

**DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION**

1E12  
Revision 7  
AVCO Lycoming

**IO-520-A1A-A2A-B1A-B1BB1C-B1D**  
-B2A,-C1A,-D1A,-D1B,-E1A  
-E1B,-E2A,-E2B,-F1A

**LIO-320-B1A,-C1A**

**AIO-320-A1A,-A1B,-A2A,-A2B,-B1B,**  
-C1B

**AEIO-320-E1A,-E1B,-E2A,-E2B**

April 4, 1977

**TYPE CERTIFICATE DATA SHEET NO. 1E12**

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. 1E12) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Civil Air Regulations/Federal Aviation Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Manufacturer: AVCO Lycoming Division  
AVCO Corporation  
Williamsport, Pennsylvania 17701

| Model | Lycoming          | <b>IO-320-A1A</b>              | <b>IO-320-B1A</b>  | <b>IO-320-C1A</b>          | <b>AEIO-320-E1A</b> | <b>AIO-320-A1A</b>             |
|-------|-------------------|--------------------------------|--|----------------------------|---------------------|--------------------------------|
| Type  | 4HOA Direct Drive | -A2A,-E1A<br>-E2A,-E1B<br>-E2B | -B1B,-B1C<br>-B1D,-B2A,<br>-D1A,-D1B<br><b>LIO-320-B1A</b> | -F1A<br><b>LIO-320-C1A</b> | -E1B,-E2A<br>-E2B   | -A1B,-A2A<br>-A2B,-B1B<br>-C1B |

|   |  |                           |               |         |               |               |
|---|--|---------------------------|---------------|---------|---------------|---------------|
| Rating  |  |                           |               |         |               |               |
| Maximum continuous, hp.,r.p.m. full throttle at:    |  |                           |               |         |               |               |
| Sea level pressure altitude                         |  | 150-2700-S.L.             | 160-2700-S.L. | --      | 150-2700-S.L. | 160-2700-S.L. |
| Takeoff, hp., r.p.m., full throttle at              |  |                           |               |         |               |               |
| Sea level pressure altitude                         |  | 150-2700-S.L.             | 160-2700-S.L. | --      | 150-2700-S.L. | 160-2700-S.L. |
| Fuel (min grade aviation gasoline)                  |  | 80/87                     | 91/96-100/130 | 100/130 | 80/87         | 91/96-100/130 |
| Lubricating oil                                     |  | Lycoming<br>Spec.No. 301E | --            | --      | --            | --            |
| Bore and Stroke, in.                                |  | 5.125 x 3.875             | --            | --      | --            | --            |
| Displacement, cu.in.                                |  | 320                       | --            | --      | --            | --            |
| Compression ratio                                   |  | 7.00:1                    | 8.50:1        | --      | 7.00:1        | 3.50:1        |
| Weight, lb.   |  | See NOTE 9                | --            | --      | --            | --            |
| C. G. location                                      |  | See NOTE 9                | --            | --      | --            | --            |
| Propeller shaft flangs, SAE No.                     |  | AS 127 Type 2 modified    | --            | --      | --            | --            |
| Crankshaft dampers and balancers                    |  | None                      | --            | --      | --            | --            |
| Fuel Injector                                       |  | Bendix RSA -5AD1          | --            | --      | --            | --            |
| Ignition, dual                                      |  | See NOTE 9                | --            | --      | --            | --            |
| Timing, °BTC  |  | 25                        | --            | --      | --            | --            |
| Spark plugs   |  | See NOTE 4                | --            | --      | --            | --            |
| Oil sump capacity, qt.                              |  | 8                         | --            | --      | --            | Dry sump      |
| Minimum usable oil,qt. (30° nose up or down)        |  | 2                         | --            | --      | —             | —             |
| Minimum usable oil,qt. (30° nose up, 20° nose down) |  | —                         | —             | —       | 4             | --            |

NOTES 1,2,3,4,5,6,7,8,9  
“-” same as preceding: “—” does not apply.

|          |   |   |   |   |   |   |
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| Rev. No. | 7 | 7 | 7 | 7 | 7 | 7 |

Certification basis:

| <u>Regulations &amp; Amendments</u> | <u>Model</u> | <u>Date of Application</u> | <u>Date Type Certificate No. 1E12 Issued/Revised</u> |
|-------------------------------------|--------------|----------------------------|--|
| CAR 13 effective June 15, 1956      |              |                            |  |
| As amended by 13-1, 13-2, 13-3      | IO-320-A1A   | February 16, 1961          | April 10, 1961                                       |
|                                     | IO-320-A2A   | February 16, 1961          | April 10, 1961                                       |
| 13-1, 13-2, 13-3 & 13-4             | IO-320-B1A   | September 18, 1962         | January 24, 1963                                     |
|                                     | IO-320-B2A   | September 18, 1962         | January 24, 1963                                     |
|                                     | IO-320-B1B   | December 12, 1963          | December 31, 1963                                    |
|                                     | IO-320-C1A   | January 18, 1965           | May 7, 1965  |
|                                     | IO-320-B1C   | April 1, 1965              | May 5, 1965  |
|                                     | IO-320-E2A   | March 11, 1966             | March 28, 1966                                       |
|                                     | IO-320-B1D   | April 11, 1966             | April 27, 1966                                       |
|                                     | IO-320-D1A   | February 25, 1969          | February 27, 1969                                    |
|                                     | IO-320-E1A   | April 16, 1970             | April 21, 1970                                       |
|                                     | IO-320-D1B   | July 24, 1970              | August 3, 1970                                       |
|                                     | IO-320-E2B   | May 4, 1972                | May 15, 1972   |
|                                     | AIO-320-A1A  | June 16, 1969              | June 23, 1969  |
|                                     | AIO-320-A1B  | June 16, 1969              | June 23, 1969  |
|                                     | AIO-320-A2A  | June 16, 1969              | June 23, 1969  |
|                                     | AIO-320-A2B  | June 16, 1969              | June 23, 1969  |
|                                     | AIO-320-B1B  | June 16, 1969              | June 23, 1969  |
|                                     | AIO-320-C1B  | July 29, 1971              | August 9, 1971                                       |
|                                     | LIO-320-B1A  | August 19, 1969            | August 28, 1969                                      |
|                                     | LIO-320-C1A  | August 19, 1969            | August 28, 1969                                      |
|                                     | IO-320-P1A   | December 19, 1973          | January 8, 1974                                      |
|                                     | IO-320-E1B   | January 10, 1974           | January 14, 1974                                     |
|                                     | AEIO-320-E1A | April 2, 1974              | April 12, 1974                                       |
|                                     | AEIO-320-E1B | April 2, 1974              | April 12, 1974                                       |
|                                     | AEIO-320-E2A | April 2, 1974              | April 12, 1974                                       |
|                                     | AEIO-320-E2B | April 2, 1974              | April 12, 1974                                       |

Production basis: Production Certificate No. 3

| NOTE 1. | Maximum permissible temperatures, °F:  |     |
|---------|--|-----|
|         | Cylinder head (well-type thermocouple)   | 500 |
|         | Cylinder base (not applicable to engine models which incorporate internal piston cooling oil jets) | 325 |
|         | Oil inlet  | 245 |
|         | Fuel injector air inlet (IO-320-C1A, F1A LIC-320-C1A)  | 400 |

NOTE 2. Pressure limits:

| Fuel:   | <u>Inlet to Diaphragm Pump</u> |                |  | <u>Inlet to Injector</u> |                |             |
|---|--------------------------------|----------------|--|--------------------------|----------------|-------------|
|   | <u>Maximum</u>                 | <u>Minimum</u> | <u>Maximum with Injector in Idle Cut-Off</u> | <u>Maximum</u>           | <u>Minimum</u> | <u>Idle</u> |
| <b>IO-320-A1A, -A2A, -B1A, -B1B, -B1C, -B1D, -B2A, -D1A, -D1B, -E1A, -E1B, -E2B, -E2A</b> | 35                             | -2             | -  | 45                       | 12             | -           |
| <b>IO-320-C1A, -F1A*</b>  | 45                             | -2             | 55   | 45                       | 12             | 12          |
| <b>AEIO-320-E series</b>  | 35                             | -2             | -  | 45                       | 12             | -           |
| <b>LIO-320-B1A</b>  | 35                             | -2             | -  | 45                       | 12             | -           |
| <b>LIO-320-C1A *</b>  | 45                             | -4             | 55   | 45                       | 12             | 12          |
| <b>AIO-320-A, -B &amp; -C Series</b>  | 35                             | -2             | 55   | 45                       | 14             | -           |

Note 2.

Pressure limits (cont'd)

Boost pump outlet limits to injectors:

| AIO-320-A, -B & -C Series | Parallel Boosts |           | Series Boosts |           |
|---------------------------|-----------------|-----------|---------------|-----------|
|                           | Maximum         | Minimum   | Maximum       | Minimum   |
| Zero Fuel Flow            | 45 p.s.i.       | -         | 35 p.s.i.     | -         |
| Maximum Fuel Flow         | -               | 14 p.s.i. | -             | 14 p.s.i. |

Oil:

| Normal Operating | Maximum             |           | Minimum   |  |
|------------------|---------------------|-----------|-----------|--|
|                  | Starting and Warmup | Normal    | Idling    |  |
| 90 p.s.i.        | 100 p.s.i.          | 60 p.s.i. | 25 p.s.i. |  |

Manifold pressure, in. Hg. - Absolute 29 max. (IO-320-C1A, -F1A, LIO-320-C1A)

Exhaust back pressure, in. Hg. - Absolute 32 max. (IO-320-C1A, -F1A, LIO-320-C1A)

\*AN-type fuel pump.

NOTE 3.

The following accessory provisions are incorporated:

| Accessory   | IO-320<br>-A1A,-A2A,<br>-B1A,-B1C,<br>-B2A,<br>-B1D | IO-320<br>-B1B,<br>-C1A,<br>-F1A | IO-320<br>-D1A,-E1A<br>-E2B, -E2A<br>-E1A, -E1B,<br>-E2A | Rotation            |               | Speed<br>Ratio to<br>Crankshaft | Max. Torque<br>(in.- lb.) |        | Maximum<br>Overhang<br>Moment<br>(in. - lb.) |
|---|---|----------------------------------|--|---------------------|---------------|---------------------------------|---------------------------|--------|--|
|   |   |                                  |  | Facing Drive<br>Pad | Except<br>LIO |                                 | Cont                      | Static |  |
| Starter   | *   | *                                | *  | CC                  | C             | 13.556:1                        | -                         | 450    | 150  |
| Starter   | **  | **                               | **   | CC                  | C             | 16.556:1                        | -                         | 450    | 150  |
| Generator   | *   | *                                | -  | C                   | -             | 1.91:1                          | 60                        | 120    | 175  |
| Generator   | **  | **                               | -  | C                   | -             | 2.500:1                         | 60                        | 120    | 175  |
| Alternator  | **  | *                                | *  | C                   | CC            | 3.250:1                         | 60                        | 120    | 175  |
| Fuel pump, plunger                                    | *   | -                                | *  | -                   | -             | 0.500:1                         | -                         | -      | 10   |
| Fuel Pump   | -   | *                                | -  | CC                  | C             | 1.000:1                         | 25                        | 450    | 25   |
| Vacuum Pump   | *   | *                                | *  | CC                  | C             | 1.300:1                         | 70                        | 450    | 25   |
| Hydraulic Pump  | -   | -                                | -  | C                   | CC            | 1.300:1                         | 100                       | 800    | 40   |
| Tachometer  | *   | *                                | *  | C                   | CC            | 0.500:1                         | 7                         | 50     | 5  |
| Propeller governor                                    | -   | -                                | -  | C                   | -             | 0.895:1                         | 125                       | 1200   | 40   |
| Propeller governor                                    | *   | *                                | *  | C                   | CC            | 0.866:1                         | 125                       | 1200   | 40   |
| Optional Dual Drive Mounting on Vacuum Pump Drive Pad |   |                                  |  |                     |               |                                 |                           |        |  |
| (Vacuum Pump)   | **  | **                               | **   | CC                  | C             | 1.300:1                         | 70                        | 450    | 6  |
| (Hydraulic Pump)                                      | **  | **                               | **   | CC                  | C             | 1.300:1                         | Total                     | Total  | 10   |
| or  |   |                                  |  |                     |               |                                 |                           |        |  |
| (Vacuum Pump)   | **  | **                               | **   | CC                  | C             | 1.300:1                         | 70                        | 450    | 6  |
| (Prop. Governor)                                      | **  | **                               | **   | CC                  | C             | 1.300:1                         | Total                     | Total  | 10   |

“C” - Clockwise, “CC” - Counterclockwise

\* - Standard. \*\* - Optional

NOTE 3. (cont'd)

| Accessory   | IO-320-<br>-E2B,<br>AEIO-320<br>-E2B | IO-320-<br>-D1B | AIO-320-<br>-A1A, -A1B,<br>-A2A, -A2B,<br>-B1B,<br>-C1B | Rotation            |               | Speed<br>Ratio to<br>Crankshaft | Max. Torque<br>(in.- lb.) |        | Maximum<br>Overhang<br>Moment<br>(in. - lb.) |
|---|--------------------------------------|-----------------|---|---------------------|---------------|---------------------------------|---------------------------|--------|--|
|   |                                      |                 |   | Facing Drive<br>Pad | Except<br>LIO |                                 | Cont                      | Static |  |
| Starter   | *                                    | *               | --  | CC                  | C             | 13.556:1                        | -                         | 450    | 150  |
| Starter   | **                                   | **              | *   | CC                  | C             | 16.556:1                        | -                         | 450    | 150  |
| Generator   | -                                    | -               | -   | C                   | -             | 1.91:1                          | 60                        | 120    | 175  |
| Generator   | -                                    | -               | -   | C                   | -             | 2.500:1                         | 60                        | 120    | 175  |
| Alternator  | *                                    | *               | *   | C                   | CC            | 3.250:1                         | 60                        | 120    | 175  |
| Fuel pump, plunger                                    | *                                    | *               | *   | -                   | -             | 0.500:1                         | -                         | -      | 10   |
| Fuel Pump   | -                                    | -               | -   | CC                  | C             | 1.000:1                         | 25                        | 450    | 25   |
| Vacuum Pump   | *                                    | *               | *   | CC                  | C             | 1.300:1                         | 70                        | 450    | 25   |
| Hydraulic Pump  | -                                    | *               | -   | C                   | CC            | 1.300:1                         | 100                       | 800    | 40   |
| Tachometer  | *                                    | *               | *   | C                   | CC            | 0.500:1                         | 7                         | 50     | 5  |
| Propeller governor                                    | -                                    | *               | *   | C                   | -             | 0.895:1                         | 125                       | 1200   | 40   |
| Propeller governor                                    | -                                    | -               | -   | C                   | CC            | 0.866:1                         | 125                       | 1200   | 40   |
| Optional Dual Drive Mounting on Vacuum Pump Drive Pad |                                      |                 |   |                     |               |                                 |                           |        |  |

## NOTE 3. (cont'd)

| Accessory        | <b>IO-320-</b>  |                | <b>AIO-320-</b>    | Rotation     |     | Speed<br>Ratio to<br>Crankshaft | Max. Torque |        | Maximum<br>Overhang<br>Moment<br>(in. - lb.) |    |
|------------------|-----------------|----------------|--------------------|--------------|-----|---------------------------------|-------------|--------|--|----|
|                  | <b>-E2B,</b>    |                | <b>-A1A, -A1B,</b> | Facing Drive |     |                                 | (in.- lb.)  |        |  |    |
|                  | <b>AEIO-320</b> | <b>IO-320-</b> | <b>-A2A, -A2B,</b> | Pad          |     |                                 | Cont        | Static |  |    |
|                  | <b>-E2B</b>     | <b>-D1B</b>    | <b>-B1B,</b>       | Except       | LIO | LIO                             |             |        |  |    |
| (Vacuum Pump)    | -               | -              | **                 | LIO          | LIO | C                               | 1.300:1     | 70     | 450  | 6  |
| (Hydraulic Pump) | -               | -              | **                 | LIO          | LIO | C                               | 1.300:1     | Total  | Total  | 10 |
| or               |                 |                |                    |              |     |                                 |             |        |  |    |
| (Vacuum Pump)    | -               | -              | -                  | LIO          | LIO | C                               | 1.300:1     | 70     | 450  | 6  |
| (Prop. Governor) | -               | -              | -                  | LIO          | LIO | C                               | 1.300:1     | Total  | Total  | 10 |

"C" - Clockwise, "CC" - Counterclockwise

\* - Standard. \*\* - Optional

## NOTE 3. (continued)

| Accessory   | <b>LIO-320-</b> |             | Rotation     |     | Speed<br>Ratio to<br>Crankshaft | Max. Torque |        | Maximum<br>Overhang<br>Moment<br>(in. - lb.) |  |
|---|-----------------|-------------|--------------|-----|---------------------------------|-------------|--------|--|--|
|   | <b>LIO-320</b>  |             | Facing Drive |     |                                 | (in.- lb.)  |        |  |  |
|   | <b>-B1A</b>     | <b>-C1A</b> | Except       | Pad |                                 | Cont        | Static |  |  |
| Starter   | *               | *           | CC           | C   | 13.556:1                        | -           | 450    | 150  |  |
| Starter   | **              | **          | CC           | C   | 16.556:1                        | -           | 450    | 150  |  |
| Generator   | -               | -           | C            | -   | 1.91:1                          | 60          | 120    | 175  |  |
| Generator   | -               | -           | C            | -   | 2.500:1                         | 60          | 120    | 175  |  |
| Alternator  | *               | *           | C            | CC  | 3.250:1                         | 60          | 120    | 175  |  |
| Fuel pump, plunger                                    | *               | -           | -            | -   | 0.500:1                         | -           | -      | 10   |  |
| Fuel Pump   | -               | *           | CC           | C   | 1.000:1                         | 25          | 450    | 25   |  |
| Vacuum Pump   | *               | *           | CC           | C   | 1.300:1                         | 70          | 450    | 25   |  |
| Hydraulic Pump  | -               | -           | C            | CC  | 1.300:1                         | 100         | 800    | 40   |  |
| Tachometer  | *               | *           | C            | CC  | 0.500:1                         | 7           | 50     | 5  |  |
| Propeller governor                                    | -               | -           | C            | -   | 0.895:1                         | 125         | 1200   | 40   |  |
| Propeller governor                                    | *               | *           | C            | CC  | 0.866:1                         | 125         | 1200   | 40   |  |
| Optional Dual Drive Mounting on Vacuum Pump Drive Pad |                 |             |              |     |                                 |             |        |  |  |
| (Vacuum Pump)   | **              | **          | CC           | C   | 1.300:1                         | 70          | 450    | 6  |  |
| (Hydraulic Pump)                                      | **              | **          | CC           | C   | 1.300:1                         | Total       | Total  | 10   |  |
| or  |                 |             |              |     |                                 |             |        |  |  |
| (Vacuum Pump)   | **              | **          | CC           | C   | 1.300:1                         | 70          | 450    | 6  |  |
| (Prop. Governor)                                      | **              | **          | CC           | C   | 1.300:1                         | Total       | Total  | 10   |  |

"C" - Clockwise, "CC" - Counterclockwise

\* - Standard. \*\* - Optional

## NOTE 4. The following spark plugs are approved:

|          | <b>IO-320-A &amp; -E Series</b><br><b>AEIO-320 Series</b>                                   | <b>IO-320-B Series</b><br><b>IO-320-D1A, -D1B, -AIO-320 Series</b><br><b>LIO-320-B1A</b>         | <b>IO-320-C1A, -F1A</b><br><b>LIO-320-C1A</b>                     |
|----------|---|--|---|
| AC       | A88, S-88, SR88, HSR88,<br>SR87, HSR87, SR83P,<br>HSR83P,<br>SR83IR<br>HSR83IR, SR93, HSR93 | A88, S88, SR88, HSR88, SR88D,<br>SR87, HSR87, SR83P, HSR83P,<br><br>SR83IR, HSR83IR, SR93, HSR93 | HSR87LP, HSR87LI,<br>HSR86L, 171, 271<br><br>181, 281, 281IR, 291 |
| Autolite | SH15, SH15R, SH20A,<br>SH200A, PH26, PH260  | SH20A, SH200A, SH26, SH260, PH26,<br>PH260   | PL300, PL350  |
| BG       | RB485S, RB955S  | RB485S, RB955S   | RB39R   |
| Champion | M41E, M41N, EM41E, EM41N,<br>EM42E, REM38P, RHM38P,<br>REM38W, RHM38W,<br>REM40E, RHM40E    | REM40E, RHM40E, REM40,<br>REM38E, RHM38E, REM38P,<br>RHM38P, REM38W, RHM38W                      | REB37N, RHB37N,<br>REB37E, RHB37E,<br>REB36W, RHB36P,<br>RHB36W   |
| Lodge    | —   | —  | RS35-3R, RS35-4R  |

- NOTE 5. This engine incorporates provisions for absorbing propeller thrust in both tractor and pusher type installations.
- NOTE 6. This engine is approved for horizontal helicopter application and operation.
- NOTE 7. These engines incorporate the following similarities or differences:
- IO-320-A1A - Basic model - four cylinder, horizontally-opposed, air cooled, direct drive, fuel injection engine with automotive type generator and starter.
    - A2A - Similar to -A1A but has provisions for fixed pitch propeller.
    - B1A - Same as -A1A except that fuel injector is offset toward the fore and aft centerline of engine.
    - B1B - Similar to -B1A except has an AN fuel pump drive.
    - B1C - Similar to -B1A but has adapter for mounting fuel injector straight to rear.
    - B1D - Similar to -B1C but has S-1200 series high altitude magnetos.
    - B2A - Similar to -B1A but has provisions for fixed pitch propeller.
    - C1A - Normally aspirated, similar to -B1B except has features making it suitable for turbo supercharging by STC. See limits, NOTES 1 and 2. Incorporates internal piston cooling oil nozzles.
    - D1A - Similar to -B1D except has type 1 Dynafocal mounts, S4LN-1227 and S4LN-1209 magnetos and has fuel injection mounted vertically under the sump.
    - D1B - Similar to -D1A except has propeller governor drive located on left front of crankcase instead of on accessory housing.
    - E1A - Identical to -E2A except has provisions for controllable pitch propeller.
    - E1B - Similar to -E1A except is equipped with Slick 4050 and 4051 magnetos.
    - E2A - Similar to -A2A except uses Scintilla S4LN-20 and S4LN-21 magnetos, has straight conical mounts, and has fuel injector mounted under the sump.
    - E2B - Similar to -E2A but is equipped with Slick 4050 and 4051 magnetos.
    - F1A - Similar to -C1A except has Type 1 (30°) dynafocal mount attachment instead of Type 2 (18°) mount attachment.
  - AIO-320-A1A - Similar to IO-320-B1D except permits operation in an inverted position. Differences include a front mounted propeller governor, two dry oil sumps, dual external oil scavenge pumps, an oil tank, three options of position for fuel injector mounting and Type 1 Dynafocal mount.
    - A1B - Similar to AIO-320-A1A except uses one impulse coupling magneto.
    - A2A - Similar to AIO-320-A1A but uses a fixed pitch propeller.
    - A2B - Similar to AIO-320-A1A but uses one impulse coupling magneto and has a fixed pitch propeller.
    - B1B - Similar to AIO-320-A1B except has front mounted fuel injector.
    - C1B - Identical to AIO-320-B1B except that the fuel injector is vertically mounted on bottom of sump in a forward position.
  - LIO-320-B1A - Similar to IO-320-B1A except counter clockwise rotation of engine and reverse rotation of accessories. Uses modified starter ring gear, crankshaft, cam shaft, accessory housing and oil pump body.
    - C1A - Similar to IO-320-C1A except incorporates changes shown for LIO-320-B1A. Suitable for turbo-supercharging - See limits, NOTES 1 and 2.
  - AEIO-320-E1A - Similar to IO-320-E1A except I equipped with an inverted oil system kit for aerobatic flight.
    - E1B - Similar to IO-320-E1B except is equipped with an inverted oil system kit for aerobatic flight.
    - E2A - Similar to IO-320-E2A except is equipped with an inverted oil system kit for aerobatic flight.
    - E2B - Similar to IO-320-E2B except is equipped with an inverted oil system kit for aerobatic flight.
- NOTE 8. Starters, generators and alternators approved for use on these engines are listed in the latest revision of AVCO Lycoming Service Instruction No. 1154.

NOTE 9. The following tabulation shows weights, C.G.s and magnetos for these models:

| Model        | *Weight | <u>Center of Gravity</u>                        |                                    |  |            | Slick |
|--------------|---------|---|------------------------------------|--|------------|-------|
|              |         | From front face<br>of Prop. Shaft<br>Flange;in. | Off Crankshaft<br>Center Line, in. | <u>Ignition Dual</u><br>Bendix         |            |       |
| IO-320-A1A   | 252     | 14.59   | 1.24 Below-.17 Left                | S4LN-200,S4LN-204                      | -          |       |
| -A2A         | 252     | 14.59   | 1.24 Below-.17 Left                | S4LN-200,S4LN-204                      | -          |       |
| -B1A         | 259     | 14.61   | 1.02 Below-.08 Left                | S4LN-20,S4LN-21 or S4LN-21,<br>S4LN-21 | -          |       |
| -B1B         | 257     | 14.61   | 1.02 Below-.08 Left                | S4LN-20,S4LN-21 or S4LN-21,<br>S4LN-21 | -          |       |
| -B1C         | 259     | 14.61   | 1.02 Below-.08 Left                | S4LN-20,S4LN-21 or S4LN-21,<br>S4LN-21 | -          |       |
| -B1D         | 260     | 14.61   | 1.02 Below-.08 Left                | S4LN-1209, S4LN-1208                   | -          |       |
| -B2A         | 259     | 14.61   | 1.02 Below-.08 Left                | S4LN-20,S4LN-21 or S4LN-21,<br>S4LN-21 | -          |       |
| -C1A         | 269     | 14.61   | 1.02 Below-.08 Left                | S4LN-21,S4LN-21                        | -          |       |
| -D1A         | 261     | 14.59   | 1.24 Below-.17 Left                | S4LN-1227, S4LN-1209                   | -          |       |
| -D1B         | 263     | 14.59   | 1.24 Below-.17 Left                | S4LN-1227, S4LN-1209                   | -          |       |
| -E1A         | 255     | 14.59   | 1.24 Below-.17 Left                | S4LN-20,S4LN-21                        | -          |       |
| -E1B         | 253     | 14.59   | 1.24 Below-.17 Left                | -                                      | 4051,4050  |       |
| -E2A         | 255     | 14.59   | 1.24 Below-.17 Left                | S4LN-20,S4LN-21                        | -          |       |
| -E2B         | 255     | 14.59   | 1.24 Below-.17 Left                | -                                      | 4051, 4050 |       |
| -F1A         | 269     | 14.61   | 1.02 Below-.08 Left                | S4LN-21,S4LN-21                        | -          |       |
| AIO-320-A1A  | 275     | 14.74   | 0.93 Below-.01 Left                | S4LN-1208, S4LN-1209                   | -          |       |
| -A1B         | 276     | 14.74   | 0.93 Below-.01 Left                | S4LN-1227, S4LN-1209                   | -          |       |
| -A2A         | 275     | 14.74   | 0.93 Below-.01 Left                | S4LN-1208, S4LN-1209                   | -          |       |
| -A2B         | 276     | 14.74   | 0.93 Below-.01 Left                | S4LN-1227, S4LN-1209                   | -          |       |
| -B1B         | 276     | 14.74   | 0.93 Below-.01 Left                | S4LN-1227, S4LN-1209                   | -          |       |
| -C1B         | 276     | 14.74   | 0.93 Below-.01 Left                | S4LN-1227, S4LN-1209                   | -          |       |
| LIO-320-B1A  | 262     | 14.61   | 1.02 Below-.08 Left                | S4RN-21,S4RN-20 or S4RN-21,<br>S4RN-21 | -          |       |
| -C1A         | 269     | 14.61   | 1.02 Below-.08 Left                | S4RN-21, S4RN-21                       | -          |       |
| AEIO-320-E1A | 262     | 14.59   | 1.24 Below-.17 Left                | S4LN-21, S4LN-20                       | -          |       |
| -E1B         | 258     | 14.59   | 1.24 Below-.17 Left                | -                                      | 4051, 4050 |       |
| -E2A         | 262     | 14.59   | 1.24 Below-.17 Left                | S4LN-21, S4LN-20                       | -          |       |
| -E2B         | 260     | 14.59   | 1.24 Below-.17 Left                | -                                      | 4051, 4050 |       |

\* Standard engine dry weight less starter and generator/alternator.

...END...