

**STARTING and  
OPERATING INSTRUCTIONS**

ISSUE MM-310-A

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**W I S C O N S I N**

*Air-Cooled* **Engines**



**Single Cylinder – Four Cycle**

**Models**

**ACN, BKN, AENL, AGND**

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 **TELEDYNE WISCONSIN MOTOR**

WORLD'S FOREMOST SOURCE FOR HEAVY DUTY AIR COOLED ENGINES

# INTRODUCTION

**WISCONSIN** heavy duty air cooled engines are of the most advanced design and are built in a modern factory, equipped with the latest machinery available. Only the best materials, most suitable for the particular part, are used. During production, every part is subjected to rigid inspection, as are also the completely assembled engines. After assembly, every engine is operated on its own power and all adjustments are carefully made so that each engine will be in perfect operating condition when it leaves the factory.

Teledyne Wisconsin Motor is backed by over 65 years of engineering experience in the design of internal-combustion engines for every conceivable type of service. The performance of these engines is proof of the long satisfactory service you too can expect from your Wisconsin engine.

Like all fine machinery, the engine must be given regular care and be operated in accordance with the instructions.

# SPECIFICATIONS

MODEL	ACN	BKN	AENL	AGND
Bore - inches	2-5/8	2-7/8	3	3-1/2
Stroke - inches	2-3/4	2-3/4	3-1/4	4
Displ. cu. in.	14.9	17.8	23.0	38.5
R.P.M.	HORSEPOWER			
2000	3.5	4.4	6.1	10.2
2200	3.7	4.9	6.8	10.9
2400	4.2	5.4	7.4	11.5
2600	4.5	5.8	7.9	11.9
2800	4.8	6.2	8.5	12.2
3000	5.2	6.5	8.9	12.4
3200	5.6	6.7	9.2	12.5
3400	5.8	6.9	9.2	-
3600	6.0	7.0	9.2	-

Horsepower specified in the accompanying chart is for an atmospheric temperature of 60°F. (15.5°C) at sea level and at a Barometric pressure of 29.92 in. (760 mm) of mercury.

The friction in new engines cannot be reduced to the ultimate minimum during the regular block test, but engines are guaranteed to develop at least 85% of maximum power when shipped from the factory. Power will increase, as friction is reduced, after a few days of operation. The engine will develop at least 95% of power when friction is reduced to a minimum. Generally, power will decrease 3½% for each 1000 ft. (305m) of altitude above sea level, and 1% for each 10°F. (5.5°C) above standard temperature of 60°F. (15.5°C) For continuous operation, limit to 80% of power shown as a safety factor.

# SAFETY PRECAUTIONS

- Do not operate engine in a closed building unless the exhaust is piped outside. This exhaust contains carbon monoxide, a poisonous, odorless and invisible gas, which if breathed causes serious illness and possible death.
- Never fill fuel tank while engine is running or hot; avoid the possibility of spilled fuel causing a fire.
- Always refuel slowly to avoid spillage.
- When starting engine, maintain a safe distance from moving parts of equipment.
- Do not start engine with clutch engaged.
- Do not spin hand crank when starting (Model AGND). Keep cranking components clean and free from conditions which might cause the crank jaw to bind and not release properly. Oil periodically to prevent rust.
- Never run engine with governor disconnected, or operate at speeds in excess of 3600 R.P.M. load. (3200 maximum R.P.M. for Model AGND).
- Never make adjustments on machinery while it is connected to the engine, without first removing the ignition cable from the spark plug. Turning the machinery over by hand during adjusting or cleaning might start the engine and machinery with it, causing serious injury to the operator.
- Precaution is the best insurance against accidents.

# NEW ENGINE Instructions

Read thoroughly before starting engine.

- **LUBRICATION** – Operating without oil will ruin engine.

## IMPORTANT

There is **NO OIL** in this unit.  
Fill crankcase to proper oil level, also clutch or gear box if either accessory is furnished.

Refer to *GRADE OF OIL* chart and fill with proper oil *before* starting engine.

**NOTE:** Models ACN and BKN use a *Dry Type* clutch - *Do Not Oil*.

- **AIR CLEANER**

Must be cleaned regularly – very frequently in dusty and dry grass conditions.  
*Damage Will Result From Operating With Dirty Air Cleaner.*

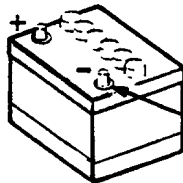
*Dry Element Type, DO NOT OIL* – Follow instructions on cleaner body.

*Oil Bath Type* requires same grade oil as used in crankcase. Maintain oil level or dirt will be drawn in and damage engine.

- **FUEL** – USE 'REGULAR' GRADE GASOLINE. Engines built to operate on FUEL OIL, KEROSENE, L.P.G. or NATURAL GAS are so identified in the model designation. Refer to 'FUEL' paragraphs of instructions. Buy fresh fuel. Do not use *out-of-season* gasoline.

- **NEGATIVE GROUND CIRCUIT**

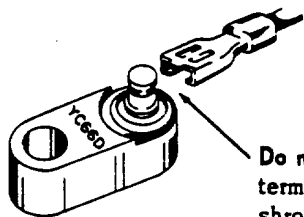
, if engine is electrically equipped with BATTERY IGNITION, MOTOR-GENERATOR or FLYWHEEL ALTERNATOR.



**GROUND ENGINE TO NEGATIVE TERMINAL ON BATTERY.**

**CAUTION:** Be absolutely sure of proper connection or damage to coil, points and regulator will result.

- **PREVENT OVERHEATING**



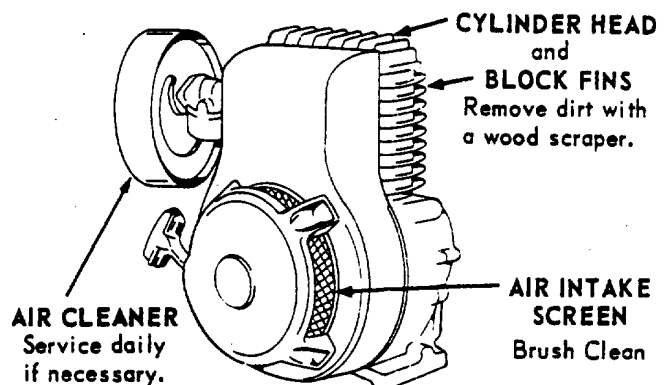
## Temperature Safety Switch

Do not disconnect wire or allow terminal to touch head fins or shrouding.

Optional accessory mounted to cylinder head bolt near spark plug – *TO PROTECT ENGINE AGAINST OVERHEATING*. If engine is equipped with this switch and stops, check first to see if engine is overheated. Other conditions may have caused engine to stop. Clean air cleaner, air intake screen, fins and check oil level, spark plug and wiring. Let engine cool at least 10 minutes before re-starting.

## Keep Engine Clean

External dirt restricts cooling and internal dirt causes wear – the result will be costly repairs.



- **BREAK-IN**

Proper *break-in* will lead to trouble-free operation and increased engine life. The factory test given to a new engine is not sufficient to establish the polished bearing surfaces which are so necessary for good performance and long engine life. There is no quick way to force the establishment of good bearing surfaces, and these can only be obtained by running a new engine carefully and under reduced

speeds and loads for a short period of time. Run the engine for a half hour without load at low idle speed (1600 to 1800 R.P.M.). The speed should then be increased gradually, to engine operating r.p.m. still without load, for an additional two hours. If at all possible, operate the engine at light loads for a period totaling about eight hours, before maximum load is applied.

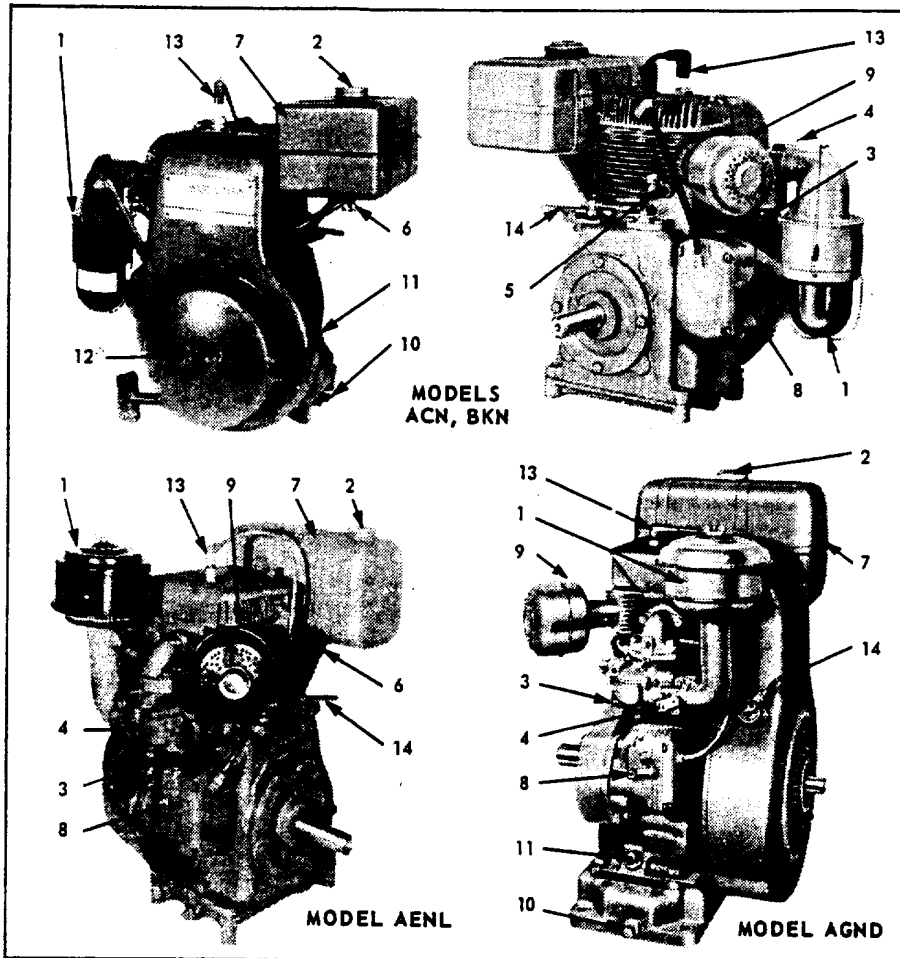


Fig. 1, ENGINE REFERENCE VIEWS

- |                                      |                               |
|--------------------------------------|-------------------------------|
| 1. AIR CLEANER                       | 7. FUEL TANK                  |
| 2. AIR VENT HOLE (Keep Clean)        | 8. MAGNETO STOP SWITCH        |
| 3. CARBURETOR MAIN JET ADJUSTMENT    | 9. MUFFLER                    |
| 4. CHOKE LEVER                       | 10. OIL DRAIN PLUG            |
| 5. CRANKCASE BREATHER                | 11. OIL FILLER and LEVEL PLUG |
| 6. FUEL SHUT-OFF VALVE WITH STRAINER | 12. REWIND STARTER            |
|                                      | 13. SPARK PLUG                |
|                                      | 14. VARIABLE SPEED CONTROL    |

**GENERAL INFORMATION**

These engines are of the four cycle type, in which each of the four operations of suction, compression, expansion and exhaust constitutes a complete stroke.

**COOLING**

Cooling is accomplished by a flow of air circulated over the cylinder and head of the engine from a combination fan-flywheel encased in a sheet metal shroud. The air is divided and directed by ducts and baffles to insure uniform cooling of all parts.

Never operate an engine with any part of the shrouding removed - This will retard air cooling.

**MAGNETO IGNITION**

The spark for ignition is furnished by a High Tension Magneto driven off the timing gears at crankshaft speed. An impulse coupling makes possible a powerful retarded spark for easy starting with no dangerous kick-back. Magneto timing on Page 4.

**BATTERY IGNITION -12 Volt Neg. Ground**

When electric starter and generator or flywheel alternator are furnished Battery Ignition is used. Connect ground cable from negative terminal of battery to lug on starting motor. Timing on Page 5.

**GOVERNOR**

A centrifugal flyweight type governor controls the engine speed by varying the throttle opening to suit the load imposed upon the engine.

**ROTATION**

The rotation of the crankshaft is clockwise when viewing from the flywheel or front end of the engine, and counterclockwise at the power take-off or rear end of engine.

**BEFORE STARTING NEW ENGINE**

1. Fill tank with Regular Grade gasoline. Oil Burning engine has letter 'O' suffixed to model designation - use 35 minimum octane fuel oil.

L.P.G. Burning engine has letter 'G' added to model designation - use propane HD5.

Natural Gas burning engines require a B.T.U. content of at least 1000.

2. Add oil to crankcase thru filler plug opening, to level of hole. Refer to Oil Chart for capacity and grade of oil.

For Run-in of New Engines, use same grade oil as recommended in Oil Chart. Check crankcase oil level every 8 hours, change oil every 50 hours of operation.

**GRADE OF OIL CHART**

TEMPERATURE	S.A.E. GRADE			
+ 120 °F to + 40 °F (+ 50 °C to + 5 °C)	30			
+ 40 °F to + 15 °F (+ 5 °C to - 10 °C)	20-20W			
+ 15 °F to 0 °F (- 10 °C to - 18 °C)	10W			
Below 0 °F (- 18 °C)	5W-20			
Use oils classified as Service MS or SE				
Engine Model	Crankcase	Clutch Unit	Red. Unit	Cl. Red. Unit
ACN BKN	1 Qt.	Dry	1 Pt.	-
AENL	1½ Qt.	1 Pt.	2/3 Pt.	1 Pt.
AGND	3½ Qt.	¾ Pt.	1½ Pts.	1 Qt.

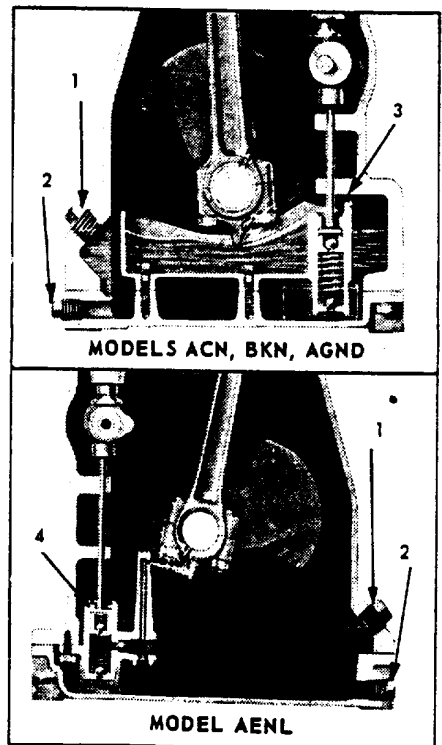


Fig. 2, LUBRICATION SYSTEMS

1. OIL FILLER and LEVEL PLUG
2. OIL DRAIN PLUG
3. OIL PUMP - maintains level in trough
4. OIL PUMP - directs spray against connecting rod

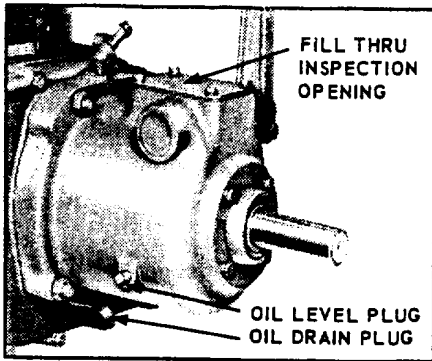


Fig. 3. CLUTCH LUBRICATION

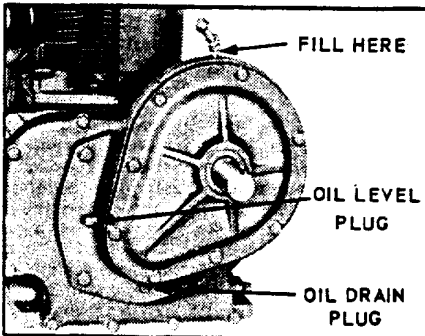


Fig. 4. REDUCTION UNIT LUBRICATION

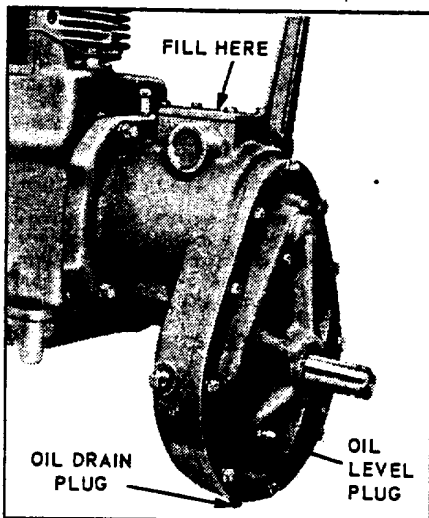


Fig. 5. CLUTCH REDUCTION LUBRICATION

3. Fill clutch and gear reduction units to the height of the oil level plug opening.

Use same grade oil as used in engine crankcase.

NOTE: Models ACN and BKN use a dry plate clutch - Do Not Oil.

With reference to Fig's. 4 and 5, all reduction units are furnished with an Oil Filler Opening, Level and Drain Plugs, suitable for all the various take-off shaft positions.

Change oil at least every 500 hours of operation.

Add sufficient oil between changes to keep oil up to the level plug opening.

### STARTING

Caution; maintain a safe distance from moving parts of equipment. Know how to stop the engine quickly in case of emergency. Refer 'To Stop Engine' paragraph.

### Rewind Starter

1. Always maintain a firm hold on the starter handle and allow it to return slowly.
2. Pull the starter handle so that the cord remains in a straight line through the handle and guide.
3. Do Not jerk the cord out to its very end in an unnecessary rough manner. Use a smooth but forceful pull.
4. Do Not let go of starter handle allowing it to snap back against the starter.

### STARTING PROCEDURE

- a. Check crankcase oil level and gasoline supply. Open fuel shut-off valve. Oil Burning engines must be started on gasoline and run for 2 or 3 minutes before switching to oil. Special instructions are available for starting L.P.G. and Natural Gas burning engines.
- b. The carburetor Main Jet is Preset at the factory. No carburetor main jet adjustment is required for starting the engine.
- c. Disengage clutch, if furnished.
- d. Set throttle about 1/2 open if variable speed governor control is furnished. With a fixed speed governor, spring will hold throttle open for starting.
- e. Pull out ignition switch, on engines equipped with Battery Ignition and with Motor-generator. The magneto ignition switch is always in the On position for starting.
- f. Close carburetor choke completely. Prime carburetor by turning engine over slowly one complete revolution before compression stroke.
- g. Open choke Half-way. Pull engine over against compression and let rope rewind slowly and completely into starter.
- h. Brace left hand against engine, Pull Firmly and Rapidly to start engine. See Fig. 6. Repeat if necessary.

With Starting Motor, pull out ignition switch, (tag reads 'To Stop Push In'), and depress starter button.

Rope Sheave Starting; Open choke half-way, turn engine over to compression stroke and then back off 1/2 turn. Wind rope fully on sheave and Pull Briskly to turn crankshaft over. See Fig. 6 A.

Hand Crank Starting; Engage the crank and Pull Up Briskly in a clockwise rotation. Do Not attempt to spin the engine with the starting crank. If the engine does not start on the first attempt, re-engage the crank and repeat operation.

Caution: Keep cranking components clean and free from conditions which might cause the crank jaw to bind and not release properly. Oil periodically to prevent rust.

- i. After engine starts Open Choke Fully. Less choking is necessary in warm weather or when engine is warm, than when cold. Should flooding occur, open choke fully and continue cranking.

If all conditions are right, engine will start promptly in one or two attempts. After engine starts, allow it to warm up a few minutes before applying load. The proper oil film on various surfaces of the piston, cylinder, bearings, etc., cannot be established until the oil has warmed up and become sufficiently fluid. Do Not Race or Gun Engine to hurry Warm-Up.



Fig. 6. REWIND STARTING

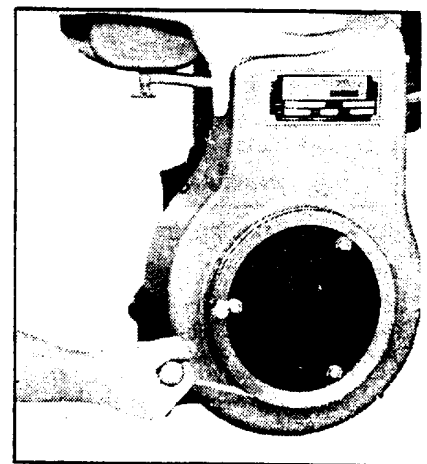


Fig. 6 A. ROPE SHEAVE STARTING

### TO STOP ENGINE

Magneto ignition engines have a lever type ground switch on the side of the magnet for stopping the engine. Depress and Hold Down Until Engine Stops. See Fig. 1, Ref. 8. Engines with motor-generator or battery ignition have an ignition switch; To Stop Push In.

If engine has been running hard and is hot do not stop it abruptly from full load. Coc the engine by removing the load and allowing the engine to run idle (1000 to 1200 R.P.M. ), for 3 to 5 minutes.

### CARBURETOR - ADJUSTMENT, Fig. 7

The carburetor Main Jet Adjustment needle valve should be opened approximately 1-1/4 Turns from its seat. After the engine is started and warmed up, adjust the needle valve for best operation under full load, if possible. In cold weather, starting may be facilitated by opening the needle valve slightly more, then readjusted to normal running position after engine is started.

The correct amount of throttle plate opening for the proper low idle speed is obtained by means of the Throttle Stop Screw. However, this is set at the factory so that no further adjustment is necessary. The Idle Adjustment is for smooth low speed operation and this adjustment, if necessary, must be made with the carburetor throttle lever closed.

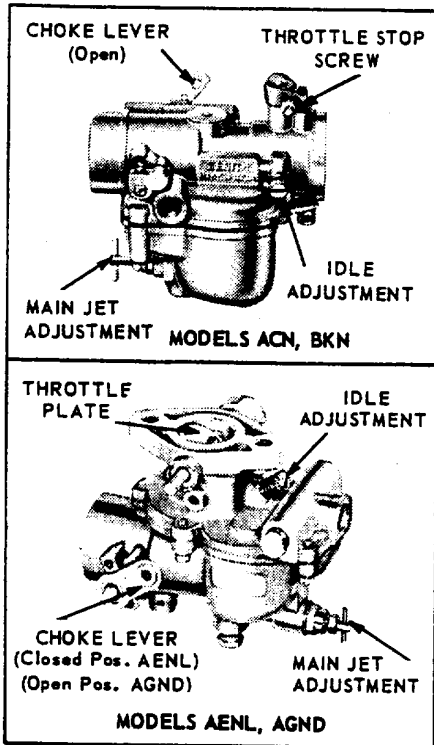


Fig. 7, CARBURETOR ADJUSTMENTS

**AIR CLEANER - OIL BATH TYPE, Fig. 8**

Service Daily; If engine is operating in very dusty conditions. Detailed instructions are printed on the air cleaner.

Operating the engine under dusty conditions without oil in the air cleaner or with dirty oil, may wear out cylinder, piston, rings and bearings in a few days time, and result in costly repairs.

Once Each Week; Remove oil and clean out bowl and baffles. Add fresh oil to the level line indicated on baffle, using the same grade oil as is used in the engine crankcase; about 1/3 pint is required.

Inspect filter element; if it shows signs of collected dirt, remove air cleaner body from bracket and wash in solvent.

**AIR CLEANER - DRY TYPE, Fig. 9**

Service Daily; If engine is operating in very dusty conditions, remove cartridge and shake out the accumulated dirt (do not tap or strike element - it may become damaged). Wipe out dirt from inside cover.

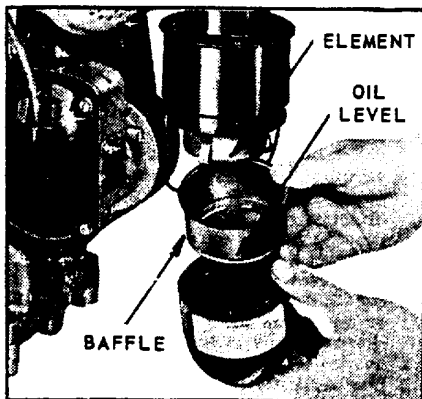


Fig. 8, OIL BATH AIR CLEANER

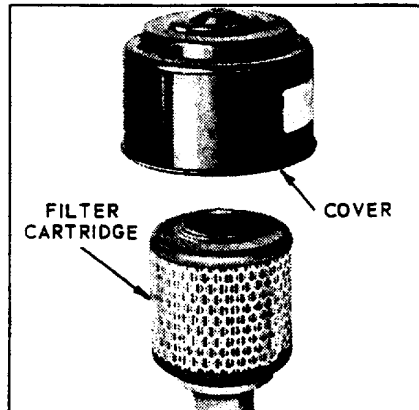


Fig. 9, DRY TYPE AIR CLEANER

Once Each Week; The filtering cartridge should be taken out and rinsed under a faucet with cold water, then wash by repeated dippings for several minutes in a solution of lukewarm water and a mild, Non-sudsing detergent. Rinse in cold water from the inside out, and allow to dry overnight before re-installing. In cold weather, protect element from freezing until dry.

Do Not Use Gasoline, Kerosene or Solvent For Cleaning - Do Not Oil Element.

After five washings or one year of service, replace cartridge. New cartridges are available at all Wisconsin Distributors and Service Centers.

**MAGNETO**

**BREAKER POINT ADJUSTMENT, Fig. 10**

At least once each season or when ignition spark becomes weak, remove magneto end cover, inspect points and check gap opening. If there is evidence of pitting or pyramiding and it becomes necessary to resurface or replace points, it also will be necessary to readjust gap to its proper clearance. The Breaker Point Gap should be 0.015 inch at full separation. Turn engine crankshaft over until Breaker Points are at their maximum opening. Loosen the two Lockscrews on breaker plate just enough so that plate can be moved. Place a 0.015 inch Feeler Gauge between points. Insert end of small screw driver into Adjusting Slot at bottom of breakerplate and open or close the contacts by moving plate until proper point gap is obtained. After tightening lockscrews, recheck breaker point gap.

**MAGNETO TIMING**

Proper mounting of the magneto is essential for correct timing. If magneto was

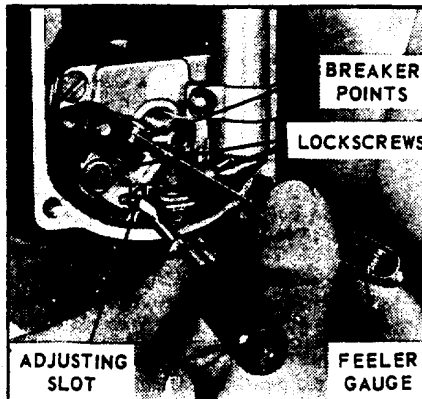


Fig. 10

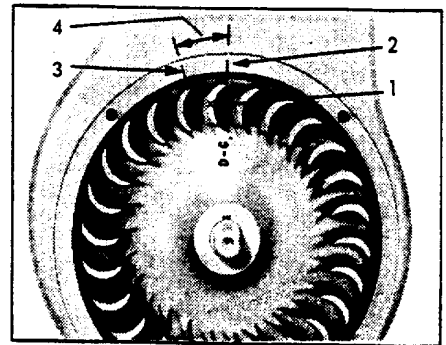


Fig. 11

1. MARKED FLYWHEEL VANE
2. VERTICAL CENTERLINE MARK
3. SPARK ADVANCE TIMING MARK
4. RUNNING SPARK ADVANCE  
17° ACN, BKN - 20° AENL, AGND

taken off for any reason, it can be reassembled as follows: Remove spark plug and determine compression stroke by placing finger over spark plug hole while cranking engine by hand. Upon reaching compression stroke continue cranking until Leading Edge of the 'D - C' and 'X' marked vane on flywheel is in line with the Vertical Centerline Mark on flywheel shroud, as shown in Fig. 11. Leave flywheel in this position. At this point, piston is on top dead center and flywheel keyway is up. Proceed to mount magneto per specific engine model.

**MODELS ACN, BKN, Fig. 12**

Mount magneto so that the Timing Mark on face of Magneto Gear matches up with Mark on Camshaft Gear as seen thru Inspection Hole in crankcase.

**MODEL AENL, Fig. 13**

Mount magneto to engine, meshing the gears so that when the magneto is in place, the 'X' marked tooth on the Magneto Gear will be visible in the Center of the Inspection Hole of the crankcase.

**MODEL AGND, Fig. 14**

Remove plug from crankcase at take-off end. The Timing Mark between two camshaft gear teeth will be visible thru this opening. Mount magneto so that 'O' Marked Tooth on face of magneto gear matches up with the 'I' Mark on face of camshaft gear, as seen thru Inspection Hole.

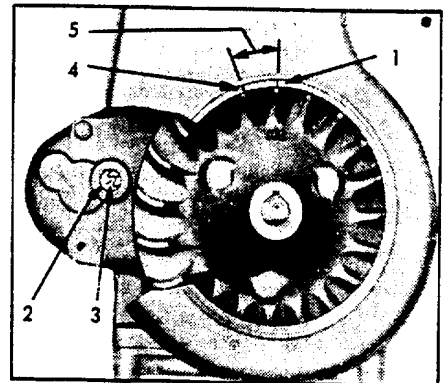


Fig. 12 ACN, BKN TIMING

1. VERTICAL CENTERLINE MARK
2. INSPECTION HOLE
3. TIMING MARKS on Magneto and Cam. Gears
4. SPARK ADVANCE TIMING MARK
5. 17° RUNNING SPARK ADVANCE

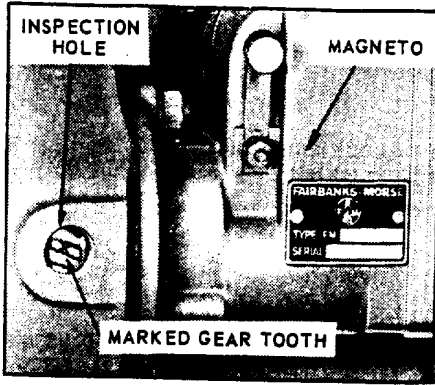


Fig. 13, AENL MAGNETO TIMING

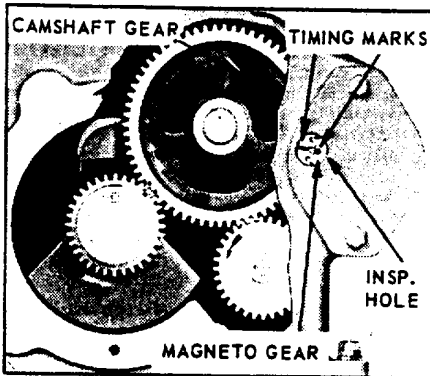


Fig. 14, AGND MAGNETO TIMING

#### ALL MODELS

When magneto is properly timed, the impulse coupling will snap when the 'D-C' marked vane of flywheel, lines up with the Vertical Centerline Mark on flywheel shroud, while cranking engine over slowly. The running Spark Advance is 17° for Models ACN, BKN and 20° for Models AENL and AGND.

#### BATTERY IGNITION

TIMING, Fig. 11 and Fig. 15

Ignition timer is used in place of magneto when electric starter and generator or flywheel alternator is furnished.

The Breaker Point Gap of 0.020 inch should be checked and adjusted before timer body is set and locked in place. Any change in gap opening will affect the ignition advance. To adjust gap, Loosen Contact Locknut and screw Fixed Contact in or out.

Turn engine over until 'D-C' and 'X' marked flywheel vane are in line with Vertical Centerline Mark on shroud, and with piston on Compression Stroke, as per Fig. 11 and 'Magneto Timing' paragraph.

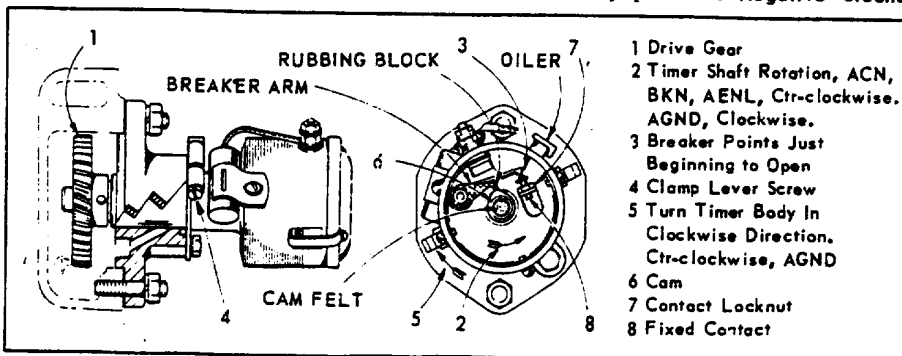


Fig. 15, IGNITION TIMER MOUNTING (AENL ILLUSTRATED)

Assuming the timer assembly is removed from the engine, turn Cam, by means of Drive Gear, in a Counter-Clockwise direction (Models ACN, BKN, AENL), Clockwise (Model AGND), until Breaker Points are just beginning to open. Mount timer assembly to engine, with oiler located as shown in Fig. 15, except for engine Model AGND the oiler will be in an approximate 11 o'clock position.

Since the running spark advance of engine is 17° (ACN, BKN), 20° (AENL, AGND), and the timer Automatic Advance is 15°, an Initial advance Setting of 2° (ACN, BKN), 5° (AENL, AGND) must be obtained in the following manner: With Clamp Lever Screw loose and Breaker Points just beginning to open, turn timer body: -

#### MODEL ACN, BKN

Clockwise through an angle of 2° or 3/64 inch on the outside circumference of timer.

#### MODEL AENL

Clockwise, 5° or about 1/8 inch in circumference of timer body.

#### MODEL AGND

Counter-clockwise direction 5° or about 1/8 inch in circumference of timer body.

All Models; Tighten Clamp Screw, mount timer cover and connect primary wire from ignition timer to coil. If care is exercised in the preceding instructions, the spark timing should be accurate enough for satisfactory starting, however, Checking Spark Advance with a Timing Light is advisable. Refer to Fig. 11 for spark advance marks.

Check Timing by connecting a Timing Light in series with spark plug. Chalk or paint the end of the 'X' marked vane on the flywheel, white. Then with the engine operating at 2000 R.P.M. or over, allow the flash from the Timing Light to illuminate the whitened vane. At the time of the flash, the leading edge of the vane should line up with the running spark advance timing mark on the flywheel shroud. See Fig. 11. If it does not, the clamp lever screw should be loosened and the timer body turned slightly clockwise or counter-clockwise, as required, until the advance timing mark and the white vane coincide. Be sure clamp lever screw is then carefully tightened. If the engine is running below 2000 R.P.M. when timing, the automatic advance in the ignition timer will not be fully advanced and timing will not be accurate. Lubricate ignition timer every 250 Hours of operation. Add 3 to 5 drops of medium engine oil to Oiler, and 1 or 2 drops of light oil (10W) to Cam Felt and Breaker Arm Pivot.

#### ELECTRICAL WIRING Fig. 16, 17

The standard wiring circuits for all 12 Volt electrical equipment is Negative Ground

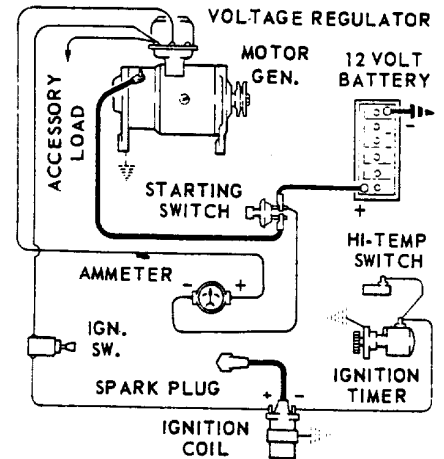


Fig. 16, WIRING DIAGRAM Motor-Generator and Battery Ignition

Polarity. Engines can be furnished with starter, motor-generator, or on Models AENL and AGND, flywheel alternator.

#### FLYWHEEL ALTERNATOR

12 Volt - 10 Amp or 25 Amp alternator, consisting of a flywheel with Magnetic Rotor, Stator and Rectifier-Regulator module, is optional equipment on Models AENL and AGND.

The flywheel alternator is of the permanent magnet type and has No Brushes, Commutator or Belts, and requires No Adjustments.

PRECAUTIONS to be exercised in the use of a flywheel alternator:

1. Do Not reverse battery connections. This is a Negative Ground system only.
2. Connect booster batteries - positive to positive and negative to negative.
3. Do Not polarize the alternator.
4. Do Not ground any wires from stator or modules which terminate at connectors.
5. Do Not operate engine with battery disconnected from system.
6. Disconnect at least one battery lead if a battery charger is used.

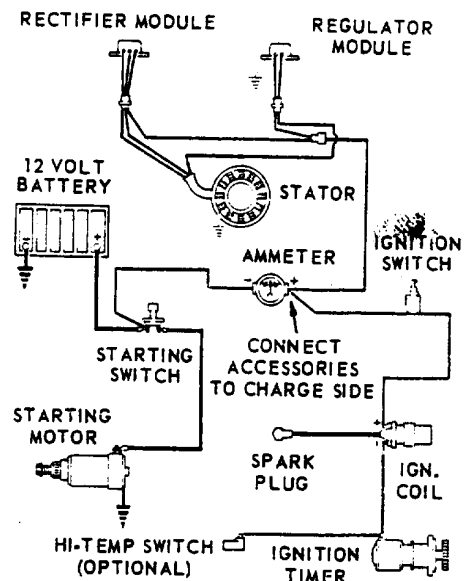


Fig. 17, WIRING DIAGRAM AENL, AGND Flywheel Alternator and Battery Ignition

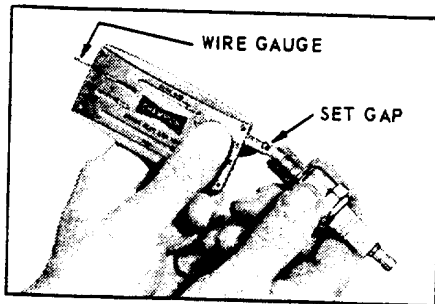


Fig. 18

### SPARK PLUG, Fig. 18

The spark plug gap should be 0.030 of an inch, and plug should be kept clean both inside and out. Check spark plug gap with a wire type gauge and regap as shown.

Use a new spark plug at the beginning of a new season. Replacement plug must be of the correct heat range, like Champion No. D-16J or AC No. C86 commercial for Models ACN, BKN, AENL, and Champion No. D-21 for Model AGND. Thread size is 18 mm. Tighten spark plug 28 to 30 Foot Pounds Torque.

### CLUTCH ADJUSTMENT

If the clutch begins to slip, it should be readjusted to prevent it from becoming overheated and damaged. First, Disconnect Ignition Cable from spark plug to pre-

vent engine from inadvertently starting, then remove inspection plate to expose the adjusting ring. Release clutch by pushing Shifter Lever Forward (toward engine).

### CLUTCH TAKE-OFF, Fig. 19, ACN, BKN

Turn take-off shaft until Lockscrew in Adjusting Ring is on top, then loosen lock-screw. While holding the take-off shaft stationary, Turn Adjusting Ring Clockwise a little at a time, until a firm pressure is required to snap clutch in engaged position with the shifter lever. Tighten lockscrew and mount inspection cover.

### CLUTCH TAKE-OFF, Fig. 20, AENL, AGND

Turn engine flywheel until clutch Adjustment Lock is visible thru the inspection

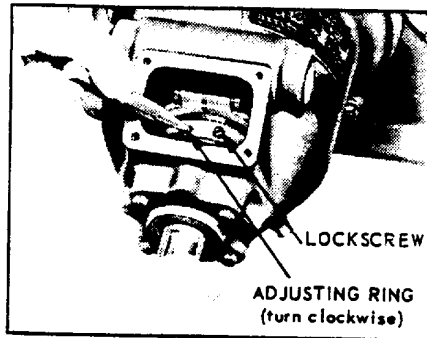


Fig. 19, CLUTCH ADJUSTMENT, ACN, BKN

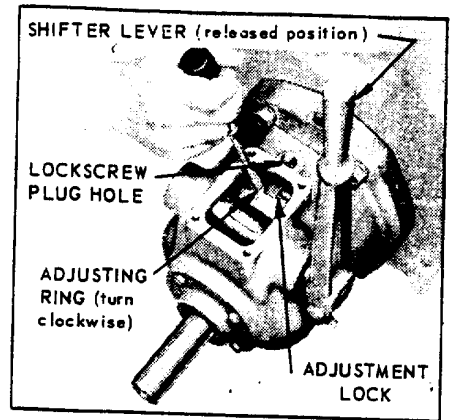


Fig. 20, CLUTCH ADJUSTMENT AENL, AGND

opening. Loosen Adjustment Lockscrew, thru Plug Hole behind inspection opening, one full turn. Keep clutch from turning by retaining engine flywheel in a stationary position. Then, by means of a screw driver, turn Adjusting Ring one notch at a time in a Clockwise Direction, until a very firm pressure is required to snap clutch in engaged position with the shifter lever. Tighten lockscrew, mount inspection cover and plug.

Clutch Reduction Unit has the same clutch as is used in the clutch take-off assembly. Adjust per Fig. 20 instructions.

## TROUBLE SHOOTING

The three prime requisites essential to starting and maintaining satisfactory operation of gasoline engines are:

1. A Proper Fuel Mixture in the cylinder.
2. Good compression in the cylinder.
3. Good Spark, Properly Timed, to ignite the mixture.

If all three of these conditions do not exist the engine cannot be started.

As a guide to locating some of the difficulties which might arise, the following cause are listed under the three headings: Fuel Mixture, Compression, and Ignition. If it appears that the troubles are mechanical and replacement parts are required, contact your nearest 'Wisconsin' authorized service center. Factory trained mechanics will save you time and money by repairing your engine in the shortest way possible.

### STARTING DIFFICULTIES

#### FUEL MIXTURE

- No fuel in tank or fuel valve closed.
- Plugged vent hole in fuel tank cap.
- Fuel line clogged.
- Carburetor not choked sufficiently, especially if engine is cold.
- Water, dirt, or gum in gasoline interfering with free flow of fuel to carburetor.
- Poor grade, stale or out-of-season gasoline.
- Carburetor flooded, caused by too much choking especially if engine is hot.
- Dirt or gum holding float needle valve in carburetor open. This condition would be indicated if fuel continues to drip from carburetor with engine standing idle.

Excessive flooding will require the spark plug be removed, dried off, and the engine turned over with the choke open, to blow excess fuel out through the plug hole.

Carburetor out of adjustment. Restricted (dirty) air cleaner.

#### COMPRESSION

Cylinder dry due to engine having been out of use for some time. Pour one fluid ounce of crankcase oil through spark plug hole.

Loose or broken spark plug. A hissing noise will be heard in cranking engine due to escaping gas mixture on compression stroke.

Damaged cylinder head gasket or loose cylinder head. This will likewise cause hissing noise on compression stroke.

Valve stuck open.

Valves adjusted with insufficient clearance under valve stems.

Piston rings stuck due to carbon accumulation. Remove pistons and clean.

#### IGNITION

Test for spark by removing spark plug and observe spark at plug gap while turning engine over. No spark or weak spark may be attributed to the following:

- Ignition wires loose or disconnected at magneto, spark plug, ignition coil, or timer.
- Broken or frayed ignition wires.
- Spark plug cable wet or oil soaked.
- Spark plug insulator broken.
- Spark plug wet or dirty.
- Spark plug point gap wrong.
- Breaker points pitted or fused.
- Breaker arm sticking.
- Condenser leaking or grounded.
- Spark timing wrong. Faulty ignition coil.

### OVERHEATING

- Crankcase oil supply low.
- Ignition spark timed wrong.
- Low grade of gasoline.
- Engine overloaded.
- Restricted cooling air circulation.
- Part of air shroud removed from engine.
- Dirt between cooling fins of cylinder block and head.
- Air intake screen clogged with dirt.

### ENGINE MISSES

- Spark plug gap incorrect.
- Worn and leaking ignition cable.
- Weak spark. See 'Ignition' test for spark.
- Loose connections at ignition cable.
- Breaker points pitted or worn.
- Water in gasoline. Sticky valves.
- Poor compression. See 'Compression'.

### ENGINE STOPS

- Fuel tank empty.
- Water, dirt or gum in gasoline.
- Gasoline vaporized in fuel lines, due to excessive heat around engine (Vapor Lock).
- Vapor lock in fuel lines due to using winter gas (too volatile) in hot weather.
- Air vent hole in fuel tank cap plugged.
- Engine scored or stuck due to lack of oil.
- Ignition troubles. See 'Ignition'.

### ENGINE SURGES OR GALLOPS

- Carburetor flooded.
- Governor spring hooked into wrong hole.
- Governor rod incorrectly adjusted.



# Limited Engine Warranty

TELEDYNE WISCONSIN MOTOR, hereinafter referred to as "Manufacturer", warrants each new Wisconsin engine sold by the Manufacturer to be free from defects in material and workmanship, under normal use and service, for a period of one (1) year (except in the case of an engine used on any recreational type vehicle the period shall be ninety (90) days) after the date of delivery to the original retail purchaser, and Manufacturer will, at its option, replace or repair, at one of the Manufacturer's factories, or at a point designated by the Manufacturer, any part or parts which shall appear to the satisfaction of the Manufacturer upon inspection at such point, to have been defective in material or workmanship. This Warranty does not obligate the manufacturer to bear any transportation charges in connection with the replacement or repair of defective parts.

This Warranty shall not apply to any engine which shall have been installed or operated in a manner not recommended by the Manufacturer; nor to any engine which shall have been repaired, altered, used in any type of competition, neglected or used in any way which, in the Manufacturer's opinion, adversely affects its performance; nor to any engine in which parts not manufactured or approved by the Manufacturer have been used; nor to any accessories installed on the engine where the accessory manufacturer has its own warranty; nor to normal maintenance services or replacement of normal service items.

Manufacturer reserves the right to modify, alter, and improve any engine or parts without incurring any obligation to replace any engine or parts previously sold with such modified, altered, or improved engine or part.

THIS WARRANTY, AND THE MANUFACTURER'S OBLIGATION HEREUNDER, IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, and all other obligations or liabilities, including special or consequential damages or contingent liabilities arising out of the failure of any engine or part to operate properly. No person is authorized to give any other warranty or to assume any additional obligation on the Manufacturer's behalf unless made in writing and signed by an officer of the Manufacturer.

 **TELEDYNE WISCONSIN MOTOR**

MILWAUKEE, WISCONSIN 53219

For Your Record

MODEL

SPEC NO.

SERIAL NO.

Copy the above from the Engine Name Plate. The Model, Spec No. and Serial No. must be given when requesting specific engine information and when ordering Service Replacement Parts.

Individual **INSTRUCTION** and **SERVICE PARTS MANUAL** available from all Wisconsin Distributors.

cut along dotted line

return to  
**TELEDYNE WISCONSIN MOTOR**  
**PRODUCT SUPPORT CENTER**  
**1910 SO. 53 RD STREET**  
**MILWAUKEE, WISCONSIN 53219**

Dear Customer:

If you would like to receive a free copy of a list of Authorized Teledyne Wisconsin Motor DISTRIBUTORS and SERVICE CENTERS in your area, please complete the following;

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ENGINE MODEL \_\_\_\_\_ SERIAL NO. \_\_\_\_\_

# ENGINE STORAGE

To protect the cylinder, piston, rings and valves, and keep them from rusting and sticking, a half and half mixture of kerosene and good gas engine oil, (the same grade as used in the engine crankcase) should be injected into the carburetor air intake while the engine is warm and running at moderate speed. About an eighth of a pint is necessary, or enough so that a heavy bluish smoke will appear at the exhaust. This fogging operation will leave a coating of oil on the above mentioned parts and protect them from the atmosphere. After the engine has stopped, turn engine crankshaft over slowly, until flywheel key or take-off shaft key-way is up, or in the 12 o'clock position and on compression stroke. Both valves will then be closed and the piston will be on top in the cylinder bore. This will minimize rusting of the cylinder bore and help in retaining the oil fog previously injected into the engine.

Drain crankcase oil while engine is warm.

Drain fuel lines, carburetor, fuel pump and tank, to prevent lead and gum sediment from interfering with

future operation. Gasoline fumes from gradual evaporation is a dangerous fire hazard.

The air cleaner should be thoroughly cleaned (remove oil from oil bath type). Air cleaner and exhaust openings should be taped or otherwise sealed off for the duration of the storage period.

The outside of the engine, including the cooling fins on the cylinder and head, should be thoroughly cleaned of all dirt and other deposits. All exposed unpainted metal parts should be coated with grease or heavy oil.

Before starting the engine, after the storage period, remove crankcase drain plug so that any condensation which may have collected may be drained, before new crankcase oil is added.

It is advisable to use a new spark plug at the beginning of the operation interval.

*It is highly recommended that machines be stored inside a building through the winter. If this is not possible, the engine should be protected from snow and ice by a proper covering.*

ENGINE MAINTENANCE SCHEDULE	Daily	Weekly or 50 hrs.	250 hrs.	Seasonally or 500 hrs.
CHECK OIL LEVEL. Add to level of filler hole opening.	●			
CHECK AIR CLEANER. Shake out accumulated dirt from dry element.	●			
CLEAN AIR INTAKE SCREEN. Clean cooling fins if necessary.	●			
CHANGE CRANKCASE OIL. Use grade and classification of oil recommended.		●		
CLEAN AIR FILTER ELEMENT. DRY Element and Oil Bath types.		●		
INSPECT and CLEAN CRANKCASE BREATHER.		●		
INSPECT SPARK PLUG and BREAKER POINTS. Replace if necessary and regap to specifications.			●	
INSPECT FUEL FILTER. Clean filter screen or strainer in fuel tank.			●	
INSPECT COOLING SYSTEM. Remove shrouding and scrape off dirt from between fins, around cylinder, head and from shrouding.			●	
INSPECT STARTING MOTOR. Check for loose mounting and cable connections.			●	
COMPRESSION. If pressure appears weak, remove cylinder head-clean out carbon deposits. Reseat valves if necessary.			●	
LUBRICATE IGNITION TIMER. Oil shaft, camfelt and breaker arm pivot.			●	
CHANGE OIL IN CLUTCH and REDUCTION GEAR HOUSINGS. Use same grade oil as used in engine crankcase. Dry clutch on ACN, BKN.				●

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