DAEWOO SERVICE MANUAL

DIESEL ENGINE
D1146
D1146T
D2366
D2366T

FOREWORD

This manual includes special notes, important points, service data, precautions, etc. that are needed for the maintenance, adjustments, service, removal and installation of the components of the models titled.

The Section Index on the contents page enables the user to quickly locate any desired section. At the beginning of each section containing more than one major subject is a Table of Contents, which gives the page number on which each major subject begins. An index is placed at the beginning of each major subject within the section.

Any reference to brand names in this manual is intended merely as an example of the types of lubricants, tools, materials, etc. recommended for use in servicing Daewoo Engine. In all cases, an equivalent may be used.

This manual should be kept in a handy place for ready reference. If properly used, it will enable the technician to better serve the owners of Daewoo Engine.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

DAEWOO
DAEWOO HEAVY INDUSTRIES LTD.
Seoul KOREA

SECTION INDEX

Section 1

GENERAL INFORMATION

CONTENTS PAGE

1. GENERAL REPAIR INSTRUCTIONS

1. The use of proper tools and special tools where specified, is important to efficient and reliable service operation.
2. Use genuine Daewoo parts.
3. Used cotter pins, gaskets, O-rings, oil seals, lock washers and self lock nuts should be discarded and new ones should be prepared for installation as normal function of the parts can not be maintained if these parts are reused.
4. To facilitate proper and smooth reassembly operation, keep disassembled parts neatly in groups. Keeping fixing bolts and nuts separate is very important as they vary in hardness and design depending on position of installation.
5. Clean the parts before inspection or re-assembly. Also clean oil ports, etc. using compressed air to make certain they are free from restrictions.
6. Lubricate rotating and sliding faces of the parts with oil or grease before installation.
7. When necessary, use a sealer on gaskets to prevent leakage.
8. Carefully observe all specifications for bolt and nut torques.
9. When service operation is completed, make a final check to be sure service has been done properly.

2. GENERAL DESCRIPTION

Models D1146 and D2366 are 6-cylinder, 4-cycle, in-line, vertical type engines. They are water-cooled and use Toroidal combustion system.

Both engine models are similar in appearance and construction.

It may be assumed that the information and values contained in this manual is applicable to both engine type unless otherwise noted.

2-1. Engine Characteristics

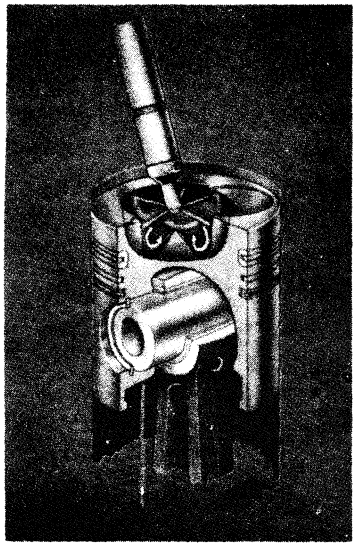
The engine operates according to the Toroidal combustion system developed by Daewoo Heavy Industrial Co. of Korea and AVL Co. of Austria.

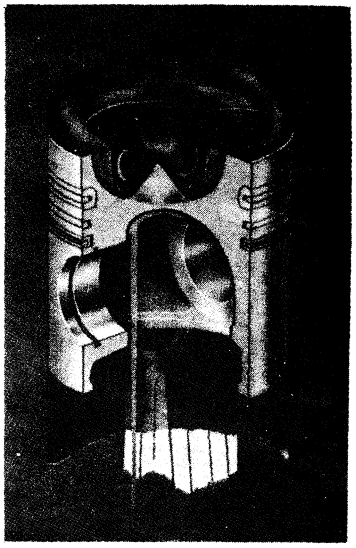
The main design features of this system are the combustion chamber arranged in the center of the piston and the swirling passage in the cylinder head.

Due to the swirling passage, the air entering the cylinder through the helical port designed specially during intake stroke is imparted a strong rotary motion in the combustion chamber and the complicated turbulence motion created by the swirl produced during compression stroke and strong squish flow makes the fuel be mixed more sufficiently with air.

During power stroke the fuel injected from a multi-orifice nozzle is mixed sufficiently with air for complete combustion, so that the improvement of performance is achieved.

Engines with the Toroidal combustion system are characterized by their quiet running, high flexibility and very low specific fuel and oil consumption.





2-2. Main Data and Specification

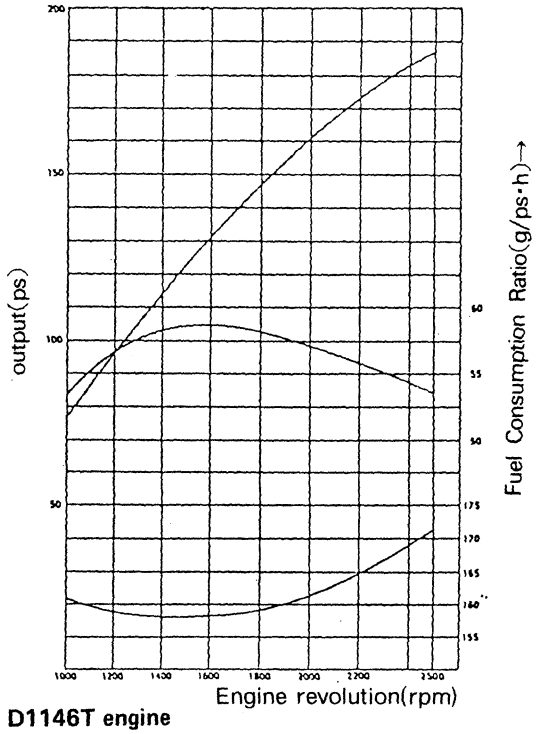
Engine Models / Descriptions	D1146	D1146 T	DZ366	D2366T
Engine type	Water cooled 4 cycle, in-line vertical	←	←	←
Combustion chamber type	Toroidal combustion chamber	←	←	←
Combustion type	Direct injection type	←	←	←

Engine Models / Deschiptions	D1146	D1146T	D2366	D2366T
No. of Cylinders-Bore x Storke (mm)	6-111 x 139	←	6-123 x 155	←
Total displacement (CC)	8,071	←	11,051	←
Compression ratio	17.6:1	17.2:1	17.5:1	16.5:1
Max. power (PS/rpm)	187/2,500	238/2,300	240/2,200	305/2,200
Max. torque (kg-m/rpm)	58/1600	80/1,400	84.2/1,400	108/1,400
Fuel injection timing	BTDC 15°	BTDC 11°	BTDC 14°	BTDC 14°
Fuel injection order	1-5-3-6-2-4	←	←	←
Injection pump type	NP-PE 6AD95 B 412 RS25	NP-PE6P 120/ 721 RS 3000	NP-PE6P 120/ 721RS 3000	←
Governor type	NP-EP/RFD 200 /1650 AF9 CHL	NP-EP/RFD200 /1650 PF 9CZR	NP-EP/RFD200 /1350 PF 7C HR	NP-EP/RFD200 /1650 PF 8CWR
Timer type	NP-EP/SP700 −1250 B4R	NP-EP/SP 950 −1150 Z4R	NP-EP/SP600-1100 Z 5.5 R	NP-EP/SD 700-1100 Z 3DR
Injection nozzle type	DLLA 150S 312	DLLA 150S 1064	DLLA 150S 308	DLLA 150S 310
Feed pump type	NP-FP/KE ADS	NP-FP/K-P	NP-FP/K-P	←
Intake valve open at	BTDC 16°	←	BTDC 18°	←
Close at	ABDC 36°	←	ABDC 34°	←
Exhaust valve openat	BBDC 46°	←	BBDC 46°	←
Close at	ATDC 14°	←	ATDC 14°	←
Oil Pump type	Gear type	←	←	←
Oil cooler type	Water-cooled	←	←	←
Fuel filter type	Double filtering type with felt and paper element	←	←	←
Oil capacity (ℓ)	15.5	←	20	←
Cooling water capacity (ℓ)	11	←	19	←
Thermostat type	Wax-pellet	←	←	←
Starter motor Voltage-output (V-kw)	24-4.5*	←	24-5.4*	←
Alternator Voltage-capacity (V-A)	24-25*	←	24-62*	←

* Specification may vary depend on the vehicle models

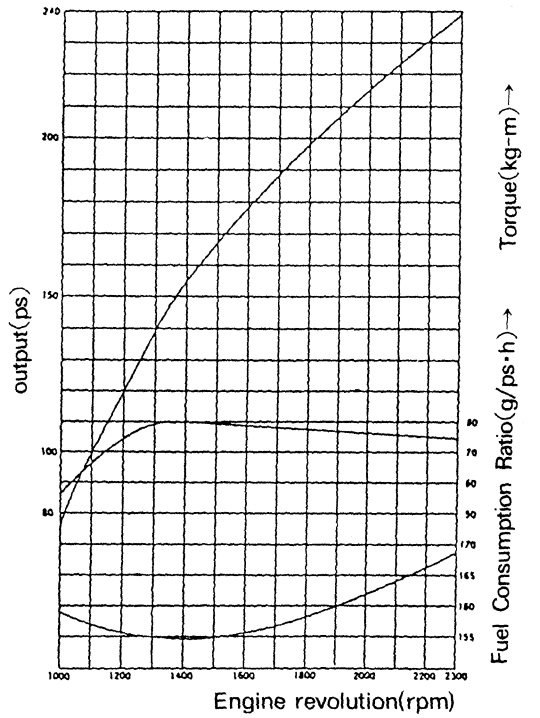
2-3. Engine Performance Curve

2-3-1. D1146 engine



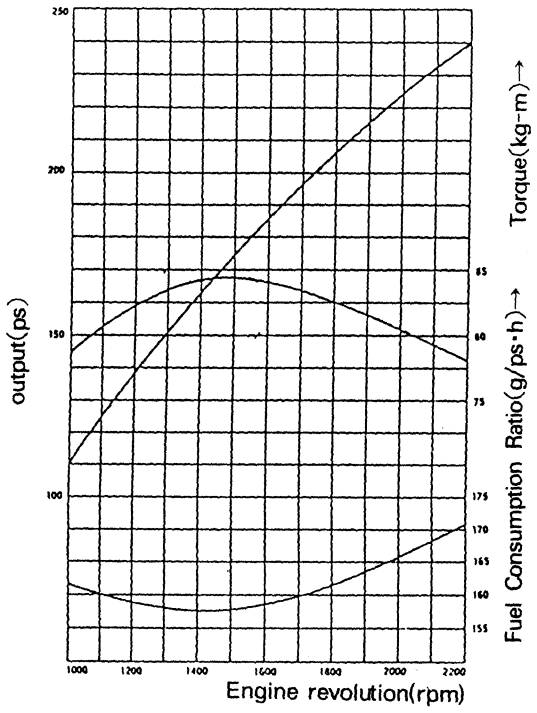
1. Max. power
   SAE 187 PS/2,500 RPM
2. Max. torque
   SAE 58.5 kg-m/1,600 RPM
3. Fuel consumption ratio
   158 g/ps.h + 5%

2-3-2. D1146T engine



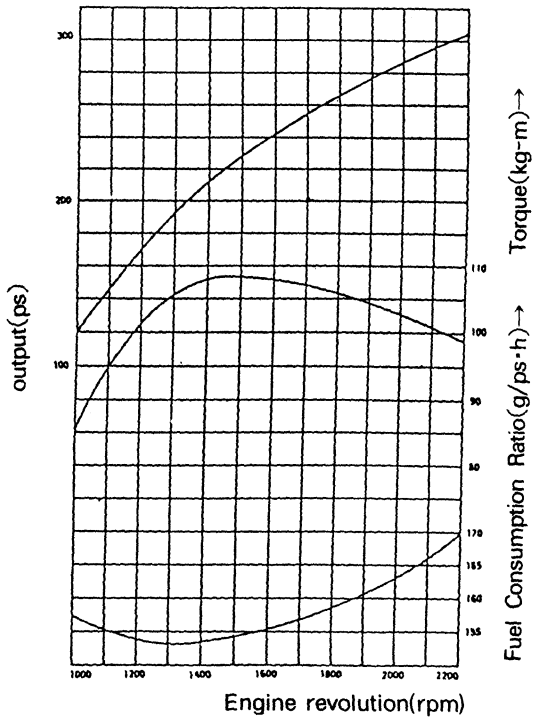
1. Max. power
   SAE 238 PS/2,300 RPM
2. Max. torque
   SAE 80kg-m/1,400 RPM
3. Fuel Consumption ratio
   154g/ps.h + 5%

2-3-3. D2366 engine



1. Max. power
   SAE 240 PS/2,200 RPM
2. Max. torque
   SAE 84.2 kg-m/1,400 rpm
3. Fuel consumption ratio
   157 g/ps.h + 5%

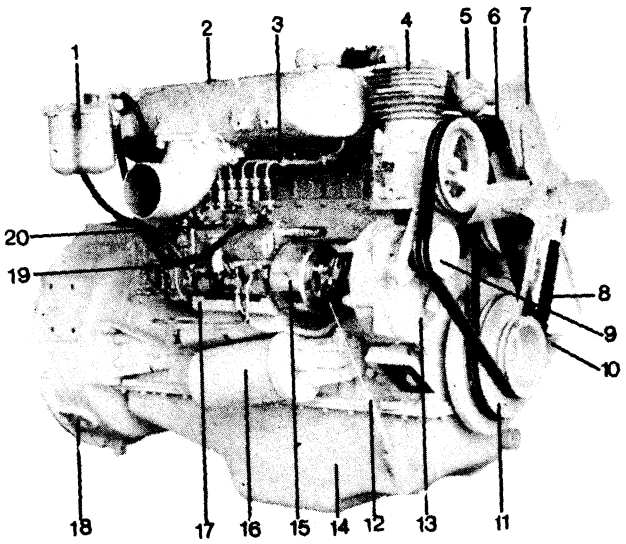
2-3-4. D2366T engine

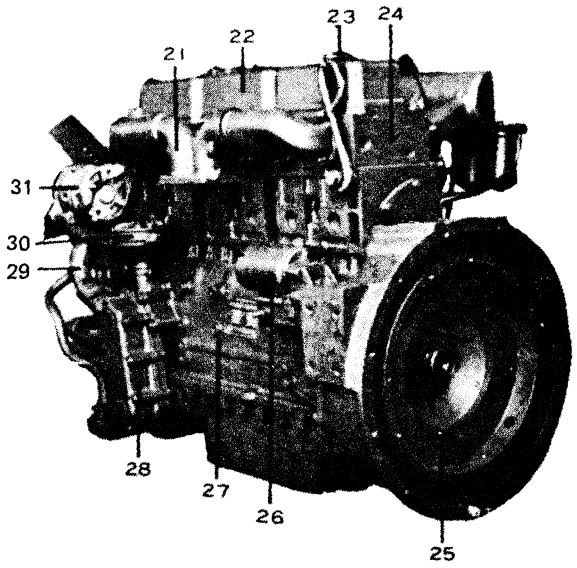


1. Max. power
   SAE 305 PS/2,200 RPM
2. Max. torque
   SAE. 108 kg-m/1,400 RPM
3. Fuel consumption ratio
   153 g/ps.h + 5%

3. EXTERNAL VIEW OF ENGINE

3-1. D1146 Engine





1. Fuel Filter
2. Intake Manifold
3. Fuel Pipe
4. Air Compressor
5. Thermostat
6. Water Pump
7. Cooling Fan
8. V-Belt
9. Idle Pulley
10. Mounting Bracket
11. Vibration Damper
12. Oil Level Gauge
13. Timing Gear Case Cover
14. Oil Pan
15. Timer
16. Oil Filter
17. Injection Pump Bracket
18. Fly Wheel Housing
19. Fuel Hose
20. Fuel Injection Pump
21. Exhaust Manifold
22. Cylinder h Head Cover
23. Oil Filler Cap
24. Cylinder Head
25. Fly Wheel
26. Starter
27. Cylinder Block
28. Oil Cooler
29. Cooling Water Pipe
30. Breather Pipe
31. Alternator