800/1000 Crawler

Service Manual

9-72062

CASE

800 CRAWLER, S/N 7081201 AND AFTER
1000 CRAWLER, BEFORE S/N 7103000
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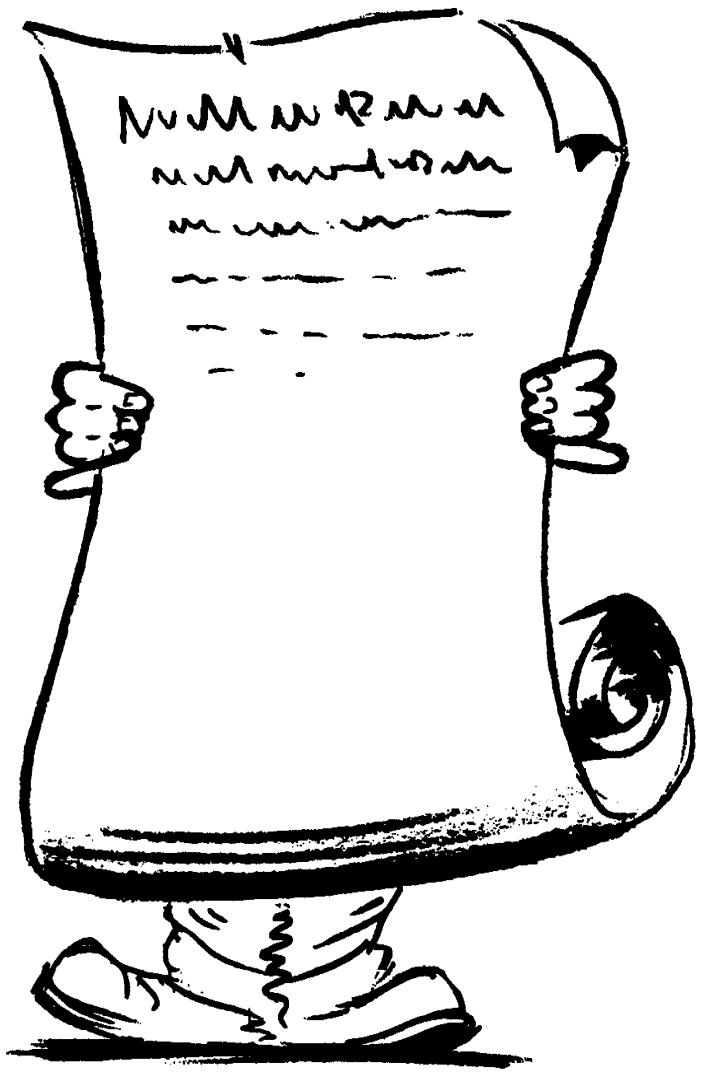
CASE CORPORATION

GENERAL SPECIFICATIONS

I



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GENERAL SPECIFICATIONS

GROUP I

SECTION A - MODEL 800 SPECIFICATIONS

CAPACITIES (U.S.)

Fuel tank	40 Gallons
Cooling	7-1/2 Gallons
Transmission and Torque Converter	11-1/2 Gallons
Final Drive (Each)	8 Quarts
Crankcase	Dry Engine (new filter element) - 9 Quarts
	Wet Engine (old filter element) - 7 Quarts
Air Cleaner	1 Quart
Hydraulic Brake System	1-1/2 Pint
Hydraulic System - Terraload'r	24 Gallons
Hydraulic System - Terradozer	22 Gallons

TRACTOR

Engine, Continental Diesel		HD-277
HP (Gross)		80
HP (Net)		70
Electrical System		24 Volts
Cooling Fan Diameter		20 In.
Ratio - Engine To Fan		1.4
Radiator: No. Tubes		5
	No. Fins Per Inch	7
Torque Converter: Make		LONG
	Type	SINGLE STAGE
	Diameter	13 In.
	Stall Speed	1550-1650
	Stall Torque Ratio	1.92
Transmission: Model		593
	Type	HYDRAULIC
	No. Speeds Forward	4
	No. Speeds Reverse	4
Battery:	Type	GROUP 2E
	Number	4
	Capacity - 20 Hour Rate	130 Amp. Hrs.
Generator:	Make	Delco-Remy
	Capacity	10 Amp.

DIMENSIONS AND WEIGHTS

	Wide Gauge (Loaders)		Narrow Gauge (Dozers)
Length, Overall Without Drawbar		114-11/16 In.	
Height		71-1/2 In.	
Gauge	60 In.		54 In.
Width, Overall	75 In.		69 In.
Ground Clearance Without Drawbar		16-3/16 In.	
Ground Clearance Under Drawbar		10-15/16 In.	
Drawbar Height		14-1/16 In.	
Drawbar Movement, Lateral		16 In.	
Track Shoe Width, Standard		15 In.	
Track Shoe Width, Maximum	24 In.		20 In.
Number Track Links Per Side		37	
Length Of Track On Ground		73 In.	
Track Pitch		6-1/4 In.	
Sprocket Teeth		27	
Ground Contact Area		2190 Sq. In.	
Height Of Grouser		2-1/16 In.	
Track Pin Diameter		1-1/4 In.	
Track Bushing Diameter		1-7/8 In.	
Track Bolt Diameter		1/2 In.	
Track Rollers, No. Per Side		5	
Track Roller Diameter		7-1/4 In.	
Support Rollers, No Per Side		1 (2 Optional)	
Ground Pressure	5.3 PSI		5.1 PSI
Weight (Standard Basic) Shipping	11,680 Lbs		11,200 Lbs.

ENGINE

Continental Model HD-277 Diesel

Number of Cylinders	4
Bore	4 In.
Stroke	5-1/2 In.
Governed RPM (Full Load)	2250
Injection System	Roosa-Master
Firing Order	1,3,4,2
Valve Tappet Clearance	.014 Intake (hot)
Valve Tappet Clearance	.014 Exhaust (hot)

PERFORMANCE DATA

		1 ST	2 ND	3 RD	4 TH
Speeds:	Forward	1.6	2.9	3.3	5.9
	Reverse	1.9	3.5	4.0	7.2

Steering:	Geared Turn - 7 Foot Radius (Measured From Center Of Inside Track)	
	Pivot Turn	
	Counter-Rotation	
Gradeability:	Fore And Aft	38°
	Sideways	32°
Drawbar Pull:	1ST	20,700
	2ND	11,750
	3RD	10,000
	4RD	5,660

SECTION B - 800 LOADER SPECIFICATIONS

REAR HINGE LOADER

Bucket Capacity	1.5 Cu. Yd.
Digging Depth Below Ground	8-3/4"@8-1/2°
Grading Angle	115°
Bucket Rollback-At Ground Level	40°
At Carry	39-1/2°
At Maximum Lift	55°
Overall Height At Maximum Lift (Clearance Required To Dump Bucket)	162-3/8 In.
Dump Clearance	98-5/8 In.
Dump Reach At Maximum Lift	35-1/16"@45°
At 7 Foot Dump	45-1/4 In.
Lifting Time From Ground Level To Max. Lift	7 Sec.
Dumping Time	2.4 Sec.
Lowering Time	5.0 Sec.
Width of Bucket	81 In.
Tractor Width	75 In.
Overall Height	94 In.
Overall Length	185-5/16 In.
Weight With Counterweight	20,970 Lbs.
Lift Capacity At Ground	17,440 Lbs.
Fully Raised	8,150 Lbs.
Dump Cylinder Size	4"x23-1/4"
Lift Cylinder Size	5"x29-1/2"
Pump Capacity At Rated RPM	41 Gal./Min.
Cutting Edge Of Bucket: Width	6 In.
Thickness	3/4 In.

SECTION C - DOZER SPECIFICATIONS

TILT - CROWN DOZER

Moldboard Width	96 In.
Moldboard Height	31-1/2 In.
Lift Above Ground	33 In.
Drop Below Ground	13 In.
Hydraulic Lift Cylinders	3-1/2" x 31-1/2"
Hydraulic Tilt Cylinders	3-1/2" x 2-1/8"
Lift Speed	13 In./Sec.
Pump Capacity	31 Gal./Min.
Moldboard Crown Adjustment	14 In.
Moldboard Pitch Adjustment	10°
Overall Length	157-1/2 In.
Weight	14,450 Lbs.

ANGLE DOZER

Moldboard Width	112 In.
Moldboard Height	31-1/2 In.
Lift Above Ground	30 In.
Drop Below Ground	13-1/2 In.
Hydraulic Lift Cylinders	3-1/2" x 31-1/2"
Hydraulic Angle Cylinders	3" x 33-1/4"
Pump Capacity	31 Gal./Min.
Lift Speed	12 In./Sec.
Moldboard Angle Adjustment	21°
Moldboard Crown Adjustment	12 In.
Overall Length	158 In.
Total Weight	15,000 Lbs.

SECTION D - MODEL 1000 SPECIFICATIONS

CAPACITIES (U.S.)

Fuel Tank		45 Gal.
Cooling		8-1/2 Gal.
Transmission and Torque Converter		11-1/2 Gal.
Final Drive (Each Side)		8 Qts.
Crankcase		11 Qts.
	with filter	12 Qts.
Air Cleaner		1 Qt.
Hydraulic Brake System		1-1/2 Pt.
Hydraulic System - Terraload'r		24 Gal.
Hydraulic System - Terradozer		22 Gal.

TRACTOR

Engine, Continental Diesel	JD-382
HP (Gross)	100
HP (Net)	87
Electrical System	24 Volts
Cooling Fan Diameter	22 In.
Ratio - Engine to Fan	1.3
Radiator: No. Tubes	6
No. Fins Per Inch	7
Torque Converter: Make	LONG
Type	SINGLE STAGE
Diameter	13 In.
Stall Speed	1400-1500
Stall Torque Ratio	1.72
Transmission: Model	593
Type	Hydraulic
No. Speeds Forward	4
No. Speeds Reverse	4
Battery: Type	Group 2E
Number	4
Capacity - 20 Hour Rate	130 Amp. Hrs.
Generator: Make	Delco-Remy
Capacity	10 Amp.

DIMENSIONS AND WEIGHTS

	Long Track (Loaders)	Standard Track (Dozers)
Length, Overall Without Drawbar	114-15/16 In.	
Height	72 - 5/8 In.	
Gauge	60	
Width, Overall	76 In.	
Ground Clearance Without Drawbar	16 - 3/16 In.	
Ground Clearance Under Drawbar	10 - 15/16 In.	
Drawbar Height	14 - 1/16 In.	
Drawbar Movement, Lateral	16 In.	
Track Shoe Width, Standard	16 In.	
Track Shoe Width, Maximum	24 In.	
Number of Track Links Per Side	39	37
Length of Track on Ground	79 In.	73 In.
Track Pitch	6 - 1/4 In.	
Sprocket Teeth	27	
Ground Contact Area	2528 Sq. In.	2336 Sq. In.
Height Of Grouser	2 - 1/16 In.	
Track Pin Diameter	1 - 1/4 In.	
Track Bushing Diameter	1 - 7/8 In.	
Track Bolt Diameter	1/2 In.	
Track Roller Diameter	7 - 1/4 In.	

	Long Track (Loaders)	Standard Track (Dozers)
Number of Track Rollers Per Side	6	5
Number of Support Rollers Per Side	2	1 (2 Optional)
Ground Pressure	5.3 PSI	5.6 PSI
Standard Basic Shipping Weight	13, 290 Lbs	13,090 Lbs.

ENGINE

Continental Model JD-382	
Number of Cylinders	4
Bore	4-1/2 In.
Stroke	6 In.
Governed RPM. (Full Load)	2000
Injection System	Roosa - Master
Firing Order	1, 3, 4, 2
Valve Tappet Clearance	.014 Intake (Hot)
Valve Tappet Clearance	.014 Exhaust (Hot)

PERFORMANCE DATA

		IST	2ND	3RD	4TH
Speeds:	Forward	1.6	2.9	3.3	5.9
	Reverse	1.9	3.5	4.0	7.2

Steering: Power Turn - 7 Foot Radius
Pivot Turn
Counter-Rotation

Gradeability:	Fore and Aft	38°
	Sideways	32°

Drawbar Pull:	IST	25,400 Lbs.
	2ND	14,400 Lbs.
	3RD	12,290 Lbs.
	4TH	6,770 Lbs.

SECTION E - 1000 LOADER SPECIFICATIONS

REAR HINGE LOADER

Bucket Capacity	2 Cu. Yd.
Digging Depth Below Ground	9-11/16" @ 8 1/2°
Grading Angle	112-1/2°
Bucket Rollback - At Ground Level	40°
At Carry	42-1/2°
At Maximum Lift	54°

Overall Height At Maximum Lift (Clearance Required to Dump Bucket)	174-1/8 In.
Dump Clearance	100-3/4 In.
Dump Reach At Maximum Lift	44-3/8" @ 45°
At 7 Foot Dump	42" @ 60°
Lifting Time From Ground to Maximum Lift	6.6 Sec.
Dumping Time	2.7 Sec.
Lowering Time	3.1 Sec.
Width of Bucket	81 In.
Width of Tractor	76 In.
Overall Height	94 In.
Overall Length	197 In.
Weight With Counterweight	23, 170 Lbs.
Lift Capacity At Ground	18,700 Lbs.
Fully Raised	9,300 Lbs.
Dump Cylinder Size	5" x 22-3/16"
Lift Cylinder Size	5-1/2" x 30"
Pump Capacity At Rated RPM	56 Gal./Min.
Cutting Edge of Bucket: Width	6 In.
Thickness	3/4 In.

SECTION F - MODEL 1000 DOZER SPECIFICATIONS

TILT-CROWN DOZER

Moldboard Width	104 In.
Moldboard Height	31-1/2 In.
Lift Above Ground	33 In.
Drop Below Ground	13 In.
Hydraulic Lift Cylinders	3-1/2" x 31-1/2"
Hydraulic Tilt Cylinders	3-1/2" x 2-1/8"
Lift Speed	14 In./Sec.
Pump Capacity	31 Gal./Min.
Moldboard Crown Adjustment	14 In.
Moldboard Pitch Adjustment	10°
Weight	16, 450 Lbs.

ANGLE DOZER

Moldboard Width	120 In.
Moldboard Height	31-1/2 In.
Lift Above Ground	31-1/2 In.
Drop Below Ground	13-1/2 In.
Hydraulic Lift Cylinders	3-1/2" x 31-1/2"
Hydraulic Angle Cylinders	3" x 33-1/4"
Pump Capacity	31 Gal./Min.
Lift Speed	14 In./Sec.

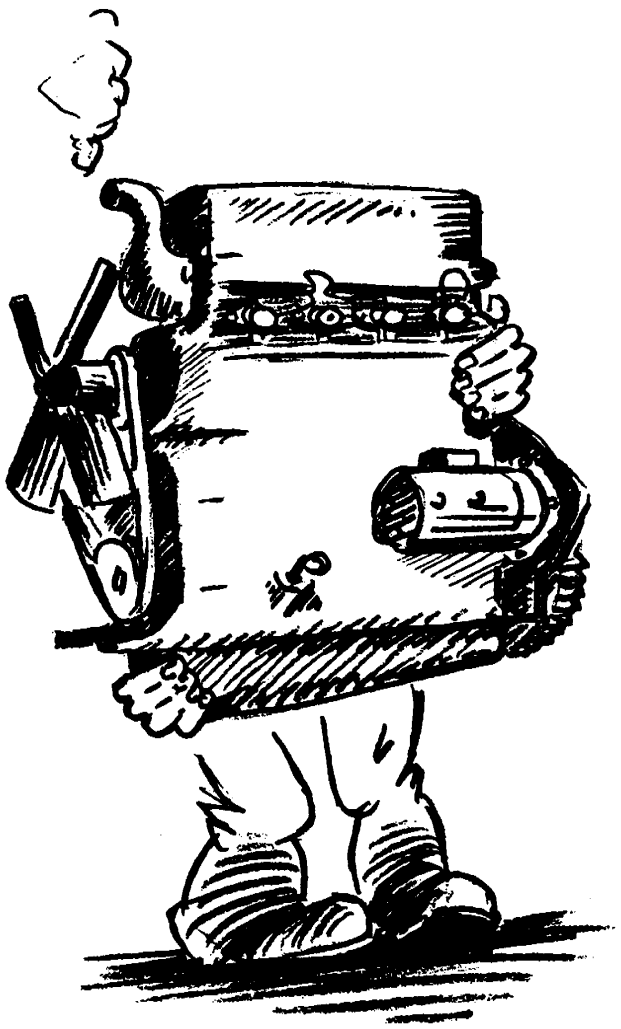
Moldboard Angle Adjustment	20°
Moldboard Crown Adjustment	12 In.
Overall Length	160 In.
Total Weight	17,025 Lbs.

SECTION G- RIPPER SPECIFICATIONS

Tooth Clearance Above Ground	15-3/4 In.
Digging Depth Below Ground	16-3/4 In.
Hydraulic Cylinder (1)(Double Acting)	4" x 13"
Number Of Teeth (Standard)	3
Spacing Of Teeth (Standard)	32" Centers
Tooth Shank Thickness	1-1/2 In.
Distance From Center Line Of Sprocket To Back Of Tooth (Raised) (Approx.)	52-13/16 In.
Weight Of Ripper	1480 Lbs.
Ballast Weights Available	2
Weight Of Ballast	860 Lbs. Ea.

ENGINE

II



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DIESEL ENGINES

GROUP II

SECTION A - GENERAL INFORMATION AND SPECIFICATIONS

ENGINE SPECIFICATIONS

	Model 800	Model 1000
Continental Diesel	HD 277	JD 382
Number of Cylinders	4	4
Bore	4"	4-1/2"
Stroke	5-1/2"	6
Displacement in Cubic Inches	277	382
Compression Ratio	15.0:1	15.0:1
Injection System	Roosa Master	Roosa Master
Firing Order	1-3-4-2	1-3-4-2

ELEMENTARY PRINCIPLES OF DIESEL ENGINES

In order to dispel any mystery there may be with regard to the diesel engine and how it operates, compare the diesel engine with its gasoline counterpart.

Mechanically, the two are alike. Both have pistons moving up and down in cylinders with connecting rods attached to a crankshaft. Both convert the reciprocating motion of the pistons into a rotary motion. Both have valves in the cylinder heads operated by a camshaft and push rods. An intake valve admits air into the cylinder, and an exhaust valve permits the disposition of the burned gases. The camshaft is driven through a train of timing gears so that the opening and closing of the exhaust and intake valves are properly timed with the stroke of the piston and crankshaft.

The engines are so much alike in exterior appearance that the only way most people are able to distinguish between them is to look for the carburetor and the distributor on the gasoline engine or the injection pump on the diesel.

Both operate on mixtures of liquid fuel and air inside the combustion chambers. The ignition of these mixtures under pressure, and the subsequent expansion furnishes the power to drive the piston downward on its power stroke. The one big difference between the two types of engine lies in the way the fuel is handled and combustion brought about.

In a gasoline engine desired proportions of fuel and air are mixed in the carburetor before entering the cylinder through the intake valve. In a diesel engine, air is drawn into the cylinder through the intake valve and is compressed. At the proper time a measured quantity of fuel is injected into this air thus forming a combustible mixture which is self-ignited by the high temperature of the compressed air.

In a gasoline engine the suction or downward stroke of the piston draws in a combustible mixture of air and gasoline which is compressed in the upward stroke and ignited by an electric spark, whereupon the expansion of this compressed mixture forces the piston down on the power stroke.

In the diesel engine, the piston on the down stroke draws in clean, pure air, which is compressed on the upward stroke. At the proper instant, fuel is injected into this compressed air which then ignites from the heat of compression, causing the expansion of the mixture and forcing the piston down on the power stroke. The compression ratio of diesel engines is twice that of gasoline engines, and it is the heat generated by the comparatively rapid compression of the air which ignites the fuel as it is sprayed in under high pressure.

It is a well known fact that the tendency in gasoline engines design is to increase compression ratios in order to obtain more power and greater efficiency out of the engine without increasing the bore and stroke. Compression ratios are however limited by the octane number of fuels available and the desire to keep combusion chamber temperatures down to prevent pre-ignition. A diesel engine is not controlled by these conditions, consequently, compression ratios in the neighborhood of 15 to 1 can be used with entire satisfaction since there is no possibility of the air in this engine igniting until injection of the fuel provides a combustible mixture. This high compression in a diesel causes the temperature of the air to rise under compression to approximately 900^{o} Fahrenheit, far above the ignition point of the fuel, thus igniting the mixture.

To summarize, both engines are heat engines of the internal combustion type, the power in each case being developed from the expansion of the mixture of air and fuel after ignition occurs. Since the expansion is directly related to the compression, the diesel is able to deliver a greater amount of work using a given quantity of fuel. This is basically the reason for its superior efficiency, which results in its saving in fuel cost.

THE DIESEL CYCLE

Intake

Air only is drawn into the cylinder through the open intake valve by the suction created by the Downward moving piston. Figure 1.

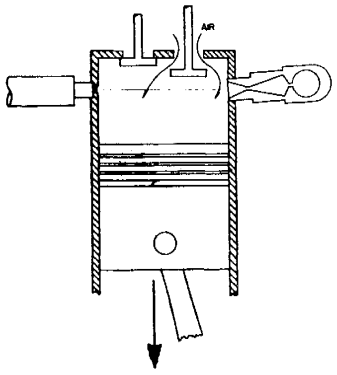


Figure 1

Compression

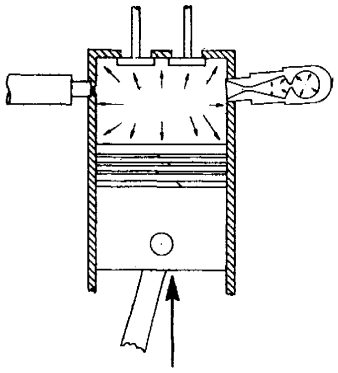


Figure 2

The intake valve is now closed and the air in the cylinder is highly compressed by the Upward Moving piston. This high compression of the air raises the temperature to between 900° and 1000° F. Figure 2.

Injection and Combustion

At a definite point, shortly before the piston reaches the top of its stroke, fuel is injected into the cylinder by the spray nozzle. The fuel is ignited by the heat of the highly compressed air. Figure 3.

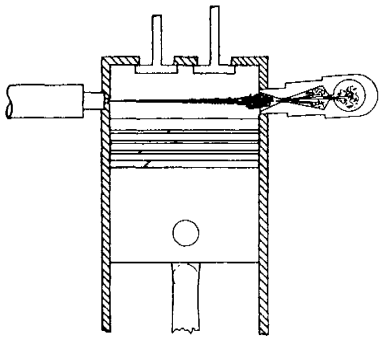


Figure 3

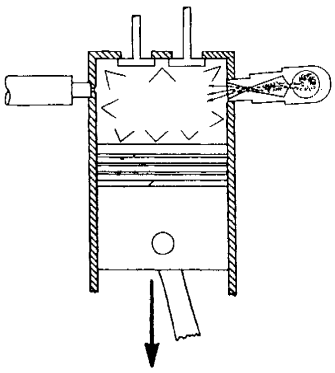


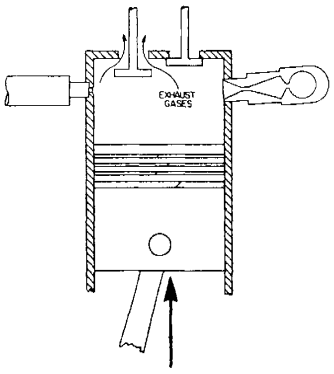
Figure 4

Power

The expansion of the gases resulting from the burning of the fuel exerts pressure on top of the piston, driving it Downward. Figure 4.

Exhaust

As the piston passes the bottom of its stroke the exhaust valve opens and the burnt gases are expelled by the now Upward moving piston. The intake valve opens about the time the piston reaches the top of its stroke, and a similar sequence of events, often referred to as the cycle, repeats itself. Figure 5.



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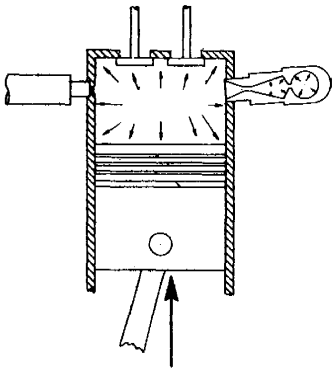

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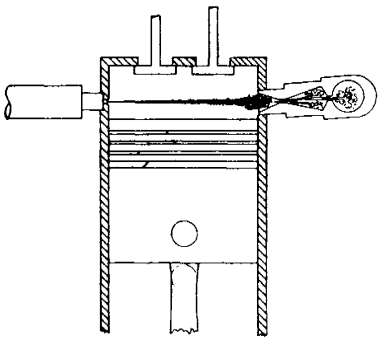

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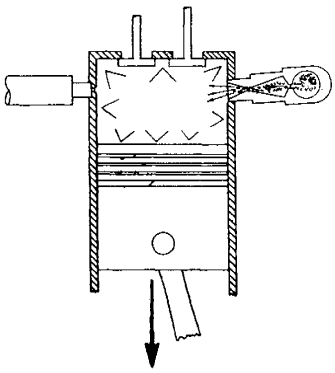

Figure 4

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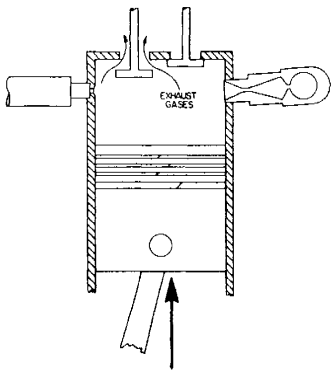

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