

# Japan Micom Car Rally 2023 National Convention

## Basic Class Competition Rules

(Purpose of establishment)

In this division, we develop a wide range of industrial engineers by cultivating basic technologies and skills in the process of pursuing high speed as a competition, while arousing interest in manufacturing through the production and adjustment of microcomputer cars. conducted for the purpose of

(definition)

### Article 1

The Micom Car Rally is a fully self-propelled machine equipped with a microcomputer board approved by the executive committee, and competes for the competition time on a regulated course.

(machine standard)

### Article 2 The machine shall meet the following conditions.

- 1 The machine must be a fully self-propelled machine that the participants themselves have created the circuit and body, created the program, and used the specified parts. In addition, if there is a change in the designated parts (discontinuation of production, etc.), he can use it for 3 years from the year of change.
- 2 Power supply and energy source is AA type secondary battery ("AA (common name in the US)") "Panasonic" only (eneloop<sup>®</sup>, eneloop pro<sup>®</sup>, eneloop lite<sup>®</sup>, Rechargeable EVOLTA) shall be 8 or less. Four batteries shall be used for the drive system (including the servomotor) and four batteries for the control system (including the microcomputer board). \* All batteries must be identified as Panasonic (EVOLTA/eneloop) while installed in the machine.
- 3 The drive system power supply and control system power supply shall be equipped with respective switches that can turn the power supply ON/OFF.
- 4 The outer shape of the machine shall be within 300 mm in width and within 150 mm in height, and there are no restrictions on the total length, weight, material, etc., but the structure shall be able to block the timer sensor (see Figure-6). However, it is not allowed to intentionally change the overall length after the start in order to gain an advantage in time.  
\*Regarding the malfunction of the machine due to the light emitting part of the timer sensor, we will take countermeasures on our own.
- 5 Machine tires (including those with equivalent functions) must run while touching the surface of the course, and it is not allowed to use adhesive substances on the contact parts. including those confirmed to be attached).
- 6 Tire width must be less than 30mm and no more than 4 wheels. \*Tire width is the dimension in the lateral direction relative to the direction of travel of the machine.
- 7 The machine shall be equipped with a sensor that detects when the start bar is opened, and the sensitivity of the sensor, etc., shall be adjustable.
- 8 Machines with a suction function are not allowed.
- 9 The use of electric double layer capacitors is prohibited.  
\* Large-capacity capacitors such as electric double-layer capacitors sold for purposes such as backup power supplies cannot be used.
- 10 Structures that may damage or stain the course during running are not permitted.
- 11 Designated parts are defined as follows.
  - a. The microcomputer board must be approved by the executive committee, and must have a structure that facilitates confirmation of the type. Only modifications that do not change the basic performance, such as adding connectors, are permitted. The control system power supply must be connected to the power connector on the microcomputer board, and other connections are not permitted.

stomach. Two gearboxes approved by the Executive Committee will be used, and modifications to the case will not be permitted. However, the following points are accepted.

- ① Replacement of pinion gear (8T)
- ② Relief processing to avoid chassis mounting screws
- ③ Cutting the shaft

cormorant. Two motors approved by the executive committee (marked with MCR) must be used for the driving part. The structure shall be such that the MCR marking can be easily confirmed. Disassembly and internal/external processing are not permitted (excluding soldering to the case of noise suppression capacitors, etc.).

\*The drive unit refers to the parts that propel the machine, such as tires, and does not include servo motors or steering mechanisms.

workman. Use the battery box to secure the battery. The structure should allow the battery to be easily removed. Battery packs are not permitted.

O. The steering mechanism shall use one executive committee-approved servomotor and shall have a structure that facilitates confirmation of the type. Modifications that change the basic performance of the servo motor are not permitted.

mosquito. Use one sensor board approved by the executive committee. We accept replacement parts,

Modifications are not permitted. However, changes in the type of course detection sensor (light emitting part, light receiving part) are not permitted.

tree. Use one motor drive board approved by the executive committee. Replacement with substitute parts is permitted, but modification is not permitted. The drive system power supply must be connected to the power connector on the motor drive board, and other connections are not permitted.

nine. Boards (including individual parts) other than microcomputer boards, sensor boards, and motor drive boards must be approved by the executive committee. Replacement with substitute parts and additions listed in the manual are permitted, but other modifications are not permitted.

(course standard)

**Article 3** The driving course shall meet the following conditions.

1 The course shall be 30 mm thick and 300 mm wide, and the surface material shall be matt white acrylic. (refer graph1)

2 The running surface of the course shall be made of matt white acrylic material with black and gray separate seal materials attached, and the crank and lane change indications and course repair materials shall use the separate seal materials including white. (Refer to Figure-2)

3 The entire course shall be a combination of straights, curves, cranks (90° right and left curves), S-curves (minimum inner diameter 450 mm), lane changes, hills or valleys with an inclination angle of less than 10°. (Refer to Figure-3, Figure-4)

4 For the crank, draw a horizontal white line with a width of 20 to 40 mm at a point 500 to 1000 mm in front. (Refer to Figure-5)

5 For lane changes, a change section length of 600mm and width of 600mm will be provided. Draw a white line with a width of 20 to 40mm in the direction of the change (on one side of the left and right) at a point 300 to 1000mm before the change section. In the change section, draw a center line (Article 3-2) with lengths of 200mm and 400mm and a white line with a width of 30mm on the outside shoulder. In addition, poles with a width of 20 to 50 mm and a height of 50 mm or more will be installed at two locations. (Refer to Figure-7)

6 The gap between course joints shall be within 1mm.

7 No obstacles such as walls shall be placed within 50mm on either side of the course. However, the following cases are excluded. a.

Around the start bar device including the timer sensor and its protective material. three-

stomach. dimensional intersection.

8 The following parts are considered part of the course:

a. Fittings for course joints.

stomach. The pole of the lane change part.

(Seal material)

Black···Sekisui Hull Color HC-015 · Eco Palette Hull Color HKC-011 ·  
Nakagawa Chemical 793 (black matte), Nakagawa Chemical 791M (black  
matte) Ash···Sekisui Hull Color HC-050, Eco Palette Hull Color HKC-057,  
Nakagawa Chemical 735 (Medium Gray)  
White···Sekisui Hull Color HC-095 · Eco Palette Hull Color HKC-097 ·  
Nakagawa Chemical 711 (White)

(vehicle inspection)

## Article 4

1 In the regulation inspection, the provisions of Article 2 will be inspected. (1) The “Advance Confirmation Form” shall be completed prior to the event in accordance with the information provided.

(2) Preliminary inspections shall be conducted for each block before the start of the preliminaries.

(3) Inspections for the final tournament will be conducted before the start of the final tournament and as required by the referee's instructions.

and

(4) At the start of each inspection time, the pre-race inspector will call the bib number.

(5) Each inspection period shall end before the next block is inspected or until the time determined by the referee.

(6) Items that fail the inspection can be remedied within the inspection time and re-inspected.

(7) Modification after passing the regulation inspection is prohibited. However, detachment of equipment for changing modes (liquid crystal, etc.) Allowed, but must be in the same condition as during the regulation inspection.

(8) Machines that pass the inspection will be affixed with a pass sticker.

2 In the pre-race inspection, the use of sticky substances on tires and batteries will be inspected. (1)

Items that fail the inspection can be remedied within the inspection time and re-inspected.

(2) Tire maintenance and battery replacement (including recharging) after passing the pre-race inspection are prohibited.

(Competition method)

Article 5 The competition method will be carried out according to each issue.

1 In the qualifying, the best time of two runs will compete for the ranking. The final will be held by a tournament with the top results of the preliminary rounds.

2 Only machines that have passed the vehicle inspection can participate in the competition.

3 Competitors set their machines to satisfy all of the following items and signal the completion of the set to the referee. (Refer to Figure-8)

\*Machine set means that the actuator part of the driving part is stationary. (1)

Avoid touching the start bar.

(2) Do not cross the start bar.

(3) Do not react to the timer sensor.

4 The machine detects when the start bar is open and autostarts. However, if it does not start, a manual emergency start is also permitted.

\*Start refers to the state in which the timer sensor is interrupted for the first time.

5 Timer measurement starts at the same time as the start bar opens. The goal ends the measurement with the reaction of the timer sensor.

- 6 After the referee confirms the completion of the set to the competitor, if the machine responds to the start bar open sensor before the start bar opens, if the machine touches the start bar, and if the referee judges it as flying, it will be flying. .
- 7 If the competitor is about to be overtaken by another car, the competitor will lift the car according to the referee's instructions. However, in an emergency, the referee may carry out the lifting.
- 8 About the handling of the machine in the race

		qualifying round	final tournament
both start after, overtaking when occurs <small>combination</small>	lifting was machine	Rerun immediately after finishing the race (Single run) is possible.	Not recorded.
	passing was machine	related to the lifted machine the race will continue.	Continue the race regardless of which car is lifted and
one star unable to Overflow occurs when	lifting was machine	Not recorded.	Not recorded.
	passing was machine	related to the lifted machine the race will continue.	Continue the race regardless of which car is lifted and
Same time for both or No records for both in the case of		Final tournament advance order  Same best time in qualifying , at the other time determine the ranking. Which record If the record is the same, the bib in order. However, Only one re-race and do. Still can win If not, a lottery will be held.	(1) 1st Round  The best time in the qualifying round will be the winner. just However, if the qualifying best times are the same, The winner of the other time will be the winner. be. If the other time is also the same, 1 Re-race only once. still win  If there is no winner, a lottery will be held.  (2) Other than the 1st round and the final, the winner will be the person with the highest time in the previous race. be. If the previous race is also the same, the Go back to the previous race and qualify If all races including the same time , only one re-race will take place. So if he doesn't win, a lottery will be held.  (3) Finals Re-race only once. re-race result If the results are also the same, apply (2) above.

- 9 In the case of a re-race or re-run, the tire surface can be cleaned and the battery can be replaced. However, in this case, they must undergo the pre-race inspection again.

(no record)  
Article 6

1If there is an act that falls under each of the following items, it will not be recorded. (1)

Violating the provisions of Article 2;

(2) Those that run with a mechanism that uses the side of the course.

(3) Those with a mechanism that interferes with the running of machines running side by side.

(4) Deliberately separating the machine into multiple parts.

(5) Part of the machine touches the floor or wall outside the course.

(6) A program transferred from a computer, etc. after vehicle inspection.

(7) Machines modified after vehicle inspection.

(8) Vehicles that do not have a car inspection sticker attached.

### (9) Flying.

(10) Those who cannot finish the race within 2 minutes after starting the measurement.

(11) Anything that damages or defiles the course. However, contact with the pole is excluded.

### (12) Mode switching in the case of rerunning.

(13) Collision with another vehicle and obstructing the running (including after the goal). However, the following cases are excluded.

a. When overtaking, the overtaken machine fails to pick up and collides with it.

stomach. When the referee judges that it is difficult to pick up the ball, such as immediately after the goal.

(14) Touching the machine after the start to the goal without instructions from the referee.

(15) Other acts that are considered to harm the fairness of the competition.

(16) Violation of Article 6 of the Tournament Management Regulations.

(17) After being called within 60 seconds The machine is not completely set and cannot signal to the referee.

### (18) Matters not recorded in Article 5.8.

(19) Contact with the course in areas other than those permitted for contact with the course at the time of vehicle inspection. However, the connection to the pole

Excluding touch.

(20) After the start bar is opened, any work other than starting with the manual switch is performed (including lifting work).

2 Those who voluntarily give up the right to participate or finish the race will not be recorded as having withdrawn.

(progress)

## Article 7

1 The competition will be run by a panel of referees led by the chief referee.

2 The start of each race shall be called by the referee with the bib number.

3 The called player then within 60 seconds Set the machine on the 1st and signal the referee to complete the set. The machine shall be stationary until the start bar is opened.

4 Machines that cannot be started after opening the start bar will be allowed to start with a manual switch.

5 The Referee may, during each race, cancel by calling a stop and restart by calling a restart.

6 After the race, the referee may check the machine.

7 The race ends when the referee declares the result.

## (Objection)

Article 8 No one may appeal the referee's decision during the competition.

(Supplementary)

## Article 9

1 If you have any doubts about these rules, you can make a complaint to the executive committee before the end of the competition.

2 If there are special circumstances such as the size or content of the competition, these rules may not be followed as long as they do not impair the spirit of these rules.

(revision)

## Article 10

Revisions to these rules are subject to a resolution of the executive committee.

attachment rules

This provision shall come into effect from August 2, 2016. This

attachment rules

provision shall come into effect from July 13, 2017. These

attachment rules

provisions shall come into effect from June 15, 2018. This

attachment rules

provision shall come into effect from June 7, 2019.

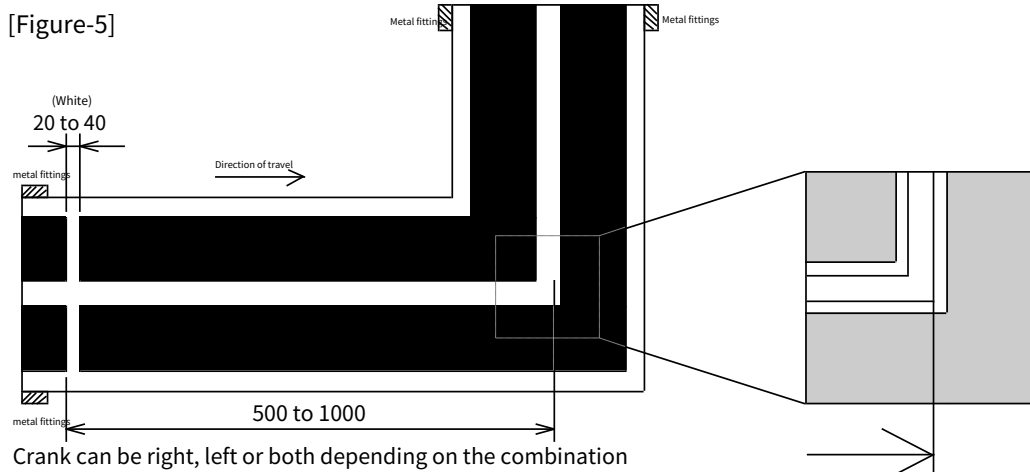
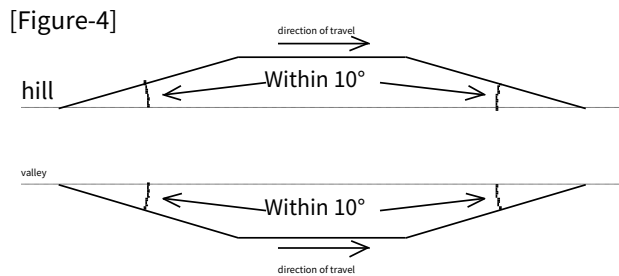
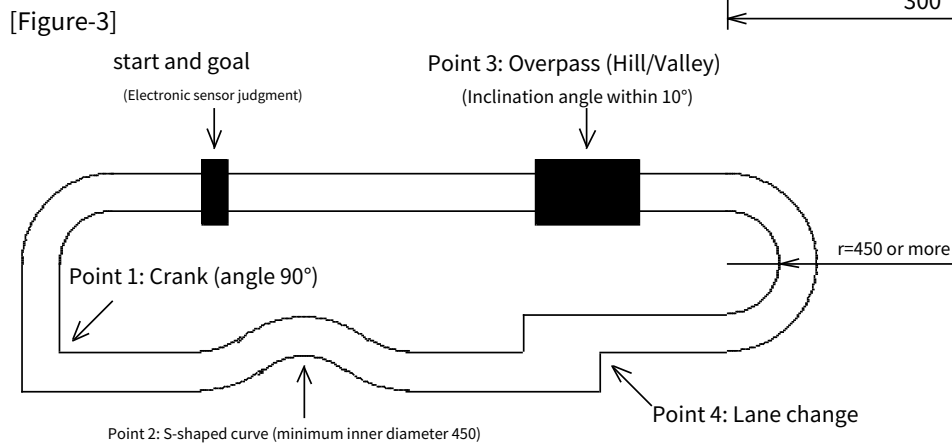
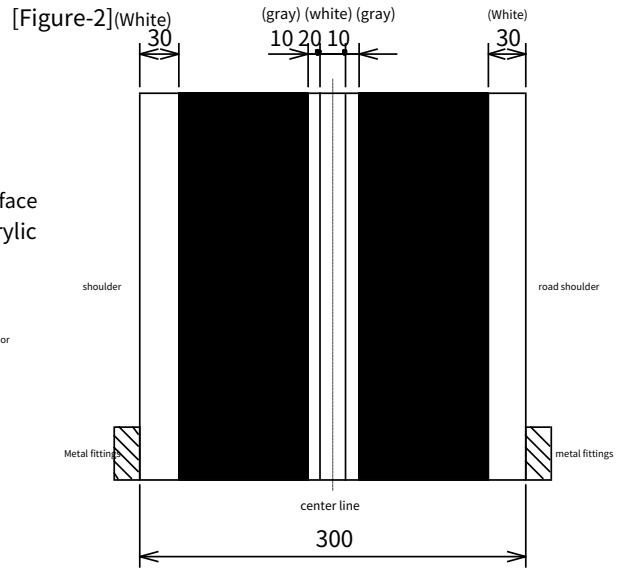
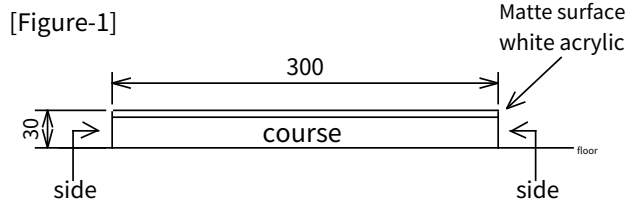
attachment rules

This provision shall come into effect from June 25, 2021. This

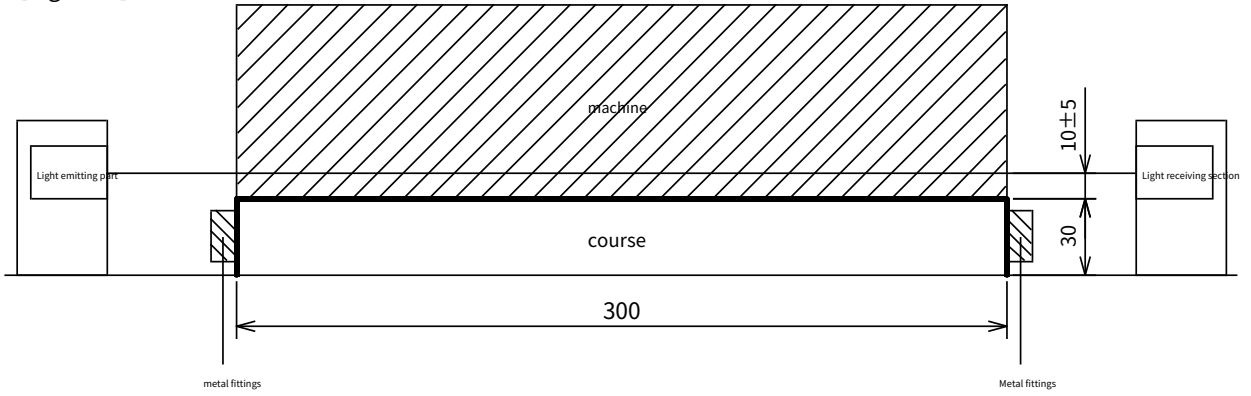
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provision shall come into effect from June 17, 2022.

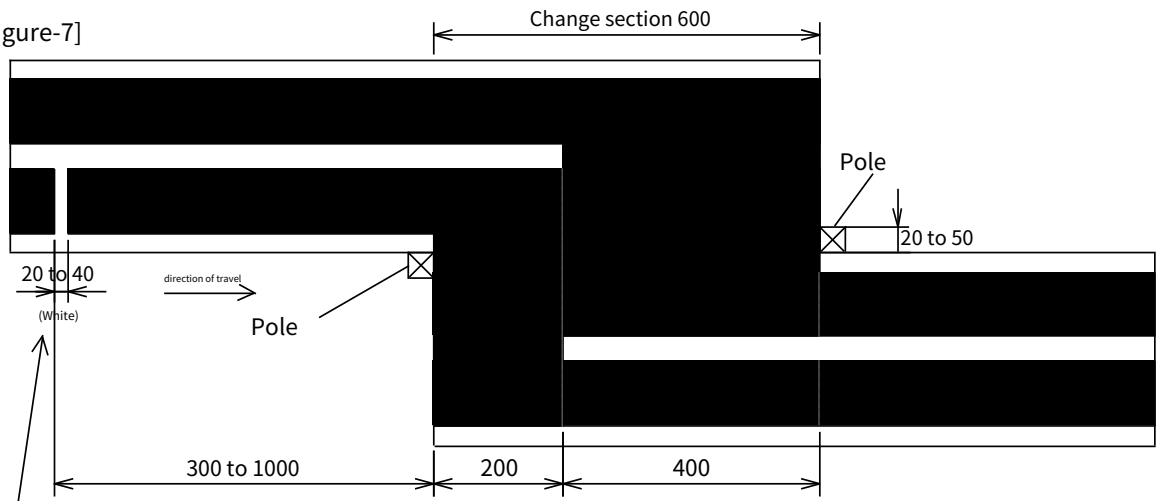
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 Note:  $\pm 2\text{mm}$  for areas where tolerance is not marked.  
 The part described is the value



[Figure-6]

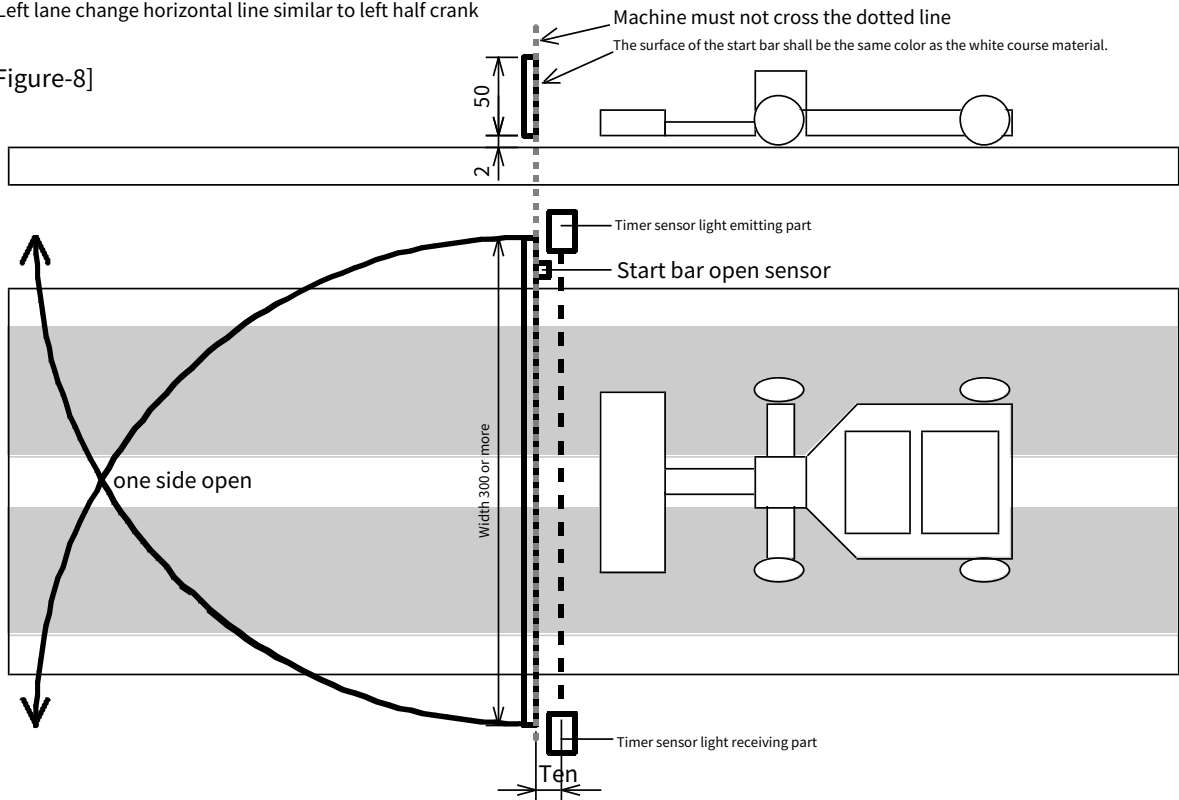


[Figure-7]



Right lane change on the right half,  
 Left lane change horizontal line similar to left half crank

[Figure-8]





Supplement: Specified parts

content	Model	Number of use
Microcomputer board	① H8/RY3048F(*1) ② RY3048F one (including TypeH)(*1) — ③ MS304CP01(*1) ④ MS304CP02(*1) ⑤ RY3687(*1) — ⑥ RY3687N(*1) — ⑦ RY_R8C38 ⑧ RMC-R8C35A	1 sheet
gear box	High speed gearbox HE	2 pieces
motor	RC-260RA-18130 (with MCR stamp)	2 pieces
Servomotor	① High tech HS-430BH ② Made by Futaba S3003 ③ Made by Sanwa SRM-102Z ④ JR(Nippon Remote Control Co., Ltd.) Made ES-539 (can be used until this year) — ⑤ Made by RC DEPOT JR/DFA S519 (added from JMCR2020 competition addition)	1 piece
sensor board	① Sensor part of mini micom car Ver.2 (one board including start bar detection sensor board) <del>② Sensor board TLN113 version (combined with the start bar detection sensor board)(*1)</del> <del>③ Sensor board TLN119 version (includes start bar detection sensor board as one board)(*1)</del> ④ Sensor board Ver.4 (including Ver.4.1) ⑤ Sensor board Ver.5	1 sheet
motor drive substrate	① Motor drive part of Mini Micom Car Ver.2 <del>② Motor drive board Vol.2 (including extension board)(*1)</del> <del>③ Motor drive board Vol.3(*1)</del> <del>④ Motor drive board Ver.4(*1)</del> ⑤ Motor drive board Ver.5	1 sheet
microcomputer board, sensor board, motor drive board Substrates other than (*2) (*3)	① RY_R8C38 board connector conversion board ② Free additional set ③ EEP-ROM board <del>④ LCD/microSD board(*1)</del> ⑤ LCD/microSD board Ver.2 ⑥ RY_R8C38 board DIP switch board ⑦ Rotary encoder Ver.2 (*2) ⑧ Rotary Encoder TypeS (*2)	limit none

(\*1) Not available from 2022 due to Article 2 (1).

(\*2) Specifications follow the production manual at <https://www2.himdx.net/mcr/product/download.html>

However, the method of manufacturing the encoder table and the number of slits are not limited.

(\*3) Be sure to use the conversion board (1) when using the board (2), (3), (7), (8). However, using the liquid crystal substrate of (4) and (5)

If you want to use it, you can use the attached 10P connector.