



Hercules
Operator's Manual
DJX Series
Diesel

Operator's Manual

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HE-O-DJX

SERVICE MANUAL

HERCULES

Compression Ignition Injection
Engine

(Diesel Type)

Six Cylinder
Diesel Engine

of the

DJX Series

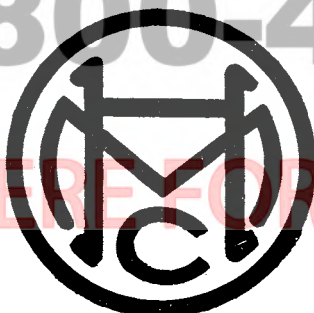
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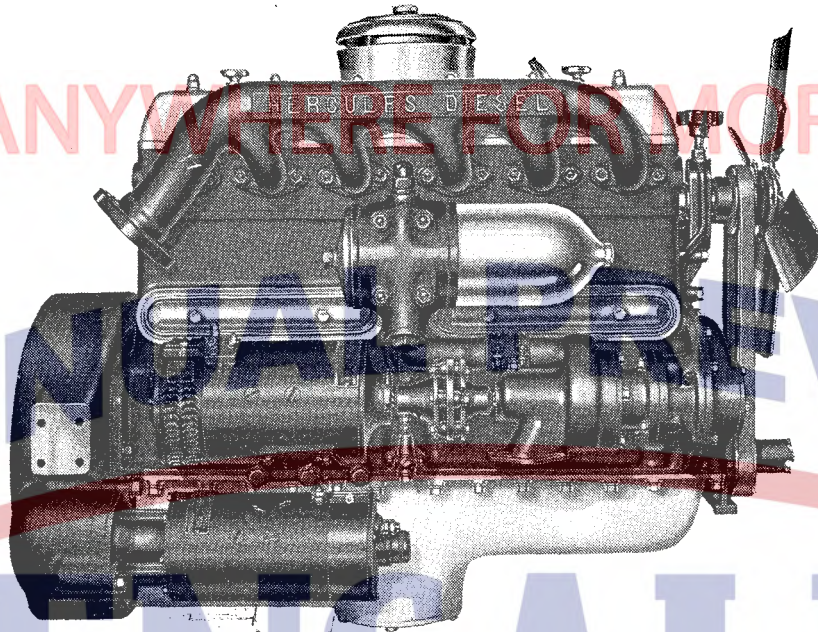
HERCULES MOTORS CORPORATION

Canton

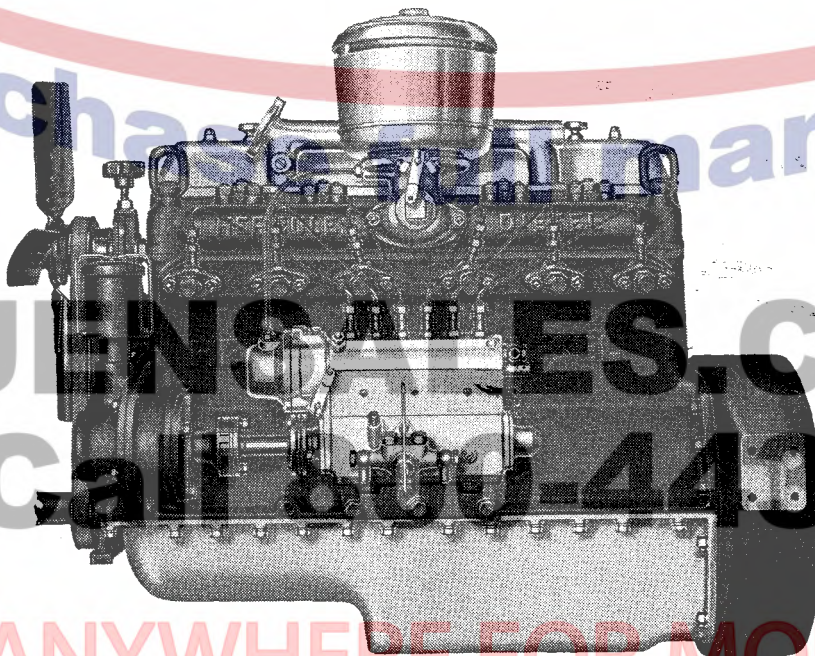
Ohio



CLICK ANYWHERE FOR MORE DETAILS



DJX Series Water Pump, Generator and
Starting Motor Side



DJX Series Fuel Injection Pump Side
Center Mounted Pump

CLICK ANYWHERE FOR MORE DETAILS

Introduction

THE Hercules compression ignition injection type engine is the result of years of development and field experience. Extensive tests have proven these different size engines adapted to all purposes for which such sizes and types are needed. The Hercules Motors Corporation was not satisfied to merely build an engine which would operate on the Diesel Cycle principle but this engine had to be of a type which would eliminate many of the objections to some of the existing compression ignition engines. These Hercules Diesel type engines have demonstrated their ability to operate smoothly and to be free from objectionable smoke while developing surprising power. It was essential that this type engine should demonstrate its fitness for a place in the Hercules line by giving the same satisfactory results which thousands of operators have obtained from several hundred thousand gasoline engines which have been manufactured by this company during the past twenty years.

The Hercules Diesel Series has been designed to follow as closely as possible the characteristic features of the Hercules gasoline engines wherever the design has not required the introduction of entirely new features because of the compression ignition principle of operation. This made possible the use of the valuable experience obtained from field operation of several hundred thousand Hercules Engines and these features not only assure satisfactory performance but they also enable the average mechanic to make adjustments in exactly the same manner as he has been accustomed to make them on the Hercules gasoline engines.

An effort has been made to give sufficient information to permit an experienced mechanic making the various adjustments and replacements which may be needed.

To men trained in compression ignition type engine operation the Hercules Diesel series presents no maintenance problems and the construction of the Hercules compression ignition engine is so similar to that of the more common gasoline engine that no good mechanic need hesitate to make all of the ordinary adjustments.

The mystery commonly surrounding the Diesel cycle engine will be eliminated by careful study of the various parts of this book which covers design, construction and maintenance, but we do not wish to encourage any inexperienced person attempting to make repairs or adjustments, for such action may result in very expensive repairs being necessary. **Do not attempt to start, operate or service a Hercules compression ignition engine without becoming familiar with the instructions given under these various sections.**

Compression ignition engines have generally been called Diesel engines in the past due to their operating on the Diesel cycle. For the sake of brevity the Hercules compression ignition engine will be referred to in this book as a Diesel engine by which name it is most commonly known.

HERCULES MOTORS CORPORATION

SPECIFICATIONS

Models DJXB - DJXC Diesel Engines

	Model DJXB	Model DJXC
Bore and Stroke.....	3½"x4½"—88.9x114.3 mm	3¾"x4½"—95.2x114.3 mm
No. of Cylinders.....	6	6
N. A. C. C. Horsepower.....	29.4	33.75
Piston Displacement.....	260 cu. in. or 4.26 liters	298 cu. in. or 4.87 liters
Rotation—Clockwise Standard, Looking at Cranking End.		

MAIN BEARINGS

	Model DJXB	Model DJXC
No. of Bearings.....	7	7
Bearings, Diameter.....	3" — 76.2 mm	3" — 76.2 mm
Bearings, Length (Front 1).....	1¼" — 31.7 mm	1¼" — 31.7 mm
Bearings, Length (Center 4).....	2½/32" — 51.6 mm	2½/32" — 51.6 mm
Bearings, Length (Rear 7).....	2¼/16" — 52.4 mm	2¼/16" — 52.4 mm
Bearings, Length (Int. 2-3-5-6).....	1¾/32" — 31.0 mm	1¾/32" — 31.0 mm

CAMSHAFT

	Helical Gear	Helical Gear
Drive.....		
No. of Bearings.....	4	4
Diameter of all Bearings.....	2¼/16" — 52.4 mm	2¼/16" — 52.4 mm
Length (Front 1).....	1¾/8" — 34.9 mm	1¾/8" — 34.9 mm
Length (2-3-4).....	1¾/8" — 28.6 mm	1¾/8" — 28.6 mm

Location, Right Hand Side Looking at Flywheel.

CONNECTING ROD

Material.....	Heat Treated Nickel Chrome Molybdenum Steel
Connecting Rod Bearing, Diam....	2½/2" — 63.51 mm
Connecting Rod Bearing, Length.....	1²⁵/32" — 45.2 mm
Connecting Rod Length, c to c.....	8" — 203.2 mm

GENERAL DATA

Fuel Pump.....	Plunger Type
Fuel Nozzles.....	Pintle Type
Fuel Transfer Pump.....	Integral with Fuel Pump
Fuel Strainer.....	Efficient Type
Governor.....	Vacuum Type
Air Cleaner.....	Efficient Oil Bath Type
Compressor.....	Provision for 3 or 6 cu. ft. Air Compressor (or Vacuum Pump)
Exhaust Manifold Bore.....	2¼" — 57 mm
On Right Hand Side, Looking at Flywheel.	

NOTE: The Hercules Motors Corporation reserves the right to change design or specifications, without notice.

some additional bearing clearance must be provided. It is, therefore, recommended that .003" to .004" clearance be provided between the crankshaft and the main bearings. The main bearing caps consist of a very rigid forging and are very securely fastened to the crankcase by means of large diameter studs, two studs being used on the front and intermediate bearings, and four studs are used on the center and rear bearings. The main bearings are doweled in place so as to permit removal of caps and replacement without shifting bearing on the case.

It is seldom necessary to use any shims between the caps and the case.

Main Bearing Adjustment.

If excessive clearance develops between shaft and bearing shells and no shims are found in place between the caps and case bearing fits are re-conditioned by use of new shells, after re-adjustment of the bearings and their having all been tightened securely, it should be possible to turn the crankshaft in the bearings by taking hold of the cheeks of the shaft. Care must be exercised to prevent too tight a fit on any of these bearings.

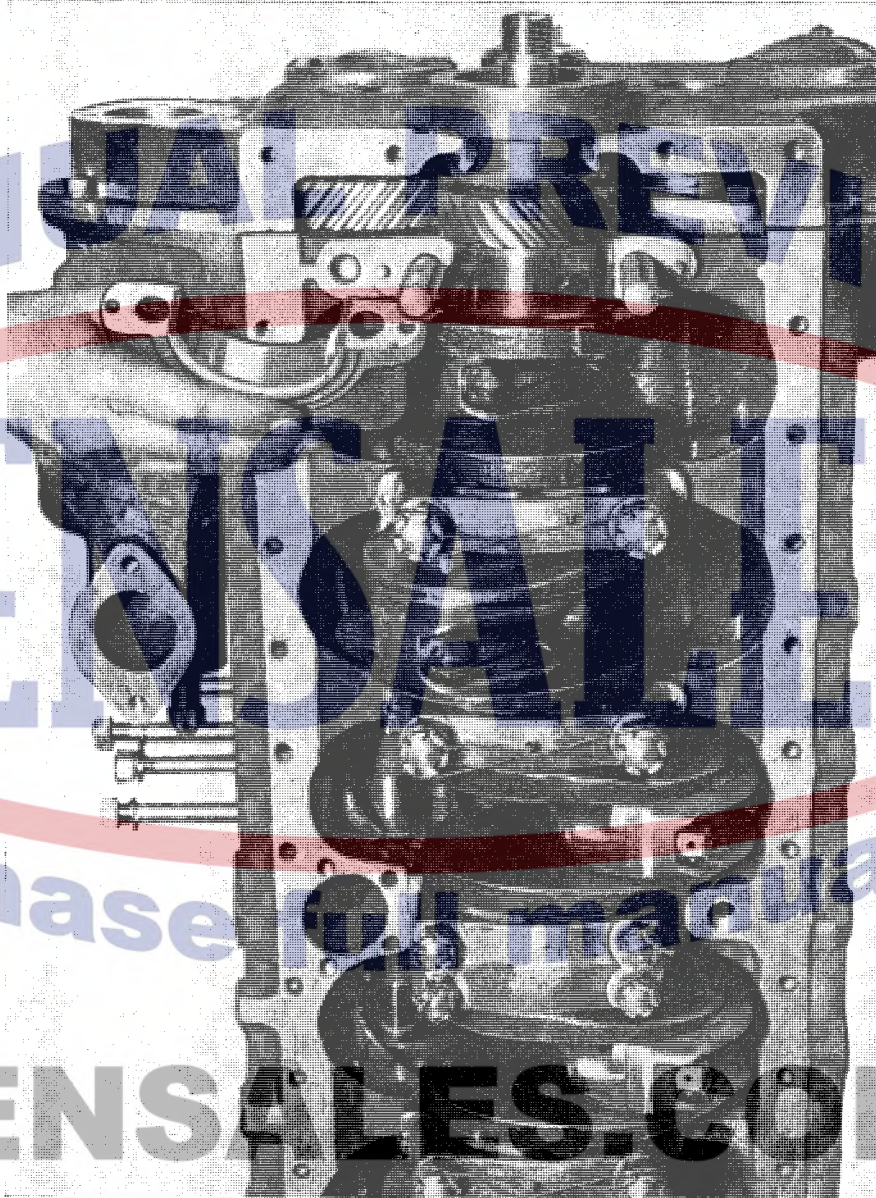


Illustration No. 2

Connecting Rod. The nominal diameter of the connecting rod journal is $2\frac{1}{2}$ ". In order to make use of this large diameter bearing and still permit assembling the connecting rod through the cylinder bore, it is necessary to split the connecting rod and cap on an angle. In order to prevent any shearing action on the connecting rod cap screws a very strong tongue and groove construction is

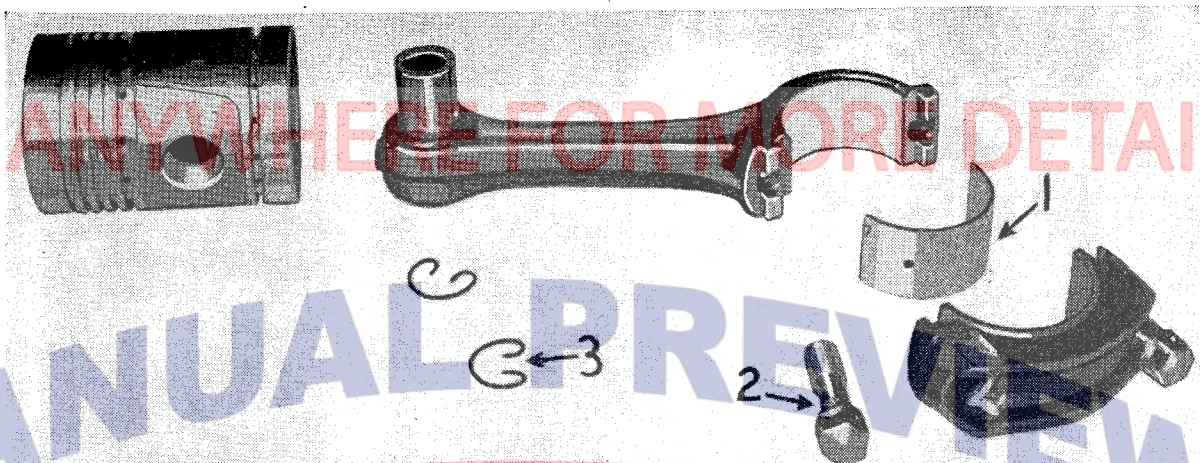


Illustration No. 3

used between the connecting rod and the cap which definitely locates the cap and relieves the cap screws of any shearing strain. The connecting rod bearings are of the precision shell type, and the bearing metal used is of various types of alloy metal. Shims are not commonly used between the connecting rod and the cap. The shells are held in place and rotation is prevented by means of an ear on the shell at the split line. The connecting rod is drilled, permitting oil to pass from the big end bearing up to the piston pin. Illustration No. 3 shows the connecting rod and its various parts.

Caution. When removing piston and connecting rod from the cylinder bore the carbon which has collected at the top of the cylinder bore may make it necessary to use considerable force to push the piston out of the cylinder. Removal of the carbon around the top of the bore will make piston removal much easier. In order to prevent the tongue scratching the cylinder bore while forcing the piston and rod assembly out, it is advisable to either wrap the lower end of the connecting rod with a rag or place two strips of thin wood or cardboard between the rod and cylinder wall. Then if the rod rocks it will not gouge or scratch the cylinder wall.

Connecting Rod Bearing Adjustment. Due to absence of shims adjustment of connecting rods is made by replacement of the bearings. A clearance of .003 to .004" is recommended between the connecting rod journal and the connecting rod shells.

Piston Pin. The piston pin is of very large diameter, and is of the full floating type. This means that the pin can rotate in either the piston bosses or in the bushing at the top end of the connecting rod, but the fit in the piston is intended to be much tighter than the fit in the connecting rod; consequently the movement in the piston consists of a slight creeping action, while the normal rotation of the pin occurs in the bushing at the rod. The piston pin is prevented from moving endwise and making contact with the cylinder wall by means of snap rings which lock in grooves machined in the bosses of the piston. The piston pin should have a clearance of .001" to .0015" in the bushing in the top of the rod.