

# Mazda RX-2

(Capella Rotary)

# 616

(Capella 1600)

## Workshop Manual



03-0780

# MAZDA

# WORKSHOP MANUAL

## **MAZDA RX-2** **(CAPELLA ROTARY)**

### **SEDAN** **COUPÉ**

**NOTE :**

"Capella Rotary" is the nickname of the "MAZDA RX-2," which is used in some markets.

SECTION INDEX	
Name	Section
Engine	1
Lubricating System	2
Cooling System	3
Fuel System	4
Electrical System	5
Clutch	6
Transmission	7
Propeller Shaft	8
Rear Axle	9
Steering	10
Brake	11
Wheels & Tires	12
Suspension	13
Body	14
Technical Data	T



# ENGINE

1-A.	REMOVING THE ENGINE .....	1 : 4
1-B.	DISASSEMBLING THE ENGINE .....	1 : 6
1-C.	ENGINE INSPECTION AND REPAIR .....	1 : 10
	1-C-1. Front Housing .....	1 : 10
	1-C-2. Intermediate Housing .....	1 : 12
	1-C-3. Rear Housing .....	1 : 12
	1-C-4. Rotor Housing .....	1 : 13
	1-C-5. Rotor .....	1 : 14
	1-C-6. Seal .....	1 : 18
	1-C-7. Eccentric Shaft .....	1 : 21
1-D.	ENGINE ASSEMBLY .....	1 : 22
	1-D-1. Installing the Oil Seal .....	1 : 22
	1-D-2. Installing the Seal .....	1 : 22
	1-D-3. Installing the Rear Rotor .....	1 : 23
	1-D-4. Installing the Rear Rotor Housing .....	1 : 23
	1-D-5. Installing the Eccentric Shaft....	1 : 24
	1-D-6. Installing the Seal.....	1 : 25
	1-D-7. Installing the Intermediate Housing .....	1 : 25
	1-D-8. Installing the Front Rotor and Housing .....	1 : 25
	1-D-9. Installing the Front Housing ....	1 : 25
	1-D-10. Tightening the Tension Bolts....	1 : 25
	1-D-11. Installing the Clutch Assembly ..	1 : 26
	1-D-12. Adjustment of Eccentric Shaft End Play .....	1 : 26
	1-D-13. Installing the Front Cover .....	1 : 27
	1-D-14. Installing the Metering Dump....	1 : 28
	1-D-15. Installing the Oil Strainer and Oil Pan .....	1 : 28
	1-D-16. Installing the Oil Filter .....	1 : 28
	1-D-17. Installing the Water Pump .....	1 : 28
	1-D-18. Installing the Distributor .....	1 : 29
	1-D-19. Installing the Alternator .....	1 : 29
	1-D-20. Installing the Manifold and Carburettor .....	1 : 30
1-E.	ENGINE INSTALLATION .....	1 : 30

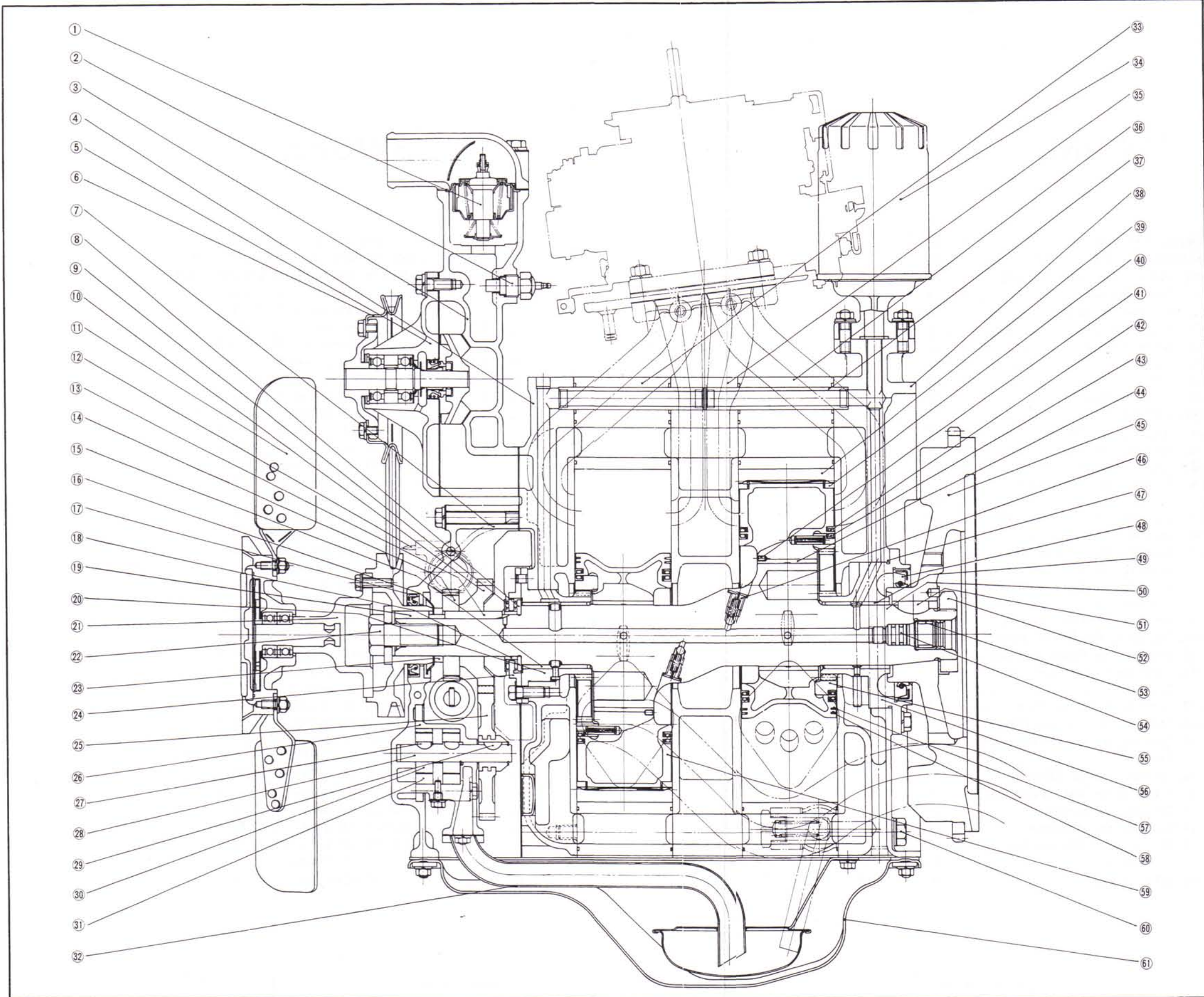


Fig. 1-1 Engine (1)

1. Thermostat
2. Heat Gauge Unit
3. Water Pump Casing Ass'y
4. Front Housing Ass'y
5. Pump Cover Ass'y
6. Water Pump Pulley
7. Front Cover Ass'y
8. Thrust Plate
9. Needle Bearing
10. Oil Pump Drive Gear
11. Cooling Fan
12. Indicator Pin
13. Key
14. Distributor Drive Gear
15. Main Bearing
16. Oil Baffle Plate
17. Oil Seal
18. Spacer
19. Key
20. Stationary Gear (front)
21. Fan Drive Ass'y
22. Bolt
23. Spacer
24. Thrust Bearing Housing
25. Oil Pump Drive Gear
26. Oil Pump Body
27. Key
28. Oil Pump Shaft
29. Key
30. Oil Pump Inner Rotor
31. Oil Pump Outer Rotor
32. Oil Strainer
33. Front Rotor Housing
34. Oil Filter
35. Intermediate Housing
36. Rear Rotor Housing
37. Tubular Dowel
38. Rear Housing
39. Apex Seal
40. Corner Seal
41. Set Screw
42. Oil Seal (outer)
43. Oil Seal (inner)
44. Rotor Bearing
45. Flywheel
46. Oil Jet Plug
47. "O" Ring
48. Oil Seal
49. Main Bearing
50. Eccentric Shaft
51. Key
52. Nut
53. Needle Bearing
54. Blind Plug
55. Internal Gear
56. Stationary Gear (rear)
57. Side Seal Inner
58. Side Seal Outer
59. Rotor Ass'y
60. Tension Bolt
61. Oil Pan

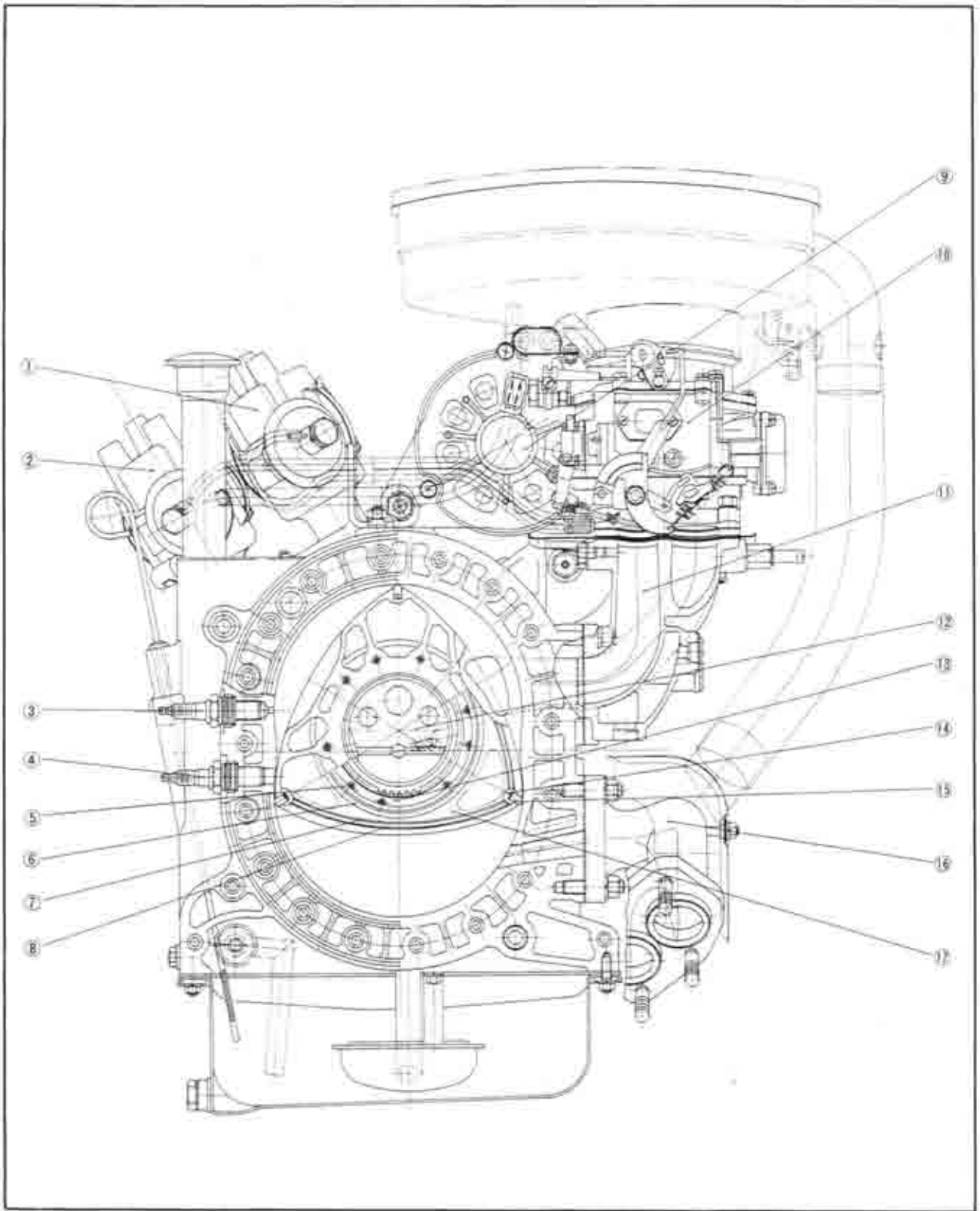


Fig. 1-2 Engine (2)

1. Trailing Distributor  
 2. Leading Distributor  
 3. Trailing Spark Plug  
 4. Leading Spark Plug  
 5. Inner Oil Seal  
 6. Outer Oil Seal

7. Inner Side Seal  
 8. Outer Side Seal  
 9. Alternator  
 10. Carburettor  
 11. Inlet Manifold  
 12. Eccentric Shaft

13. Internal Gear  
 14. Corner Seal  
 15. Apex Seal  
 16. Exhaust Manifold  
 17. Rotor

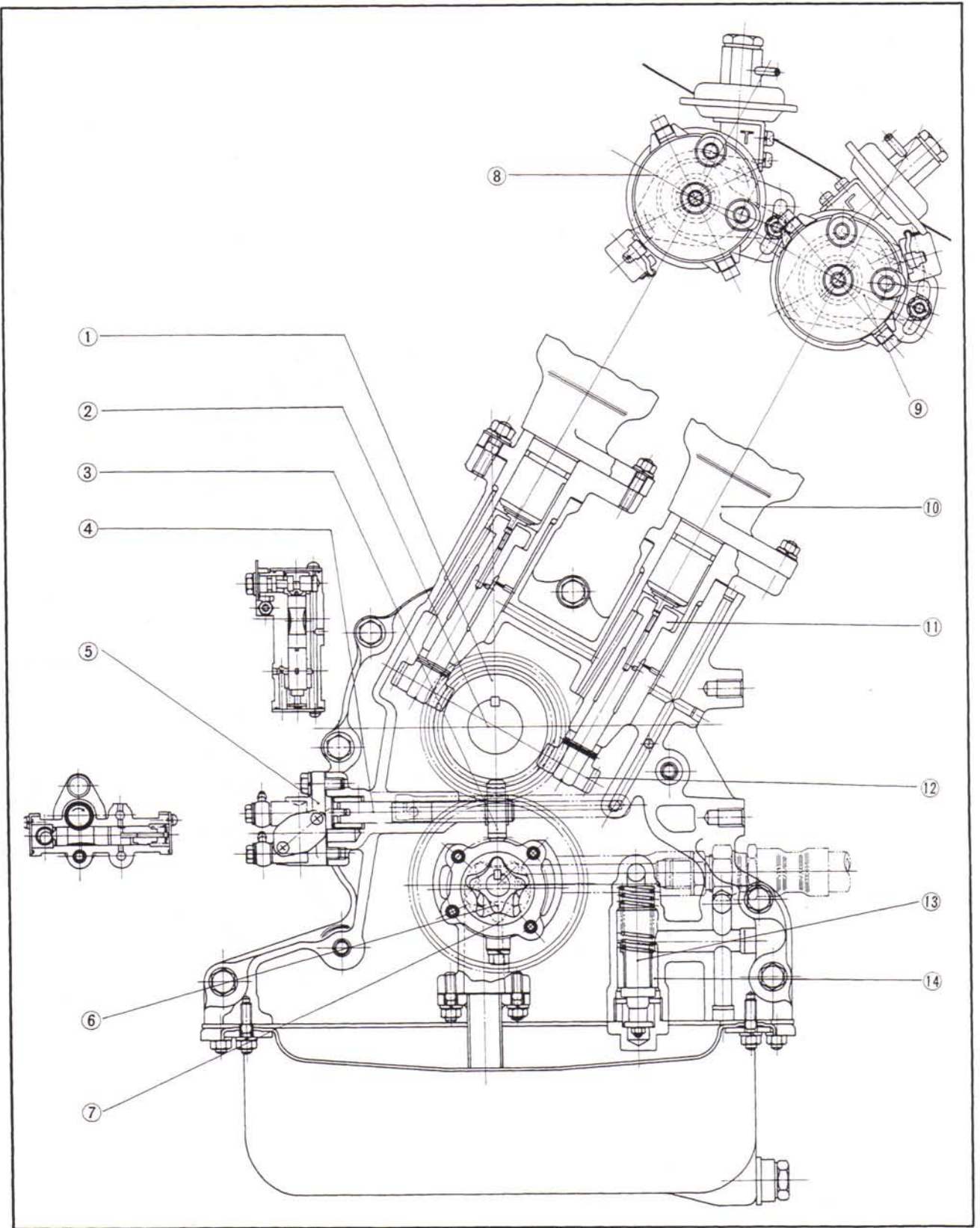


Fig. 1-3 Engine (3)

- 1. Distributor Drive Gear
- 2. Eccentric Shaft
- 3. Metering Pump Drive Gear
- 4. Metering Pump Drive Shaft
- 5. Metering Pump Ass'y

- 6. Oil Pump Inner Rotor
- 7. Oil Pump Outer Rotor
- 8. Trailing Distributor
- 9. Leading Distributor
- 10. Distributor Socket

- 11. Distributor Drive Shaft
- 12. Distributor Driven Gear
- 13. Pellet
- 14. Slide Valve

## ENGINE

RX-2 is mounted with a 2-rotor type rotary piston engine of Toyo Kogyo's unique design. Its single chamber capacity is 573 cc (35.0 cu. in) and the compression ratio is 9.4 : 1. The performance is shown in Fig. 1-4.

The main component parts of the rotary piston engine are entirely different from those of the conventional reciprocating engine. The rotor which corresponds to the piston of the reciprocating engine makes a rotary motion due to the explosion pressure occurring in the chamber formed by the rotor housing and the side housing which correspond to the cylinder of the reciprocating engine. This rotary motion of the rotor is converted into the rotary motion of the eccentric shaft and is then produced as output through the flywheel.

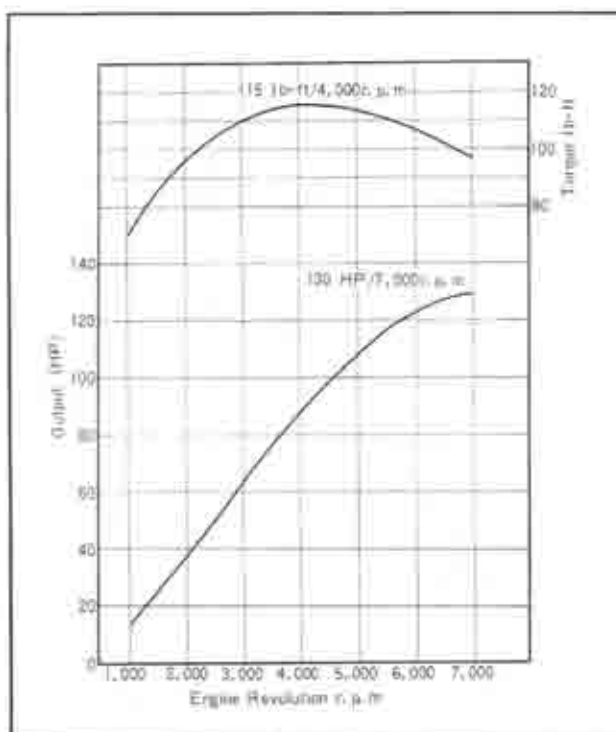


Fig. 1-4 Engine performance curve

### 1-A. REMOVING THE ENGINE

To remove the engine for overhauling, proceed as described in the following :

1. Remove the bonnet.
2. Protect the fender with a cover.
3. Drain the cooling water.
4. Drain the engine lubricating oil.
5. Remove the air-cleaner.
6. Remove the fuel pipe from the carburettor.
7. Disconnect the accelerator cable and the choke cable from the carburettor.
8. Disconnect the wiring from the starting motor.
9. Disconnect the wiring from the alternator and the water temperature gauge unit.
10. Disconnect the high-tension cables from the distributors and the spark plugs.
11. Disconnect the wire of the oil pressure switch.
12. Remove the water hoses from the engine.
13. Remove the heater hose from the engine.

14. Remove the oil hoses from the front cover and rear housing of the engine, and remove the oil hose clip on the engine mounting bracket.
15. Remove the radiator upper shroud.
16. Remove the alternator.



Fig. 1-5 Disconnecting pipes and cables.

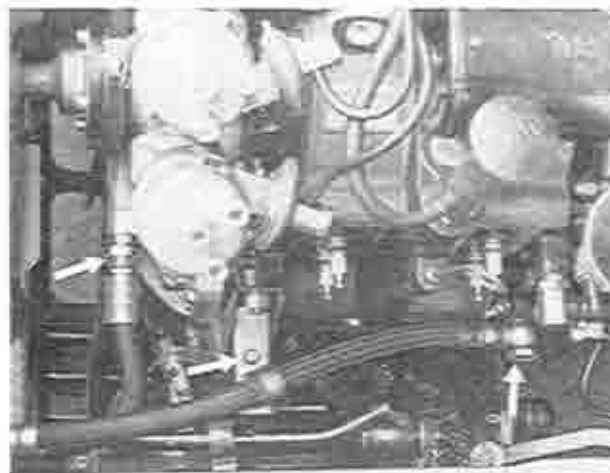


Fig. 1-6 Removing oil hoses





Fig. 1-7 Removing cooling fan



Fig. 1-8 Disconnecting exhaust pipe

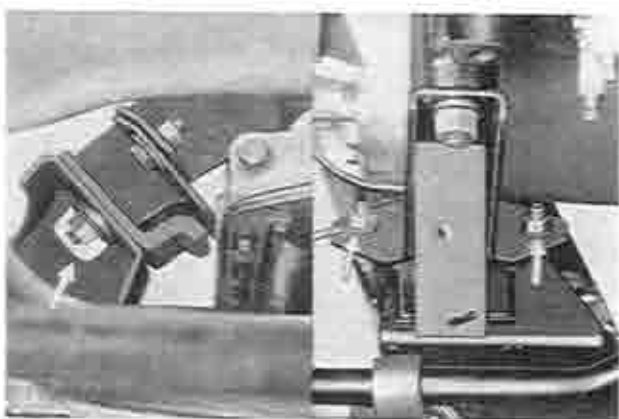


Fig. 1-9 Loosening mounting bolts



Fig. 1-10 Removing engine from vehicle

17. Remove the cooling fan from the eccentric shaft pulley.

18. Remove the starting motor.

19. Remove the clutch release cylinder and place it on the frame.

20. Disconnect the exhaust pipe from the manifold.

21. Remove the bolts securing the clutch housing to the rear housing of the engine.

22. Remove the hot air duct from the exhaust manifold.

23. Support the transmission with a suitable jack.

24. Remove the bolts from each engine mounting. For easy disconnection, it is recommendable to remove the two small bolts on left-hand side and a large nut on right-hand side as shown in Fig. 1-9.

25. Install a suitable lifting sling on the engine hanger bracket of the front rotor housing. Attach the sling to a hoist or other lifting device and take up all slack.

26. Pull the engine forward until it clears the clutch shaft. Then, lift the engine from the vehicle.

27. Disconnect the connecting rod of the oil metering pump at the carburettor side.

28. Remove the intake manifold, with carburettor and exhaust manifold.

29. Remove the engine bracket.

30. Mount the engine on the engine stand (49 0107 680A, 49 0813 005 and 49 0820 006).

**1-B. DISASSEMBLING THE ENGINE**

Engine overhaul should be done in the following order after dismounting the engine from the vehicle:

1. Remove the water pump pulley.
2. Remove the water pump.
3. Remove the distributors from the front cover.
4. Remove the spark plugs.
5. Remove the oil filter from the rear housing.

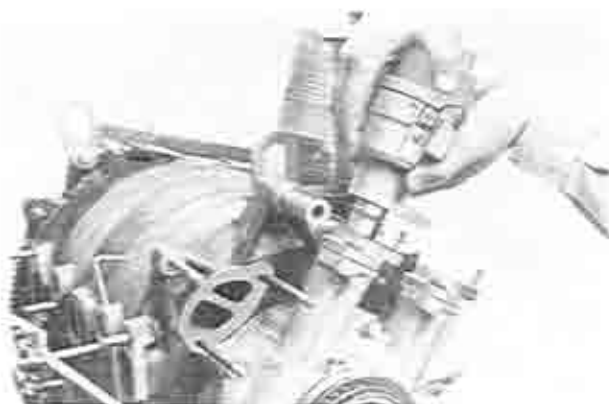


Fig. 1-11 Removing distributor

6. Attach the ring gear brake (49 0820 060) to the flywheel. Remove the eccentric shaft pulley with key.
7. Remove the clutch assembly and clutch disk.
8. Straighten the tab of the lockwasher and remove the flywheel nut using the flywheel box wrench (49 0820 035).

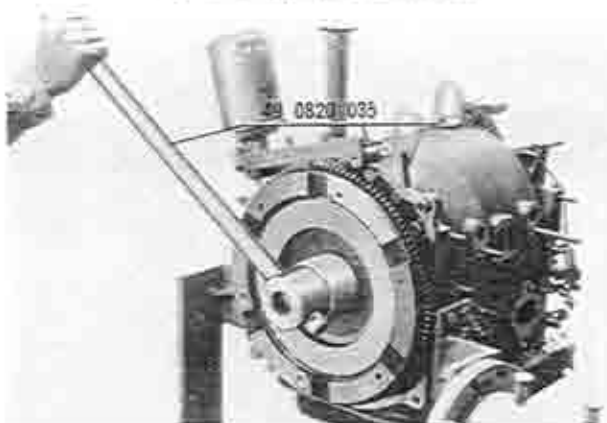


Fig. 1-12 Loosening flywheel nut

9. Remove the flywheel by using the flywheel puller (49 0823 300), turning the handle and lightly hitting the head of the puller.



Fig. 1-13 Removing flywheel

10. Remove the oil pan.
11. Remove the oil strainer.

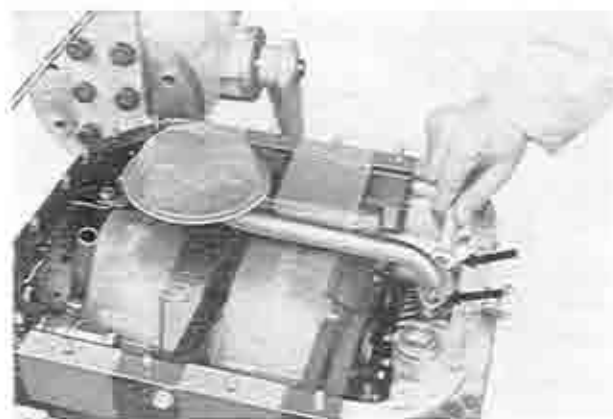


Fig. 1-14 Removing oil strainer