

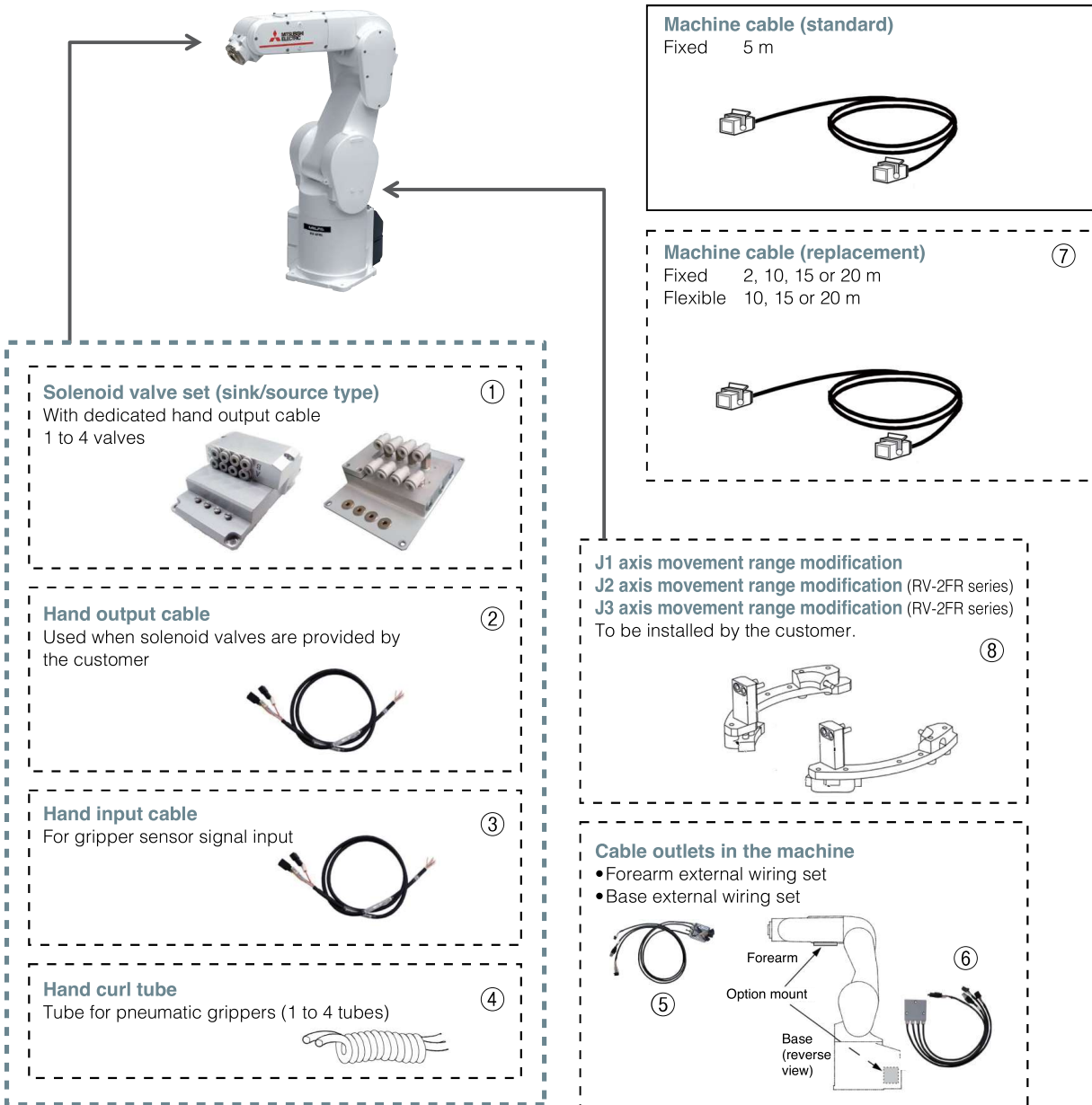
OPTIONS

Robot arm options(RV-FR series)

* Excluding RV-35FR/50FR/80FR

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Robot Option Specifications



**Internal wiring/
tubing specifications**

The factory default specification is for wiring/tubing to be routed internally to the wrist with an outlet from the mechanical interface.

Robot arm options(RV-FR series)

No.	Name	Type	RV					Specifications
			2FR 2FRL	4FR 4FRL	7FR 7FRL	7FRL	13FR 13FRL 20FR	
①	Solenoid valve set	1E-VD0m (sink) 1E-VD0mE (source)	○	—	—	—	—	1 to 2 valves with solenoid valve cable. □ indicates the number of valves (1 or 2); output: φ4
		1F-VD0m-02 (sink) 1F-VD0mE-02 (source)	—	○	○	○	—	1 to 4 valves with solenoid valve cable. □ indicates the number of valves (1, 2, 3, 4); output: φ4
		1F-VD0m-03 (sink) 1F-VD0mE-03 (source)	—	—	—	—	○	1 to 4 valves with solenoid valve cable. □ indicates the number of valves (1, 2, 3, 4); output: φ6
②	Hand output cable	1E-GR35S	○	—	—	—	—	Straight cable for 2-valve systems, robot connector on one end, unterminated on the other. Total length: 350 mm
		1F-GR35S-02	—	○	○	○	○	Straight cable for 4-valve systems, robot connector on one end, unterminated on the other. Total length: 500 mm
③	Hand input cable	1S-HC30C-11	○	—	—	—	—	4-point type, with a robot connector on one side and unterminated on the other.
		1F-HC35S-02	—	○	○	○	○	8-point type, with a robot connector on one side and unterminated on the other. Total length: 1000 mm
④	Hand curl tube	1E-ST040mC	○	○	○	○	—	For 1- to 4-φ4-valve systems; total length: 630 mm (including 180 mm curled section) □ indicates No. of tubes (2, 4, 6 or 8), 2 or 4 only in the RV-2FR and RV-2FRL
		1N-ST060mC	—	—	—	—	○	For 1- to 4-φ6-valve systems; total length: 1150 mm (including 250 mm curled section) □ indicates No. of tubes (2, 4, 6 or 8)
⑤	Forearm external wiring set 1	1F-HB01S-01	—	○	○	○	○	For the forearm. External wiring box used for connecting the gripper input cable, Ethernet cable and the electric gripper and force sensor cable.
	Forearm external wiring set 2	1F-HB02S-01	—	○	○	○	○	For the forearm. External wiring box used for connecting the force sensor, electric gripper and Ethernet cable.
⑥	Base external wiring set 1	1F-HA01S-01	—	○	○	○	○	For the base. External wiring box used for connecting the electric gripper communications output, electric gripper and force sensor cable and Ethernet cable. Includes gripper input.
	Base external wiring set 2	1F-HA02S-01	—	○	○	○	○	For the base. External wiring box used for connecting the electric gripper communications output, electric gripper, force sensor and Ethernet cable. No gripper input.
⑦	Machine cable (replacement) (fixed)	1F-mmUCBL-41	○	○	○	○	○	Replacement type, 2, 10, 15 or 20 m □ indicates cable length (02, 10, 15 or 20 m)
	Machine cable (replacement) (flexible)	1F-mmLUCBL-41	○	○	○	○	○	Replacement type, 10, 15 or 20 m □ indicates cable length (10, 15 or 20 m)
⑧	J1 axis movement range modification	1S-DH-11J1	○	—	—	—	—	Stopper for changing the range, installed by customer
		1F-DH-05J1	—	—	—	○	○	Stopper for changing the range, installed by customer (Also compatible with RV-7FRL)
		1F-DH-04	—	—	○	—	—	Stopper for changing the range, installed by customer
		1F-DH-03	—	○	—	—	—	Stopper for changing the range, installed by customer
	J2 axis movement range modification	1S-DH-11J2	○	—	—	—	—	Stopper for changing the range, installed by customer
J3 axis movement range modification	1S-DH-11J3	○	—	—	—	—	Stopper for changing the range, installed by customer	

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Robot Option Specifications

RV-4FR/7FR/13FR/20FR series tooling machine configurations

The required options differ depending on the gripper (tool) configuration. The table below lists the "Forearm external wiring sets" and "Base external wiring sets" required for the different gripper configurations. Select wiring sets accordingly.

Gripper configuration	Wiring mode	Body specifications	Required equipment		Comment
			Forearm external wiring set	Base external wiring set (*3)	
• Pneumatic gripper + gripper input signals	Internal	-SH01	— (*1)	—	Air tubes: Up to 2 sets (φ4 × 4), 8 input signals
	External	Standard	— (*2)	—	Air tubes: Up to 4 sets (φ4 × 8)
• Pneumatic gripper + gripper input signals • Vision sensor	Internal	-SH05	— (*1)	(1F-HA01S-01)	Air tubes: Up to 1 set (φ4 × 2), 8 input signals
	External	Standard	1F-HB01S-01 (*2)	1F-HA01S-01	Air tubes: Up to 4 sets (φ4 × 8)
• Pneumatic gripper + gripper input signals • Force sensor	Internal	-SH04	— (*1)	(1F-HA01S-01)	Air tubes: Up to 1 set (φ4 × 2), 8 input signals
	External	Standard	1F-HB01S-01 (*2)	1F-HA01S-01	Air tubes: Up to 4 sets (φ4 × 8)
• Pneumatic gripper + gripper input signals • Vision sensor • Force sensor	Internal (External air tubes)	-SH02	— (*1)	(1F-HA01S-01)	External air tubes: Up to 4 sets (φ4 × 8)
	External	Standard	1F-HB01S-01	1F-HA01S-01	Air tubes: Up to 4 sets (φ4 × 8)
• Electric gripper + gripper input signals • Vision sensor	Internal	-SH02	—	(1F-HA01S-01)	
	External	Standard	1F-HB01S-01	1F-HA01S-01	
• Electric gripper • Vision sensor • Force sensor	Internal	-SH03	—	(1F-HA02S-01)	
	External	Standard	1F-HB02S-01	1F-HA02S-01	

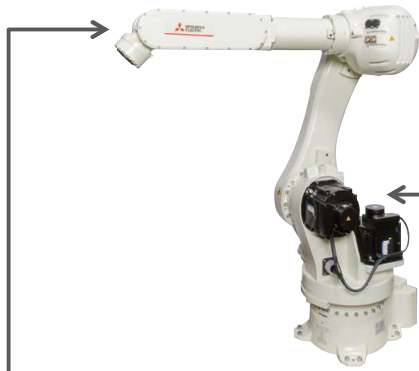
*1: For pneumatic grippers with internal wiring, solenoid valves should be provided.

*2: For pneumatic grippers with external wiring, solenoid valves, tubing and input cables, etc. should be provided as necessary.

*3: For machines with internal wiring and tubing, a base external wiring set is included with the machine and does not need to be provided separately.

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Robot arm options(RV-35FR/50FR/80FR)



Machine cable (standard)
Fixed 7m



Machine cable (replacement) ④
Fixed 12,17or22m
Flexible 7,12,17 or 22m

Hand input cable ①
Cable for connection to hand open/close sensors, etc.



Hand output cable ②
Cable for connection to hand open/close sensors, etc.



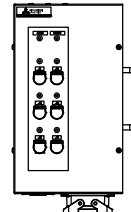
Hand Ethernet cable ③
The customer should use this cable to connect a camera.



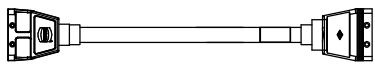
Operating range change stopper ⑤
The customer should install the optional stopper



Brake releasing device ⑥
The brakes of the robot arm can be released without connecting a controller in emergency



Power cable for the brake ⑦
This cable is used to connect between the brake releasing device and the robot arm and to supply brake power to the robot.



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No.	Name	Type	Specifications
①	Hand input cable	1F-HC2000S-44	Robot side:Connector,Hand side:Wire (Input:12points,length:2,000mm)
②	Hand output cable	1F-GR2000S-44	Robot side:Connector,Hand side:Wire (Output:8points,length:2,000mm)
③	Hand Ethernet cable	1F-LAN2000-44	Robot side:Connector,Hand side:Wire (Total length:2,000mm)
④	Machine cable (replacement) (Fixed)	1F-□□UCBL-44	□□ in model name shows the cable length as follows, 12=12m,17=17m,22=22m
	Machine cable (replacement) (Flexible)	1F-□□LUCBL-44	□□ in model name shows the cable length as follows, 07=7m,12=12m,17=17m,22=22m
⑤	Operating range change stopper	1F-DH-44J1	J1 axis +side: +180 degrees, +160 degrees, +140 degrees, +120 degrees, +100 degrees, +80 degrees, +60 degrees, +40 degrees, +20 degrees -side: -180 degrees, -160 degrees, -140 degrees, -120 degrees, -100 degrees, -80 degrees, -60 degrees, -40 degrees, -20 degrees Two places can be selected from the above. The minimum operating range, however, is 80 degrees.
⑥	Brake releasing device	2F-BRKBOX-1	The brake of one axis (J1 to J6 axes) is released. The brakes of the J2 to J6 axes are intermittently released. Input power specifications:100 to 240V AC The customer needs to prepare an input power cable. Connect it to the robot arm using the machine cable (CN2). The power cable for the brake can be used for the connection.
⑦	Power cable for the brake	2F-BRKCBL-1	Cable length:5m