

# Chrysler

SIX CYLINDER  
**INDUSTRIAL  
ENGINES**



*"Horsepower with  
a pedigree"*

## *Models*

IND.	IND.
<b>5</b>	<b>5A</b>
<b>6</b>	<b>6A</b>
<b>7</b>	<b>7A</b>
<b>8</b>	<b>8A</b>

**MAINTENANCE *and* PARTS MANUAL**

D-12154 - Second Edition



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# **MAINTENANCE AND PARTS MANUAL**

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**FOR 6-CYLINDER  
CHRYSLER INDUSTRIAL ENGINES  
MODEL IND. 5, 5A, 6, 6A, 7, 7A, 8  
AND 8A SERIES  
POWER UNITS, ENGINE ASSEMBLIES  
AND BASE ENGINES**

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**Extra copies of this Manual are available at \$1.00 each under Part Number D-12154, Second Edition. Order direct from the Industrial Engine Division.**

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**CHRYSLER CORPORATION—INDUSTRIAL ENGINE DIVISION**

**12200 East Jefferson Avenue**

**Detroit 31, Michigan, U. S. A.**

Chrysler Corporation reserves the right to make changes in design or to make additions to or improvements in its product without imposing any obligation upon itself to install them on its products previously manufactured.

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## INTRODUCTION

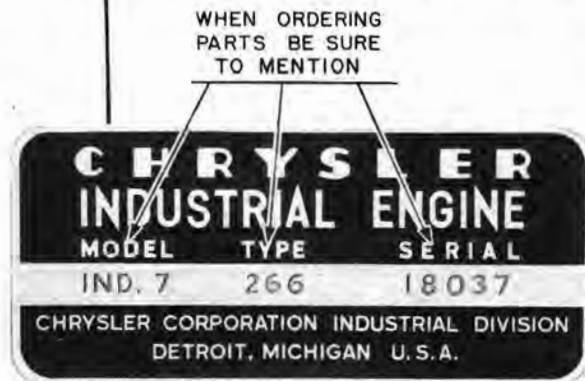
### 1. GENERAL INFORMATION.

a. **Arrangement of Manual.** Part One contains general details of construction, operation, lubrication and maintenance recommendations and a table of specifications and tolerances for the base engine and its various modifications. Part Two contains an illustrated Parts List for the base engine.

b. **Illustrations.** The illustrations in this manual are intended to show typical construction of the various parts. In some instances the shapes or details of the parts illustrated may not represent their actual appearance, however, they will serve to show the servicing methods explained or help to identify parts performing the same function.

c. **Identification of Engine.** A plate is attached to the right (manifold) side of the engine showing the model, type and serial number. Refer to figure 1. When ordering parts for the engine, or when carrying on correspondence, be sure to mention the model, type and serial number of the engine.

d. **The care** exercised in the operation and maintenance of Chrysler Industrial Engines will extend their useful life and insure highly satisfactory and dependable service. To those responsible for the operation and maintenance of the engine, this manual contains suggestions on everyday operation and care as well as periodical lubrication and maintenance instructions.



19x3848

Figure 1—Typical Serial Number Plate

e. **Modifications.** Slight modifications in design as dictated by field experience or desire to improve the unit, or changes of materials due to inability to procure those originally specified, may become necessary. Such changes in design will be obvious and whenever possible, parts or assemblies will be interchangeable with original design.

f. **Tools.** The service tools referred to in this manual or their equivalent, are necessary for efficient servicing of Chrysler Industrial Engines. All tools listed are available through the Miller Manufacturing Company, Detroit 4, Michigan, U.S.A.

# PART ONE

## OPERATION, LUBRICATION AND MAINTENANCE

### Section I

### GENERAL DESCRIPTION

#### 2. GENERAL DESCRIPTION.

**a. Differences Between Models.** Chrysler Industrial Engines, Model IND. 5, 5A, 6, 6A, 7, 7A, 8 and 8A Series (figs. 2 and 3), are supplied in various types for use as power units for mechanical shovels, power winches, road building equipment, welding generators, farm tractors and farm implements, irrigation deep well pumps, truck tractors, air conditioning mobile units, cement mixers and many other industrial applications.

When an engine is modified for various adaptations with a particular combination of accessories, it is designated by a separate model and type number, such as Models IND. 5 or 5A-202, 6 or 6A-211, 7 or 7A-261 and 8 or 8A-114. This is done so it may be readily identified in determining the service parts requirements or when additional accessories are required for various adaptations.

**b. Features of Construction.** The engine is a six-cylinder, four cycle, gasoline type with liquid cooling and pressure lubrication. Many moving parts are super-finished to provide the maximum in wear-resisting, load-carrying properties in the bearing surfaces. Some of the features of construction of the basic engine are:

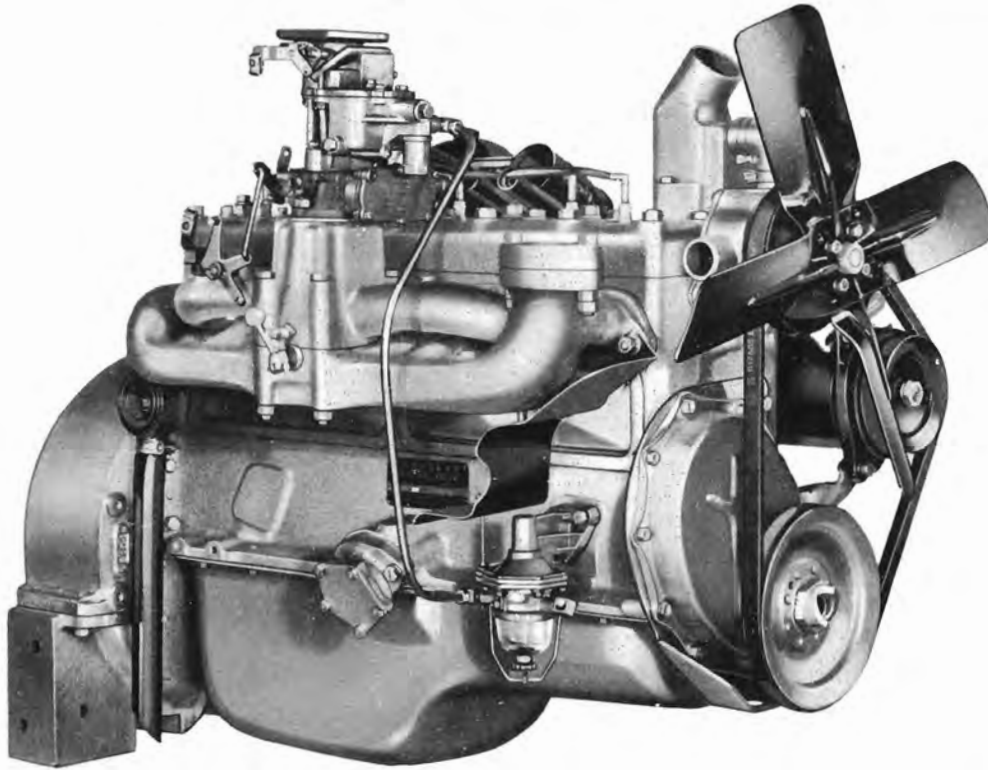
**CYLINDER BLOCK.** The cylinder block is designed to give the greatest possible rigidity. The cylinder block is cast integral with the crankcase so as to obtain perfect alignment with the crankshaft and insure the best possible heat transfer. A water distributor tube, installed in the cylinder block directly behind the water pump, directs the circulation of water to assure uniform water temperatures.

**CRANKSHAFT.** The crankshaft is made with integral counterweights and is statically and dynamically balanced for smooth operation.

**BEARINGS.** The bearings are designed to withstand the high stresses imposed upon them during operation. Long bearing life is assured by precision manufacturing methods and the super-finished surfaces on which they operate.

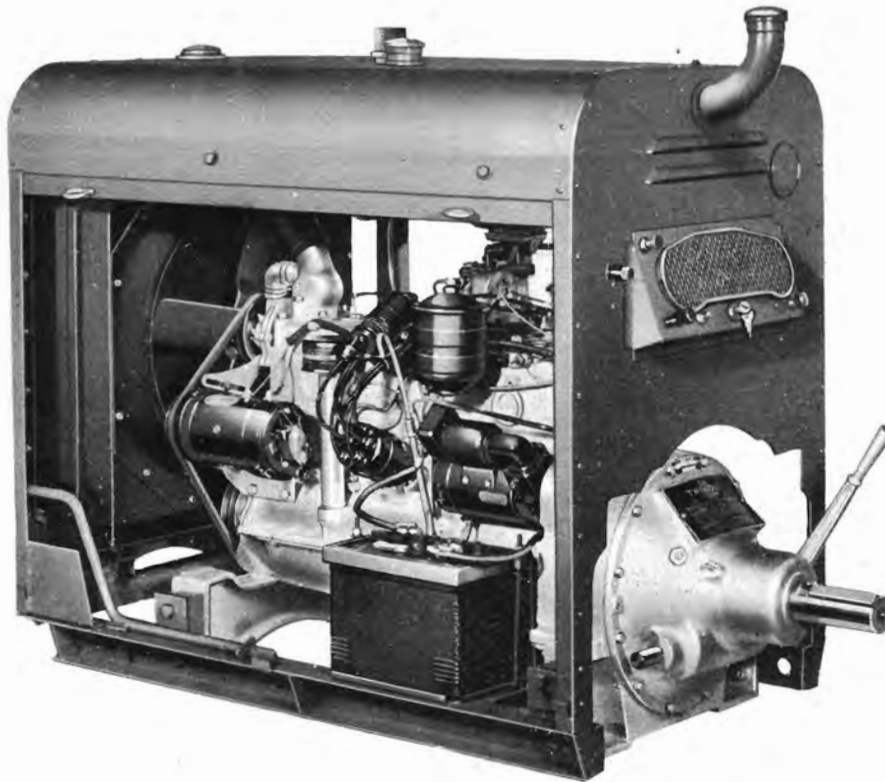
**VALVES.** The exhaust valve seat inserts are hardened, assuring long life and a minimum of maintenance attention. Valve temperatures are controlled by a stream of cooled water delivered to each valve seat through the water distributor tube. For heavy duty operation, it is recommended that sodium-cooled exhaust valves be specified on new engines being ordered.





47x128

Figure 2—Chrysler Industrial Engine (Model IND. 7 or 7A-261)



47x129

Figure 3—Chrysler Industrial Engine (Model IND. 7 or 7A-264)

**LUBRICATION.** The engine is lubricated by oil which is picked up by a rotary-type pump from the oil pan through a floating type oil intake equipped with a screen and delivers it under pressure to the oil filter. After passing through the oil filter, it is forced through passages to the working parts of the engine. Oil temperatures

are reduced by the full length water jacket.

#### CAUTION

*Never operate the engine at an angle greater than 15 degrees because serious damage to the connecting rods, main bearings or other internal parts will result, also oil float level will be greatly affected.*

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## Section II

# OPERATION

### 3. PREPARATION OF ENGINE FOR OPERATION.

Before placing the engine in service, give particular attention to the following items:

**ENGINE OIL.** Check engine oil level. If necessary, add sufficient amount of recommended oil.

**LUBRICATION.** Make certain all points referred to in the lubrication chart, page 12, are properly lubricated.

**COOLING SYSTEM.** Fill the system with clean water. During freezing weather, use a sufficient amount of anti-freeze to protect the system for the lowest anticipated temperature.

**BATTERY AND ELECTRICAL CONNECTIONS.** Check all electrical connections, particularly the battery cables, make certain they are clean and securely tightened. Maintain the electrolyte solution in the battery at the proper level by adding pure distilled water to each cell. *Do not overfill the battery.*

**CYLINDER HEAD NUTS, BOLTS AND CAP SCREWS.** See that all cap screws, bolts and nuts which hold attaching parts are securely tightened. Tighten the cylinder head nuts in sequence as shown in figure 22.

### 4. PRESTARTING INSPECTIONS AND ESSENTIAL INFORMATION.

The life of an engine depends to a great extent upon careful and frequent inspections to be sure that all units are adequately lubricated and maintained. When the engine is in constant use, make the inspections listed below daily. If the engine has been idle for a period of time, make the following inspections before starting the engine.

**ENGINE OIL LEVEL.** Inspect the engine oil for proper level. Add oil as required.

**FUEL.** These engines are designed for operation on regular grades of fuel. Premium grade fuels are not required.



**LEAKS.** Inspect engine in general for evidence of fuel, oil or water leakage.

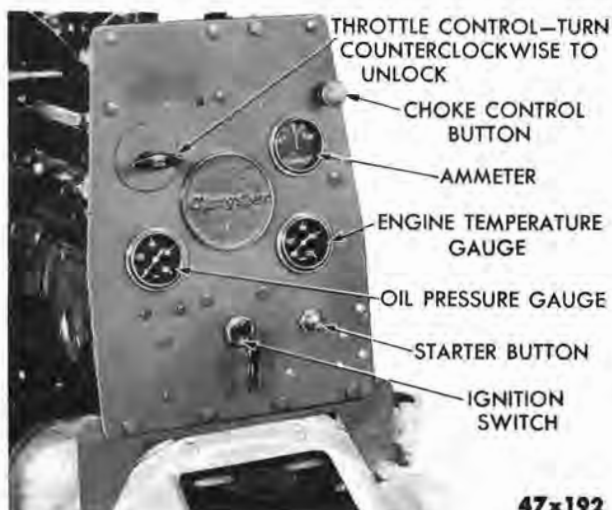
**COOLING SYSTEM.** Inspect level and add water or anti-freeze as required. Make certain all water drain cocks are closed.

## 5. STARTING AND STOPPING THE ENGINE.

### a. Starting the Engine.

(1) Set the throttle at 1/3 open and pull out choke button if not equipped with an automatic choke. Refer to figure 4 for location of throttle and choke controls.

(2) Disengage the clutch (if so equipped), turn on the ignition switch and engage the starter. The engine should start. Starter should not be engaged longer than 15-second periods at a time. If the engine does not start at the first attempt, allow 10 to 15 seconds time to elapse and then repeat.



47x192

Figure 4—Typical Instrument Panel

(3) If the engine becomes overchoked or flooded, open the throttle fully and press the starter switch. After the engine starts, close the throttle to obtain the engine speed desired and watch the oil pressure gauge. If oil pressure is not built up immediately, stop the engine and investigate the cause.

### NOTE

*The ammeter reading may show maximum charge immediately after starting the engine, depending upon the condition of the battery, but will gradually return to zero as the battery becomes fully charged.*

**b. Stopping the Engine.** Close the throttle gradually and disengage the clutch (if so equipped). Allow the engine to run at idling speed for a few minutes; then, with throttle closed, turn off the ignition.

## 6. OPERATION PRECAUTIONS.

**a. Warm-up Period.** After starting a cold engine, operate it at a speed slightly faster than idle (approximately 700 revolutions per minute) for a few minutes to allow the engine to reach normal operating temperature before placing it under full load. This will permit the oil to warm up and reach the bearing surfaces, reducing the possibility of scoring and premature wear of internal engine parts.

**b. Oil Pressure.** With the engine turning at 1800 revolutions per minute and water tempera-

ture at approximately 160° F., the oil pressure should be 40 to 55 pounds, providing there is no unusual escape of oil from some point in the system. As bearings wear and the increased clearance allows more than the normal amount of oil to escape there will be a drop in pressure shown on the gauge, particularly at idling speed.

In the event the full-flow filter should become clogged, the oil will not be filtered but will be pumped to the working parts of the engine at reduced pressure through the safety valve. When the filter is operating properly, oil pressure indicated on the instrument panel oil pressure gauge should be 40 to 55 pounds above 1800 RPM. If this pressure drops below 40 pounds, the filter element may be plugged and should be changed.

**c. Water Temperature.** A thermostat is located in the cylinder head outlet elbow to retard the circulation of water in the radiator until the water has reached a predetermined temperature, as indicated on the temperature gauge (if so equipped) thereby permitting faster warm-up of the engine. When operating in hot climates, the maximum reading shown on the gauge should not exceed 100° F. above the prevailing atmospheric temperature.

#### CAUTION

*Do not operate the engine with the thermostat removed, as this unit is essential for proper circulation and efficient engine performance.*

**d. Ignition System.** Keep the units of the ignition system clean and properly adjusted. Never use paint or lacquer on ignition wires as this may crack wires and cause a short circuit.

**e. Fuel System.** Keep the fuel tank, fuel lines and filters clean. Use clean fuel of proper grade.

**f. Cooling System.** Do not fill the cooling system when the engine is overheated. Allow the engine to cool before adding water or anti-freeze to prevent cracking the cylinder block. Use a good grade of anti-freeze during cold weather.

**g. Breaking in a New or Rebuilt Engine.** For peak performance and economical operation, the following adjustments should be made on a new or rebuilt engine after one hour of operation.

- (1) With the engine hot, tighten cylinder head to the specified torque which is 65 to 70 foot pounds.
- (2) Adjust valve tappets.
- (3) Adjust ignition timing if necessary.
- (4) Lubricate water pump.
- (5) Oil governor and set to proper speed (RPM).
- (6) Inspect for fuel, oil or water leaks.
- (7) Adjust idle mixture and idle speed.