DATSUN
E10

COMPETITION TUNE-UP MANUAL

NISSAN MOTOR CO., LTD.

Tokyo, Japan

1975

TUNE UP MANUAL FOR E10 SERIES

1. FOREWORD

This manual has been prepared as a guide for remodeling the Datsun 120A – P(L)E10, KP(L)E10 series – into race- or rally-use versions by using Nissan competition parts.

This manual introduces competition parts based on the international sporting code of FIA, and describes remodeling methods as well as the features of each part.

FIA code and the special regulations of ACN (National Automobile Club) in each country should be observed when selecting competition parts for remodeling.

Nissan Motor Company does not warrant or guarantee the competition parts.

For any inquiries or suggestions regarding this manual, please write to the following address:

Competition group
Export Service Department
Nissan Motor Co., Ltd.
17-1, Ginza, 6-chome,
Chuo-ku, Tokyo, Japan
TELEX: NISMO J22503
CABLE: NISMO TOKYO

2. NOTES

2.1 Nissan Motor Company does not warrant or guarantee parts or vehicles when used for competition purposes. Furthermore, the use of certain types of competition equipment or modifications to a standard Datsun automobile may not meet respective countries' regulations for use on public roads.

2.2 Descriptions in this manual are based on race-use R.H. drive cars classified in FIA group II.

2.3 FIA recognition has been obtained for R.H. drive cars. FIA regulations also permit participation of L.H. drive cars in competition.

2.4 The A12 engine introduced in this manual is the 3 mm oversize type, with a displacement of 1270cc. The maximum output of the engine with competition parts installed is 120PS/80000rpm, and the maximum torque is 11kg-m/7200rpm or over.

2.5 If a larger engine output than the above is desired, enlarge the cylinder bore and replace the piston with the 1298cc version. This will increase the engine output to 130PS/8200rpm or over.

2.6 When making inquiries regarding selection or installation of competition parts, please include the intended use, type of competition, course and road conditions, and required performance in as much detail as possible, if the inquiries relate to the unit assembly or to the overall problems of the vehicle.

2.7 If you place an order of racing parts, please contact to our Export Parts Department.

April, 1975

Export Service Dept.
NISSAN MOTOR CO., LTD.

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I. ENGINE

The A12 engine can be modified to feature one of three different displacements.
Hereafter, the 1,171 cc, 1,270 cc and 1,298 cc engines shall be referred to respectively as STD, Opt. I and Opt. II.

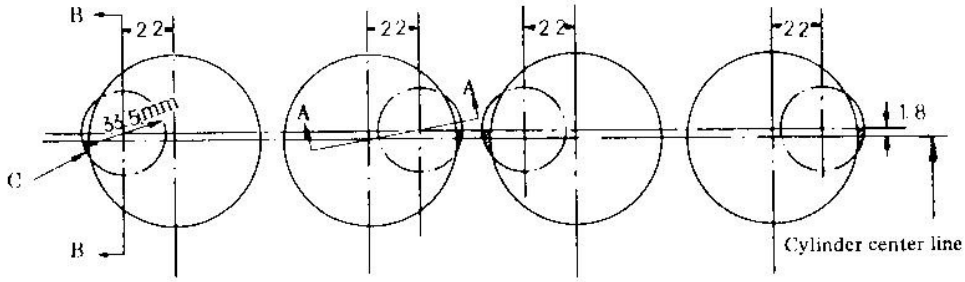
1. Cylinder block

Using the standard cylinder block, modify it as follows.

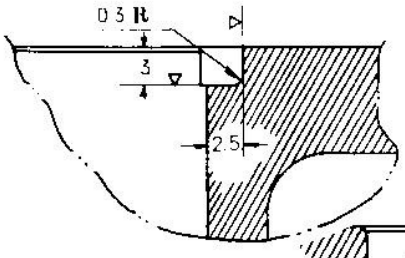
1) Enlarge the standard bore
Note: Though the wall thickness of the standard 73 mm bore is 5 mm, inaccurate casting and/or machining during modification may result in damage to the block.

STD	1,171 cc	73.000 $^{+0.050}_{0}$ mm
Opt. I	1,270 cc	76.000 $^{+0.050}_{0}$ mm
Opt. II	1,298 cc	76.800 $^{+0.050}_{0}$ mm

2) Additional cutting of valve recess on the block
Though there is a valve recess on the block, cut 1.5 mm more when using the race option camshaft.



View A – A

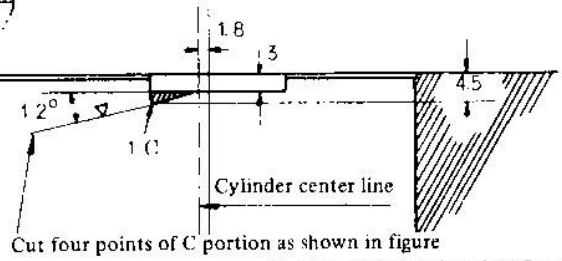


The dimensions of the location marked with an * differ as follows.

Opt. I 1.0 mm

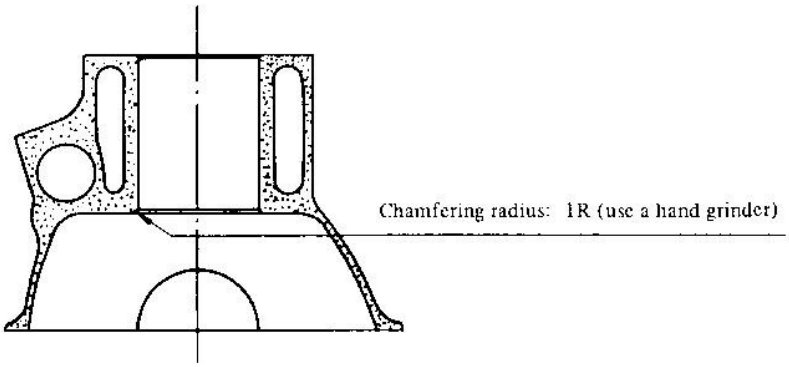
Opt. II 0.6 mm

View B – B

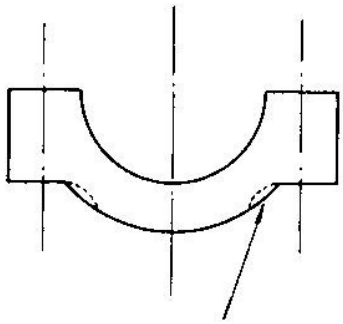


Cut four points of C portion as shown in figure
(Radius of corner=less than 2 mm)

3) Chamfering lower part of cylinder bore skirt
Though this area is already chamferred during the production process, additional chamfering will help prevent scuffing of piston skirt, and will reduce wear, etc. Chamfer this area very carefully.



4) Main bearing cap
To reduce stress concentration, grind back of cap bolt seat, being careful not to make an edge.

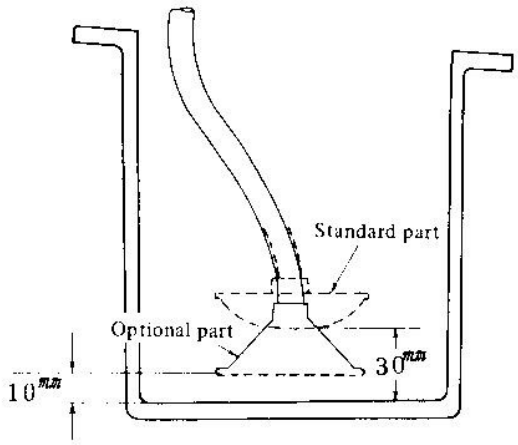


Grind back of cap bolt seat carefully so as not to make edge.

2. Oil pump strainer

The following oil strainer is available as optional race equipment. The inlet (screen) is positioned 10 mm deep from the bottom of the oil pan. The inlet is funnel-shaped to prevent air sucking.

Optional oil strainer : Part No. 15050 M0820



3. Cylinder head

Starting with the Datsun PE10 standard twin carburetor part (Part No. 11041 M0800), modify it as follows.

1) Adjustment of compression ratio
Adjust combustion chamber volume by grinding lower deck of cylinder head. (Volume of combustion chamber for model PE10 twin carb. is 32±0.5 cc)

(CC)

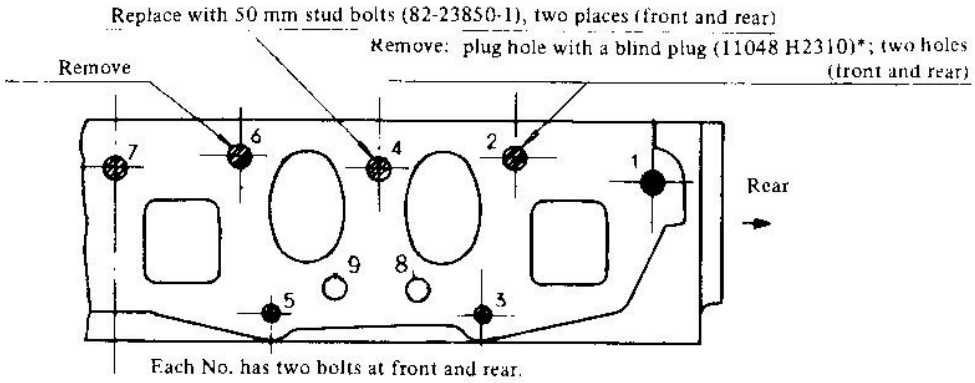
	St'd	Opt.I	Opt.II
Volume of each cylinder (V)	293	317	324
Combustion chamber volume (V2)	20.5	22.7	22.7
Gasket volume (V1) (0.6t)	(2.7)	(2.7)	(2.7)
0.8t	3.6	3.6	3.6
(1.2t)	(5.4)	(5.4)	(5.4)
Volume for piston top land (V3)	1.8	1.8	1.8
Volume for valve recess (V4)	0.4	0.5	1.5*

Reference

$$\text{Compression ratio} = \frac{V}{V1 + V2 + V3 + V4} + 1$$

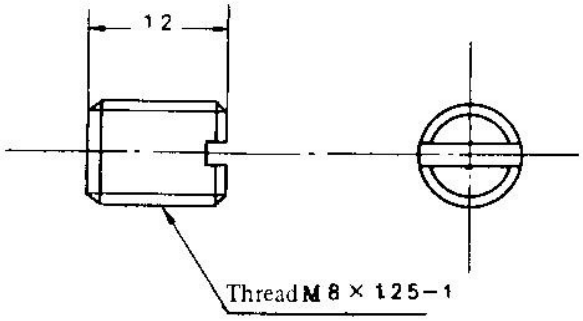
Notes: 1. For items marked with an *, it is necessary to modify recess of piston top land when 13201 M0821 or 13202 M0821 valve is used.
2. Adjust difference in volume between combustion chambers to within ±0.1 cc.

2) Replacement of stud bolt
When race option intake manifold and exhaust manifold are used, stud bolts must be replaced or removed.



※ Blind plug 11048 H 2310

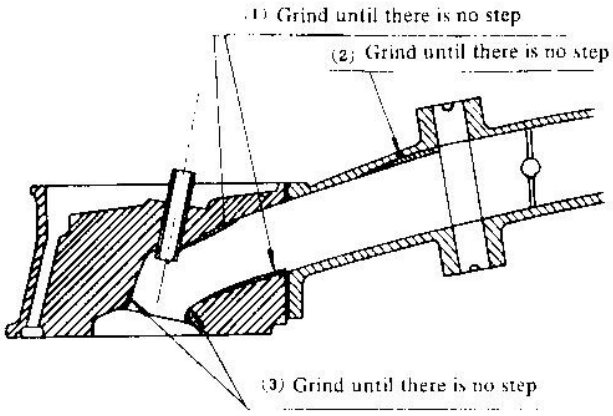
Material: Aluminum



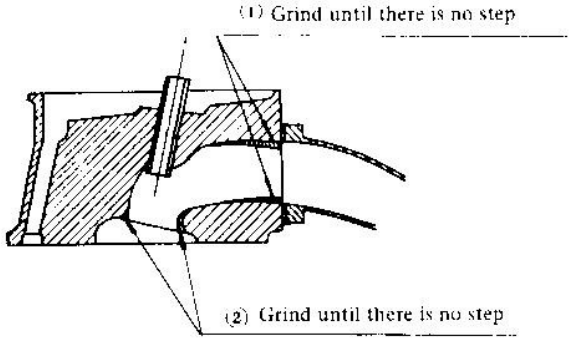
(1) Use bolts Nos.1, 3, 5 and 7 as they are.
(2) Remove Nos. 2 and 6 bolts and screw in blind plug, applying binding agent to No. 2 bolt.
(3) Replace No. 4 bolt with 50 mm stud bolt (87-23850-1).

3) Grinding intake and exhaust port and combustion chamber
Grinding of intake and exhaust ports is aimed at smoothing surface of casting wall.

1) Intake port



2) Exhaust port



(1) Grind step between port of head and manifold.
(2) Grind step at upper part of valve seat.
(3) Grind step between intake and exhaust port and insulator.
(4) Give inner wall of port and combustion chamber a mirror-like finish.

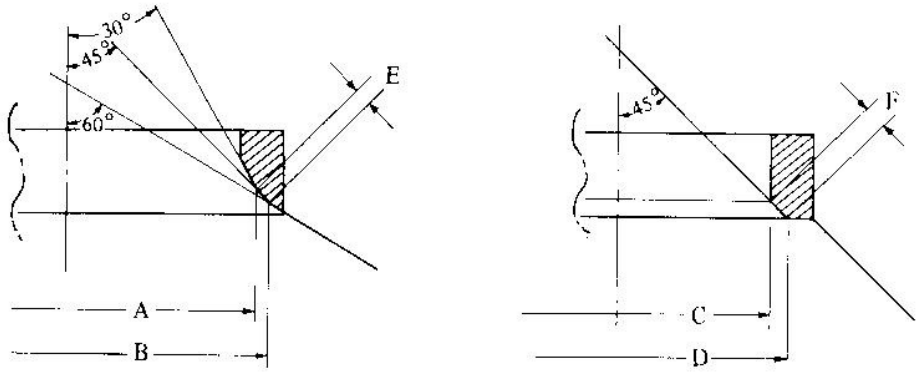
4) Modification of valve seat

* mark indicates that valve seat insert must be replaced.

Diameter of lower hole head side

(mm)

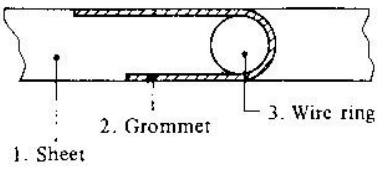
Intake	39.5	+ 0.025 0
Exhaust	34	+ 0.025 0



	A	B	C	D	E	F
STD	32.5	34.6	26.0	28.6	1.3	1.8
Opt. 1	34.6	36.7	27.1	29.7	1.0	1.8
*Opt. 2	36.5	38.0	28.0	30.6	1.3	1.8

4. Head gasket and head bolts

1) Use head gasket part No. 11044 M0820.



To prevent blow-by, a wire ring is used as shown in above figure.

2) Use model PE10 twin carb. for head bolts.

Part No.	11056	H2301	9 p.c.s.
	11057	H2301	1 p.c.s.

ⓘ PE10 twin carb head bolts are embossed with an identification mark.

Note: On top of this head bolt is an embossed identification mark as shown in this figure.
This bolt is made of a material which has greater tensile strength than that of head bolt for single carburetor.

- Tightening torque
  - ○ Initial tightening torque : 6.0 mKg (At production line : 4.5)
  - ○ Intermediate " : 7.0 mKg (" 6.5)
  - ○ Final " : 7.3 ~ 7.8 mKg (At production line : 6.5 ~ 7.0)

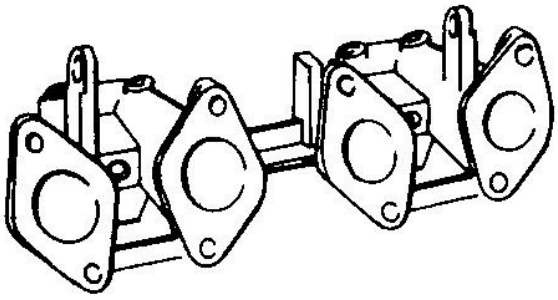
5. Intake manifold

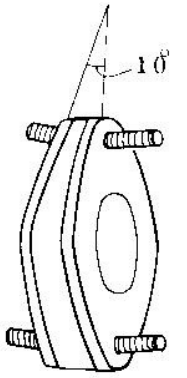
There are two kinds of intake manifold.

1) For Solex 40 PHH
Use intake manifold Part No. 14002 H2310 together with insulator Part No. 16174 M0820.

Optional racing, intake manifold

Material: aluminium casting

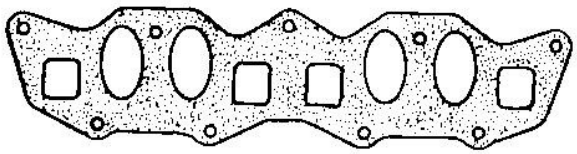




Optional insulator

Optional racing manifold gasket (14035-H2310)

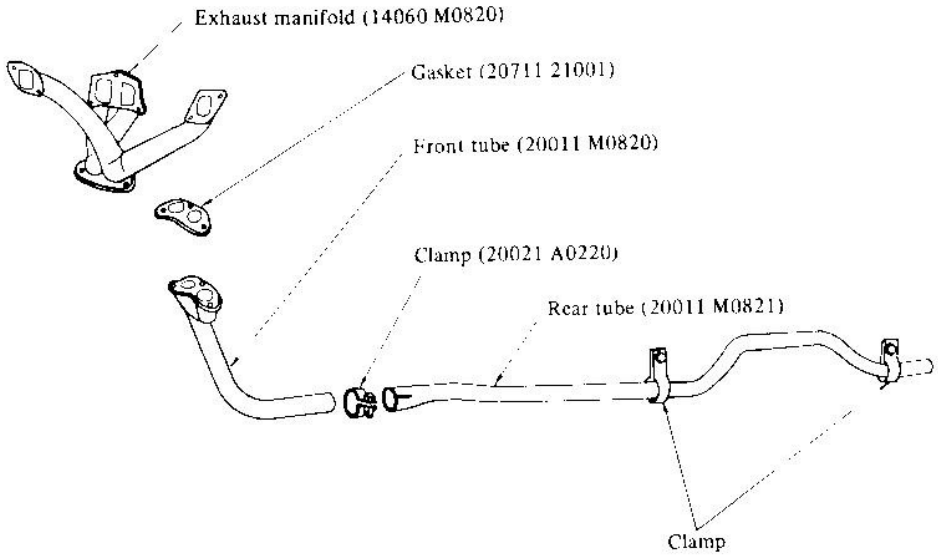
Thickness: 1.6 mm



2) For Solex 44 PHH
Use intake manifold Part No. 14001 M0820 for this Solex. In this case, insulator (Part No. 16174 20100) should be used as a set. (This insulator has no inclination.)
Note: Careful checking is required because this insulator has a short life owing to heat from exhaust manifold.

6. Exhaust system

1) The following parts are available.



7. Crankshaft

Use standard crankshaft.

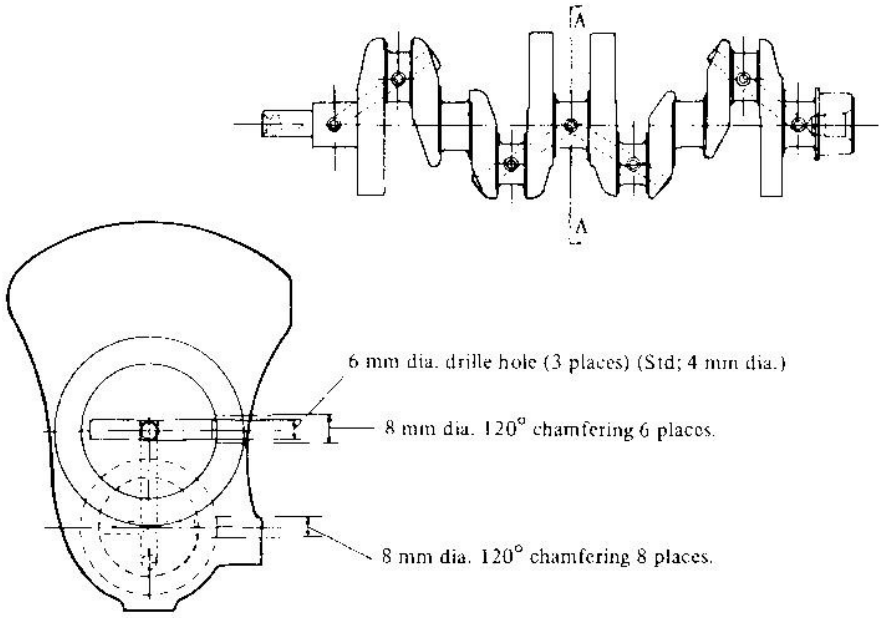
1) Oil holes of crank pin and journal must be chamferred 1 mm in depth and 2 mm (8 mm dia.) in width.

2) Lap surface of journal and crank pin with chrome oxide for finishing.
If any cracks are found on surface, polish with sand paper (#700~#1000) or lap with chrome oxide, paying attention to out of roundness and parallelism.

Out of roundness Parallelism	less than 0.005 mm

3) Dynamic balance of crankshaft is adjusted to less than 35 g.cm.
When forged surface is ground or some operation which will affect balance is undertaken, dynamic balance must be re-adjusted.
(Recommended dynamic balance limit: less than 18 gr.cm)

4) Every time engine is overhauled, oil hole plug must be removed and washed.



8. Connecting rod

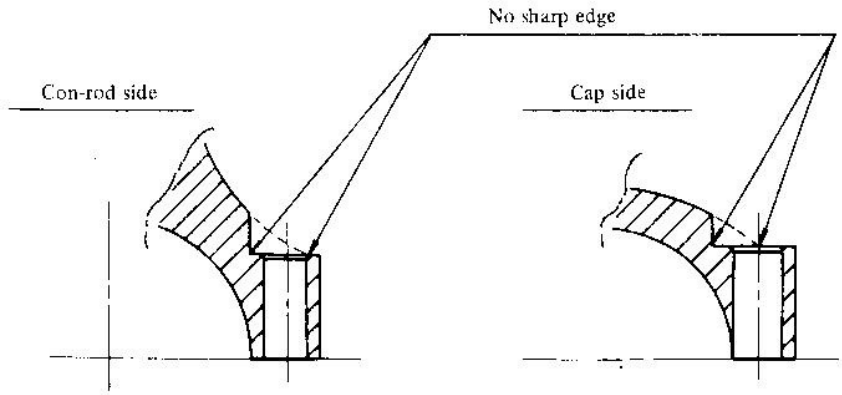
The following strengthened connecting rods are optionally available.

Part No.	12100 M0820	Rod Ass'y-con.
	12109 M0820	Bolt-Con. rod
	12112 M0820	Nut-Con. rod

Modify them as follows.

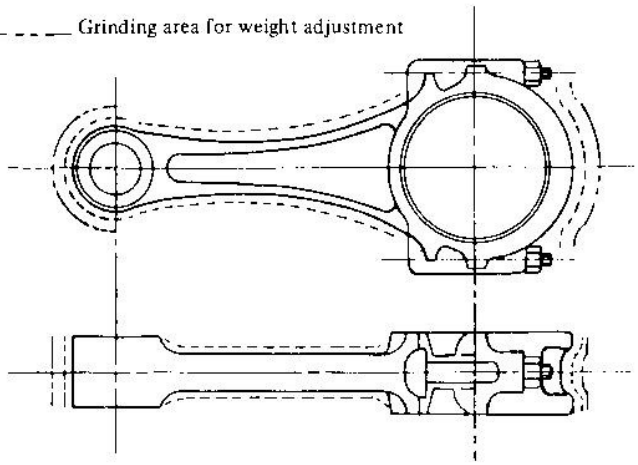
1) Chamfer back of bolt seat and nut seat until no sharp edges remain.

2) Super finish forged surface with a hand grinder.



(2) – – – – – Super finishing area

(3) ——— – – – Grinding area for weight adjustment

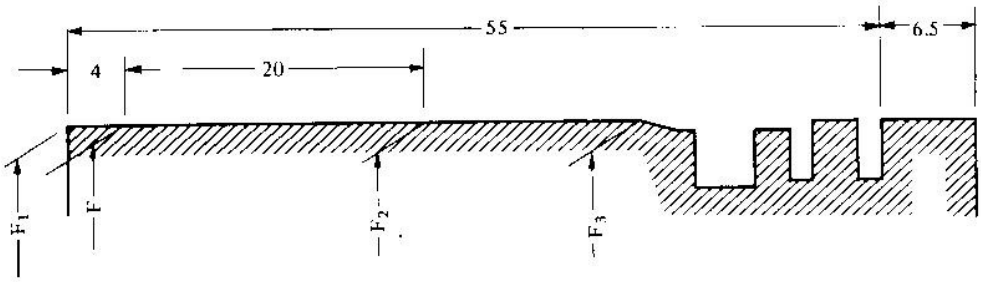


3) Balance weight variation of each connecting rod to less than 2.0 g when assembled.

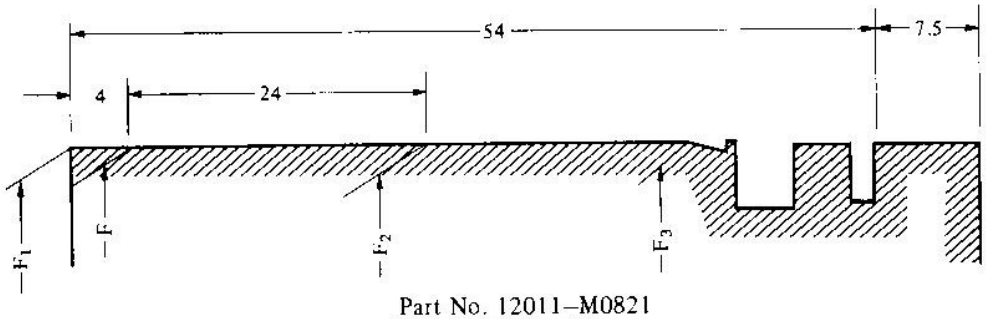
4) Tightening torque of bolts is 4.0 Kg-m.
When standard connecting rods are used, modify them as described above.

9. Piston

Aluminium alloy pistons which feature reduced heat deformation characteristics are optionally available.



Part No. 12011–M0820



Part No. 12011–M0821

Part No.		F	F1	F2	F3	Displacement
12011	H2310	72.98 ±0.01				1,170 cc
"	M0820	75.92 ±0.01	0 -0.015	←	-0.195 -0.210	1,270 cc
"	M0821	76.72 ±0.01	"	"	"	1,298 cc
			Compared with the measuring data F			

Notes: After cylinder head is ground, check to be sure that there is no interference between piston and valve.
Temporarily assembling cylinder head without head gasket, check that clearance between piston and valve is 1 ~ 2 mm.

Combination of piston, piston ring, piston pin and con-rod.

Part No.		STD	Opt. 1	Opt. 2	Application	Note
12011 (Piston)	H2310	○				73.0 mm dia.
	M0820		○		○	76.0 mm dia.
	M0821			○		76.8 mm dia.
12033 (Ring)	B3040	○				3 Rings
	M0875		○		○	_ " _
	M0876			○		2 Rings
12024 (Pin)	H2310	○				outer dia. 17.5 mm
	M0820		○		○	_ " _ Full floating
	M0821			○		_ " _ outer dia. 18.5 mm
12100 (Rod)	H1000	○	○			
	M0820			○	*○	

Use ○ marked parts as combination.
* Finish inner diameter of con-rod small end from 17,430 to 17,418 mm.

10. Bearing

1) Main bearing
A grooved main bearing which provides for increased lubricant circulation is optionally available.
The main bearing is available in three different sizes so as to facilitate adjustment of crankshaft oil clearance to correct value (50 to 70μ).

Main bearing size (Optional part)

Part Name	Part No.	Bearing thickness	Oil clearance range (for new crankshaft)	Note
Main outer bearing	12215 H2310	1.823 ~ 1.831 mm	0.029 ~ 0.071 mm	Equivalent to standard size
	12215 H2311	1.818 ~ 1.826	0.039 ~ 0.081	
	12215 H2312	1.813 ~ 1.821	0.049 ~ 0.091	
Main inner bearing	12231 H2310	1.823 ~ 1.831	0.029 ~ 0.071	Equivalent to standard size
	12231 H2311	1.818 ~ 1.826	0.039 ~ 0.081	
	12231 H2312	1.813 ~ 1.821	0.049 ~ 0.091	
Main center bearing	12247 H2310	1.823 ~ 1.831	0.029 ~ 0.071	Equivalent to standard size
	12247 H2311	1.818 ~ 1.826	0.039 ~ 0.081	
	12247 H2312	1.813 ~ 1.821	0.049 ~ 0.091	

Note: There is an oil clearance range of 0.042 mm for each bearing size. This is the sum of the production error in the dimensions of crankshaft diameter, bearing diameter, and bearing housing diameter.

2) Connecting rod bearing
Select a bearing size that will provide an oil clearance of 50 to 60μ.

Connecting rod bearing size (Optional part for A10)

Part No.	Bearing thickness (t)	Oil clearance range (for new crankshaft)	Note
12111- 25720	1.495 ~ 1.503 mm	0.02 ~ 0.06 mm	Equivalent to standard size
12111 -25721	1.490 ~ 1.498	0.03 ~ 0.07	
12111–25722	1.485 ~ 1.493	0.04 ~ 0.08	
12111 -25723	1.498 ~ 1.508	0.01 ~ 0.05	Equivalent to standard size

11. Flywheel

A flywheel with improved balance is available as an optional racing part.
A clutch cover and pressure plate with improved balance are also available as optional racing parts.

	Opt.	St'd
Part No.	12300 M0820	12300 M0820
Max. unbalance	5 gr-cm	10 gr-cm

Reference: Max. dynamic unbalance.

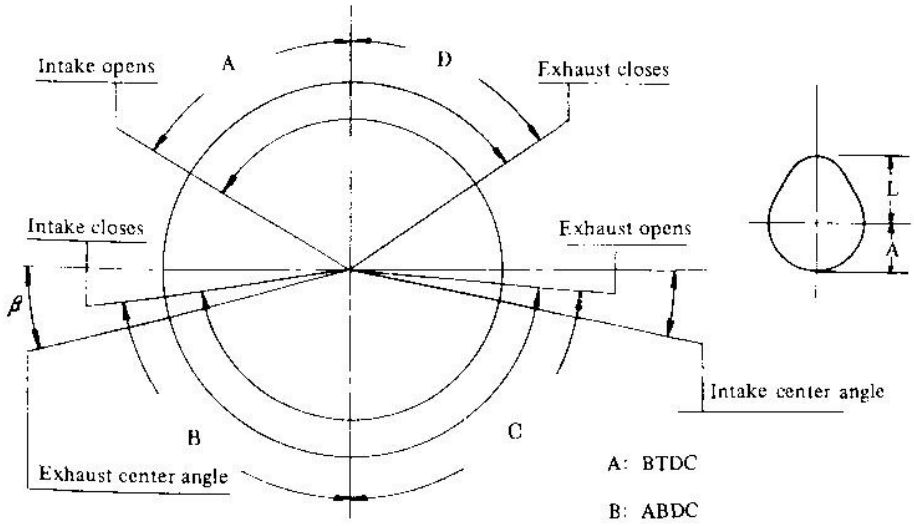
Part	Opt.	St'd
1 Flywheel	5 gr-cm/900 r.p.m. (12300 M0820)	10 gr-cm/900 r.p.m.
2 Kit clutch cover	" (30210 M0875)	"
3 Clutch disc	" (30100 M0801)	"
1 + 2 + 3 Ass'y	"	No indication

12. Camshaft

Three types of optional camshafts are available for race and rally use.

Part name	Part No.	Dimension A	Dimension L	Note
80° cam	13001–H2312	14.45 mm	20.95 mm	For race
74° cam	13001–H2311	"	"	For race
70° cam	13001–H2310	"	"	For rally
St'd 64° cam PE10 twin carb..	13001–H2300	15.03 mm	"	Suitable for rally
One carb.-use St'd 80°A cam	13001–18001	15.60 mm	"	
80°A	13001–M0820	13.70 mm	20.96 mm	For race

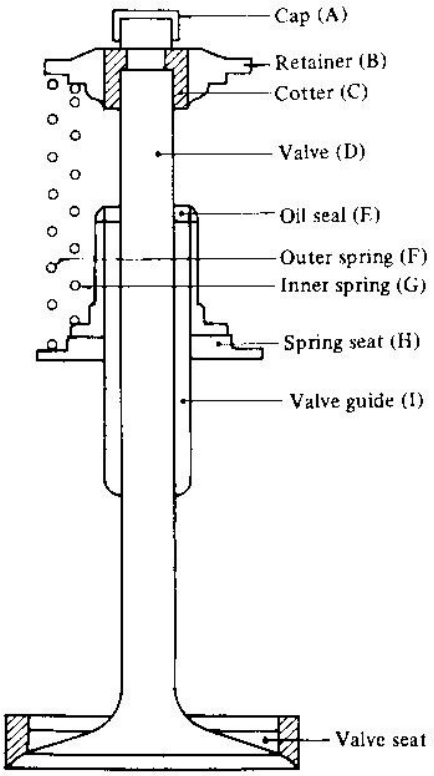
VALVE TIMING DIAGRAM



Part Name	Part No.	Working angle	Valve timing						Valve lift (mm)	Valve clearance when checking the left items (mm)
			A	B	C	D	α	β		
80° cam	13001–H2312	320°	58°	82°	85°	55°	12°	15°	9.4	0.25
74° cam	13001 H2311	296°	46°	70°	73°	43°	12°	15°	9.4	0.25
70° cam	13001–H2310	280°	38°	62°	65°	35°	12°	15°	9.4	0.25
PE10 twin-carb. St'd cam (64° cam)	13001–H2300	256°	20°	56°	58°	18°	18°	20°	8.4	0.35
One carb.-use std. cam	13001–18001	240°	12°	48°	10°	50°	18°	20°	7.6	
80°A cam	13001–M0820	320°	58°	82°	85°	55°	12°	15°	10.5	0.25

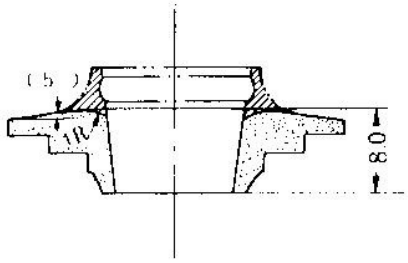
13. Valve train parts

1) Valve mechanism



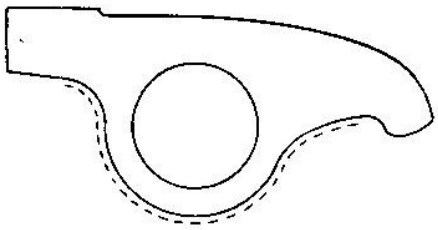
(A)13229–M0820(Opt)Exclusive part for 13201–M0821
(B)13209–H2302(STD)
(C)13210–M0820(Opt)Exclusive part for 13101–M0821
(C)13210–73400(STD)
(D)13202–M0821(Opt)Valve head dia. 32mm Stem dia. 8mm
(D)13201–M0821(Opt)Valve head dia. 38.4mm Stem dia. 7mm
(D)13202–M0820(Opt)Valve head dia. 30.1mm Stem dia. 8mm
(D)13201–M0820(Opt)Valve head dia. 37.1mm Stem dia. 8mm
(E)13207–M0820(Opt)
(E)13207–M0821(Opt)Exclusive part for 13201–M0821
(F)13203–H2300(STD)
(G)13204–M0820(Opt)
(H)13205–H2300(STD)
(I)13213–M0820(Opt)
(I)13112–M0821(Opt)Exclusive part for 13201–M0821
(I)13212–H2300(STD)INT.
(I)13213–H2300(STD)EXH.
(J)11098–H2301(STD)INT.
(J)11099–M0101(STD)EXH.
(J)11098–M0820(Opt)INT.
(J)11099–M0820(Opt)EXH.

2) Modification of valve retainer



Note: For weight reduction, remove hatching area.

3) Modification of valve rocker



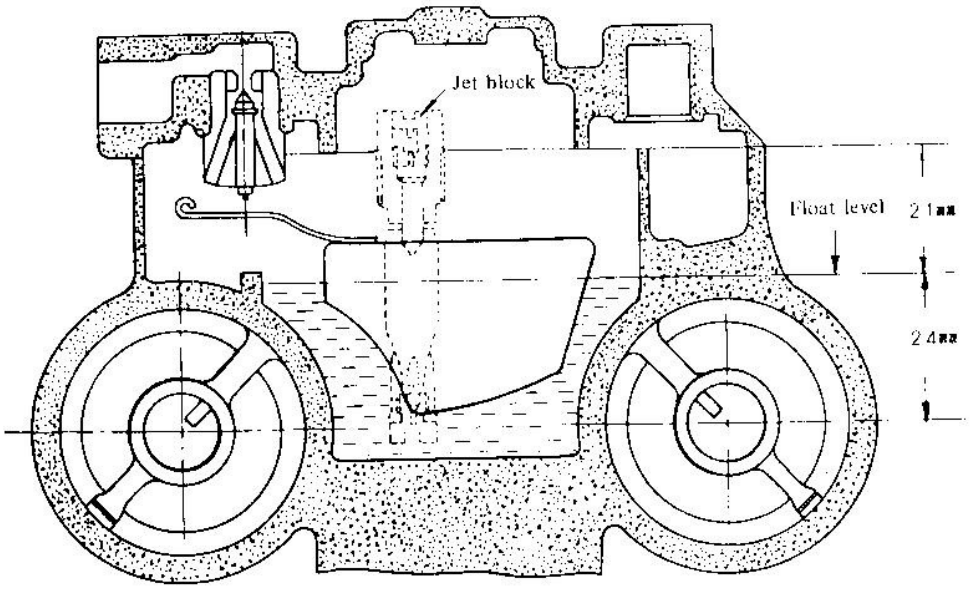
Note: Mirror finish "....." portion. Polishing the entire surface with emery paper is recommended.

4) Carburetor

The Mikuni Solex 40PHH and 44PHH carburetors are available as racing options.

i) Specifications of optional racing carburetor

Model	N40PHH-A30	N44PHH
Part No.	16010- H2310	16010–M0820
Bore	40 mm dia.	44 mm dia.
Air horn length	25 mm	50 mm
Large venturi dia.	33 mm dia.	37 mm dia.
Main jet	#120 (1.2 mm dia.)	#145 ~ #160
Main air jet	#180 (1.8 mm dia.)	#180 ~ #200
Pilot jet	# 50 (0.5 mm dia.)	#55
Pilot air jet	# 80 (0.8 mm dia.)	1.22 mm dia.
Float level (fuel level)	21 mm above float chamber surface (24 mm down from bore center line)	
Pump rod split pin position	2nd stage from bottom	



Note:

1) When Mikuni Solex 40PHH is used, dent cowl panel so that it will not hit against air horn.
2) If you have any questions regarding Solex carburetor parts, please contact the nearest Solex agency.

- Sizes of main jet and air jet.
  The sizes of main jet and air jet are as follows.

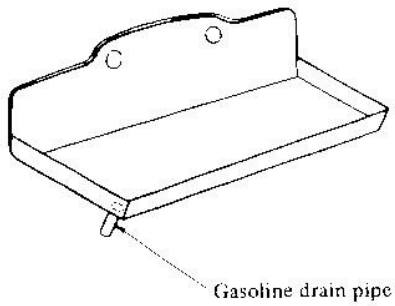
(1) Main jet

No.	Dia. (mm)
# 110	1.10
# 115	1.15
# 120	1.20
# 125	1.25
# 130	1.30
# 135	1.35
# 140	1.40
# 145	1.45
# 150	1.50

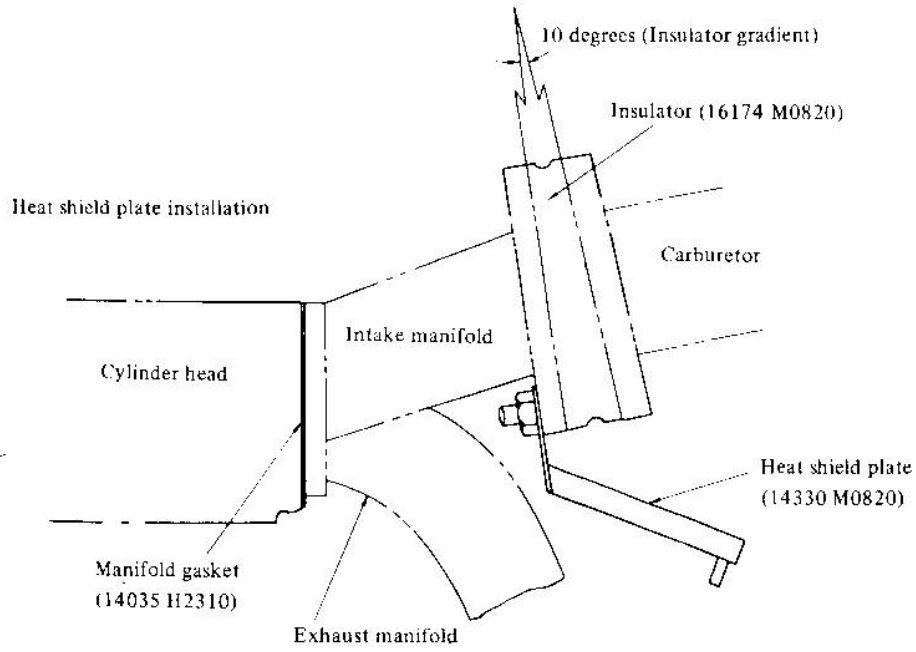
(2) Main air jet

No.	Dia. (mm)
# 150	1.50
# 160	1.60
# 170	1.70
# 180	1.80
# 190	1.90
# 200	2.00

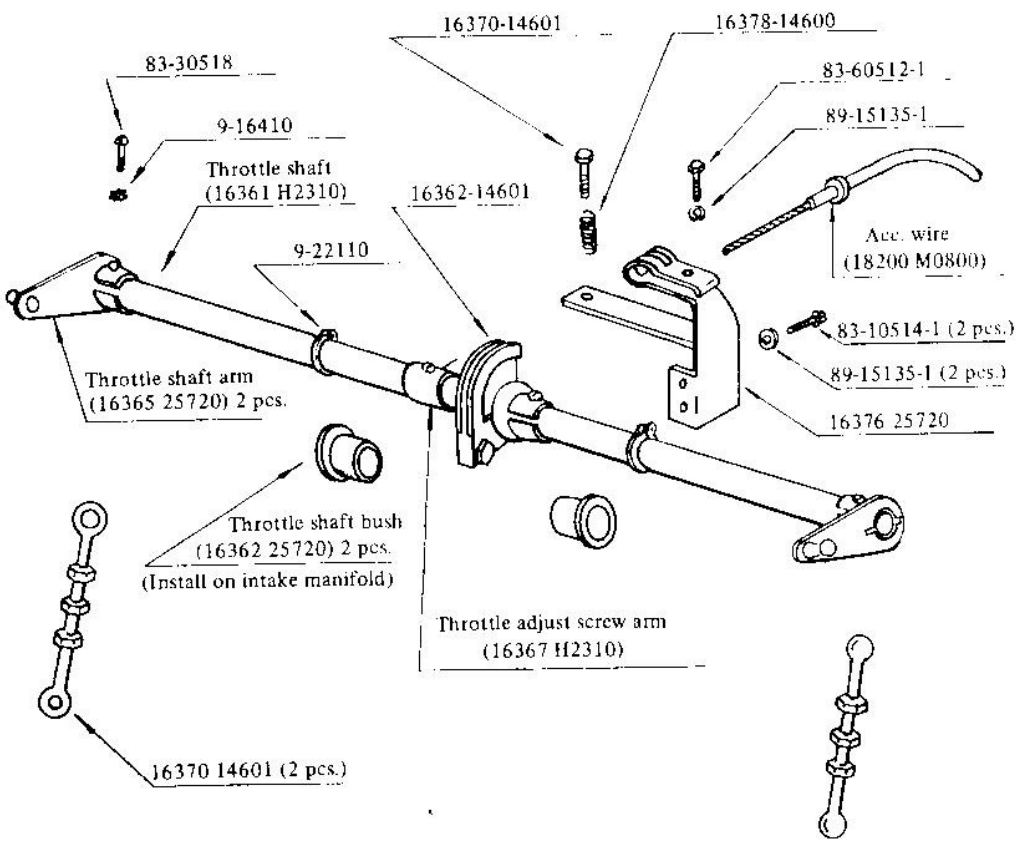
ii) Heat shield plate
An optional heat shield plate with a gasoline drain pipe for the prevention of fire is available.
Each carburetor requires one shield plate.



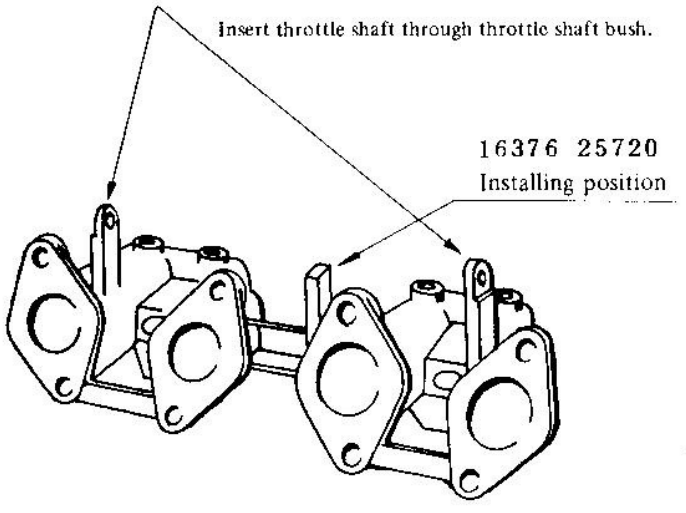
Optional heat shield plate
(Part No.14330 M0820)



14. Throttle linkage for racing use



Note: Accelerator linkage kit Part No. 16360 H2310 (Except acc. wire and bush)

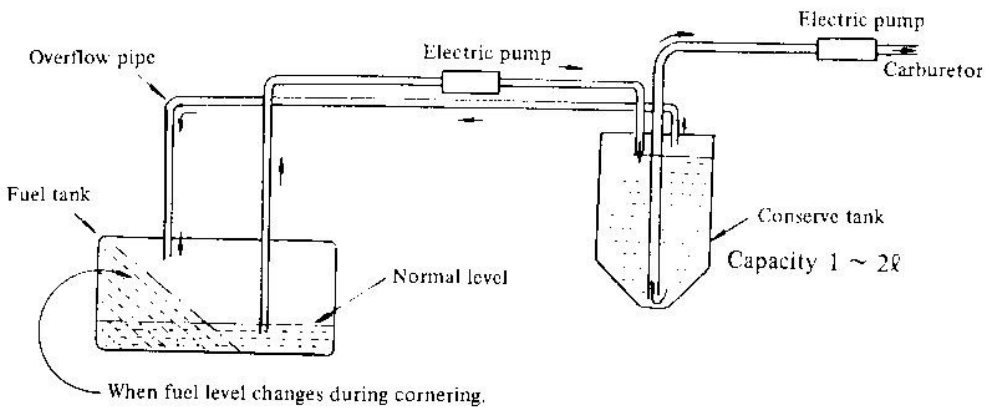


15. Electric pump

Use either optional parts for PGC10 (17010 A0220) or P510 (17010 22011).

Note: Before installing electric pump, remove mechanical pump installed on cylinder block, and attach plate at that location. (Plate Part No. 16420 14500)

Reference: When fuel in fuel tank is low, air is sucked into fuel line during cornering. To prevent this, modify as follows:



16. Pulley

Optional parts for crank pulley, water pump pulley and fan belt are as follows:

		Part No.	Pulley dia.	Note
Crank pulley	Opt.	12303–27720	101 mm	Small & deep groove type; B110 opt.
	St'd	12303–18002	134 mm	
Fan & pump pulley	Opt.	21051–27720	100 mm	B10 Opt.
	St'd	21051–M0100		
Fan belt	Opt.	11720–27720		
	St'd	11720–25604		

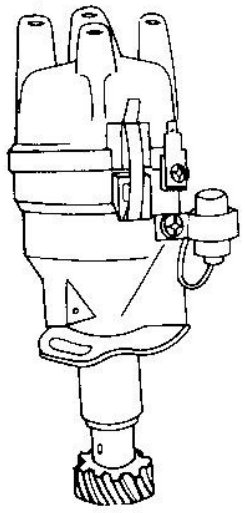
17. Alternator

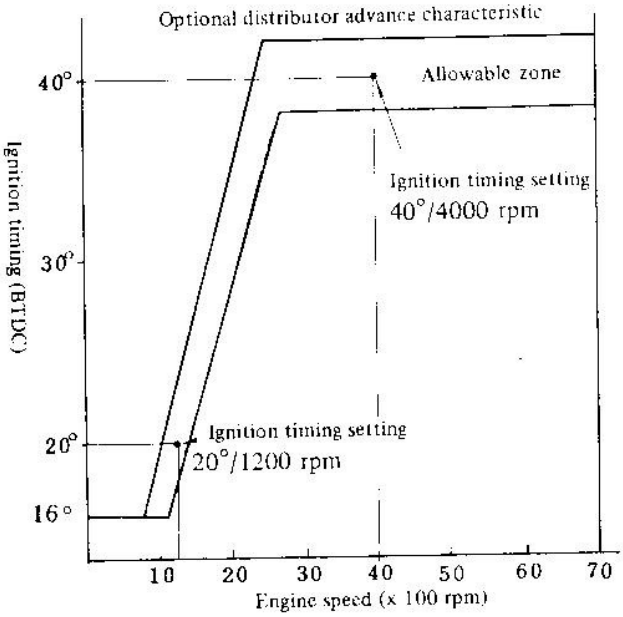
Use standard part for races, and optional cold climate part (23100 U0100) for rallies.

18. Ignition system parts

1) Standard type
   i) Distributor
   The distributor shown below is available as an optional racing part.
   For rallies, use B10 rally option part (22100 27720) modifying fixing plate.

Optional distributor
(22100-M0819)





		Optional part	Standard part
Part No.		22100 M0819	22100 M0810
Advance device	Centrifugal type	Applicable	Applicable
	Vacuum type	Not applicable	Applicable
Point gap (mm)		0.30 ~ 0.40	0.45 ~ 0.55
Point pressure (Kg)		0.55 ~ 0.75	0.50 ~ 0.65
Weight (Kg)		0.86	1.0

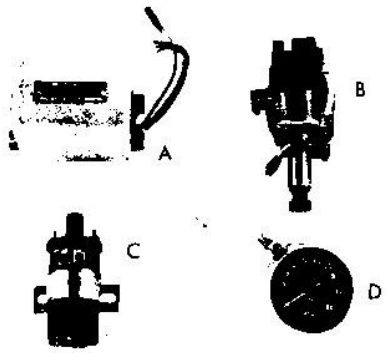
Remarks: Make sure that ignition timing is 40°/4000 rpm, although it was set previously at 20°/1200 rpm.

ii) Ignition coil
Use standard PE10 twin carburetor ignition coil with external resistor.

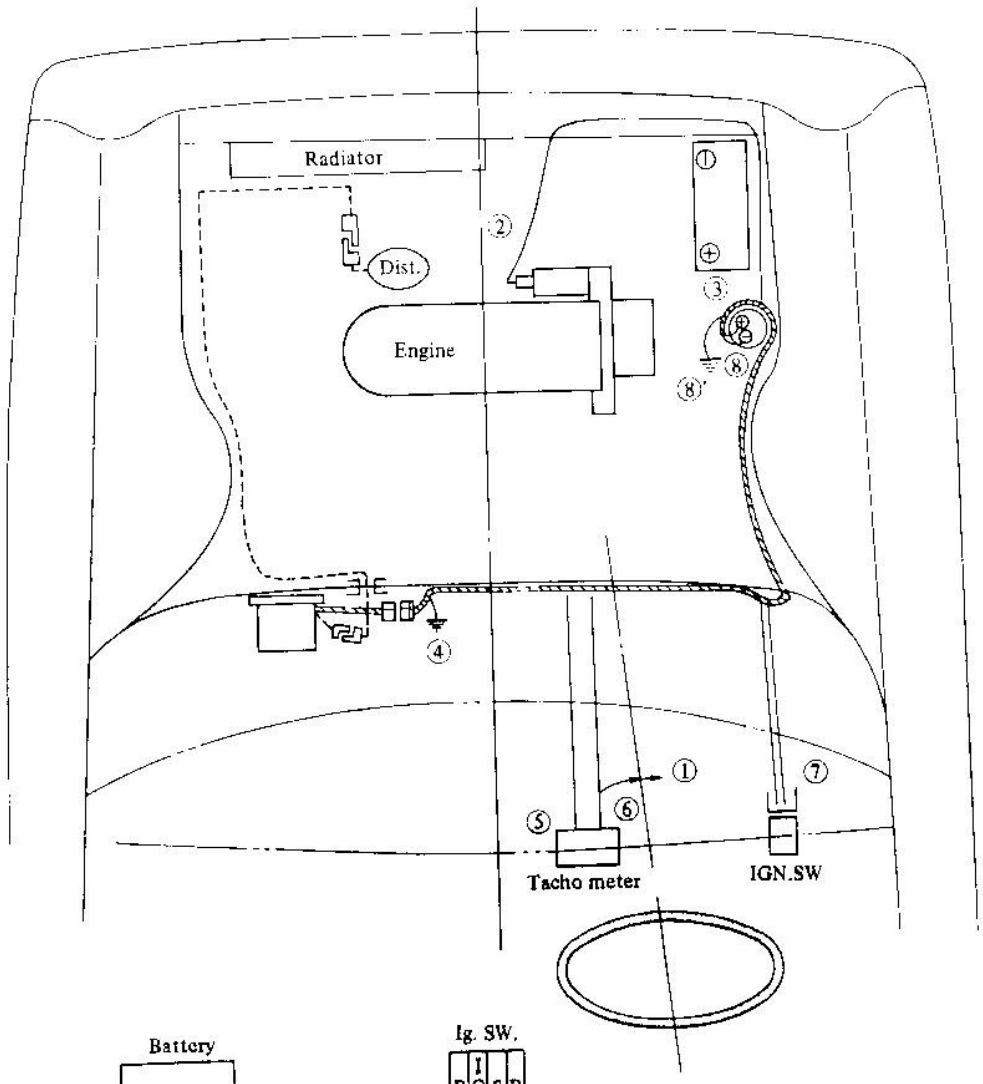
Part No.	Make & type
22433 14606	Hitachi C6R-200
22433 14616	Hanshin HP5-13E

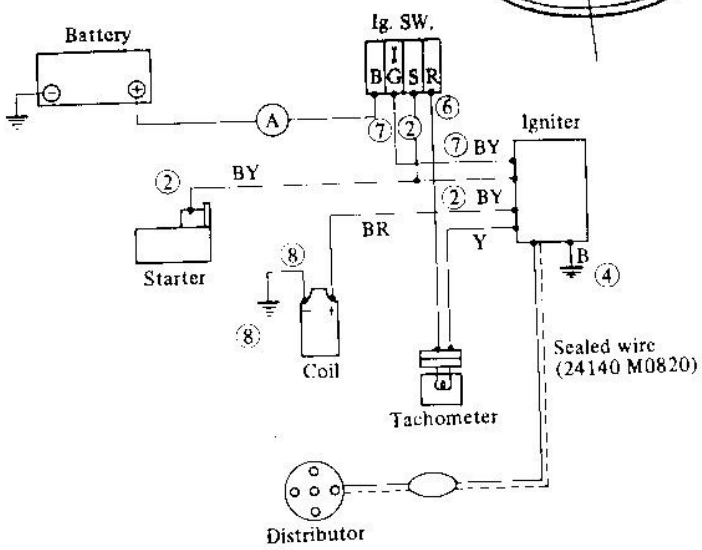
2) C.D.I. type
The C.D.I. type ignition is recommended for high speed engines.

	Part No.	Name	Quantity
A	22020 M0820	UNIT-Transistor Ignition	1
B	22100–M0820	DISTRIBUTOR ASSY-Ignition	1
	22162 71311	CAP ASSY-Distributor	(1)
	22157–18010	ROTOR ASSY-Head	(1)
C	22433 M0820	COIL ASSY-Ignition	1
	24140–M0820	WIRE ASSY-Distributor	1
	24141 M0820	HARNESS ASSY-Ignition	1
D	24855–M0820	TACHOMETER ASSY	1



◦ Plug gap 0.7 ~ 0.8 mm
◦ Advance 35°/6000 rpm


Radiator
Dist.
Engine
Tacho meter
IGN.SW


Battery
Ig. SW.
I
B G S R
Igniter
BY
BY
BR
Y
B
Starter
Coil
Tachometer
Sealed wire
(24140 M0820)
Distributor

1. Bolt igniter unit to dashboard and ground to body panel.
2. Tighten terminal ④ to dashboard with tapping screw, and ground to body panel.
3. Connect terminal ① to standard wire harness (Tachometer to ignition coil (BW)).
4. Connect terminal ⑤ and ⑥ to tachometer. Connect other terminal of ⑥ to R of ignition switch (Disconnect standard wire).
5. Connect terminal ⑦ to ignition switch IG (Disconnect standard wire).
6. Fix terminal ③ and ⑧ to ignition coil with nuts.
7. Ground terminal ⑧' to body panel.
8. Connect terminal ② disconnecting standard wire for starter.

iv) Ignition plug

The following is available as an optional part.

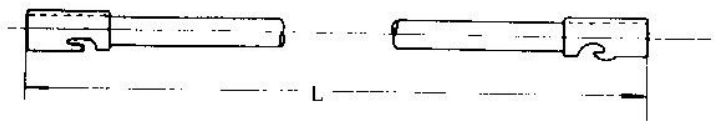
NGK BP-9ES: power chip, wide range, recommended for racing.

Note: Rally-use plug should be selected in accordance with how engine is tuned. In general, an NGK BP-7ES is recommended.

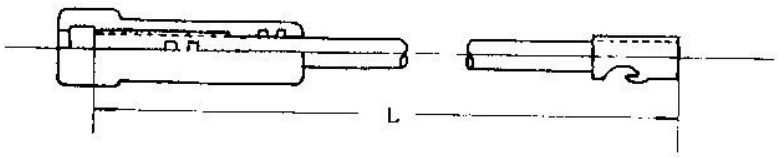
iii) High tension cable

The following cables are available as optional racing parts.

S: Type



T: Type



Part Name		Part No.	Type	L Dimension (mm)
High tension cable (coil to distributor)		22450–M0810	S	380
High tension cable	No.1	22451–25720	T	190
"	No.2	22452–25720	T	250
"	No.3	22453–25720	T	300
"	No.4	22454–25720	T	390

Note: The optional racing cable does not contain a radio noise suppressor. Before using this cable on a public road, consult local ordinances and regulations.

19. Radiator

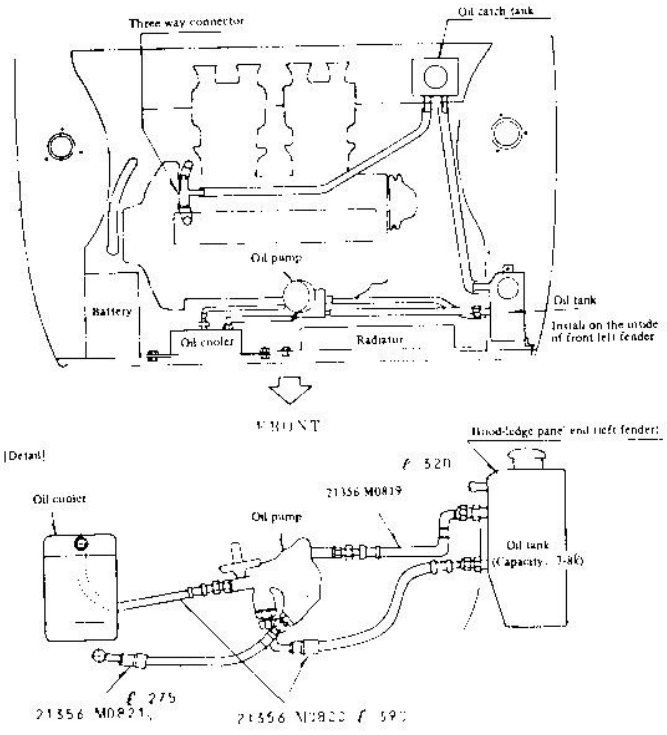
The following radiator is available as an optional racing part.

	Race opt.	Hot climate opt.	PE10 twin-carb. st'd
Part No.	21400 M0820	21400 M1005	21400 M1000
Water capacity (ℓ)	1.6	1.6	1.5
Weight (dry) (Kg)	3.0	4.0	3.5
Fin pitch (mm)	1.8	←	2.2
Radiating area (m^2)	4.43	4.96	3.48
Material (Fin)	Aluminum	Copper	←

Note: Use the PE10 twin-carb. standard parts for both upper and lower radiator hoses.

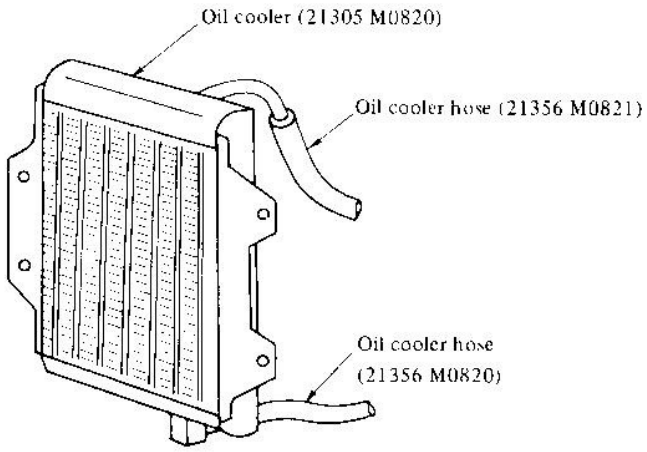
20. Oil system

1) Piping diagram



2) Oil cooler

The following oil cooler (21305 M0820), made of aluminum, is available as a racing option.



3) Oil pump

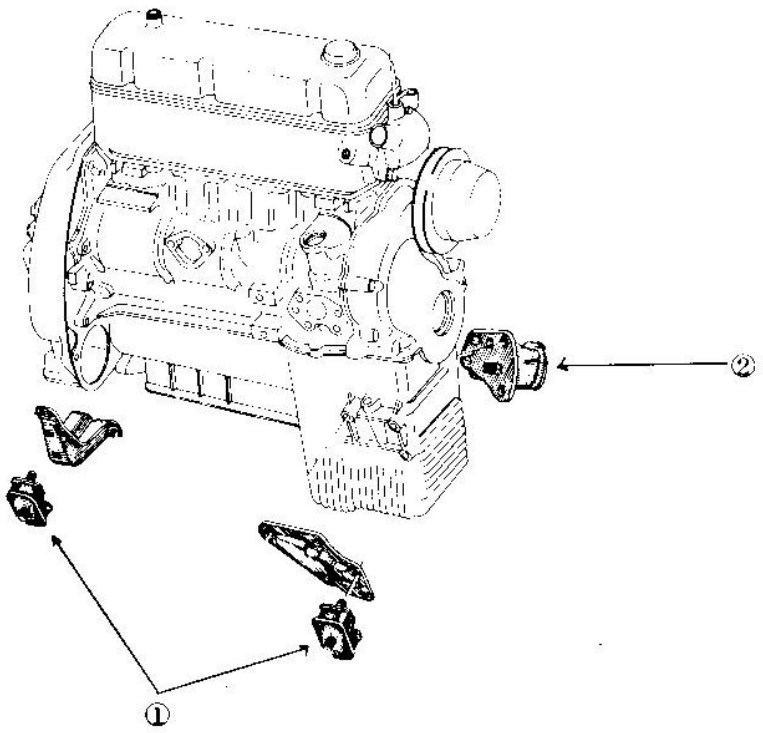
The following optional part is used.

	Part No.	Feeding capacity	Pump type
Opt.	15010 M0821	26.1 ℓ/min.	Gear
St'd	15010 M0100	19.5 ℓ/min.	Trochoid

(Pump revolution at 4000 r.p.m.)

21. Engine mounting

An insulator made of hard rubber is available as an option.
This insulator helps prevent gear from popping out, an eventuality which could possibly occur with standard insulator during hard acceleration.



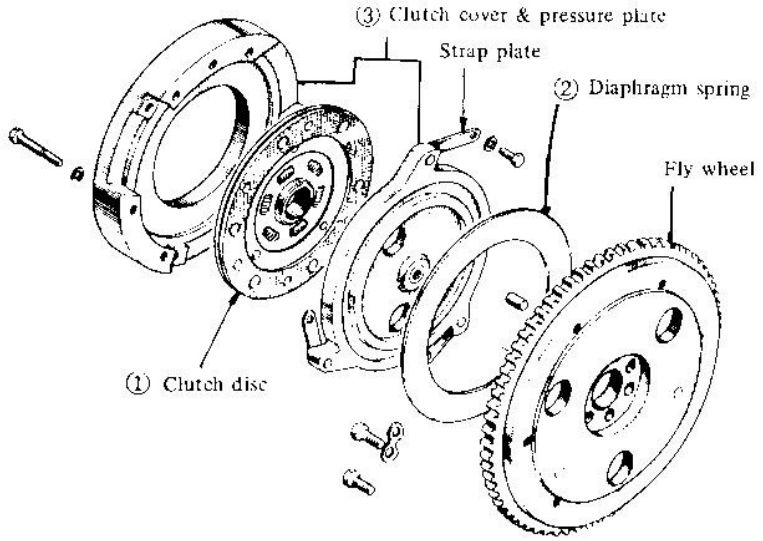
No.	Part name		Part No.	Spring rate kg/mm	P/C
1	Front engine mounting insulator	Opt.	11220 M0820	70	2
		Std.	11220 M0200	40	2
2	Rear engine mounting insulator	Opt.	11320 M0820	65	1
		Std.	11320 M0200	52	1

II. CHASSIS

1. Clutch

The following parts are available as options for race and rally.

No.					
1	Clutch disc	PE10 St'd	30100 M0802		For rally
		Opt.	30100 M0820	Facing material altered (Anti-burst part)	For race
2	Diaphragm spring	PE10 St'd	30214 M0800	Setting press. 270 Kg	For rally
		Opt.	30214 M0820	Setting press. 315±25 Kg	For race
3	Clutch cover & pressure plate	PE10 St'd	30206 M0800	Dynamic bal. 10gr-cm/900rpm	For rally
		Opt.	30206 M0820	Dynamic bal. 5gr-cm/900rpm Strap plate thickness increased	For race



Notes:

1. Modify clutch disc in order to get optimum fit between clutch disc and pressure plate.
2. Thickness of strap plate should be changed to 0.8 mm x 2.

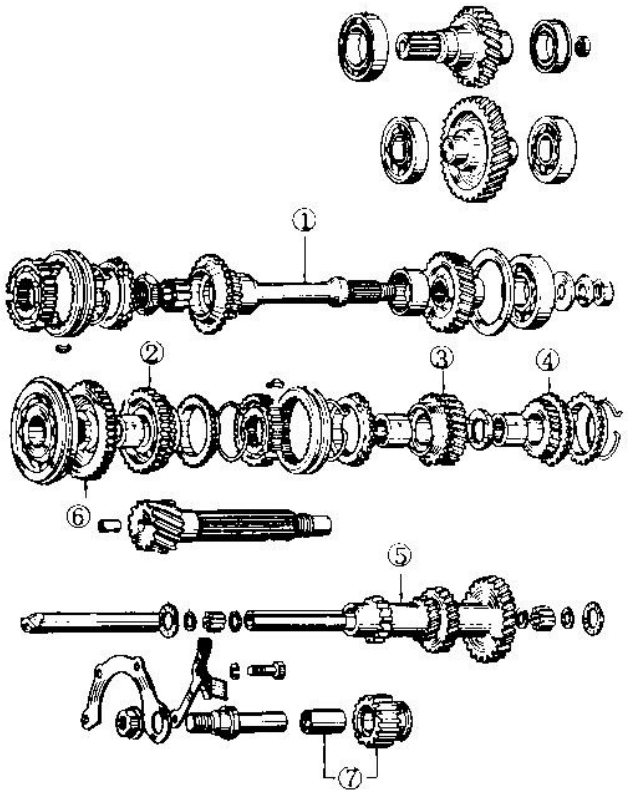
2. Transmission

The following optional close ratio gear set is available for races. Standard transmission for PE10 can also be used for racing, owing to its rather close ratio.

1) Comparison of transmission gear ratio.

Gear position	E10 4 speed standard part	PE10 Standard part	Optional racing part
1st	3.673	3.014	2.557
2nd	2.217	1.973	1.674
3rd	1.448	1.384	1.263
4th	1.000	1.000	1.000
Reverse	4.093	3.358	2.983

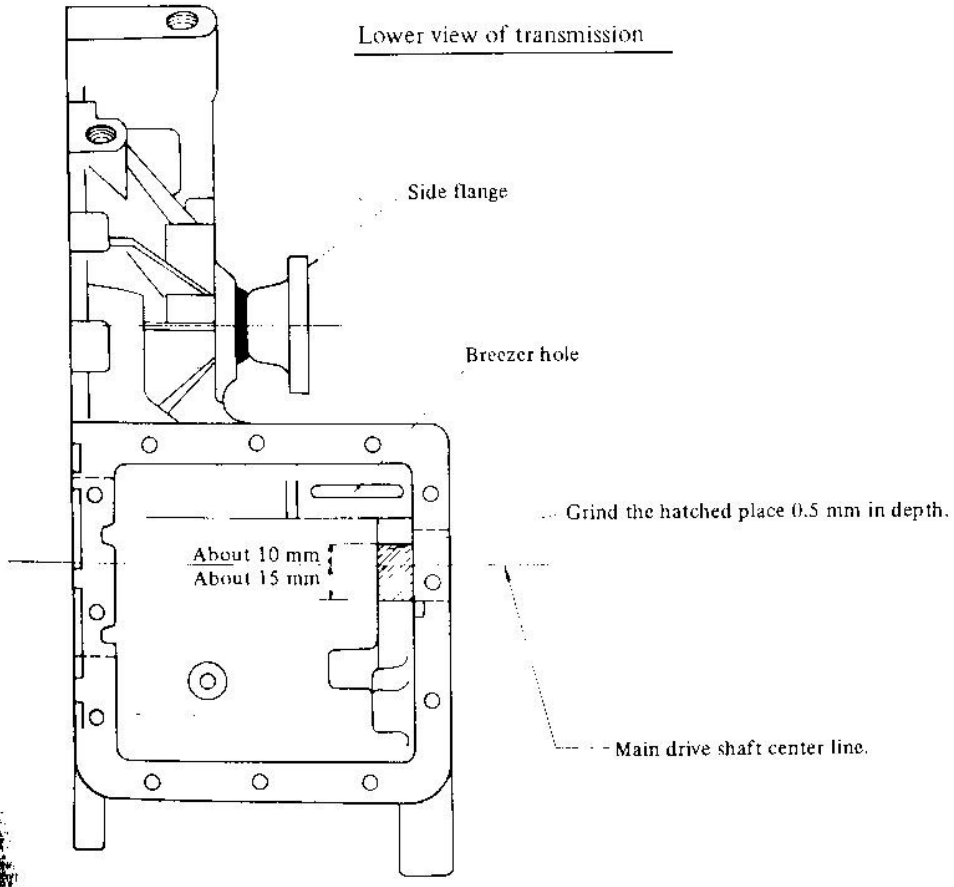
2) Replacing parts for race gear set.
Replace parts 1 - 7 as shown in following list.



No.	Part name	E10 4 speed standard part	PE10 standard part	Optional part
1	Main drive gear	32200 M0100	32201 M0800	32200 M0820
2	1st gear	32243 M0201	32243 M0201	32241 M0820
3	2nd gear	32251 M0200	32251 M0800	32250 M0820
4	3rd gear	32261 M0200	32261 M0800	32260 M0820
5	Counter gear	32213 M0202	32213 M0802	32213 M0820
6	Reverse gear	32245 M0202	32245 M0202	32245 M0820
7	Reverse idler gear	32280 M0202	32280 M0202	32280 M0820

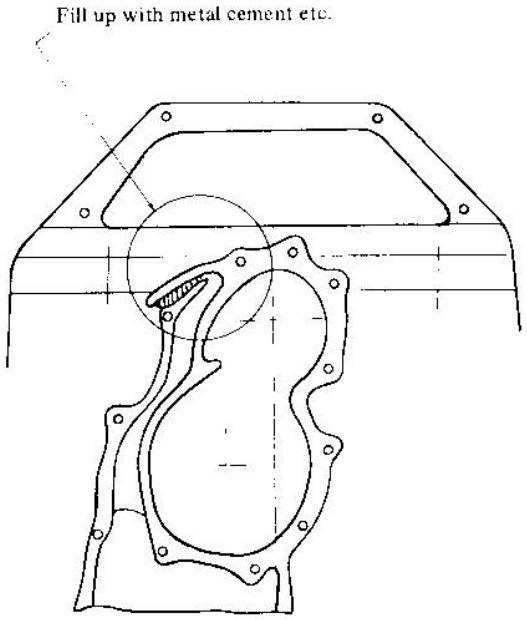
3) Modification of transmission case

(1) Grind surface which comes in contact with the main drive gear.
When optional gear set is used in place of standard one, grind areas shown in figure. Because diameter of main drive gear is larger than standard one, there is a possibility that gear will interfere with case.

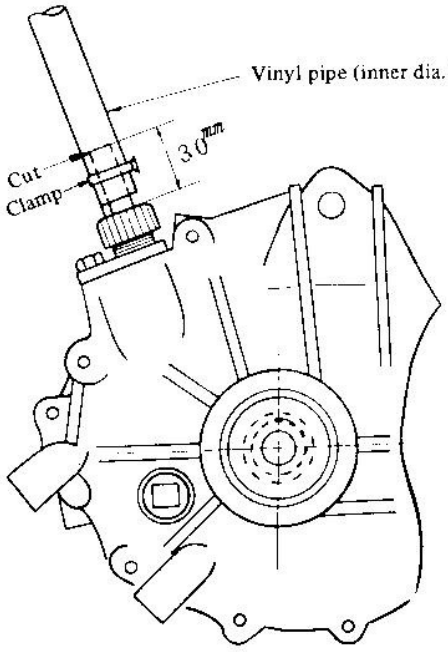


(2) Breather remodeling for race
Remodel breather as shown in following figure.

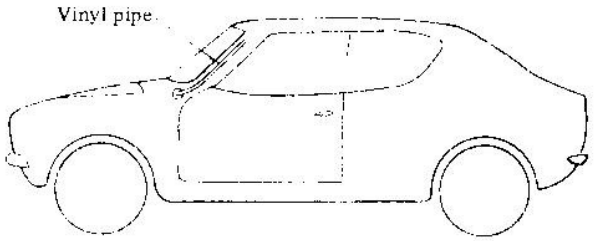
i) Fill groove of standard breather with metal cement etc. as shown in figure.



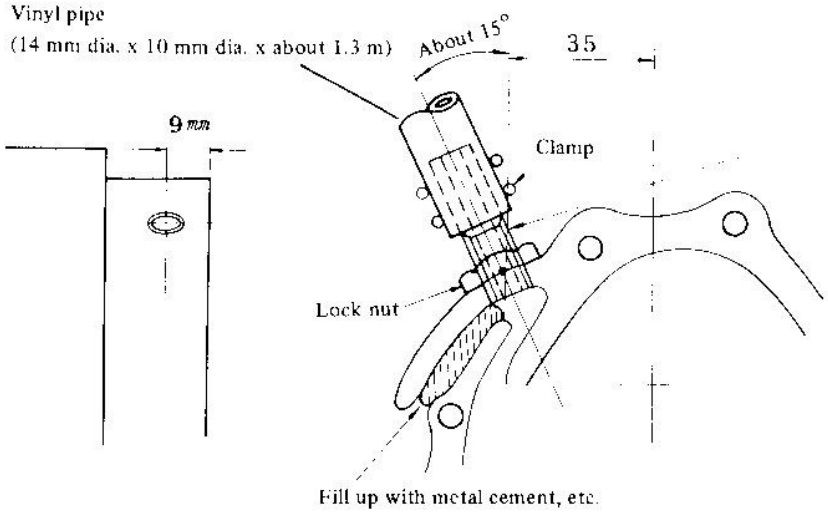
ii) Remove speedometer pinion.
Cut speedometer cable 30 mm from its root and connect a vinyl pipe.



iii) Pass piping of vinyl pipe through hot air hole of upper dash out of body, drilling a 15 mm hole in cowl top as shown in figure, and train it over front pillar. Recommended location for the drilling hole is around root of front pillar. Fix pipe with clamps.



iv) Others
The following modifications are recommended for rallies.



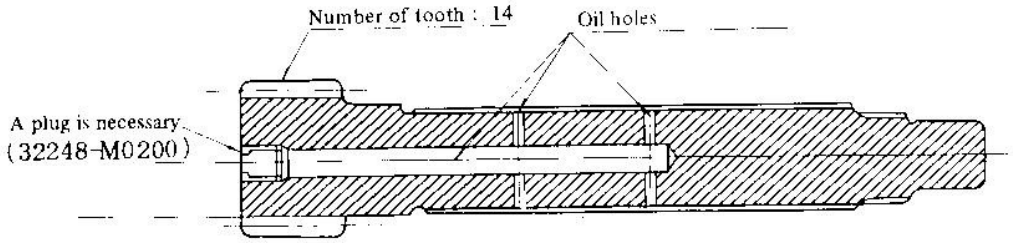
Grind head of 10 mm dia. bolt and drill a 6 mm dia. hole through center of bolt as shown in figure.

3. Final gear and limited slip differential

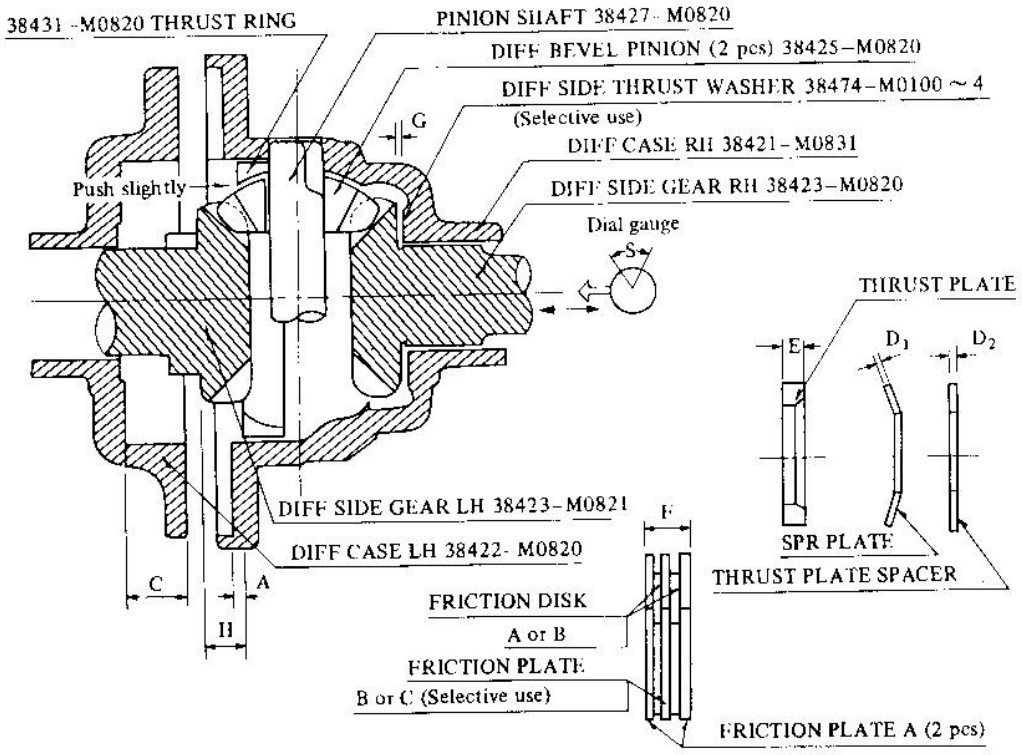
1) Final gear
Choose one from standard parts. For a final gear ratio of 4.429, use optional main shaft.

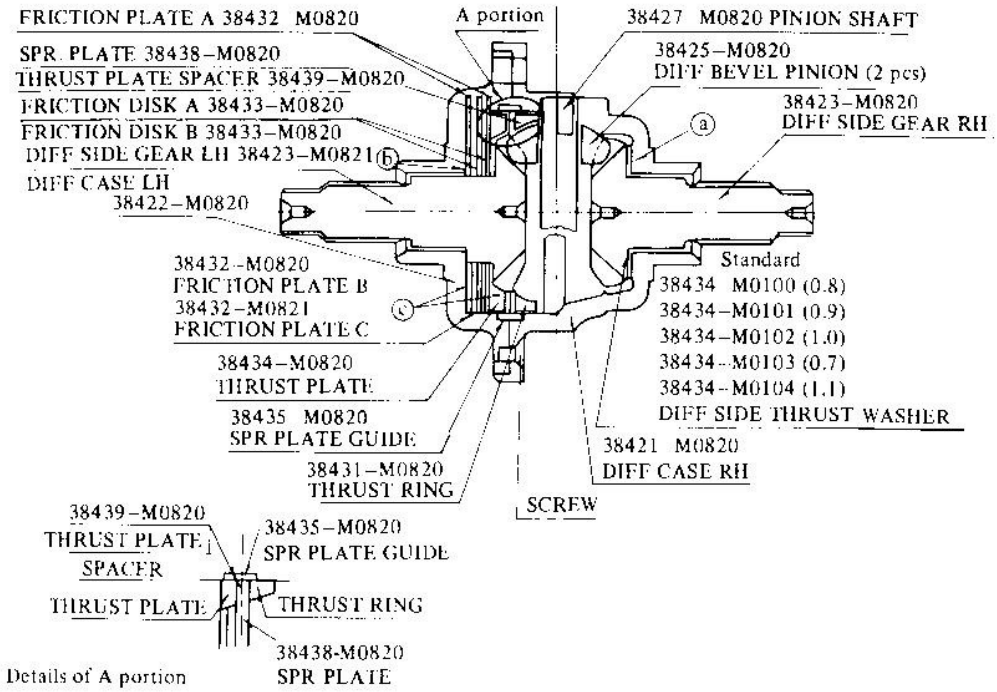
Final ratio		4.067	4.286	4.429
Main shaft	Number of teeth	15	14	* 14
	Part No.	32241–M0802	32241–M0201	32241- M0820
Final gear	Number of teeth	61	60	62
	Part No.	38101–M0801	38101–M0200	38101–M0100
Note		Final ratio for PE10 4 speed T/M	Final ratio for E10 4 speed T/M	Combination of optional main shaft and final gear for 3 speed T/M

* Optional main shaft (Part No. 32241–M0820)



2) Limited slip differential





Note: Gap of ⓐ portion, 0.1-0.2 mm
Gap of ⓑ portion, 0.03-0.15 mm
These are imaginary gaps when spring plate is contacted.
Pay attention to the assembly direction of 38432 M0820 so that there is no oil groove on surface of ⓒ portion.

ASSEMBLING

When assembling, adjust gap as follows. (assemble without applying oil)

(1) End play adjusting of right side gear.
i) Insert right side gear (38423 M0820) without a thrust washer to the right differential case (38421 M0820).
ii) Install pinion shaft (38427 M0820) and two bevel pinions (38425 M0820).
iii) Install thrust ring (38431 M0820) and push it slightly in the direction of arrow.
iv) Place the dial gauge at end of thread side of right side gear and move as shown in figure to measure end play.

When S is measured data,
choose thrust washer (38424 M0100 ~ M0104) so that G=S-T= 0.05 ~ 0.2 is satisfied.

T: thickness of thrust washer

(2) Measuring end play of left side gear.
After completing adjustment of end play of right side gear:
i) Install left side gear (38423 M0821) as shown in figure and measure H dimension.
ii) measure thrust plate (38434 M0820) thickness: E
iii) measure spring plate (38438 M0820) thickness: D1
iv) measure thrust plate spacer (38439 M0820) thickness: D2
v) $(E + D_1 + D_2)$–H= end play of left side gear

(3) Adjusting assembling clearance
After completing 1 and 2 :
i) measure C dimension of left side differential case (38422 M0820).
ii) measure A dimension as shown in figure.
iii) combine each friction plate (38432 M0820 ..... 2 plates, 38432 M0821 or M0821) with two friction disc (38433-M0820, M0821), and hold down with about 50kg of equalized pressure. Measure total width F.
iv) $(C + A) - (E + D_1 + D_2 + F) = L$
v) choose friction disc and plate that will result in an "L" of less than 0 ~ 0.15 mm.

(4) After completing the adjustment of each clearance, assemble each part, applying gear oil.

(5) Measuring performance after reassembly
Initial torque of P. LOM2C after completion of reassembly should be from 2kg to 5kg and must be measured as follows.
Measuring initial torque.
Measure torque required to rotate one side gear slowly while other side is fixed.
Note: Do not hold differential case.

(6) Transmission & differential oil
If P. LOM2C is installed, use GL5 class oil mixed with 200cc of additive for L.S.D.

4. Suspension

4.1 Race-use
With this suspension, a minimum ground clearance of 100 mm can be obtained when the effective tire diameter is 515 mm.

(1) Front suspension specification
① Front coil spring

Part No.	54010 M0821
Spring constant	3.28 kg/mm
Free height	282 mm
Wire diameter	12 mm

② Front strut

Part No.	5430-2/3 M0821
Damping force	94/67 kg(at 0.3 m/sec.)
Max. length	436 mm
Min. length	316 mm

③ Bumper rubber
Refer to page 36
④ Dust cover (Standard part)
Refer to page 37
⑤ Stabilizer (Standard part: 22 mm dia.)
⑥ Transverse link (Standard part)

(2) Rear suspension specification

i) Coil spring

Part No.	55020 M0821
Spring constant	5.6 kg/mm
Free height	173 mm
Wire diameter	11.8 mm

ii) Shock absorber

Part No.	56210 M0822
Damping force	107 kg/74 kg (at 0.3 m/sec.)
Max. length	366 mm
Min. length	270 mm

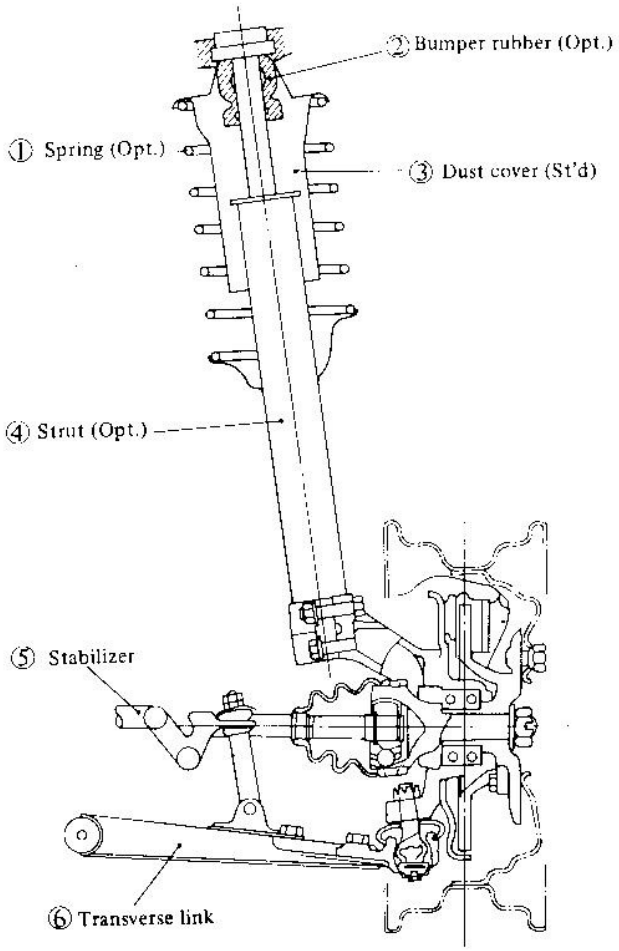
iii) Stabilizer

Part No.	56230 M0820
Diameter	14 mm

iv) Rear arm

Part No. 5550-1/2 M0875

Rear stabilizer fixing part is added to standard part (5550-1/2 M0200).



(3) Rally-use

i) Front strut

Part No.	5430-2/3 M0220
Damping force	74/44 kg
Max. length	503 mm
Min. length	358 mm

Note: De-Carbon type is used.

ii) Front coil spring

Part No.	54010 M1001
Spring constant	2.78 kg/mm
Free height	326 mm
Wire diameter	12.0 mm

iii) Rear coil spring

		PE10 St'd	PE10 rally opt.	KPE10 St'd
Spring constant	kg/mm	4.5	4.88	5.6
Free height	mm	222.5	222	214
Wire diameter	mm	12.0	11.8	12.2

iv) Rear shock absorber

Part No.	56210 M0275
Damping force	85/55 kg
Max. length	427 mm
Min. length	297 mm

(4) Front wheel alignment (Race and rally)

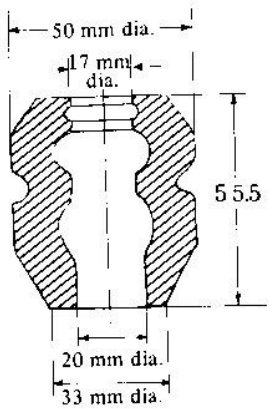
Toe-in : Out 5.0 ± 1.0 mm
Camber : Minus 0°45′ ± 30′
Caster : Plus 1°45′ ± 30′

(5) Modification

Front bound bumper

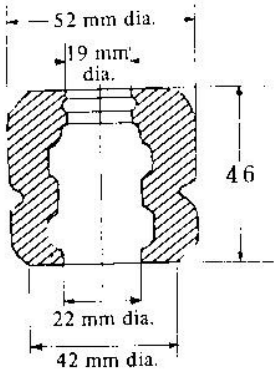
Race option

Part No. 54050 M0820



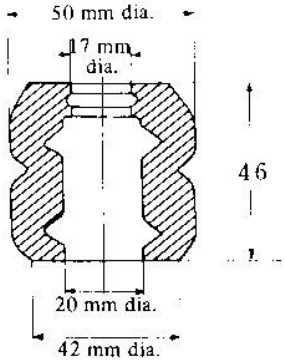
Rally option

Part No. 54050 M0220

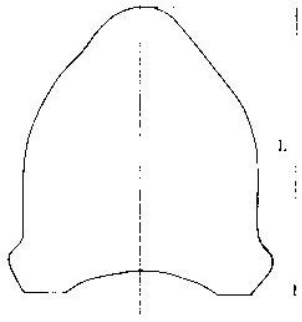


Standard

Part No. 54050 M0200



Rear bound bumper



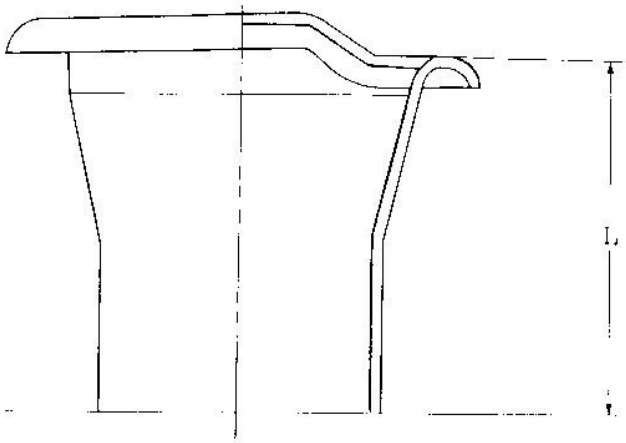
Part name	PE10 Standard	Race option
Part No.	55240–M0200	55240–M0820
L	65 mm	51.5 mm

Part name	Rally option
Part No.	55240–M0220
L	78 mm

Dust cover

For race, cut total length to 85 mm as follows.

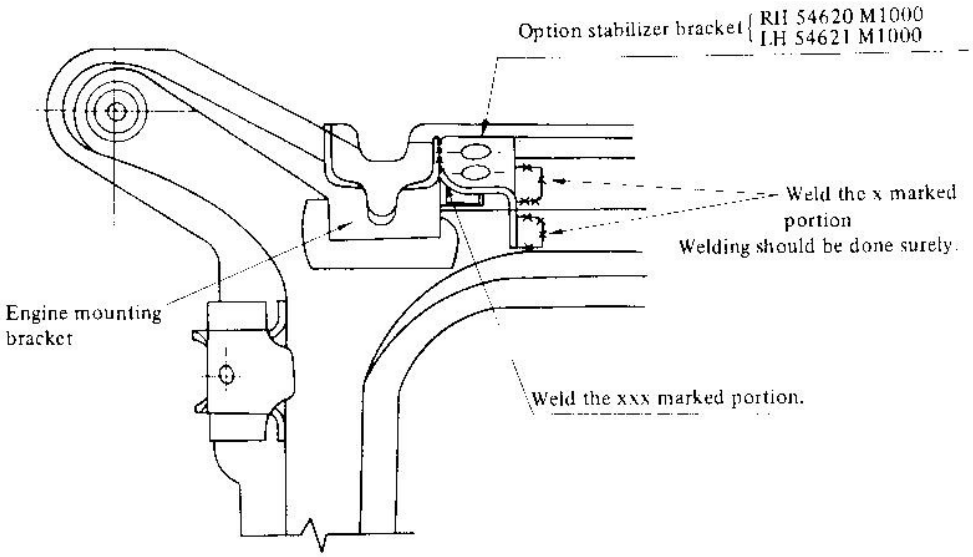
For rallies, use standard part intact.



	Race option part	Standard
L	85 mm	153 mm

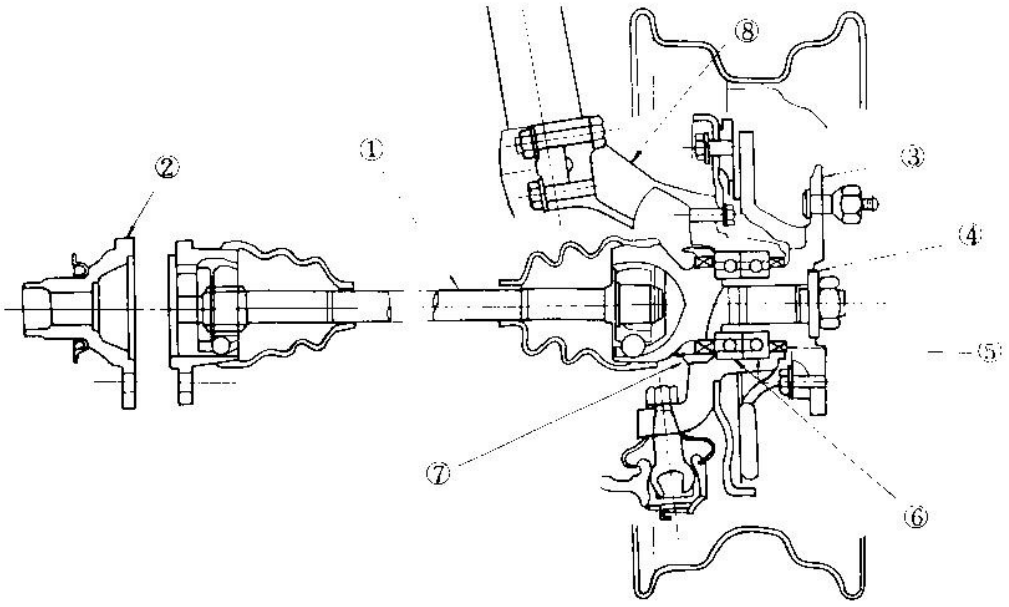
Installing race-use front stabilizer

Weld stabilizer bracket to sub-frame as follows.



5. Front axle

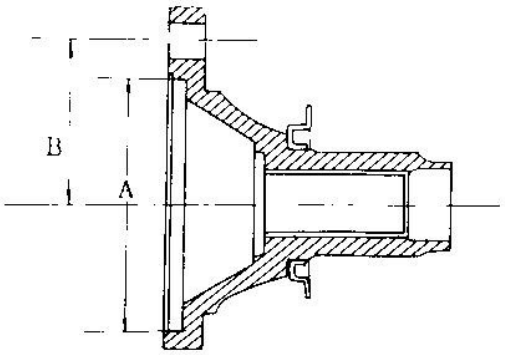
Use model PE10-R specification part for front drive system.



5.1 Drive shaft

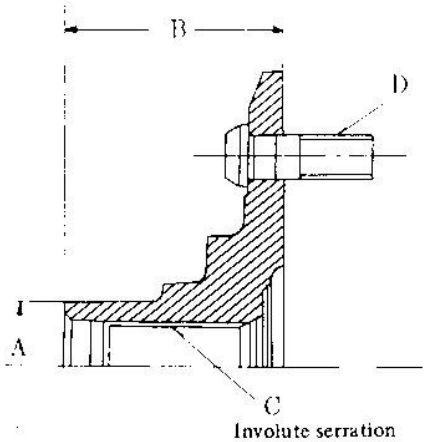
		PE10-R part	Other model's part
Part No.		40010 M0820	40010 M0202
Drive shaft dia., mm		21.2	19
Drive shaft length, mm		597.0	594.5
Involute serration	Large dia., mm	25	22
	Small dia., mm	24	20

5.2 Side flange



	PE10-R part	Other model's part
Part No.	38220 M0820	38220 M0101
A mm dia.	76	70
B mm (radius)	46	43.5

5.3 Wheel hub



		PE10-R part	Other model's part
Part No.		40204 M0820	40204 M0202
A		35 mm	30 mm
B		64 mm	62 mm
C	Large dia.	25.4 mm	22.4 mm
C	Small dia.	23.4 mm	20.4 mm
D	Bolt length	41.5 mm	*39.5 mm

Note: Bolts marked with an * have been heat-treated for added strength.

5.4 Washer

	PE10-R part	Other model's part
Part No.	40037 M0820	40037 M0200
Outer dia. mm	40	38
Inner dia. mm	20.5	18.5
Thickness mm	4.5	4.5

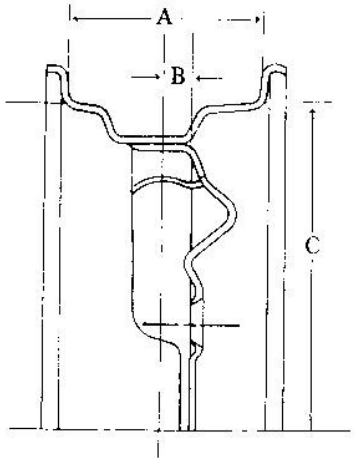
5.5 Wheel bearing

	PE10-R part	Other model's part
Part No.	40215 M0820	40215 M0201
Thickness mm	34	32
Inner dia. mm	35	30
Outer dia. mm	72	62

5.6 Bearing lock nut

	PE10-R part	Other model's part
Part No.	40228 M0820	40228 M0200
Outer dia. mm	72	64.5
Inner dia. mm	62	56

6. Road wheel



A : Rim width
B : Off-set
C : Rim diameter

Part No.	A	B	C	Plate thickness	Note
40300–M0200	102	45	304	2.5	4J -12
40300–A1801	102	40	329.4	3.2	4J -13
40300–78801		35			4.5J -13
40300–M0821	153	25	329.4	3.2	6J -13
40300–M0820	178	25	329.4	3.2	7J -13
* 40300–M2220	203	20	329.4	6.0	8J -13
* 40300–M2221	229	10	329.4	6.0	9J -13

* marked parts are made of aluminium alloy.

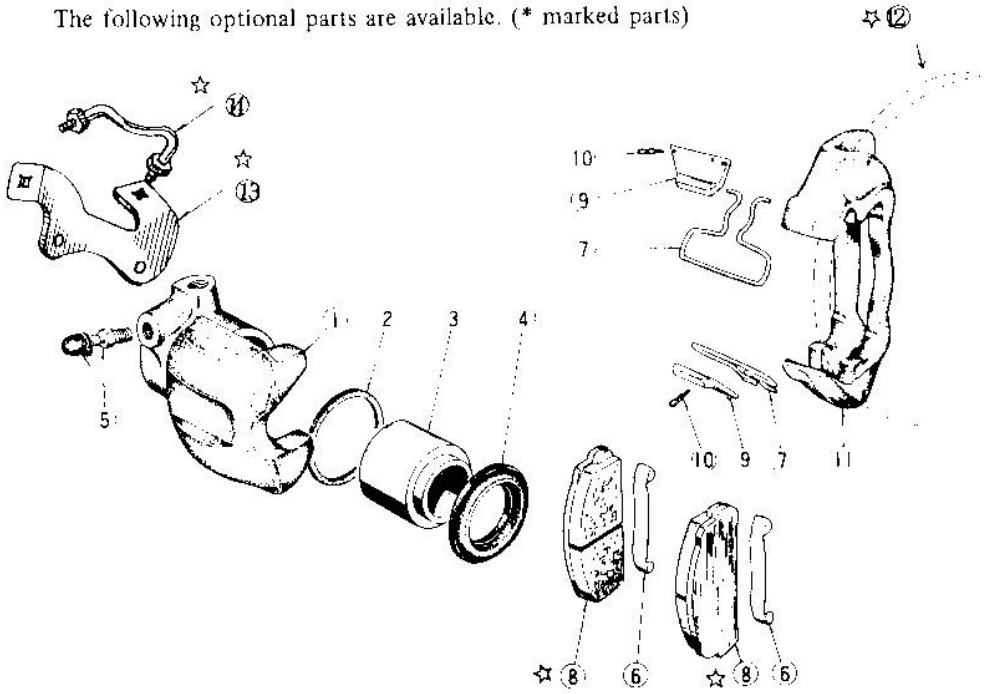
7. Brake

7.1 Master cylinder

	Race option	Standard
Part No.	46010 M0820	46010 M0801
Cylinder size	3/4"	11/16"
Note	Tandem type	Tandem type

Note: Above mentioned part is for right hand models.
For left hand drive model is 46010 M0821.

7.2 Front disc brake
The following optional parts are available. (* marked parts)



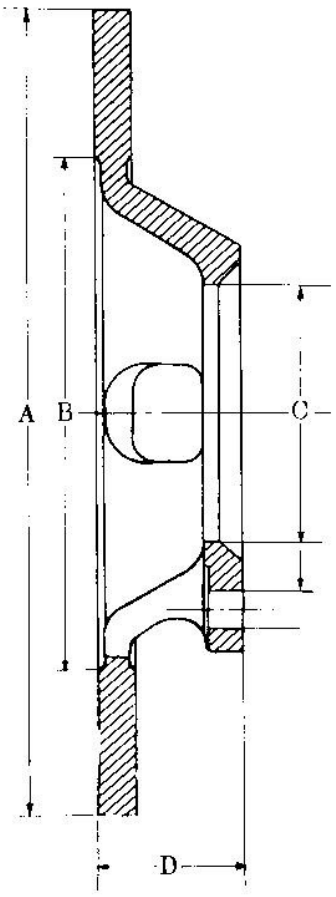
1. Pad

Parts No.	Note
41060 M0822	For short distance race
" M0821	For middle distance race
" M0820	For rally

2. Brake pipe bracket
   RH 46330 M0820
   LH 46331 M0820

3. Disc brake pipe
   This pipe should be replaced together with above mentioned bracket.
   Part No. RH 46320 M0820
   LH 46321 "
   Pipe length 99 mm (St'd 72 mm)

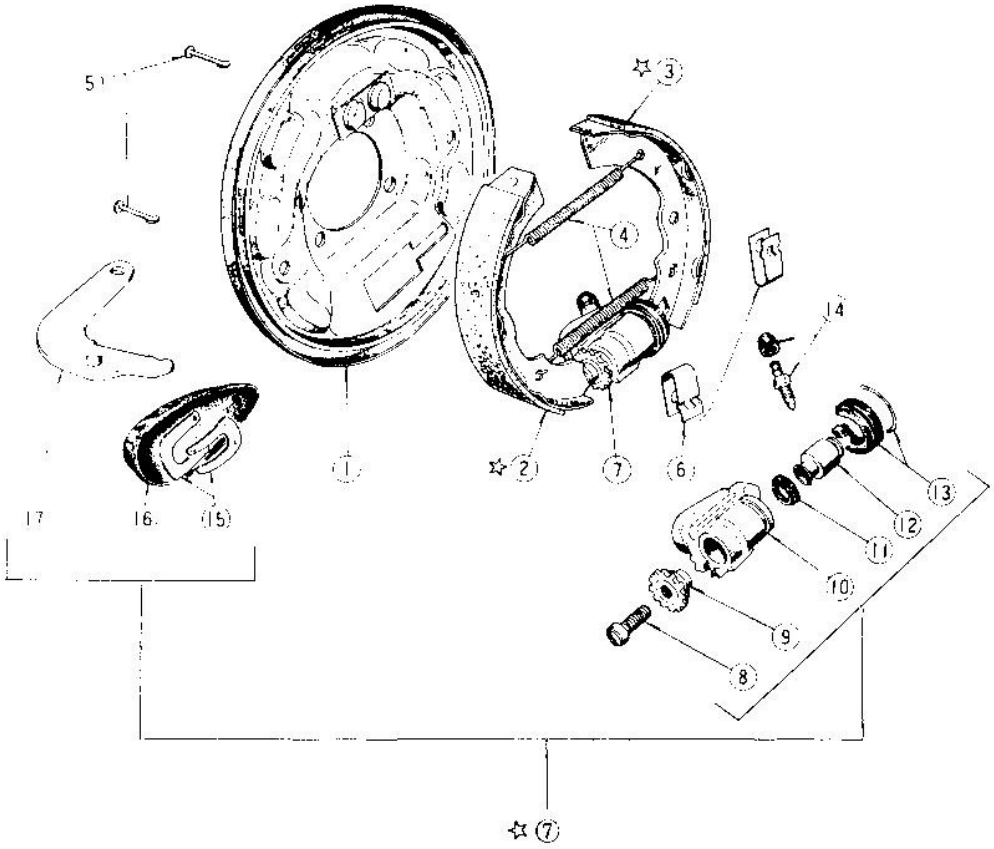
4. Brake disc



	Option	St'd
Part No.	40206 M0820	40206 M0800
A mm dia.	220	200
B mm dia.	140	120
C mm dia.	70	64
D mm dia.	39	40

7.3 Rear brake

Following parts are available as options. (* marked parts)



(1) Brake shoe

	opt.		st'd	
	Fore	After	Fore	After
Part No.	44070–M0821	44060–M0821	44070–M0200	44060–M0200
Note	Heat and wear resistance increased.			

(2) Wheel cylinder

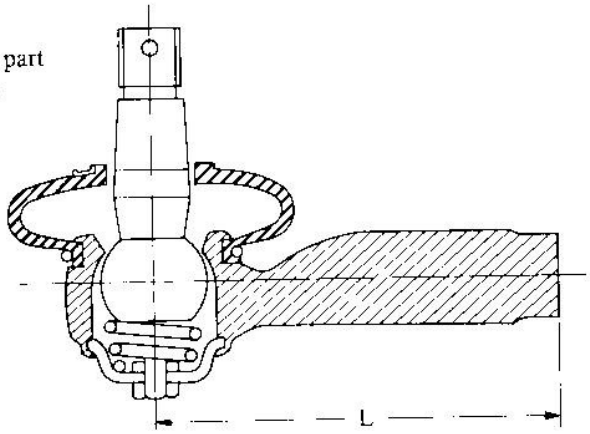
	opt.	st'd
Part No.	44100–M0200	44100–M0202/3
Cylinder	5/8"	11/16"

8. Steering

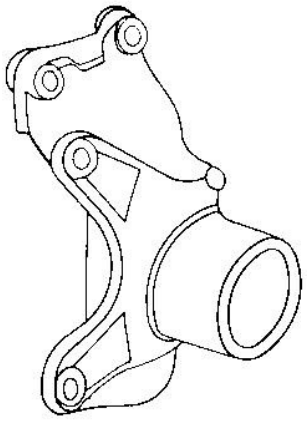
Following parts are available as options.

8.1 Side rod socket

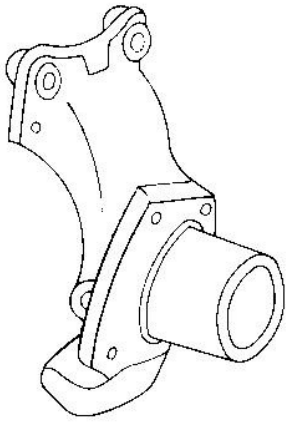
L dimension for optional part 48520 M0821 is 100 mm (Standard part; 85 mm).



8.2 Steering knuckle
Since front brake diameter is larger by 20 mm, location of caliper fixing hole is changed. Moreover, since outside wheel bearing diameter is greater by 10 mm, dimension of each portion is changed.



40014/5 M0820
Opt.



40014/5 M0200
St'd

III. BODY

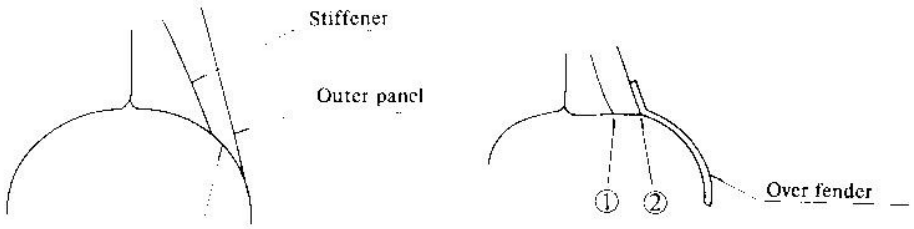
1. Over-fender

Overall widths of before standard vehicle and after attachment of over-fender are as follows.

	Homologated dimension	Over-fender attached dimension
Front	1,490 mm	1,590 mm
Rear	1,470 mm	1,570 mm

Homologated width of KPE10 X-1R is 1,550 mm; after over-fender is attached, width is 1,650 mm.

Modifying rear fender

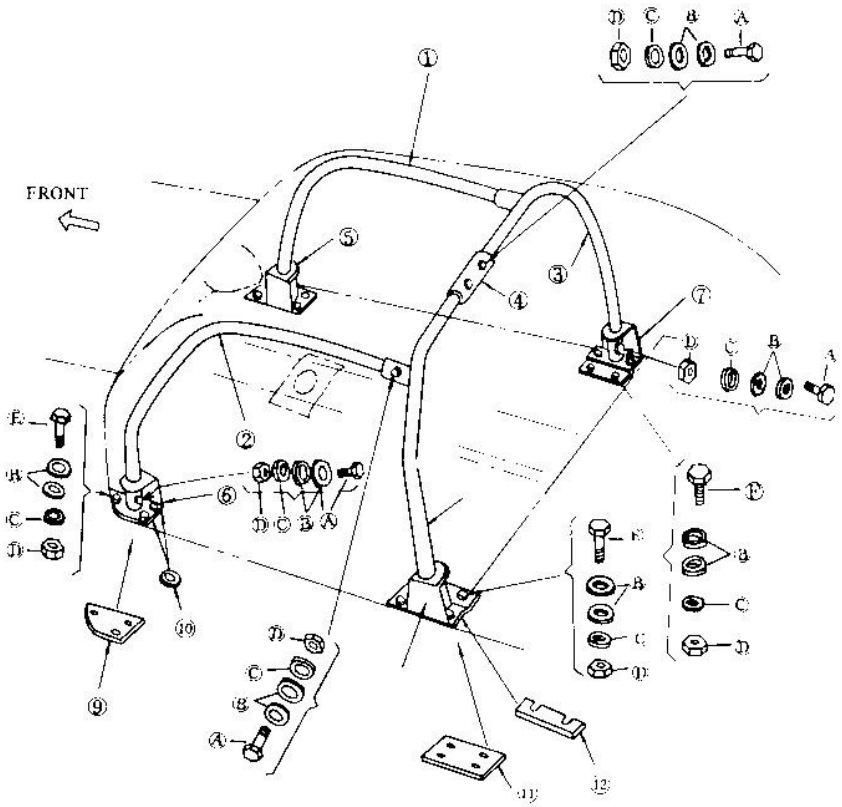


(i) Strike out outer wheel house panel and stiffener, then weld them.
(ii) Weld ① and outer panel.
(iii) Fix over-fender to ②.

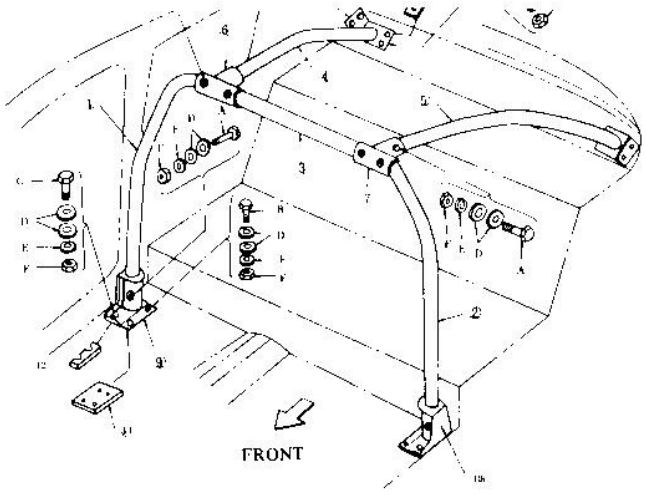
Note: Be sure to weld entire periphery.

2. Roll bar

Use it according to ACN regulation in each country.



For coupe, 96100 M1420 is available for right hand drive as a kit.
For sedan, 96100 M0820 is available.

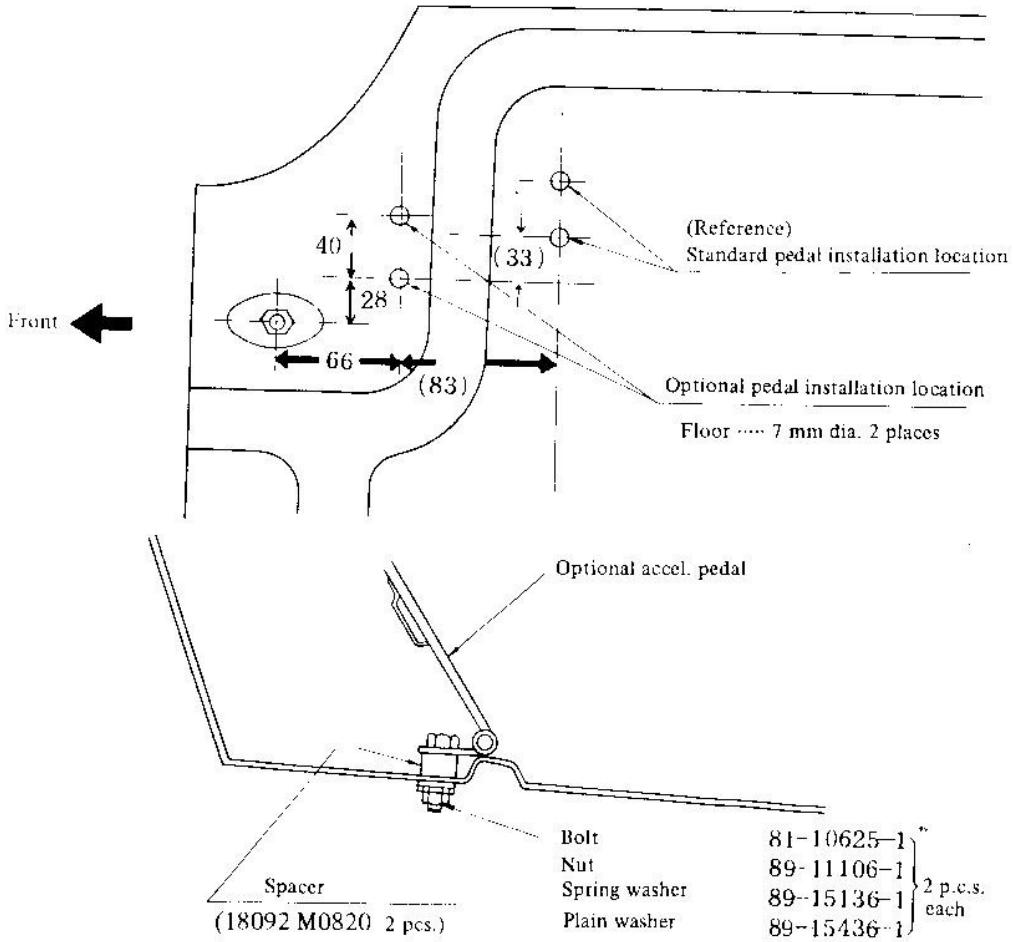


IV. OTHERS

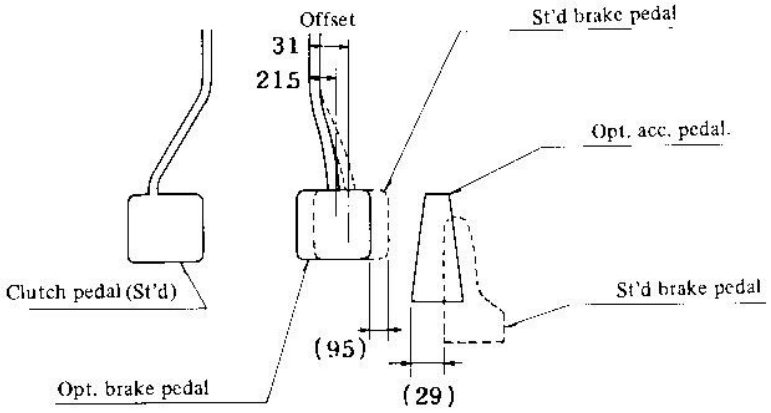
1. Pedals

The following are available as optional parts.
Accel. pedal (18010 M0820) ----- Shape and installation location altered.
Brake pedal (46520 M0820) ----- Dimension of offset decreased.

1.1 Optional accelerator pedal installation



1.2 Pedal layout



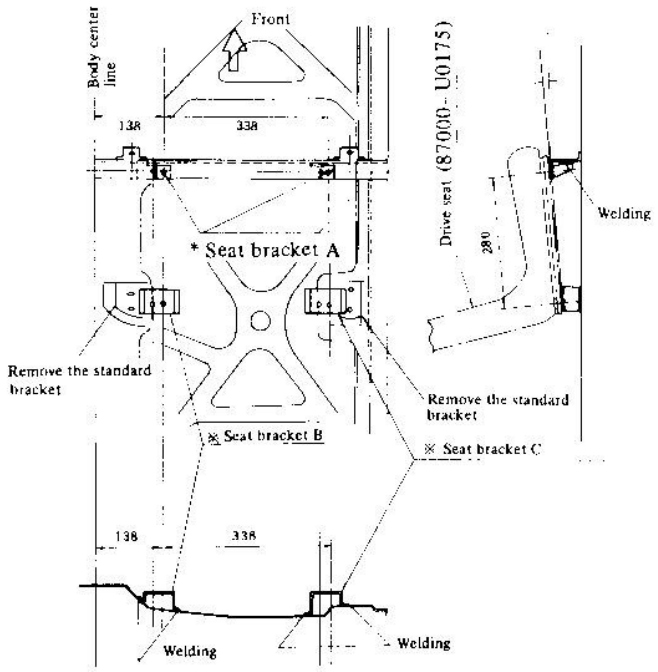
2. Seat and seat belt

2.1 Seat

For racing, use the following part 87000 U0175, P510 optional part with slide rail for driver seat.

2.2 Seat installation

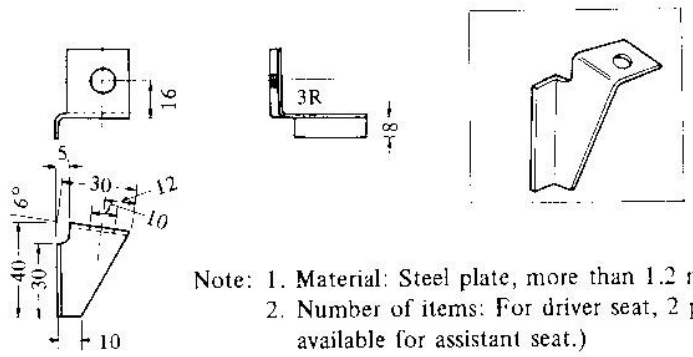
Since optional seat fixing brackets are not available, make them by yourself and install as shown below. (The following figure shows driver seat. Install assistant's seat at a position symmetrical to car center line.)



2.3 Making seat fixing bracket

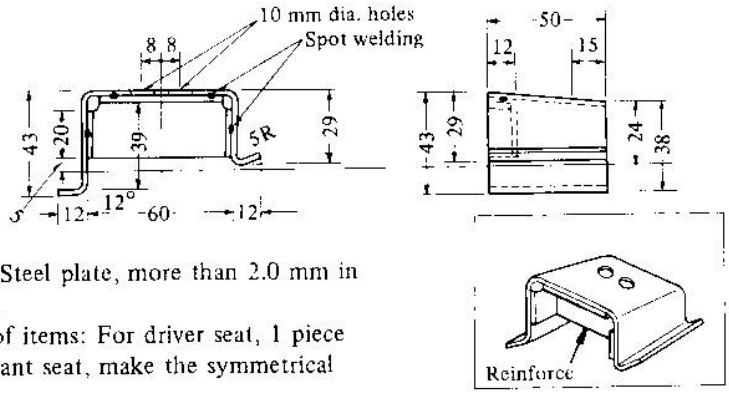
Three kinds of bracket should be made as follows.

(1) Bracket A



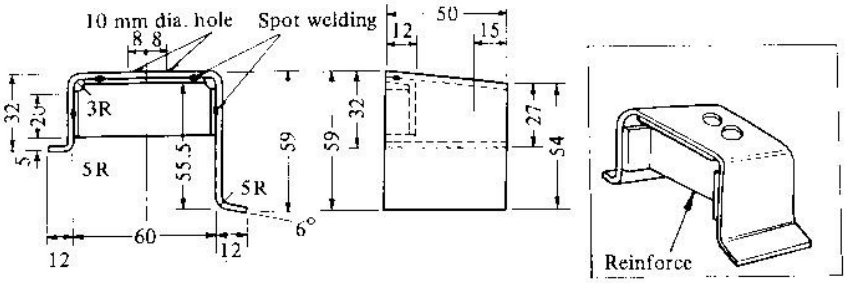
Note: 1. Material: Steel plate, more than 1.2 mm in thickness.
2. Number of items: For driver seat, 2 pieces (also available for assistant seat.)

(2) Bracket B



Note: 1. Material: Steel plate, more than 2.0 mm in thickness.
2. Number of items: For driver seat, 1 piece (for assistant seat, make the symmetrical one)

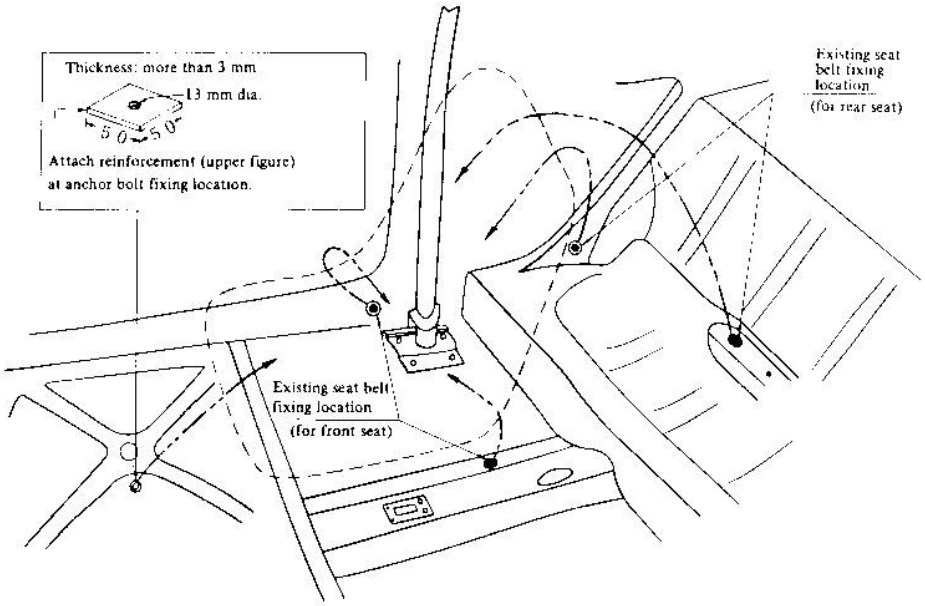
(3) Bracket C



Note: 1. Material: Steel plate, more than 2.0 mm in thickness.
2. Number of items: For driver seat, 1 piece (for assistant's seat, make symmetrical one).

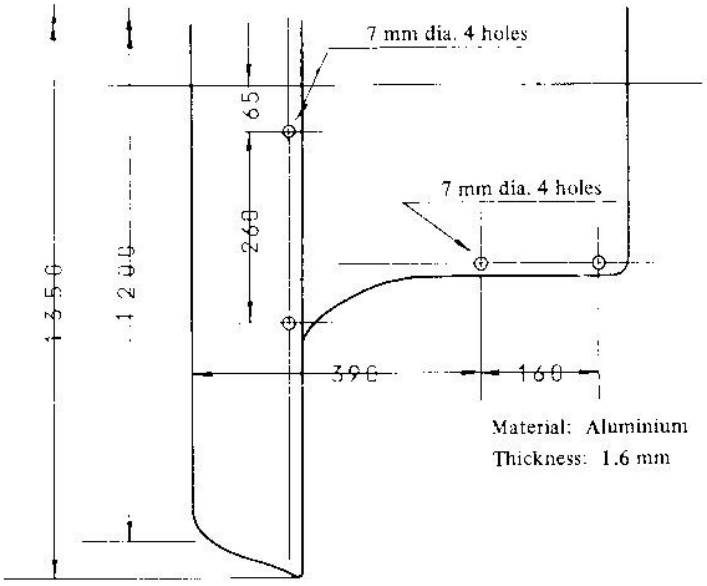
2.4 Seat belt installation

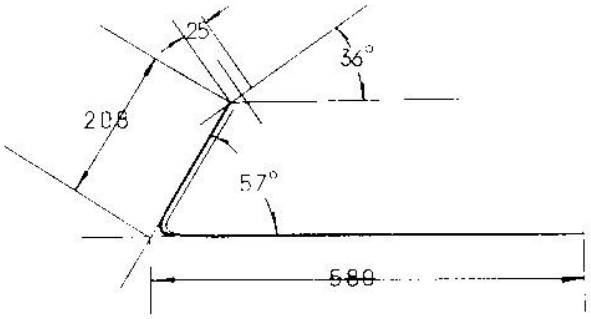
For racing, optional five point seat belt (86850 A0220) is recommended.
To install it, use fixing holes for standard seat belt, and add a hole at the front.
When installing the four point seat belt, use existing four holes.



3. Air spoiler

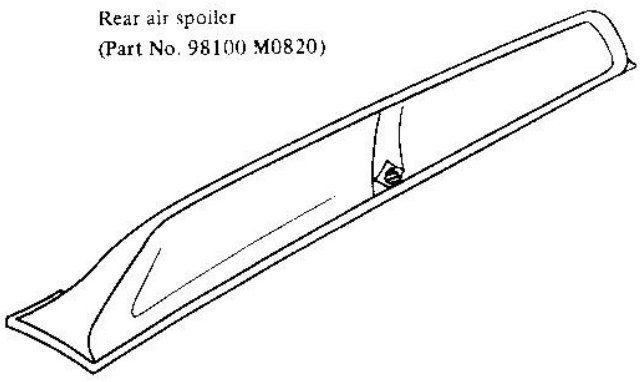
3.1 Front air spoiler (Use according to ACN regulations in each country)
A front air spoiler fitted to 1973 Japan Automobile Federation specifications is available as an optional part.





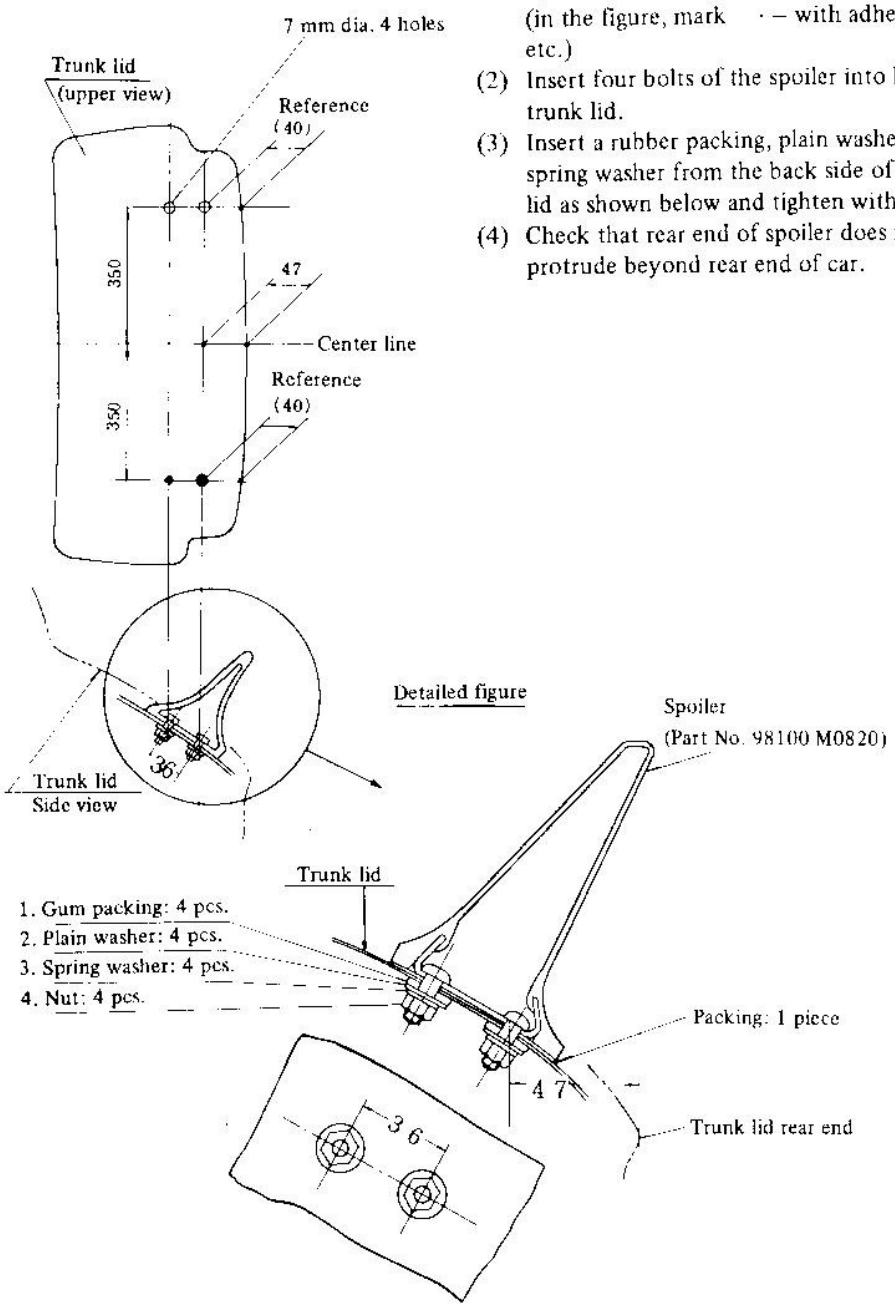
3.2 Rear air spoiler (Can be used for FIA group 2)
The following rear spoiler is available as an optional racing part.

Rear air spoiler
(Part No. 98100 M0820)



Installation

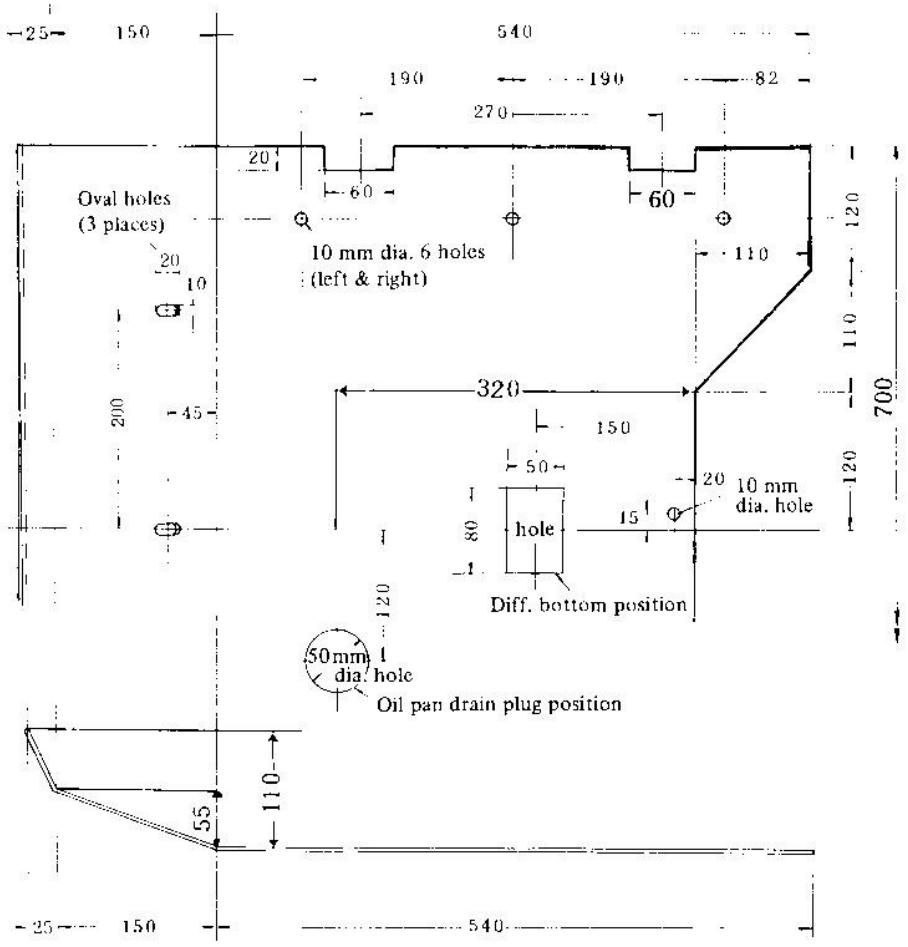
(1) Make four holes in trunk lid as shown in figure.
(in the figure, mark · – with adhesive tape etc.)
(2) Insert four bolts of the spoiler into holes in trunk lid.
(3) Insert a rubber packing, plain washer, and spring washer from the back side of trunk lid as shown below and tighten with nut.
(4) Check that rear end of spoiler does not protrude beyond rear end of car.



4. Underguard

Use Under Guard Kit (50910 M0220) or make it according to the following figure.

4.1 Underguard plate (one piece)



It is recommended that holes for installing bolts be drilled from lower side of panel about 4 to 5 mm in depth so that head of bolts do not protrude from the surface of plate.

Note: Above figure shows right half.

Recommended thickness for steel plate; 6.0 mm,
for aluminium plate; 10.0 mm

4.2 Bracket A (6 pieces)

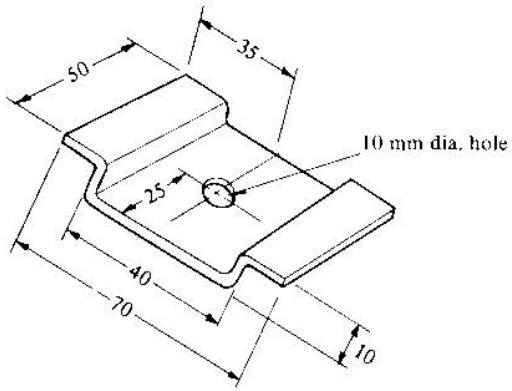


Plate thickness: more than 2.0 mm (Steel)
Bending angle: more than 3 mm in radius

4.3 Bracket B (3 pieces)

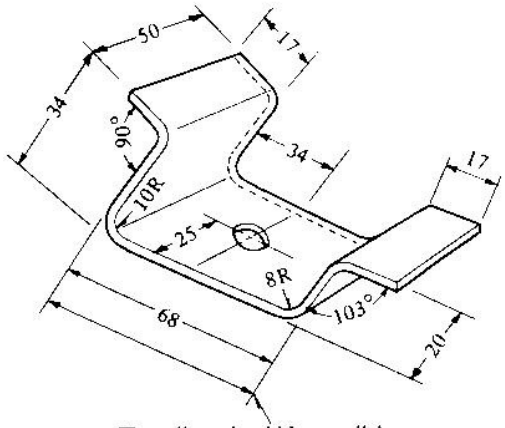


Plate thickness: more than 2.5 mm (Steel)
Bending angle (except where indicated in figure) about 5 mm in radius

4.3 Bracket C (1 piece)

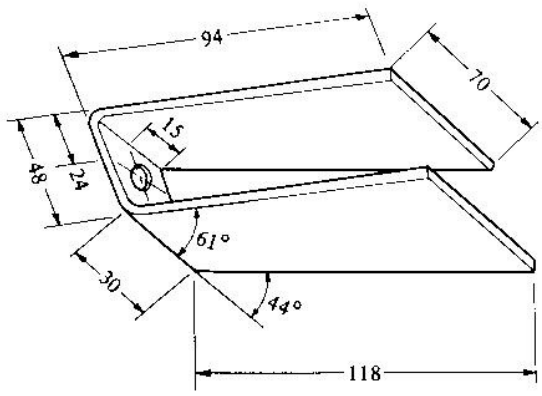
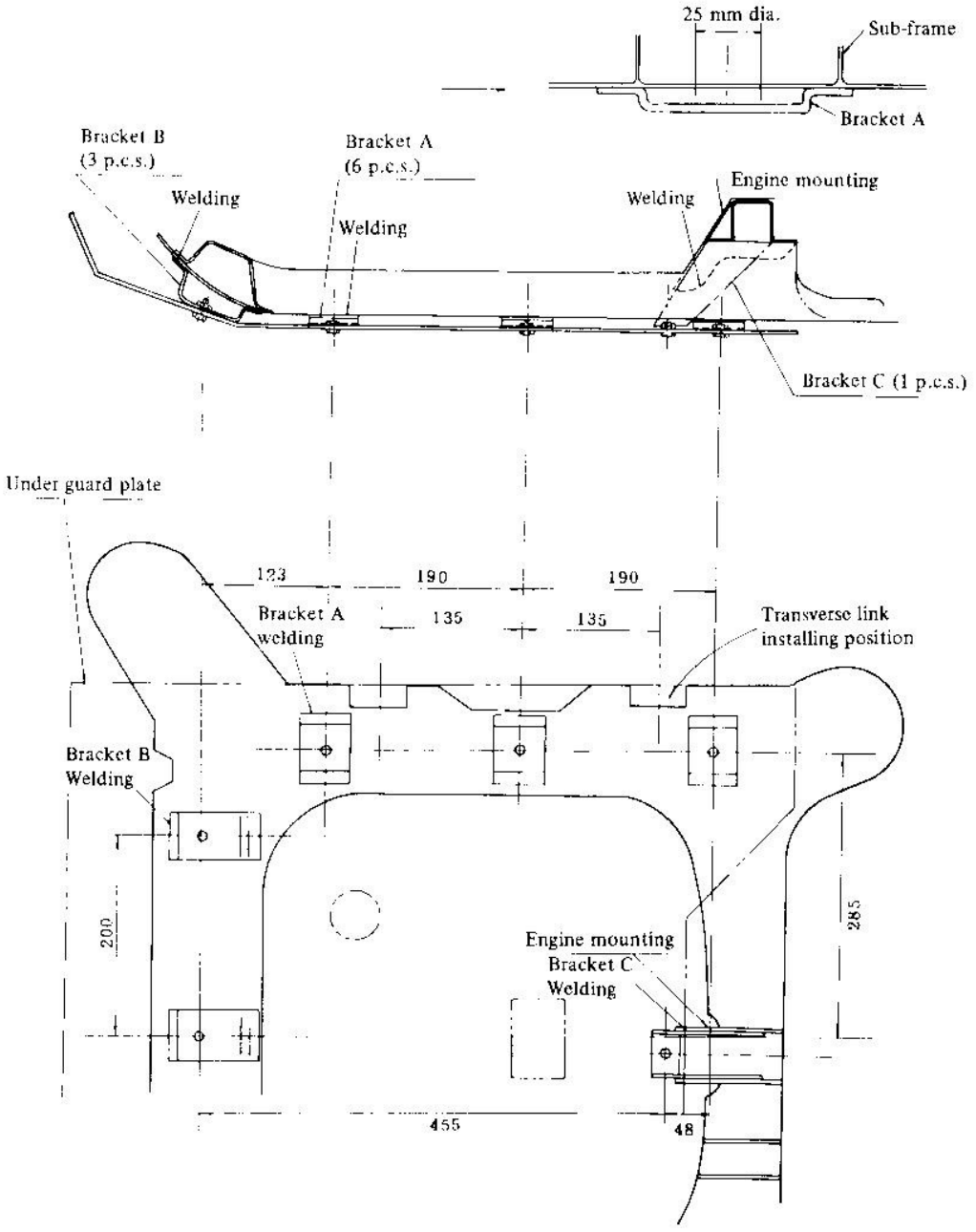


Plate thickness: more than 3.0 mm (Steel)
Bending angle: about 4 mm in radius

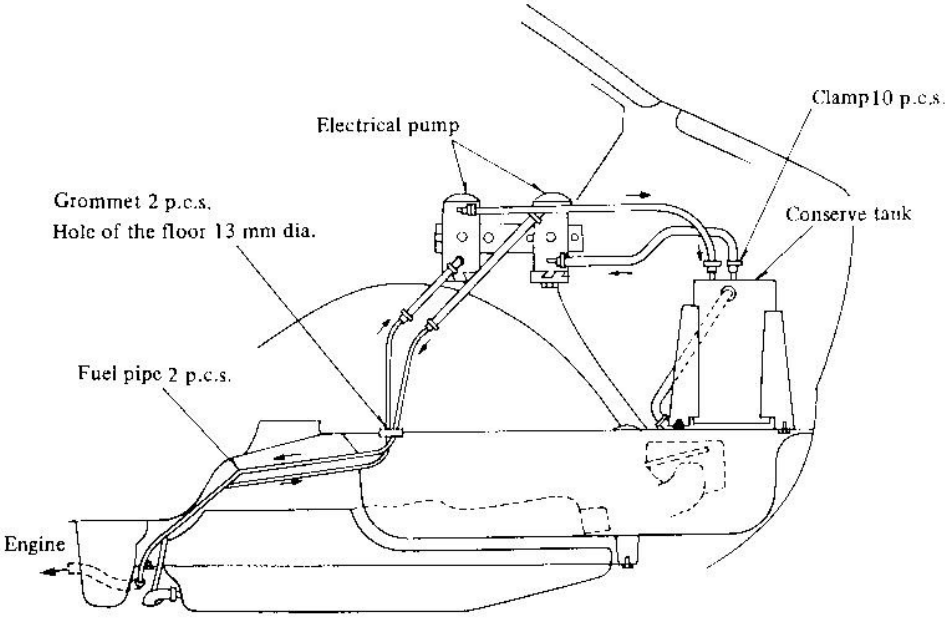
Installing
Weld brackets A, B and C on sub-frame as shown in figure.

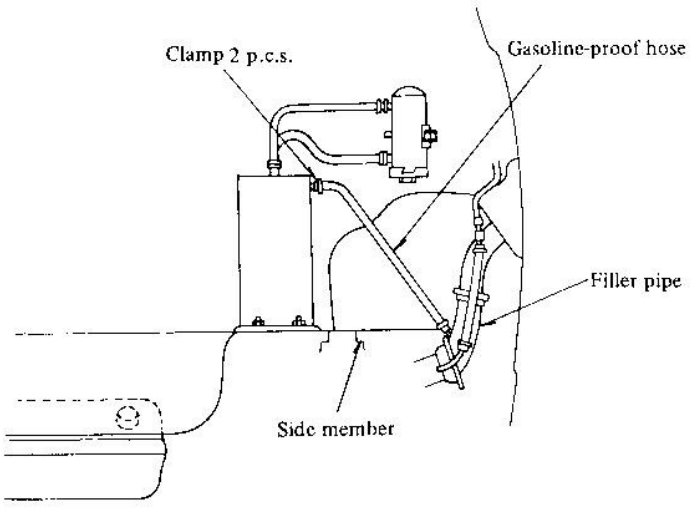


Note: Modify so that clearance between exhaust tube and under guard is more than 10 mm.

5. Fuel piping (modify according to ACN regulation in each country)

Conserve tank, filler pipe and fuel pipe are available as optional parts. When installing safety fuel tank, use these parts and pipe with reference to figure below.





6. Front glass

The laminated glass which is compulsory for racing is optionally available.

	Sedan	Coupe
Part No.	72613 M1000	72613 M1402
Trade mark	LAMILEX	←
Thickness, mm	6.7	6.6

Notes: 1. Trade mark for standard(tempered)glass is TEMPALEX.
2. In some models, laminated glass is installed as a standard part.

7. Wiper

The following parts are optionally available.

1) Sedan

Part name	Part No.	P/C	Note
Arm	26380 H1075	2	Common to model B110, pressure 550 gr (St'd 380 gr.)
Blade	26360 H1075	2	Common to model B110, 510 and S30, length 400 mm
Motor	28810 M0820	1	

2) Coupe

Part name	Part No.	P/C	Note
Arm spring	26382 M0820	2	Use the standard arm, but replace spring with a optional one, pressure 700 gr (St'd, 500gr.)
Blade	RH 26340 M1400 LH 26340 M1401	1 Each	Standard blade can be used.
Motor	28810 M0820	1	

8. Recommended lubricants (for reference)

Engine oil	Shell X100 # 40 Shell Super Motor Oil (20W-50) (For rally and when oil temperature changes greatly)
Transmission oil Differential with Limited Slip Differential	Gear oil – GL5 class # 140 Additive – Name: LSD FIX Oil Part No.: LSD 02- M0875 (200cc)
Brake fluid	Shell Donax HB (flashing point: over 260°C) B (flashing point: over 206°C) Castrol Girling Brake Oil Amber
Wheel bearing grease	Lithium base MP grease