Changes for the Better







Nagoya works, Mitsubishi Electric Corporation, has acquired certification for systems of environmental management under ISO 14001, and for quality management systems under ISO 9001.



Fine Tuning! Improved Performance

Mitsubishi's original robot dedicated motor and dedicated servo amplifier have been newly developed to improve the robot's movement and basic performance. A variety of functions, realized with the 64-bit RISC processor, provide solutions for our customer's high value-added systems.



Features

Improved Productivity

- •High Speed Operation
- In addition to high payload capability, high speed operation is now possible.
- Diverse Lineup
 As the S Series horizontal multi-joint robots, seven models with varied arm lengths and 6-kg, 12-kg and 18-kg payloads are available.
- Compliance with environmental protection
 Lineup also includes robots with environment-resistant specifications.
- Please select a robot according to the desired environment.
 Valve Placement with Consideration for Peripheral Devices
 The dedicated valve option for the rear of the No. 2 arm and its installation space are provided. New design is enable to minimize the interference with peripheral devices.



Reduction of Maintenance Cost

Installed with the Maintenance Function The maintenance period is announced beforehand by the maintenance forecast function and position restoration function, allowing timely maintenance and a reduction of total maintenance costs.

Powered and Improved

- More Robots with Clean Room Specification Horizontal multi-joint models with 12-kg or 18-kg payload are now available with clean room specification.
 (Special Specification at Factory Shipment)
- Improved Actual Operating Speed A higher speed operation than with the conventional RH-A Series is achieved in the actual movement range, as well as the maximum speed. The operating speed setting that estimates the lifespan in all movement ranges is also implemented.
- The speed is improved by employing the drive module common to the S Series.

Compatiblity

Compatible with the RH-A Series

- The mechanical compatibility with the RH-A Series is maintained. The user of the RH-A Series can continue to use the existing robots with this new series.
- * To replace RH-A with RH-6SH, correction of the Z position may partially be required.

Model Structure

Pohot corios	Arm length		Connection controller			
Rubul Selles	[mm]	170	200	300	350	
	350	RH-6SH3517M/C	RH-6SH3520	-	-	
RH-6SH series	450	RH-6SH4517M/C	RH-6SH4520	_	-	CR1B-571
	550	RH-6SH5517M/C	RH-6SH5520	_	-	
	550	-	-	RH-12SH5530M/C	RH-12SH5535	
RH-12SH series	700	-	-	RH-12SH7030M/C	RH-12SH7035	0000 574
	850	-	-	RH-12SH8530M/C	RH-12SH8535	GRZB-3/4
RH-18SH series	850	-	-	RH-18SH8530M/C	RH-18SH8535	

*1: Robots with CE marking specification are separately available. The RH-6SH Series uses the CR2B-574 controller. For more information, please contact your nearest dealer or distributor. *2: Please note that the environment-resistant specifications (C: clean room specification, M: oil mist specification) have a narrower up/down axis movement range compared to the robots with the standard specification. *3: The environment-resistant specifications (clean room specification, oil mist specification) are provided as special specifications at factory shipment. For delivery schedule,

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with More Diverse Functions!

Robot Arm Outside Dimension / Movement Range Diagrams

RH-6SH



Hand mounting dimensions Cross-section Y-Y

*10: This is the restricted area in the movement range diagram

*11: This is the reference process surface at installation.

	*12: This is the screw hole (M4) for fastening the user wiring and piping.
Н	*13: In the oil mist and clean-room specifications, this is 1027 for the RH-12SH S

*13:	In the oil mist and	clean-room	specifications,	this is 10)27 for the	e RH-12SH	Series and	999	for the
	RH-8SH Series.								
***	THE LOOP CHI								

~ 75 100 100 View Z

240 or more

- *15: In the oil mist and clean-room specifications, a bellows is installed in the exposed parts (top and
- bottom) of the ball screw spline.
 *16: G is \$\phi_25\$ for the RH-12SH Series, and \$\phi_32\$ for the RH-18SH Series. The shaft outline of the hand mounting flange is common. (*16a)

Varied dimensions								
Robot series	А	В	С	D	E (*10)	F (*13)	G	Н
RH-12SH55	225	R550	R191	145	240	972	¢ 25	30
RH-12SH70	375	R700	R216	145	240	972	¢ 25	30
RH-12SH85	525	R850	R278	153	-	972	¢ 25	30
RH-18SH85	525	R850	R278	153	-	967	ø 32	40

>> List of Specifications

Robot Arm

Туре		Unit	RH-6SH35zze	RH-6SH45zze	RH-6SH55zze	RH-12SH55zze	RH-12SH70zze	RH-12SH85zze	RH-18SH85zze	
Machine class						En (Refer to Table 1)			
Installation						Floor mount				
Degrees of freed	lom					4				
Structure					Horiz	zontal, maltiple-joint	type			
Driving method						AC servomotor				
Position sensing	method					Absolute encoder				
Maximum load c	apacity	kg		6			12		18	
Arm length	NO1 arm		125	225	325	225	375	52	25	
Anniengui	NO2 arm	mm		225			32	25		
Maximum reach rasius (NO1 arm+NO2 arm)			350	450	550	550	700	85	i0	
Operating range -	J1	dog		254 (±127) 280 (±140)						
	J2	uey	274 (±137)	290 (:	±145)	290 (:	290 (±145)		±153)	
	J3(Z)	mm				Z (Refer to Table 1)				
	J4(θ)	deg				720 (±360)				
Maximum reach rasius (Operating range Maximum speed Maximum compos Cycle time *18 Allowable wrist-mome Position	J1	doglooo		375		360 28			18	
	J2	ueg/sec	612				412	2.5		
	J3(Z)	mm/sec		1,177		1,300 1,7			1,200	
	J4(θ)	deg/sec		2,411		1,500				
Maximum compo	osite speed *17	mm/sec	6,473 (4,694)	7,128 (5,349)	7,782 (6,003)	10,555 (5,796)	11,498 (6,738)	(6,738) 11,221 (6,612)		
Cycle time *18		sec	0.45	0.46	0.47	0.43	0.44	0.46	0.53	
Allowable wrist-mon	nent of inertia (rating)	kg·m²		0.04 (0.01)			0.1 (0.02)		0.2 (0.02)	
Position	X-Y composite	mm		±0.02		±0.02 ±0.025				
ropostabillity	J3(Z)			±0.01		±0.01				
repeatability	$J4(\theta)$	deg		±0.02		±0.03				
Ambient tempera	ature	°C				0 to 40				
Mass		kg	2	0	21	41	43	45	47	
Tool wiring *19					8 hand input poir	nts, 8 output points,	8-wire spare wire			
Tool pneumatic p	pipes					¢6 x 2 pipes				
Supplied air pres	sure	MPa				0.5±10%				
Protection class/C	lean specifications				Pro	otect (Refer to Table	e 1)			

*17: The value when J1, J2 and J4 are composed. The value in parentheses is the value when J1 and J2 are composed.
*18: RH-6/12SH shows the value when the payload is 2 kg (RH-18SH shows the value when the payload is 5 kg).
•The cycle time may increase when the work's positioning accuracy is required, for instance, or depending on the operating position. (The cycle time is a reciprocating operation of up/down 25 mm and horizontal 300 mm.) *19: The air hand interface (optional) is required to use hand output.

Table 1: Relationship Among the Robot Series, Environment Specifications and Up/Down Axis Movement Range (Z Stroke)

Dehotoprice	Up/down axis movement range		Protection specifications		Protection class/Clean specifications		
RODOL Selles	(Z)	Symbol (model notation: zz)	(En)	Symbol (model notation: e)	(Protect)		
DH COH	200 (97 to 297)	20	Standard	Blank	IP20		
кп-05п	170 (97 to 267)	17	Oilmist proof	М	IP54		
series	170 (97 to 267)	17	Clean	С	Class10 (0.3µm)		
	350 (-10 to 340)	35	Standard	Blank	IP20		
RH-12/185H	300 (-10 to 290)	30	Oilmist proof	М	IP54		
series	300 (-10 to 290)	30	Clean	C	Class10 (0.3µm)		

Controller

	Туре	Unit	CR1B-571	CR2B-574			
Path co	ontrol method		PTP control	, CP control			
Numbe	er of axes controlled		Up to 6 axes s	simultaneously			
CPU			64bit RI	SC/DSP			
			Joint interpolation, linear interpolation, t	hree-dimensional circular interpolation,			
			palletizing, conditional branching, subroutine, interrupt control,				
Main functions			multi-task, optimum accele	ration/deceleration control,			
			optimum override control,optin	num path connection function,			
			torque limit command, XYZ compliance	e control, collision detection function,			
			maintenance forecast function	n, position restoration function			
Robot	language		MELFA-E	BASIC IV			
Positio	n teaching method		Teachig method (direc	t, remote), MDI method			
ity v	Numbers of teaching points	points	2,5	500			
pad	Number of steps	steps	5,0	000			
Me	Number of programs	steps	8	8			
Program	n creation procedures		Personal computer	or teaching pendant			
rface External I/O ad Memory	Conorol purposo	nointo	16 inputs/16 outputs (up to 240/240 when	32 inputs/32 outputs (up to 256/256 when			
		points	using the optional, additional I/O unit) using the optional, additional I				
	Dedicated		Assigned from general-purpose I/O (one point, "STOP," is fixed)				
	Hand open/close	points	8 inputs/0 output (maxin	num 8-point option) *20			
	Emergency stop input	points	1				
	Emergency stop output	points	1				
	Door switch input	points 16 inputs/16 outputs (up to 240/240 when 3: using the optional, additional I/O unit) Assigned from general-purpose I, points 8 inputs/0 output (maximu points points 1 points 1 points 1 points 1	1				
	RS-232C	ports	1 (for connecting a personal	computer, vision sensor etc.)			
Φ	RS-422	ports	1 (for connecting a	teaching pendant)			
fac	Slot dedicated to hand	slots	1 (for connecting a pne	eumatic hand interface)			
Iter	Extension slot	slots	0 (When using options: 3) *21	3			
-	Expantion memory slot	slots	_	1			
	Robot I/O link	channels	1 (for connecting	a parallel I/O unit)			
Ambie	nt temperature	°C	0 tc	0 40			
Ambie	nt humidity	%RH	45 to	0.85			
wer	Voltage range	V	Single phase, AC180 to 242	Single phase, AC180 to 242			
Suppo	Power capacity	kVA	1.0	2.0			
Ground	ding	Ω	100 or less (D-c	lass grounding)			
Structu	ire		Self-contained floor ty	pe/closed structure			
External	dimensions (Including legs)	mm	212 (W) x 290 (D) x 165 (H) *22	460 (W) x 400 (D) x 200 (H)			
Mass		kg	Approx. 8 *22	Approx. 20			

Controller Outside Dimension



*20: The air hand interface (optional) is required to use hand output.
*21: The expansion box (optional) needs to be mounted.
*22: The size and weight do not include the expansion box for mounting options.

with More Diverse Functions!



Note 1: Select an appropriate interface according to the I/O on the peripheral device side or network function.

Note 2: The device configuration is specified at shipment. It will be a built-to-order product. Please confirm the delivery date and specification. (Contact the Mitsubishi Sales Dept. for details.)

Mitsubishi Electric Industrial Robots MELFA RH-6SH/12SH/18SH Series

					Model compatibility				
Classification	Name	Type Specifications		RH-6SH	RH-12/18SH	RH-5AH	RH-10/15AH	Remark	
		1S-VD01M-03	1 connection with solenoid valve cable	X		X	X		
		1S-VD02M-03	2 connections with solenoid valve cable	X	ا	X	X		
		1S-VD03M-03	3 connections with solenoid valve cable	X	ĬŎ	X	X		
		1S-VD04M-03	4 connections with solenoid valve cable	X		X	×		
	Solenoid valve (Sink)	15-VD01M-04	1 connection with solenoid valve cable	$\hat{\mathbf{o}}$	×	X	×		
		1S-VD02M-04	2 connections with solenoid valve cable	- ŏ	X	X	×		
		15-VD02M-04	3 connections with solenoid valve cable			X	×		
		15 VD04M 04	A connections with solonoid valve cable			X	×		
Robot arm		15-VD04WF04	1 connection with solonoid valve cable		$\stackrel{\frown}{\frown}$		×		
		15-VD01ME-03	2 connections with solenoid valve cable			×	×		
		15-VD02IVIE-03	3 connections with solonoid valve cable		\vdash	X	×		
		15-VD03IVIE-03	A connections with solonoid valve cable		\vdash		×		
	Solenoid valve (Source)	15 VD01ME 04	1 connection with solonoid valve cable		\vdash				
		15-VD01WE-04	2 connections with solenoid valve cable						
		15-VD02IVIE-04	2 connections with colonaid valve cable		$+\hat{\cdot}$		\sim	1	
		15-VD03IVIE-04	A connections with selenoid valve cable				\sim		
oq	Lland output cable	15-VD04IVIE-04	Terminal and is not processed, supporting 4 connections		$\vdash \hat{\frown}$			l	
Rc		15-GR355-02	Province support with growmet		+		\sim	1	
		15-HC35C-U2	Support for 7.4.4		$\vdash \checkmark$				
	Hand curl tube	1E-ST0408C-300	Support for 4 4		\vdash				
-	Machine cables extension (Fixed)	10-ST0608C	Support for ϕ 6-4		\vdash			1	
		15-05CBL-01	Extension type, amount of extension: 5m		+			1	
		15-10CBL-01	Extension type, amount of extension: Tom		+			1	
		15-15CBL-01	Extension type, amount of extension: 15m		$\vdash \stackrel{\circ}{}$		X		
		15-05CBL-03	Extension type, amount of extension: 5m		X		X	1	
		15-10CBL-03	Extension type, amount of extension: 10m		X		X		
		15-15CBL-03	Extension type, amount of extension: 15m				X		
		15-05LCBL-01	Extension type, amount of extension: 5m	X	+		X	1	
		IS-TOLCBL-01	Extension type, amount of extension: 10m				X		
	Machine cables extension	1S-15LCBL-01	Extension type, amount of extension: 15m	X	+		X		
	(Flexible)	1S-05LCBL-03	Extension type, amount of extension: 5m				X		
		1S-10LCBL-03	Extension type, amount of extension: 10m		X	X	X		
		1S-15LCBL-03	Extension type, amount of extension: 15m		×	X	X	l	
	Teaching pendant	R28TB	IP65, 7m cable length				0		
		R281B-15	IP65, 15m cable length				0		
	Pneumatic hand interface (Sink)	2A-RZ365	DO: 8 (Sink)				0		
	Pneumatic hand interface (Source)	2A-RZ375	DO: 8 (Source)	0			0	1	
	Parallel I/O unit (Sink)	2A-RZ361	DI: 32 (Sink)/DO: 32 (Sink)	0	0	0	0	1	
	Parallel I/O unit (Source)	2A-RZ371	DI: 32 (Source)/DO: 32 (Source)	0	0	0	0		
	External I/O cable	2A-CBL05	Terminal end not processed 5m length	0			0		
	External i/O cable	2A-CBL15	Terminal end not processed 15m length	0	0	0	0		
	Ethernet interface	2A-HR533-E	10 base-T 10Mbps	0	0	0	0		
ē	CC-Link interface	2A-HR575-E	CC-Link intelligent remote station (32 points/32 points per station)	0	0	0	0		
2	Profibus interface	2A-RZ577-E	Profibus-DP SLAVE	0	0	0	0		
out	Expansion serial interface	2A-RZ581-E	RS-232C/422 each 1ch	0			0		
Ŭ	Expansion memory	2A-HR432	User program area after expantion: 2MB	X		X	0		
	Additional axis interface	2A-RZ541-E	Control up to 8 axes with SSCNET	0	0		0		
	Expansion option box	CR1-EB3	Required when mounting expansion interface.	0	×	0	×	Dedicated for CR1, CR1B	
	Controller protection box	CR1B-MB	Enclose CR1B-571 for dust-proof measures.	0	X	0	×		
	Perssonal computer support softwware (Windows)	3A-01C-WINE	Support software on Windows (CD-ROM)	0	0	0	0		
	Perssonal computer support softwware-mini (Windows)	3A-02C-WINE	Simplified version support software on Windows (CD-ROM)	0	0	0	0		
		RS-MAXY-CBI	For PC-AT (DOS/V) compatible machines, cable length 3 m. straight type	0	0	0	0		
	Personal computeer cable	RS-AT-RCBI	For PC-AT (DOS/V) compatible machines, cable length 3 m. right-angled type	ŏ	Ŏ	Ŏ	Ŏ		
Service		A6BAT	For internal use in the robot arm	Ŏ	Ŏ	ŏ	Õ		
part	Backup battery	ER6	In the controller	ŏ	ĬŎ	Ŏ	ŏ		

>> Configuration Options



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Governmental export permits are required for the export of products used for strategic materials and service.