

# SERVICE TABLE OF LIMITS

## PART 1 DIRECT DRIVE ENGINES

### SECTION V SPECIAL TORQUE REQUIREMENTS (CONT.)

| Ref.<br>New | Ref.<br>Old | Chart                             | Thread<br>Size                     | Nomenclature                                 |              |                              | Torque Limits      |              |               |
|-------------|-------------|-----------------------------------|------------------------------------|----------------------------------------------|--------------|------------------------------|--------------------|--------------|---------------|
| 930         | 849         | ALL                               | 3/8                                | Allen Head Screw (Diaphragm Fuel Pump)       |              |                              | 225 - 250 in. lbs. |              |               |
| 931         |             | A                                 | 9/16                               | Locking Nut (Valve Adjusting Screw)          |              |                              | 450 in. lbs.       |              |               |
| 932         | 858         | ALL                               | 5/16-18                            | Exhaust Transitions - Studs (Driving Torque) |              |                              | 100 in. lbs.       |              |               |
|             |             | ALL                               | 3/8-16                             | Exhaust Transitions - Studs (Driving Torque) |              |                              | 200 in. lbs.       |              |               |
|             |             | SECTION V SPRINGS                 |                                    |                                              |              |                              |                    |              |               |
|             |             | Chart                             | Nomenclature                       | Avco Lyc.<br>Part No.                        | Wire<br>Dia. | Length<br>At Comp.<br>Length | COMP. LOAD         |              |               |
|             |             |                                   |                                    |                                              |              |                              | Mfr.<br>Min.       | Mfr.<br>Max. | Serv.<br>Max. |
| 950         | 800         | A-B-D-G-J-S-T-Y-BD-BE             | Outer Valve Springs (Parallel)     | 76994<br>LW-11800                            | .177         | 1.30 in.                     | 112 lb.            | 122 lb.      | 109 lb. min.  |
|             |             | A-B-D-G-J-S-T-Y-BD-BE             | Outer Valve Springs (Parallel)     | 65427                                        | .162         | 1.30 in.                     | 82 lb.             | 89 lb.       | 79 lb. min.   |
|             |             | S1-S2-S3-S5-S6-S7-S9-S10-T2-T3    | Outer Valve Springs (Angle)        | 68326                                        | .177         | 1.46 in.                     | 103 lb.            | 111 lb.      | 100 lb. min.  |
|             |             | S1-S2-S3-S5-S6-S7-S9-S10-T2-T3    | Outer Valve Springs (Angle)        | LW-11796                                     | .182         | 1.43 in.                     | 116 lb.            | 124 lb.      | 113 lb. min.  |
| 951         | 801         | A-B-D-G-J-S-T-Y-BD-BE             | Auxilliary Valve Spring (Parallel) | 65567<br>LW-11795                            | .135         | 1.17 in.                     | 61 lb.             | 67 lb.       | 58 lb. min.   |
|             |             | S1-S2-S3-S5-S6-S7-S9-S10-T2-T3-AF | Auxilliary Valve Spring (Angle)    | 68328<br>LW-11797                            | .142         | 1.33 in.                     | 75 lb.             | 83 lb.       | 72 lb. min.   |
| 952         | 802<br>803  | ALL (AS APPLICABLE)               | Oil Pressure Relief Valve Spring   |                                              |              |                              |                    |              |               |
|             |             | Avco Lycoming<br>Part Numbers     | Identification                     |                                              |              |                              |                    |              |               |
|             |             |                                   | Dye                                | Free Length                                  |              |                              |                    |              |               |
|             |             | 61084                             | None                               | 2.18                                         | .054         | 1.30 in.                     | 8.5 lb.            | 9.5 lb.      | 8.3 lb. min.  |
|             |             | 65703                             | None                               | 2.16                                         | .063         | 1.47 in.                     | 17.8 lb.           | 19.4 lb.     | 18.0 lb. min. |
|             |             | 68668                             | Purple                             | 2.04                                         | .054         | 1.30 in.                     | 7.1 lb.            | 7.8 lb.      | 6.9 lb. min.  |
|             |             | 77467                             | Yellow                             | 1.90                                         | .054         | 1.30 in.                     | 6.4 lb.            | 7.1 lb.      | 6.2 lb. min.  |
| LW-11713    | White       | 2.12                              | .059                               | 1.44 in.                                     | 10.79 lb.    | 11.92 lb.                    | 10.5 lb. min.      |              |               |
| 953         | 811         | A-B-G-J-S-T-Y-AF                  | Oil Cooler Bypass Spring           |                                              | .0465        | 1.94 in.                     | 6.50 lb.           | 7.25 lb.     | 6.41 lb. min. |
| 954         |             | BD-BE                             | Oil Filter Bypass Spring           |                                              | .047         | 1.00 in.                     | 3.05 lb.           | 3.55 lb.     | 3.0 lb. min.  |
| 955         | 806         | D                                 | Magneto Coupling Spring            |                                              | .091         | .603 in.                     | 20 lb.             | 22 lb.       | 19 lb. min.   |

# SERVICE TABLE OF LIMITS

## STANDARD TORQUE UNLESS OTHERWISE LISTED

Torque limits for propeller attaching bolts to be supplied by propeller aircraft manufacturer.

| TABLE I                                          |         |         |        |         |         | TABLE II     |          |
|--------------------------------------------------|---------|---------|--------|---------|---------|--------------|----------|
| BOLTS, SCREW AND NUTS                            |         |         |        |         |         | PIPE PLUGS   |          |
| Thread                                           | Torque  |         | Thread | Torque  |         | Thread       | Torque   |
|                                                  | In. Lb. | Ft. Lb. |        | In. Lb. | Ft. Lb. |              | In. Lbs. |
| 10                                               | 49      | -----   | 1/2    | 900     | 75      | 1/16-27 NPT  | 40       |
| 1/4                                              | 96      | -----   | 9/16   | 1320    | 110     | 1/8-27 NPT   | 40       |
| 5/16                                             | 204     | 17      | 5/8    | 1800    | 150     | 1/4-18 NPT   | 85       |
| 3/8                                              | 360     | 30      | 3/4    | 3240    | 270     | 3/8-18 NPT   | 110      |
| 7/16                                             | 600     | 50      | -----  | -----   | -----   | 1/2-14 NPT   | 160      |
| THIN NUTS (1/2 DIA. OF BOLT) – 1/2 LISTED TORQUE |         |         |        |         |         | 3/4-14 NPT   | 230      |
|                                                  |         |         |        |         |         | 1-11-1/2 NPT | 315      |

| TABLE III                                                                                                                                                                                                                                                                                                                                                                          |               |        | TABLE IV                                                        |           |                 |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|-----------------------------------------------------------------|-----------|-----------------|-----------|
| CRUSH TYPE GASKETS                                                                                                                                                                                                                                                                                                                                                                 |               |        | FLEXIBLE TUBE CONNECTIONS<br>(SEALASTIC OR EQUIVALENT FITTINGS) |           |                 |           |
| Thread Pitch on Part to be Tightened                                                                                                                                                                                                                                                                                                                                               | ANGLE OF TURN |        | Tube Size                                                       | Thread    | Torque In. Lbs. |           |
| Threads Per Inch                                                                                                                                                                                                                                                                                                                                                                   | Aluminum      | Copper |                                                                 |           | Aluminum Alloy  | Steel     |
| 8                                                                                                                                                                                                                                                                                                                                                                                  | 135°          | 67°    | (-3) 3/16                                                       | 3/8 - 24  | 25 - 35         | 95 - 105  |
| 10                                                                                                                                                                                                                                                                                                                                                                                 | 135°          | 67°    | (-4) 1/4                                                        | 7/16 - 20 | 50 - 65         | 35 - 150  |
| 12                                                                                                                                                                                                                                                                                                                                                                                 | 180°          | 90°    | (-5) 5/16                                                       | 1/2 - 20  | 70 - 90         | 170 - 200 |
| 14                                                                                                                                                                                                                                                                                                                                                                                 | 180°          | 90°    | (-6) 3/8                                                        | 9/16-18   | 230 - 260       | 450 - 500 |
| 16                                                                                                                                                                                                                                                                                                                                                                                 | 270°          | 135°   | (-10) 5/8                                                       | 7/8 - 14  | 330 - 360       | 650 - 700 |
| 18                                                                                                                                                                                                                                                                                                                                                                                 | 270°          | 135°   |                                                                 |           |                 |           |
| 20                                                                                                                                                                                                                                                                                                                                                                                 | 270°          | 135°   | TABLE V                                                         |           |                 |           |
| 24                                                                                                                                                                                                                                                                                                                                                                                 | 360°          | 180°   | STUDS MN. DRIVING TORQUE                                        |           |                 |           |
| 28                                                                                                                                                                                                                                                                                                                                                                                 | 360°          | 180°   | Threads                                                         |           | Torque In. Lbs. |           |
| <b>NOTE:</b> Install all crush type gaskets except the self centering type, with the unbroken surface against the flange of the plug or part being tightened against the seal. Turn the part until the sealing surfaces are in contact and then tighten to the angle of turn listed for the appropriate thread size.<br><b>NOTE: Lubricate Threads Unless Otherwise Specified.</b> |               |        | 1/4-20                                                          |           | 15              |           |
|                                                                                                                                                                                                                                                                                                                                                                                    |               |        | 5/16-18                                                         |           | 25              |           |
|                                                                                                                                                                                                                                                                                                                                                                                    |               |        | 3/8-16                                                          |           | 50              |           |
|                                                                                                                                                                                                                                                                                                                                                                                    |               |        |                                                                 |           |                 |           |

| TABLE VI                               |             |                 |
|----------------------------------------|-------------|-----------------|
| JAM NUT OR STRAIGHT THREAD O-RING BOSS |             |                 |
| Tube Size                              | Thread      | Torque Ft. Lbs. |
| -03                                    | 3/8 – 24    | 8 – 9           |
| -04                                    | 7/16 – 20   | 13 – 15         |
| -05                                    | 1/2 – 20    | 14 – 15         |
| -06                                    | 9/16 – 18   | 23 – 24         |
| -08                                    | 3/4 – 16    | 40 – 43         |
| -10                                    | 7/8 – 14    | 43 – 48         |
| -12                                    | 1-1/16 – 12 | 68 – 75         |
| -14                                    | 1-3/16 – 12 | 83 – 90         |
| -16                                    | 1-5/16 – 12 | 112 – 123       |
| -20                                    | 1-5/8 – 12  | 146 – 161       |
| -24                                    | 1-7/8 – 12  | 154 – 170       |
| -32                                    | 2-1/2 – 12  | 218 – 240       |

# SERVICE TABLE OF LIMITS

## STANDARD TORQUE (CONT.) UNLESS OTHERWISE LISTED

**TABLE VII**

**METAL TUBE FITTINGS**

| Dash Nos.<br>Ref. | Tubing OD<br>inches | Wrench torque for tightening AN-818 Nut (pound inches) |         |                |         |                                                                          |     | Minimum bend radii<br>measured to tubing<br>centerline. Dimension in<br>inches |        |
|-------------------|---------------------|--------------------------------------------------------|---------|----------------|---------|--------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------|--------|
|                   |                     | Aluminum-alloy tubing                                  |         | Steel tubing   |         | Aluminum-alloy tubing<br>(Flare MS33583) for use<br>on oxygen lines only |     |                                                                                |        |
|                   |                     | Minimum                                                | Maximum | Minimum        | Maximum |                                                                          |     |                                                                                |        |
|                   |                     | Minimum                                                | Maximum | Alum.<br>Alloy | Steel   |                                                                          |     |                                                                                |        |
| -2                | 1/8                 | 20                                                     | 30      | 75             | 85      | --                                                                       | --  | 3/8                                                                            | --     |
| -3                | 3/16                | 25                                                     | 35      | 95             | 105     | --                                                                       | --  | 7/16                                                                           | 21/32  |
| -4                | 1/4                 | 50                                                     | 65      | 135            | 150     | --                                                                       | --  | 9/16                                                                           | 7/8    |
| -5                | 5/16                | 70                                                     | 90      | 170            | 200     | 100                                                                      | 125 | 3/4                                                                            | 1-1/8  |
| -6                | 3/8                 | 110                                                    | 130     | 270            | 300     | 200                                                                      | 250 | 15/16                                                                          | 1-5/16 |
| -8                | 1/2                 | 230                                                    | 260     | 450            | 500     | 300                                                                      | 400 | 1-1/4                                                                          | 1-3/4  |
| -10               | 5/8                 | 330                                                    | 360     | 650            | 700     | --                                                                       | --  | 1-1/2                                                                          | 2-3/16 |
| -12               | 3/4                 | 460                                                    | 500     | 900            | 1000    | --                                                                       | --  | 1-3/4                                                                          | 2-5/8  |
| -16               | 1                   | 500                                                    | 700     | 1200           | 1400    | --                                                                       | --  | 3                                                                              | 3-1/2  |
| -20               | 1-1/4               | 800                                                    | 900     | 1520           | 1680    | --                                                                       | --  | 3-3/4                                                                          | 4-3/8  |
| -24               | 1-1/2               | 800                                                    | 900     | 1900           | 2100    | --                                                                       | --  | 5                                                                              | 5-1/4  |
| -28               | 1-3/4               | --                                                     | --      | --             | --      | --                                                                       | --  | --                                                                             | --     |
| -32               | 2                   | 1800                                                   | 2000    | 2660           | 2940    | --                                                                       | --  | 8                                                                              | 7      |

# SERVICE TABLE OF LIMITS

## PART I - DIRECT DRIVE ENGINES

### SECTION V SPECIAL TORQUE REQUIREMENTS

