.113								
	1/21	0.103								
	1/33	0.097								
HF-KP13G7	1/5	0.162	105	85h7	90	59	25h7	42	80	9
	1/11	0.149								
	1/21	0.139								
	1/33	0.151								
HF-KP23G7	1/5	0.447	70	56h7	60	40	16h7	28	58	5.5
	1/11	0.443	105	85h7	90	59	25h7	42	80	9
	1/21	0.740								
	1/33	0.693								
HF-KP43G7	1/5	0.627	70	56h7	60	40	16h7	28	58	5.5
	1/11	1.000	105	85h7	90	59	25h7	42	80	9
	1/21	0.920								
	1/33	0.976	135	115h7	120	84	40h7	82	133	11

4. Function Comparison

Item		MR-C series	MR-JN series
1	Capacity range (200V/100V)	30W to 400W/30W to 200W	50W to 400W/50W to 200W
2	Internal regenerative resistor	Not supported	Built-in (200W or more)
3	Dynamic brake	Not supported	Built-in
4	Control circuit power supply/main circuit power supply	Single-phase 200V (100V) in common	24VDC /single-phase 200V (100V)
5	24VDC power supply capacity	I/F = 0.2A	I/F = 0.2A, Control power supply = 0.5A
6	Auto tuning	5 levels	16 levels + One-touch adjustment
7	Control mode	Pulse command, Internal speed	Pulse command, Internal speed, internal torque Built-in positioning function (CP, CL)
8	Maximum input pulse	Differential pulse 200kpps	Differential pulse 1Mpps
9	DIO points	DI: 4 points, DO: 2 points	DI: 6 points, DO: 4 points
10	Encoder pulse output	Z-phase (Open collector)	ABZ-phase (Differential), Z-phase (Open collector)
11	DIO interface	Sink DI = 24V/5V, DO = 24V	Sink/source DI = DO = 24V
12	Analog I/O	Not supported	Not supported
13	Number of internal speed commands	2 points	8 points
14	Parameter setting method	MR-Configurator (SETUP81) Push button	MR-Configurator (SETUP221) Push button
15	Servo configuration software communication	RS-232C (The MR-C-T01 is required.)	USB (The MR-JN series has a USB port.)
16	Servo motor (Encoder resolution)	HC-PQ (12-bit INC)	HF-KN (17-bit INC) With a reduction gear: HF-KP
17	Motor torque	50W/100W: 400% 200W: 300% 400W: 230%	50W/100W: 300% 200W: 300% 400W: 300%
18	Button	4 buttons	5 buttons
19	LED indication	7 segments, 3 digits	7 segments, 3 digits
20	Advanced vibration suppression control	Not supported	Supported
21	Adaptive filter II	Not supported	Supported
22	Notch filter	Not supported	Supported (3 filters)
23	Tough drive	Not supported	Supported
24	Drive recorder	Not supported	Supported
Note	Item 4, 5: The control power supply is separated from the main circuit. The MR-JN series requires more 24VDC power supply capacity. Item 11: The MR-JN series does not support DI of the 5V power supply. Others: The shaded area indicates an added or improved function.		

