1/8SCALE BUGGY

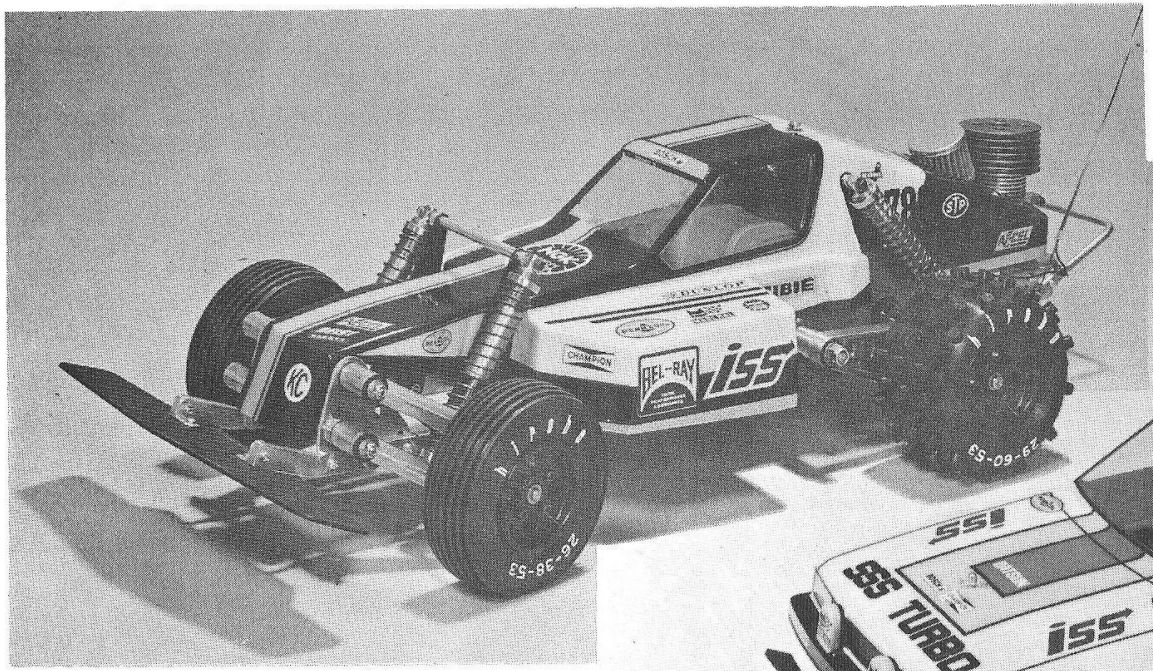
NEW RUSHER 8

ニュー ラッシャーエイト

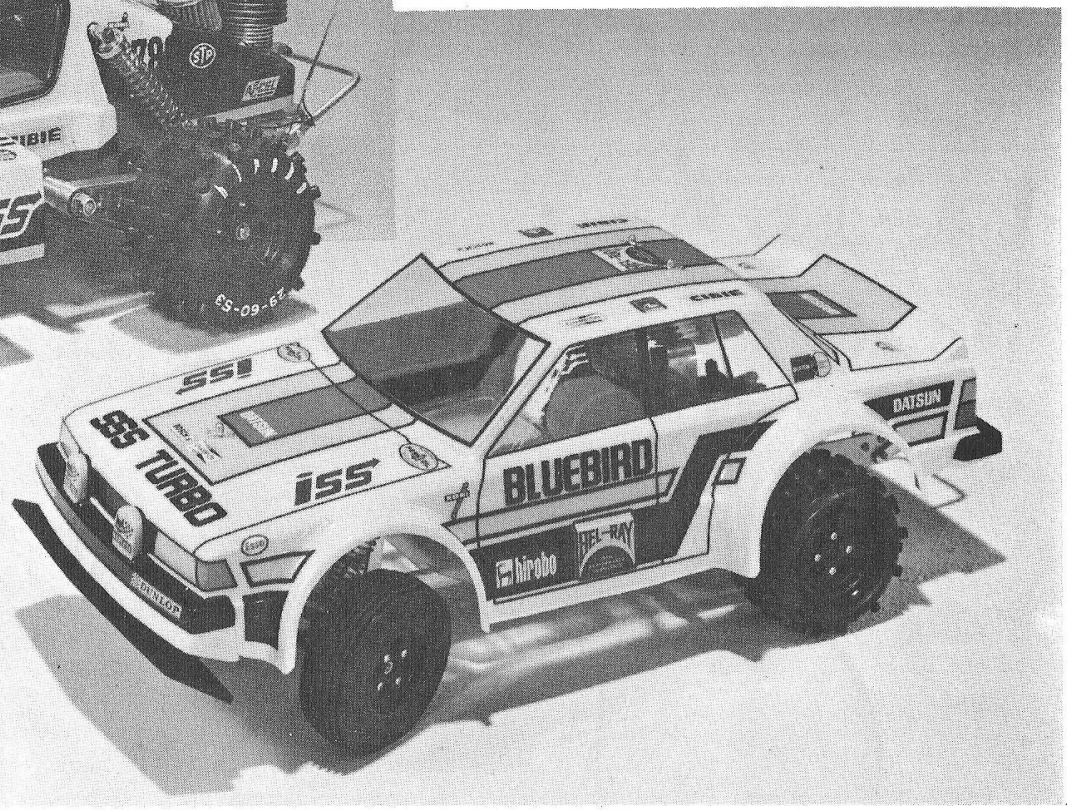
組み立て説明書 ASSEMBLING INSTRUCTION

●ホイルベース	Wheel base	310 mm (12-1/5")
●フロントトレッド	Front tread	240 mm (9-1/2")
●リヤートレッド	Rear tread	230 mm (9-1/20")
●フロントタイヤ径	Front tire dia.	104 mm (4-1/10")
●リヤータイヤ径	Rear tire dia.	115 mm (4-1/2")
●車高	Height	170 mm (6-7/10")
●車巾	Width	290 mm (11-2/5")
●全長	Length	620 mm (24-2/5")
●最低地上高	Min.over-ground height	40 mm (1-3/5")
●エンジン	Engine	19 to 21 class
●無線機	Radio	2 channels

FOR EXPORT



1/8ENGINE BUGGY ニューラッシャー
NEW RUSHER 8



1/8ENGINE BUGGY ブルーバードターボ
BLUEBIRD TURBO SSS-S

Thank you very much for your purchase of 1/8 BUGGY RUSHER 8 of HIROBO INDUSTRIAL CO., LTD. This instruction manual covers the correct assembling method and the instruction necessary for safe and joyful driving with your BUGGY kept under the best conditions. So, please be acquainted with the structure and performance of this racing buggy through this instruction manual.

TOOLS NECESSARY FOR ASSEMBLING WORK

Screw driver (Plus), Cutting pliers, Knife, Cutter, Spanners, Files, Adhesives (Sony Bond, Instant Adhesive), and Painting set.

COMPONENTS & INSTRUMENTS NECESSARY FOR DRIVING (RUNNING)

Engine, Prop (2-channel), Plug, Battery for starter, Fuel, Cross-headed wrench, Fuel pump, Battery for ignition, Air cleaner, and Heat sink.

THE FOLLOWING SYMBOLS ARE USED IN DESCRIPTION AND ILLUSTRATIONS

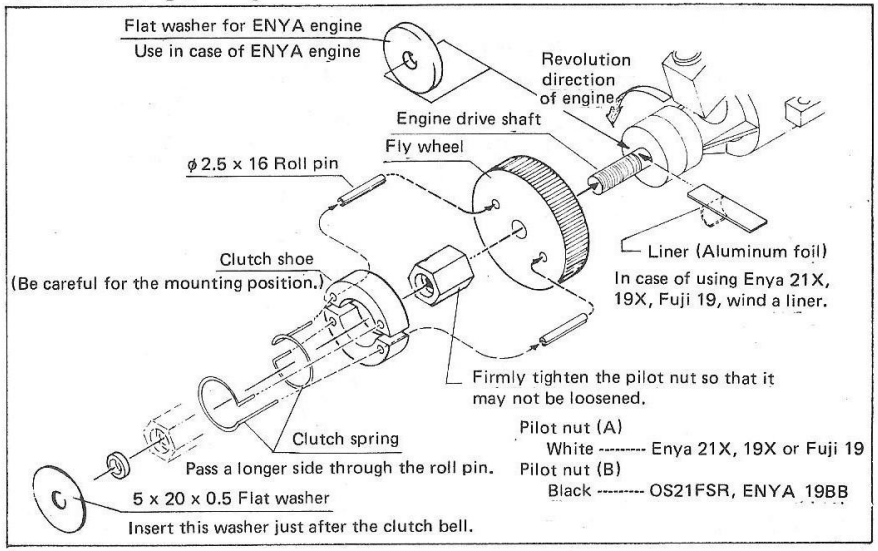
Cs: Cap screw Ss: Set screw PH: Pan head machine screw
FW: Flat washer (or plain washer)

IMPORTANT

All the small components are packed in sacks according to the assembling procedures. Therefore, please assemble them in accordance with the instruction manual.

NB:
The specifications herein shall be subject to change without any prior notice.

A. Assembling the engine section



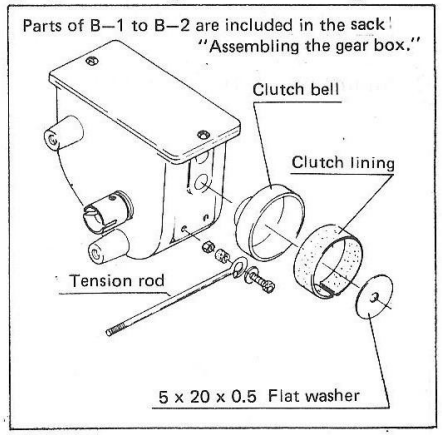
(1). As a pilot nut differs to the kind of an engine, please select the best one to the kind of a drive shaft.

(2). Firmly set the flywheel with the pilot nut and sufficiently tighten it. The nut should be free from any slackening.

(3). If the diameter of drive shaft of the engine is small, fit a liner to the drive shaft, on which flywheel is to be mounted. If the engine rotates at a high speed with correct centering (alignment) not secured, vibration may be generated, causing the engine to be damaged.

(4). The pilot nut bushing is for alignment with the transmission. After it is attached or adhered to the pilot nut, give a coat of grease to it.

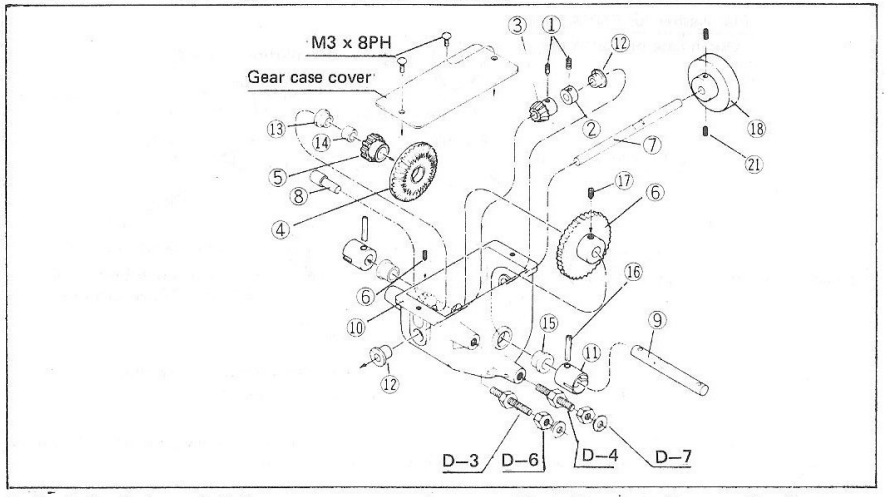
B–1. Mounting the clutch lining



(1). Mount a clutch bell after the tension rod (included in "D. Mounting the body mount) is mounted.

(2). Cement the clutch liner with an instant adhesive or epoxi-oriented adhesive.

B–2. Assembling the gear box (resolving fig.)

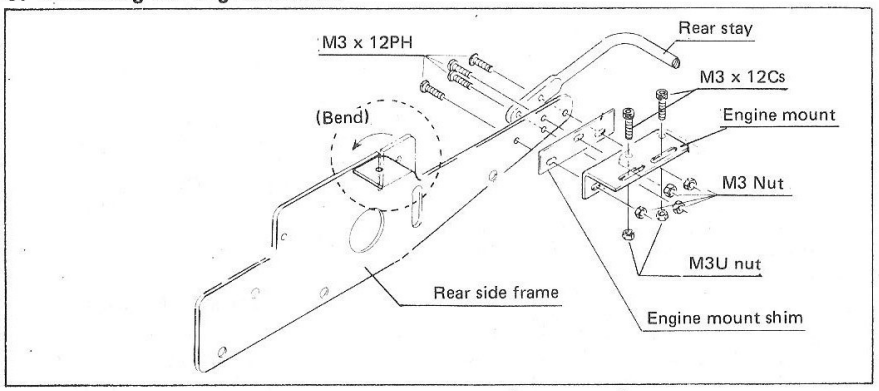


D-3, D-4, D-6, and D-7 are necessary when mounting the gear box on the frame.

(1). Though the gear box has been assembled at our workshop before shipment, sufficiently supply oil to the gears and the bearings. After that, provide it with the cover. (The oil supply volume is about 5 to 10cc).

(2). Temporarily mount the gear box at the frame with the mounting screws (M5) because the alignment with the engine is required later. So, when mounting the engine, tighten the mount screws and fix the box as paying attention to the alignment of the gear box with the engine.

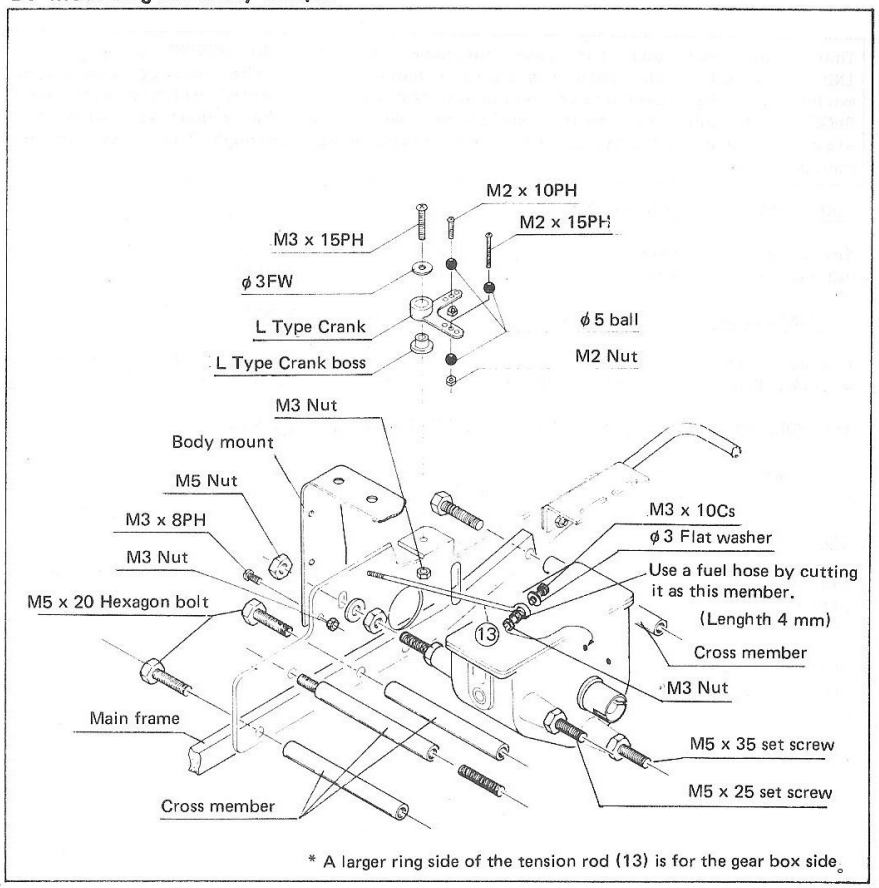
C. Mounting the engine mount



(1). Now lightly tighten the mount screws (M3 x 12PH) which are used for mounting the engine bed at the rear side frame. Firmly tighten them after securing the alignment of the gear box. (ϕ3 plain washer is used for mounting a piano wire for antenna.)

(2). When an engine of ENYA or FUJI is used, mount an engine mount shim at both sides. (For the engine of OS, there is no need to use it).

D. Mounting the body mount



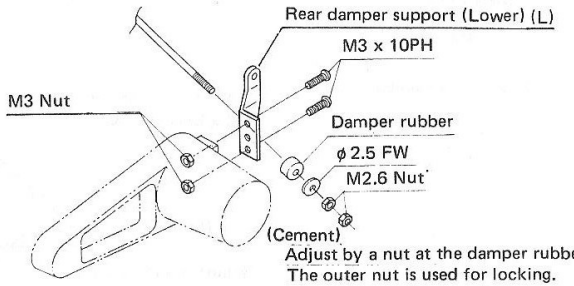
(1). A larger ring side of the tension rod is for the gear box side. Mount the tension rod with M3 x 10Cs and M3 nut by which the cap screw (Cs) is prevented from being loosened. Adjust the rod so that it may vertically move.

(2). When mounting the engine, it is necessary to secure the alignment (centering) of the engine with the gear box. Locate the engine so that uniform clearance of about 0.5mm may be secured between the clutch bell and the flywheel, and tighten the gear box mount screws and the engine mount screws. (The pilot nut bushing is so composed that the centering(alignment) may be secured relating to the clutch bell).

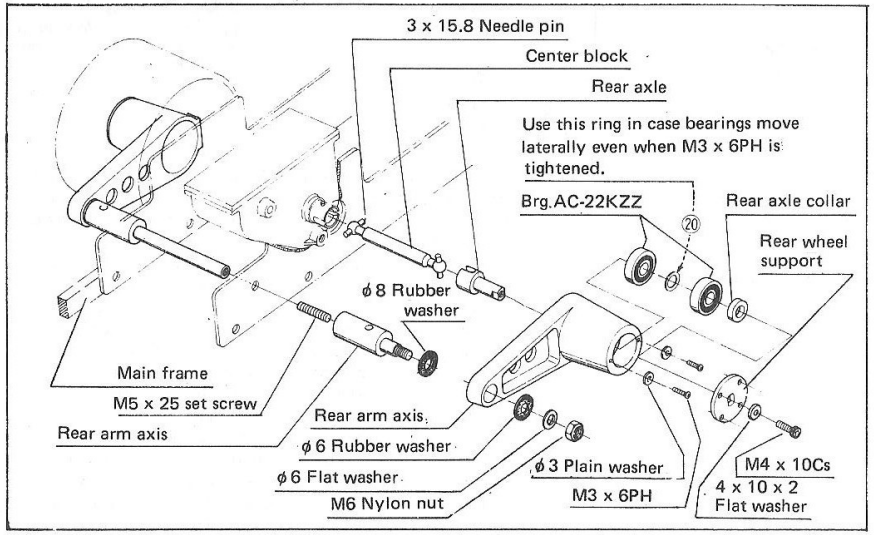
(3). When mounting the main frame, place it on a plain surface such as a table or desk in order to check that no distortion occurs. After that, firmly tighten the screws of each part. (It is important to eliminate any distortion in subsequent adjustment and/or repair for damages).

E–1. Assembling the rear arm

(This illustration shows the assembling of the left side. For the right side, all of these parts should be symmetrical to this left side.)
(These screws & nuts parts in this fig. are included in the sack of "D".)

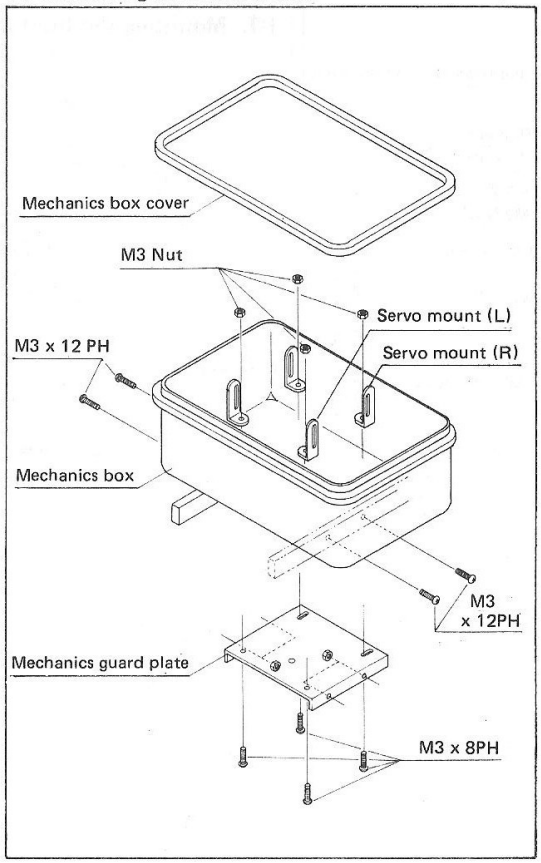


E–2. Mounting the rear arm



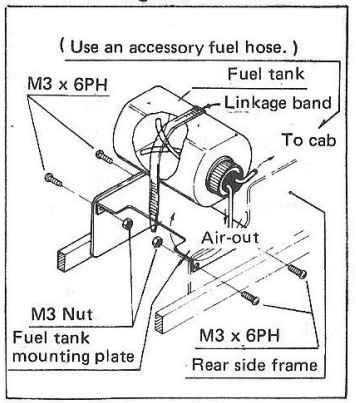
(1). Mount bearings (if they moves laterally, use an adjust washer (20)).
(2). Before mounting M6 nylon nut, mount the rear damper supports R and L at the rear arm. (Adjust the nylon nut so that the arm may smoothly move). See Fig. E-1.
(3). Mount the rear wheel supports. After mounting, mount and remove them by using the M4 x 10Cs. Firmly tighten them after positioning in the groove of the rear axles.

F. Mounting mechanics box



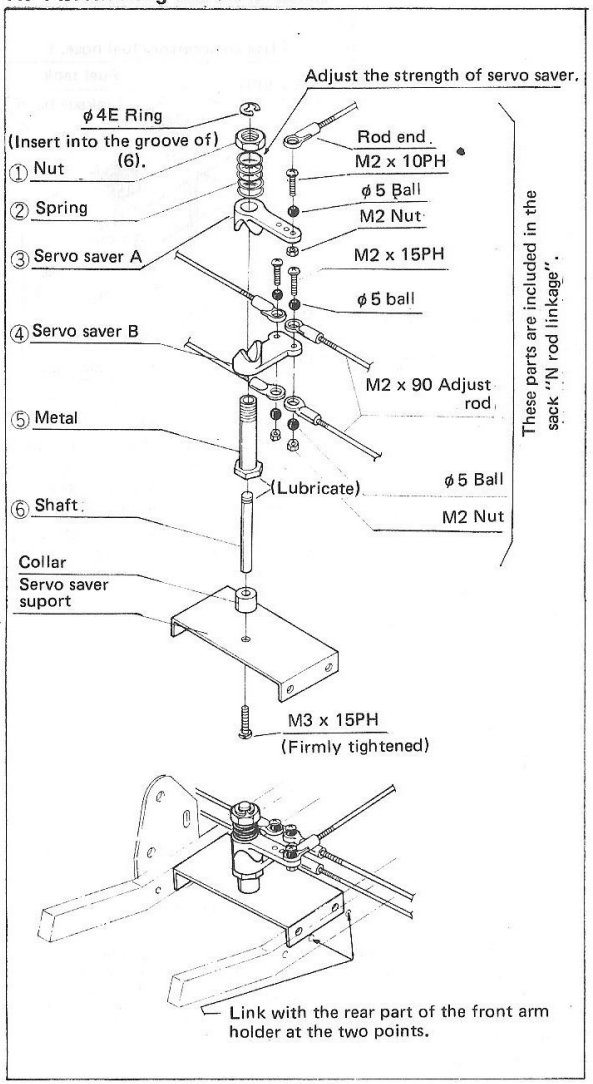
(The mechanical box is transparent for easily observing insides. It is easier to drill the mounting holes on it as fitting to respective mating components.)
(1). Fit the lower mechanical box to the mechanical guard plate, and drill holes at the mounting position by a chisel. Mount them together with the servo mounts R and L with screws of M3 x 8PH. However, if the servo is too large, widen the width along side the long slit. (At this time, it is more convenient to keep the servo mounted as shown in Fig. N).
(2). Mount the assembly on the main frame.
(3). In addition to the aboves, it is further necessary to drill an adjust rod through-hole, a switch hole, and a hole for taking out an antenna on the mechanical box. After the servo is mounted in a position, determine the position of the mechanical box. (Refer to the rod linkage).

G. Mounting the fuel tank



(1). Mount the tank.
(2). The linkage band can not be removed once it is tightened. So, please be careful for tightening it. Therefore, when removing it from the body, do it together with its receiver. (Cut off unnecessary parts by scissors).

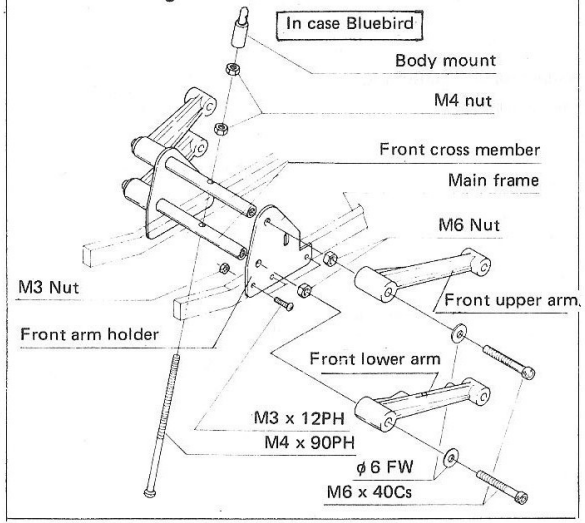
H. Assembling the servo saver



(1). Assemble the servo saver.
(2). After it is assembled, see if the members from (1) to (5) can smoothly rotate. (A clearance with no play) is required between the member (1) and φ4 E-ring.)

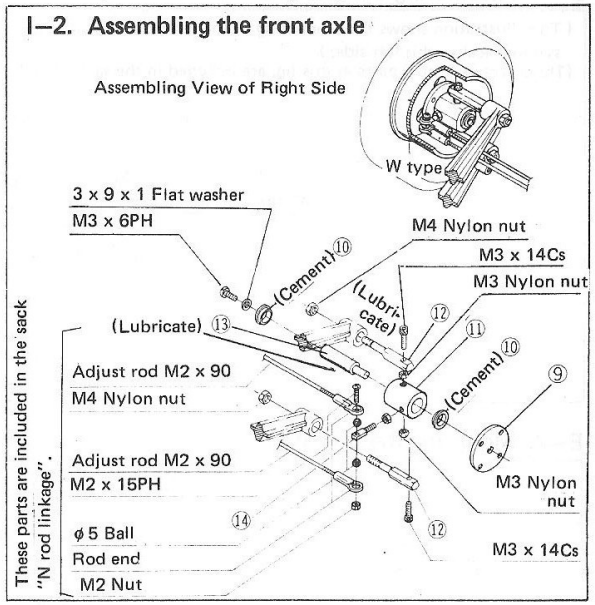
Assembling the front end (The parts I-1 to I-2 are included in a sack of the parts for I.)"Assembling the front end")

I-1. Mounting the front arm



(1). Mount the front arm holder together with the "H" servo saver with M3 x 12PH on such a horizontal plain so that no twisting may be generated.
(2). M6 nut is a lock nut by which the front cross member and the front arm holder are firmly fixed. Tightening M6 x 40Cs, firmly lock the M6 nut where the arm movement becomes smooth and has no play.

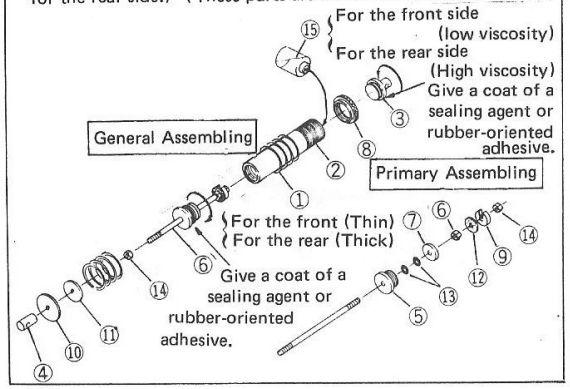
I-2. Assembling the front axle



(1). Mount the front upright (12) at the upper and lower front arms with M4 nylon nut. Don't tighten it too much. Do it so that the arms may smoothly turn.
(2). Cement the front axle metal (10) to the front axle housing (11). When cementing, use an instant adhesive and pass the front axle (13) through the metal before cementing, in order to secure the alignment. (Be careful so that the adhesive may not go on the front axle).
(3). Link the assembly (1) with the assembly (2). The M3 nylon nut is a lock nut of the M3 x 14 CS. At the same time, it is also used for positioning the front upright. After mounting it, check the front axle housing for smooth rotation. (At this time, Cs and nut move together with the axle housing. If not, the nut is not sufficiently locked.)
(4). Provide the front axle with M3 x 6PH and drive the front wheel support (9) in the opposite side. (The support (9) is locked later with M5 nut).
(5). The right and left φ5 ball mount positions of the knuckle arm should be trued up.

Assembling the damper

(The spring and its oil for the front side are different from those for the rear side.) (These parts are included in the sack "J.K.".)



(1). Primary Assembling

1). Push O-ring (13) in the cylinder cap (5) (It is should be placed between (5) and (7)).

2). When mounting a piston (9) and a rubber washer (12), tighten the M3 nut (14) so that the member (12) may not be twisted nor slip off. After completion, lock them with an instant adhesive. (There is no need to tighten the nut more. Fix it so that any play may not be generated).

3). This rubber washer functions as valve in this damper.

(2). General Assembling

1). Tighten the member (5) in the cylinder with using a caulking agent.

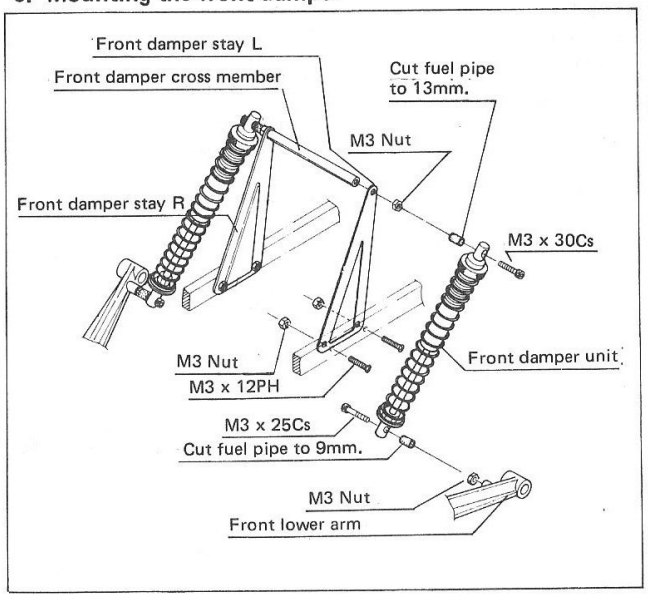
2). Lower the piston to the lowest position and supply oil.

3). As the cylinder is filled with oil, raise the piston slowly and tighten the damper support A(3) with a sealing agent coated. At this time, blow air as much as possible.

4). Mount a damper support B(4), a spring receiver plates (10) and (11) and a spring (1). M3 nut (14) is used for fixing the members (11), (10), and (4) together with the torque rod.

NB: In the damper, it is some little time until the O-ring and piston can smoothly function. So, make the warm-up run.

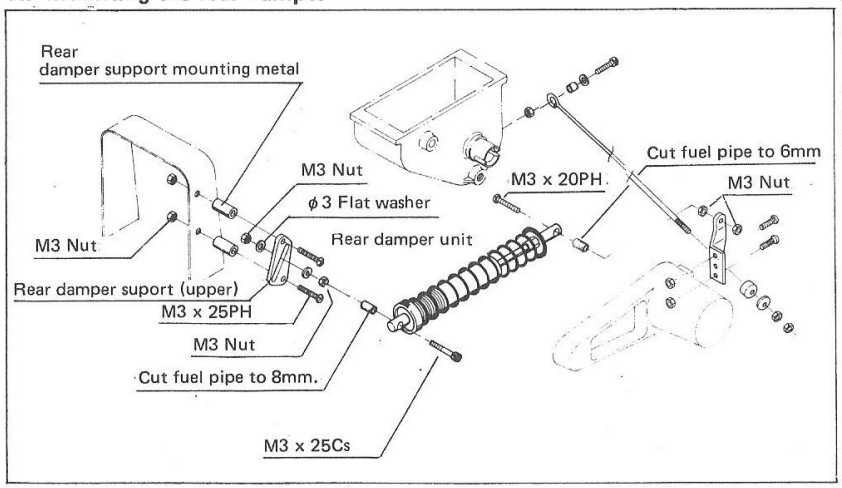
J. Mounting the front damper



(1). Set the damper so that the vertical line of the damper may be roughly at the right angle to the Cs. If inclined, the piston may not move smoothly. (Adjust it at the tightening position of the M3 nut).

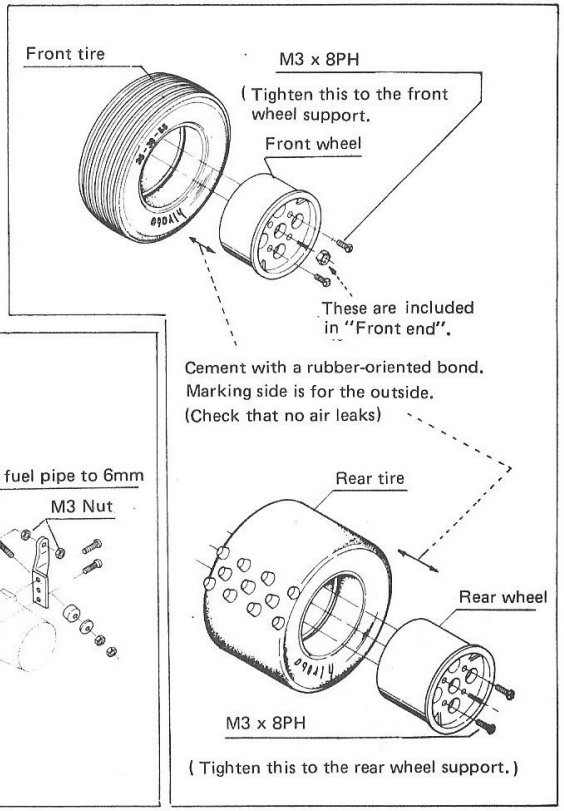
(2). As the damper and suspension spring are united into one, it is very important that the strength of the damper and the spring should be the same at both sides. (for the spring, the same strength can not be secured only by determining the length of both springs to be same. Therefore, measure the strength of springs by a spring balance for better adjustment).

K. Mounting the rear damper



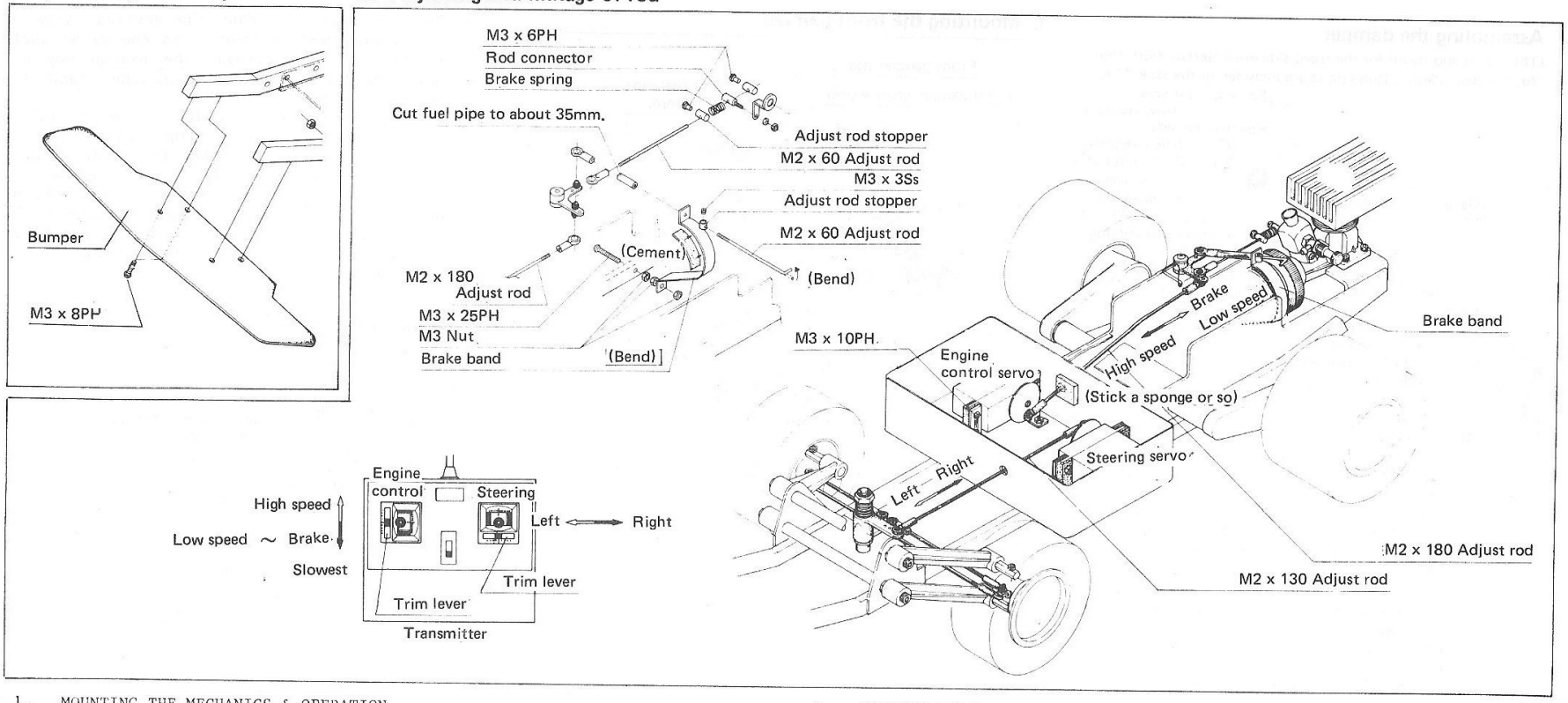
Mount the rear damper as well as the front damper. For the points, see the clause of "Mounting the front damper."

L. Assembling the tire



M. Mounting the bumper

N. Adjusting and linkage of rod



1. MOUNTING THE MECHANICS & OPERATION

In case of 2-channel prop, it has two sticks in almost all cases. The left side is for engine control and the right side is for steering. Therefore, a servo that is driven by the left side stick is used for engine control. another servo that is driven by the right side stick is used for steering. A small lever so-called "trim lever" which is attached at a side of the stick is used for micro-adjusting the movements of the servoes. So, you can correct the servoes movements by this trim lever without loosening the adjust rod.

2. MOUNTING SERVOES

Normal turn type servoes are to be used for both engine control and steering. Mount them so that the center position of the horn of the engine control servo may be located rearwards and that of the steering servo may be located forwards. And mount the adjust rod above each servo horn. At this time, the stick position of the transmitter is as follows;

Engine control side ..... Lowest position for the stick.
Intermediate (middle) for the trim lever.
Steering side ..... Neutral for the stick.
Neutral for the trim lever.

Check the aboves when switching on the servoes.

3. SETTING THE BRAKE AND THE ENGINE CONTROL

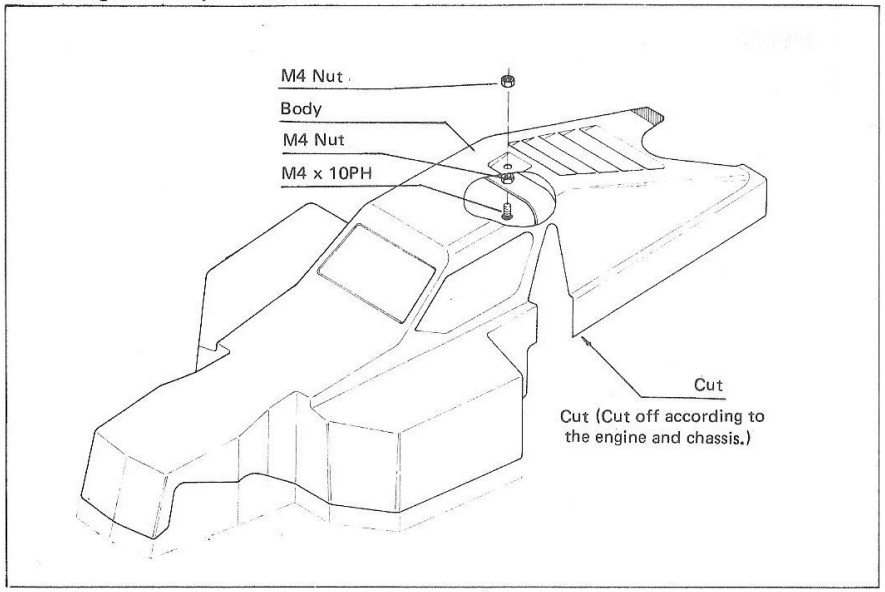
Set a brake first.

Adjust the brake so that it may function with the trim lever at middle position and the engine control stick at the slowest position at the transmitter. And adjust the strength of the brake by turning the M2 x 60 adjust rod which is set at the brake band. Adjust the throttle by positioning the adjust rod stopper. Mount the rod connector so that the carburettor drum may open by about 1mm at the above-shown stick position. And check that the drum can be fully opened with the engine control stick at HIGH. If the stroke is short, shift the rod mount position of the servo horn for better adjustment.

4. SETTING THE STEERING

Make it equal the length of both right and left tie rods (M2 x 90 adjust rod). Determine the mounting state of the servo saver (A) from the steering servo as observing the steering angle. If a great steering angle is required, shift it inwards. If your Rusher is apt to move in either right or left side, adjust it by using the trim lever.

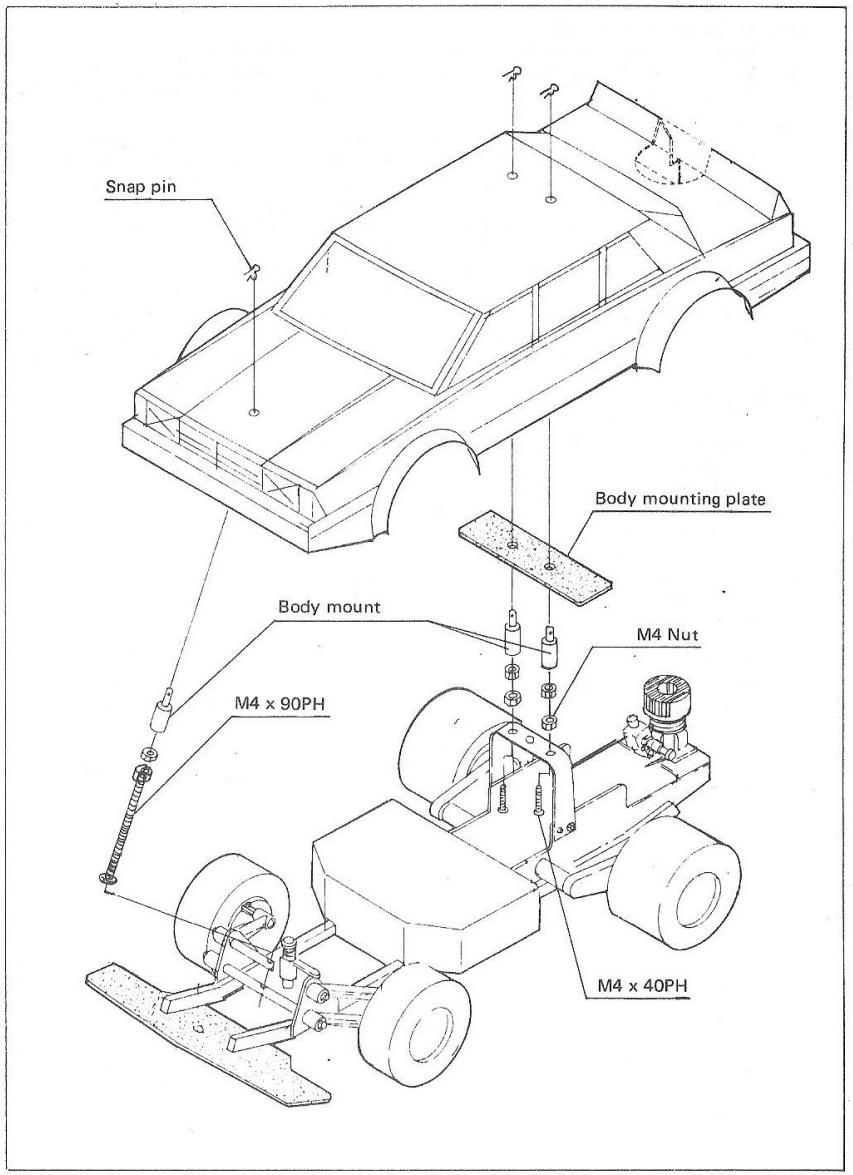
Mounting the body In case of the Rusher 8



PAINTING THE BODY

Wash the body with detergent before painting. And drill all the necessary holes and cut off all the unnecessary parts before painting. As paints for polycarbonate is sold in market, it is much recommended that such paints are used for painting the body. Give paints to inside the body. After that, attach various transcribing marks on the surface of the body.

In case of the Bluebird SSS



DRIVING/RUNNING ADJUSTMENT

1. Start the engine by a rope or an electric starter.
2. See if oil 50 is supplied in the gear box. After that, start the engine. Then, supply oil to every rotary and moving part. (Hobby Oil 50 is an option).
3. Provide the engine with an air cleaner and a heat sink without fail.
4. Check that no loosening nor slackening is caused at every screw and that the mechanisms can accurately operate. Then, start the engine.
5. Operate the engine at a low or medium speed until the amount of one or two fuel tanks is consumed. Because the gears box, gears, and every bearing should be accustomed for high speed revolution.
6. The suspensions should be adjusted to the same level of hardness at every point of right/left and rear/front parts. Then, again check that no screws or nuts are loosened. If necessary, use a screw lock.
7. After driving (running), clean up the BUGGY (remove dust or foreign matters). Keep the machine on its best condition for subsequent running.

OTHER ADJUSTMENT

It is also available to adjust and/or fix up your BUGGY (RUSHER-8) for higher performance in driving in the prescribed course.

A). Front axle

(1). Setting the toe-in

Make the distance between the front tires narrower at their forward side by shortening the length of the tie rod a little (by about 1° to 2°), and you may secure better stabilization of straight running.

B). Adjustment the rear axle and the damper

(1). Tighten or loosen the rear arm mount nut (M6 nylon nut) for the sub adjustment in order to adequate damper force.

(2). Setting the damper mount angle

It is possible to adjust the upper mount angle. Setting the damper in the upper part of a long groove, your BUGGY will become more suitable for off-road running and rear footing will be also much improved. (So, it is recommended that you will find out the most suitable position in combination with the strength adjustment of the spring).

(3). Though damper oil is usually of a single type of oil, you may adjust the damper force if you use a mixed oil.

MEMO: ————

Thank you very much for your purchase of Hirobo's 1/8 scale buggy "RUSHER -8". Through the quality and quantity of the model kits have been severely checked before shipment, please re-check the quantity of the components and parts contained in each small sack in order to make doubly sure. If you should find anything wrong, please be free to contact the shop where you have purchased or directly Hirobo Industrial Co., Ltd.

ヒロボーR/C ラッシャーエイトをお買上げいただいて誠にありがとうございました。キットの内容及び数量については、十分な検査を致しておりますが、念のため各部品小袋内の数量確認を行なって下さい。
万一不足のあった場合はお手数ですが、そのままお買上店又は弊社まで御連絡下さい。その際、Lot. NO.の付記をお願い致します。ない場合、又不明な場合は処理できかねることがあります。

検査 Inspection	Lot. No.

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Cable HIROBO FUKUYAMA

PARTS ARRANGEMENT & NAME OF PARTS

Classification	Parts No.	Parts Name	Required Q'ty Ass.	Pkd.
A. Assembling the engine section	A–1	Clutch shoe		2
	2	Fly wheel		1
	3	Pilot nut A		1
	4	Pilot nut B		1
	5	Pilot nut metal		1
	6	Clutch spring		2
	7	Liner		1
	8	Flat washer for ENYA		1
	9	5 x 20 x 0.5 FW		1
	10	2.5 x 16 Roll pin		2
B– 1 Assembling the gear box	B–1	M4 x 4 Ss	4	
	2	1st axis gear stopper	1	
	3	1st axis pinion gear	1	
	4	2nd axis bevel gear	1	
	5	2nd axis spur gear	1	
	6	3rd axis spur gear	1	
	7	1st axis	1	
	8	2nd axis	1	
	9	3rd axis	1	
	10	Gear case	1	
	11	Drive yoke	2	
	12	1st axis metal	2	
	13	2nd axis metal A	1	
	14	2nd axis metal B	1	
	15	3rd axis metal	2	
	16	3 x 14 Roller pin	2	
	17	M4 x 6 SS	2	
B–2 Assembling the gear box	B–18	Clutch bell	1	
	19	Clutch lining	1	
	20	Gear case cover	1	
	21	M4 x 6 Ss		2
	22	M3 x 6 PH		2
C. Mounting the engine mount	C– 1	Engine bed		2
	2	Rear stay		1
	3	Engine mount shim		2
	4	M3 x 12 Cs		4
	5	M3 x 12 PH		4
	6	M3 U nut		8
	7	M3 Nut		1
	8	ϕ3 FW		
D. Mounting the body mount	D– 1	Body mount		1
	2	Corss member		4
	3	M5 x 25 Set screw		2
	4	M5 x 35 Set screw		2
	5	M5 x 20 Hexagon head bolt		6
	6	M5 Nut		12
	7	ϕ5 FW		4
	8	M3 x 8 PH		2
	9	M3 x 12 PH		1
	10	M3 x Nut		3
D. Mounting the body mount	D–11	Tension rod		2
	12	M3 x 10 Cs		2
	13	M3 x 10 PH		4
	14	M3 Nut		6
	15	M 2.6 Nut		2
	16	Damper rubber		2
	17	ϕ3 FW		2

Classification	Parts No.	Parts Name	Required Q'ty Ass.	Pkd.
	18	ϕ2.5 FW		2
	19	L type clank (with boss)		1
	20	ϕ5 ball		3
	21	M2 x 10 PH		1
	22	M3 x 15 PH		1
	23	M2 Nut		2
	24	M3 Nut		1
	25	M2 x 15 PH		1
	26	ϕ3 FW		1
E. Assembling the rear arm	E– 1	Rear arm		2
	2	Rear wheel support		2
	3	Rear damper support lower R		1
	4	Rear damper support lower L		1
	5	Rear arm axis		2
	6	Rear axle		2
	7	Center block	2	
	8	Rear axle collar		2
	9	Brg. AC–ZZKZZ		4
	10	3 x 15.8 Needle pin	4	
E. Assembling the rear arm	E–11	Rubber washer ϕ6		2
	12	Rubber washer ϕ8		2
	13	M5 x 25 Set screw		2
	14	M4 x 10 Cs		2
	15	M3 x 6 PH		4
	16	M6 Nylon nut		2
	17	ϕ3 FW		4
	18	4 x 10 x 2 FW		2
	19	ϕ6 FW		2
	20	8 x 12 x 0.1 FW		2

Classification	Parts No.	Parts Name	Required Q'ty Ass.	Pkd.
F. Mechanics box	F– 1	Mechanics box		1
	2	Servo mount R		2
	3	Servo mount L		2
	4	Mechnics guard plate		1
	5	M3 x 8 PH		8
	6	M3 x 10 PH		8
	7	M3 x 12 PH		4
	8	M3 Nut		16
G. Mounting the fuel tank	G– 1	Fuel tank 120cc		1
	2	Linkage band		1
	3	Fuel hose		1
	4	Fuel tank mounting plate		1
	5	M3 x 6 PH		4
	6	M3 Nut		4
H. Assembling the servo saver	H– 1	Servo saver A		1
	2	Servo saver B		1
	3	Servo saver axis		1
	4	Servo saver metal		1
	5	Servo saver axis collar B		1
	6	Servo saver spring		1
	7	Nut for servo saver metal		1
	8	Servo saver support		1
	9	M3 x 15 PH		1
	10	ϕ4 E–Ring		1
I. Assembling the front end	I– 1	Front upper arm		2
	2	Front lower arm		2
	3	Front cross member		2

Classification	Parts No.	Parts Name	Required Q'ty Ass.	Pkd.
	4	Front arm holder		2
	5	M6 x 40 Cs		4
	6	M3 x 12 PH		6
	7	M3 Nut		6
	8	M6 Nut		4
	13	Front axle		2
	12	Front upright		4
	11	Front axle housing		2
	9	Front wheel support		2
	14	Knuckle arm		2
	10	Front axle metal		4
	15	M3 x 14 Cs		4
	16	M3 x 6 PH		2
	17	M3 Nut		2
	18	M5 Nut		2
	19	M3 Nylon nut		4
	20	N4 Nylon nut		4
	21	3 x 9 x 1 FW		2
J. Mounting the front damper	J– 1	Front suspension spring		2
	2	Damper cylinder		2
	3	Damper support A		2
	4	Damper support B		2
	5	Damper cylinder cap		2
	6	Damper torque rod		2
	7	Piston support		2
	8	Damper spring stopper		2
	9	Piston		2
	10	3 x 19 x 1.6 FW		2
	11	3 x 15 x 1.6 FW		2
	12	2 x 9.3 x 0.5 Rubber washer		2
	13	O–Ring P–3		4
	14	M3 Nut		6
	15	Front damper oil		1 set
	16	Front damper cross member		1
	17	Front damper stay R		1
	18	Front damper cross stay L		1
	19	M3 x 25 Cs		2
	20	M3 x 30 Cs		2
	21	M3 x 12 PH		4
	22	M3 Nut		8
K. Mounting the rear damper	K– 1	Rear suspension spring		2
	2	Damper cylinder		2
	3	Damper support A		2
	4	Damper support B		2
	5	Damper cylinder cap		2
	6	Damper torque rod		2
	7	Piston support		2
	8	Damper spring stopper		2
	9	Piston		2
	10	3 x 19 x 1.6 FW		2
	11	3 x 15 x 1.6		2
	12	2 x 9.3 x 0.5 Rubber washer		2
	13	O–Ring P–3		4
	14	M3 Nut		6
	15	Rear damper oil		1 set
	16	Rear damper support mounting metal		4
	17	Rear damper support (upper)		2
	18	M3 x 25 Cs		2
	19	M3 x 20 PH		2
	20	M3 x 25 PH		4
	21	M3 Nut PH		12
	22	ϕ3 FW		4

Classification	Parts No.	Parts Name	Required Q'ty Ass.	Pkd.
L. Assembling the tire	L– 1	Front tire		2
	2	Rear tire		2
	3	Front wheel		2
	4	Rear wheel		2
	5	M3 x 8 PH		16
M. Rod linkage	M– 1	Brake lining		1
	2	Brake band		1
	3	M2 x 60 Single side threaded adjust rod		2
	4	M2 x 90 Adjust rod		4
	5	M2 x 130 Adjust rod		1
	6	M2 x 180 Adjust rod		1
	7	Connecting rod		1
	8	M2 Nut		1
	9	Washer		1
	10	ϕ5 Ball		11
	11	Rod end		14
	12	Brake spring		1
	13	Adjust rod stopper		3
	14	M2 x 10 PH		3
	15	M3 x 6PH		2
	16	M3 x 25 PH		1
	17	M2 Nut		7
	18	M3 Nut		3
	19	M2 x 15 PH		4
	20	M3 x 3 Ss		1
N. Frame parts	N– 1	Main frame		2
	2	Rear side frame		2
	3	Bumper		1
	4	ϕ1.2 x 400 Piano wire		1
	5	L type wrench 1.5		1
	6	L type wrench 2		1
	7	Ltype wrench 2.5		1
	8	L type wrench 3		1
	9	L type wrench 5		1
O. Assembling instruction	O– 1	Assebmbling Instruction		1
	2	Design drawing		1
	3	Parts list		1
	4	Transcribing mark BN		1
P–1	P– 1	Body (Rusher 8)		1
P–2	P– 2	Body (Bluebird SSS)		1
				1
Q–1 Body parts (for Rusher 8)	Q– 1	M4 x 10PH		1
	2	M4 Nut		2
Q–2 Body parts (in case of Bluebird SSS)	Q– 3	Body mounting plate		1
	4	Body mount		3
	5	Snap ring		3
	6	M4 x 40 PH		2
	7	M4 x 90 PH		1
	8	M4 Nut		6
	9	Transcribing mark B		1
		Mechanics case with frame		1
		Tack paper for mechanics case		2

hirobo

1/8 SCALE BUGGY

RUSHER 8

Wheel Base	310 mm
Front Tread	240 mm
Rear Tread	230 mm
Hight	170 mm
Width	290 mm
Length	630 mm
Gear Ratio	8.56 : 1
Engine	19 – 21 Class
Radio	2 ch