FAA-CT-8080-4E

COMPUTER TESTING SUPPLEMENT FOR AVIATION MECHANIC GENERAL, POWERPLANT, AND AIRFRAME; AND PARACHUTE RIGGER

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U.S. Department of Transportation
Federal Aviation Administration

COMPUTER TESTING SUPPLEMENT FOR AVIATION MECHANIC GENERAL, POWERPLANT, AND AIRFRAME; AND PARACHUTE RIGGER

2005

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Flight Standards Service

PREFACE

This computer testing supplement is designed by the Flight Standards Service of the Federal Aviation Administration (FAA) for use by computer testing designees (CTDs) in the administration of computer-assisted airman knowledge tests in the following knowledge areas:

Aviation Mechanic General—AMG
Aviation Mechanic Powerplant—AMP
Aviation Mechanic Airframe—AMA
Parachute Rigger—RIG, RMC, RMP

FAA-CT-8080-4E supersedes FAA-CT-8080-4D, Computer Testing Supplement for Aviation Mechanic General, Powerplant, and Airframe; and Parachute Rigger, dated 2001.

Comments regarding this supplement should be sent to:

U.S. Department of Transportation
Federal Aviation Administration
Flight Standards Service
Airman Testing Standards Branch, AFS-630
P.O. Box 25082
Oklahoma City, OK 73125

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Aviation Mechanic General

$$C_T = \frac{1}{1/C_1 + 1/C_2 + 1/C_3 \ldots}$$

FIGURE 1.—Equation.

$$C_T = \frac{1}{1/C_1 + 1/C_2 + 1/C_3}$$

FIGURE 2.—Equation.

$$L_T = \frac{1}{1/L_1 + 1/L_2 + 1/L_3 \ldots}$$

FIGURE 3.—Equation.

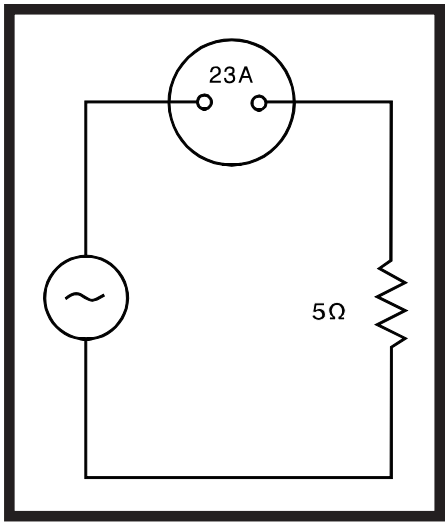

FIGURE 4.—Circuit Diagram.

$$Z = \sqrt{R^2 + (X_L - X_C)^2}$$

Z =Impedance
R =Resistance
X_L =Inductive Reactance
X_C =Capacitive Reactance

FIGURE 5.—Formula.

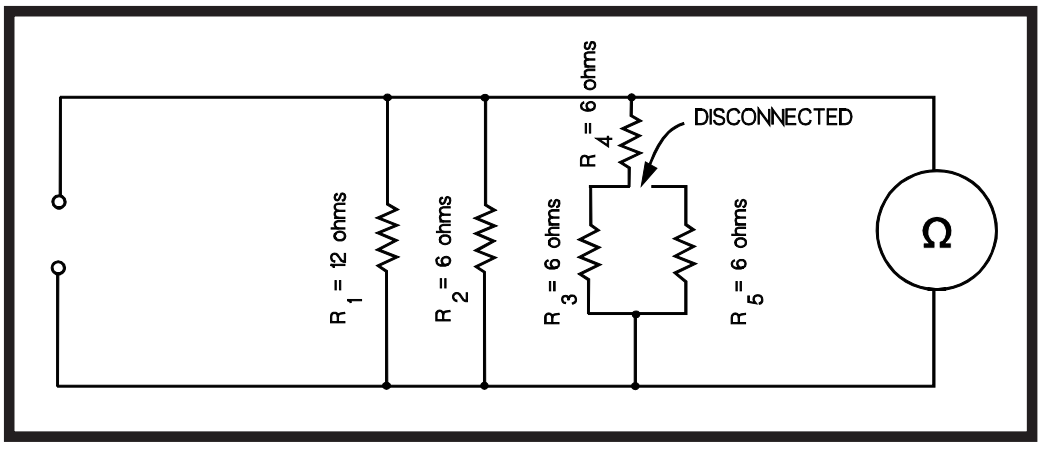

FIGURE 6.—Circuit Diagram.

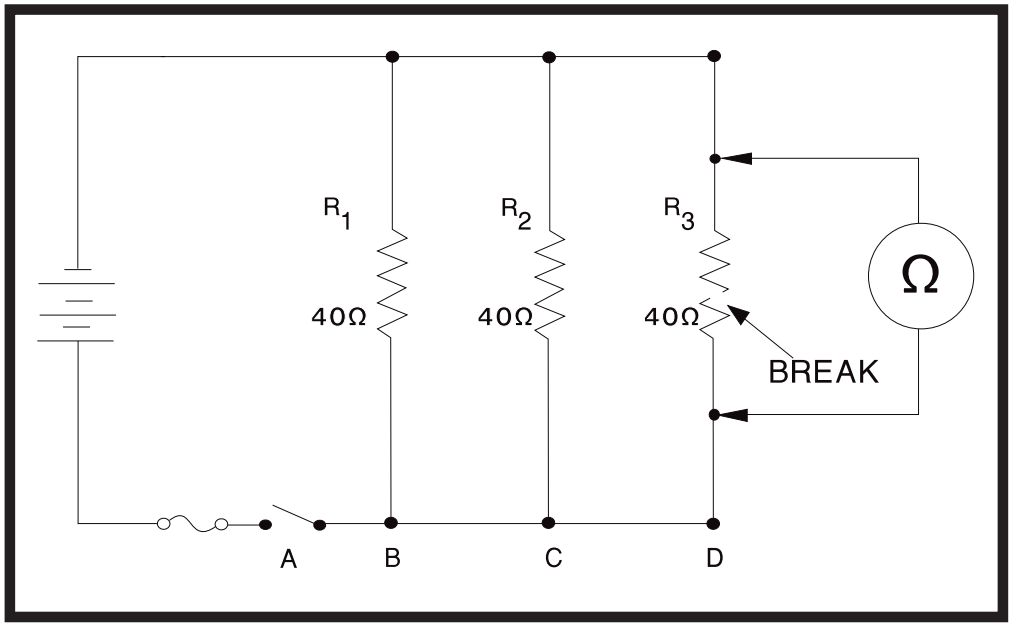

FIGURE 7.—Circuit Diagram.

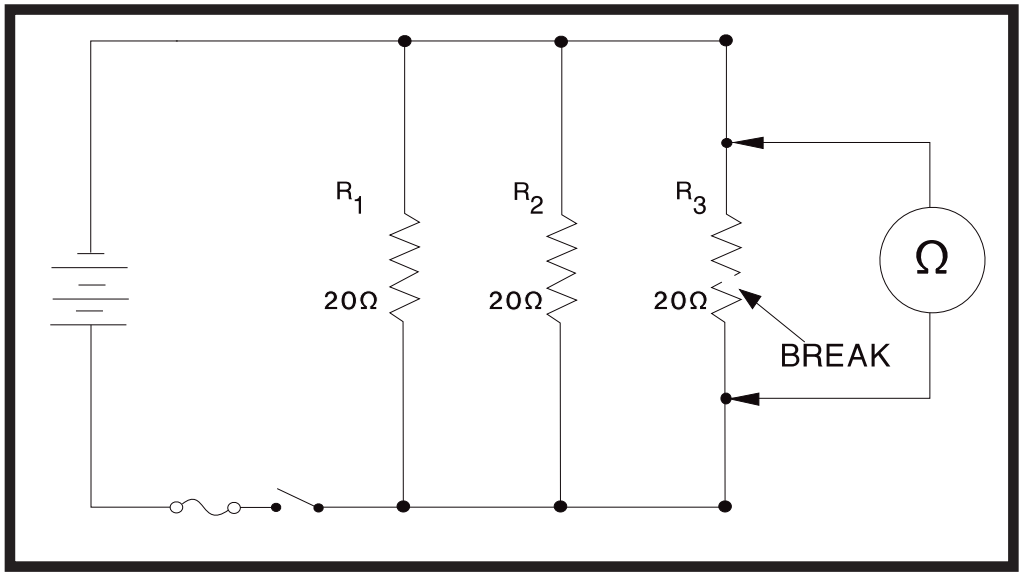

FIGURE 8.—Circuit Diagram.

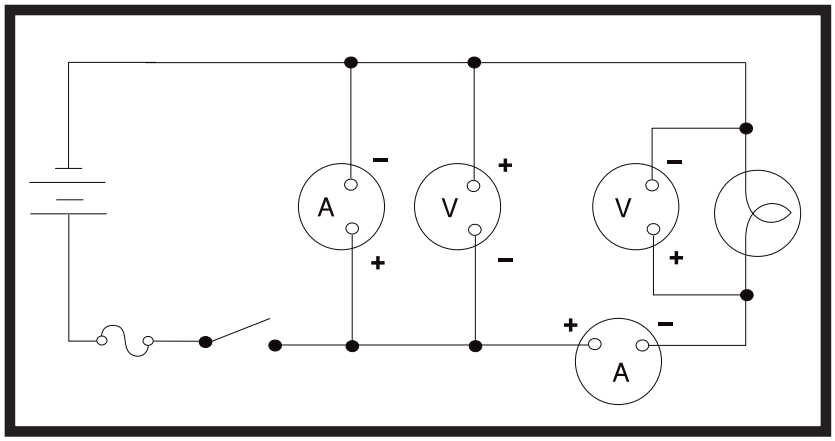

FIGURE 9.—Circuit Diagram.

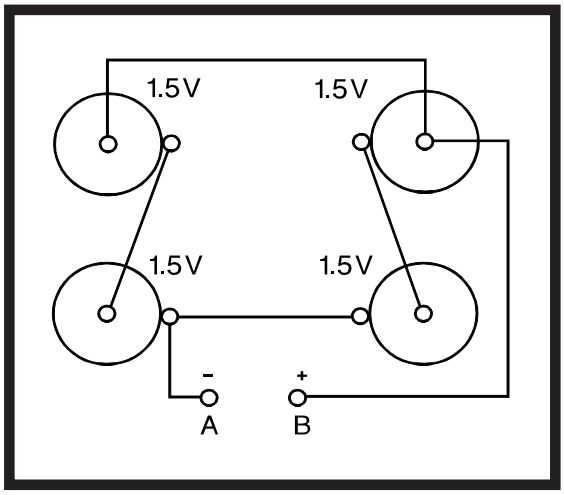

FIGURE 10.—Battery Circuit.

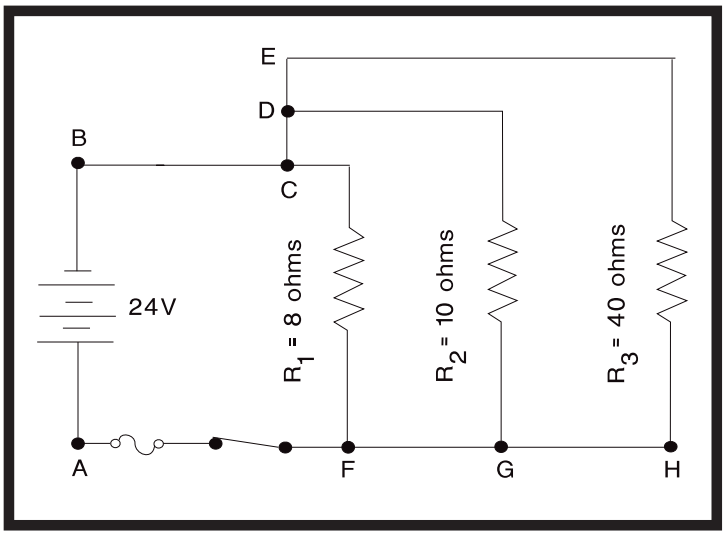

FIGURE 11.—Circuit Diagram.

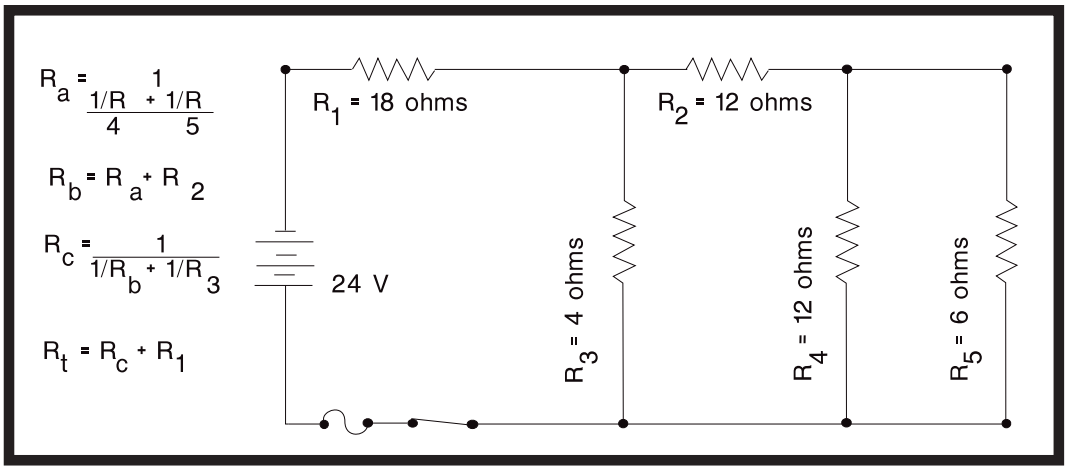

FIGURE 12.—Circuit Diagram.

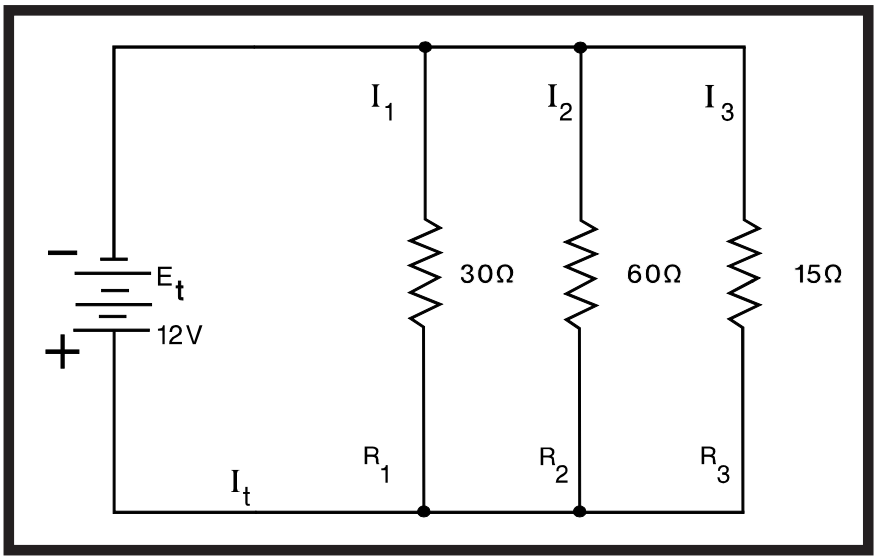

FIGURE 13.—Circuit Diagram.

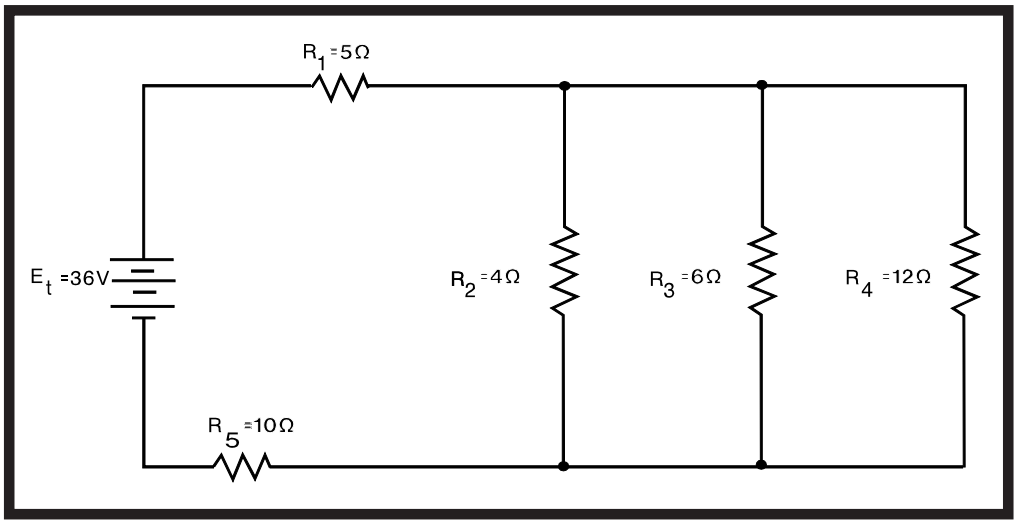

FIGURE 14.—Circuit Diagram.

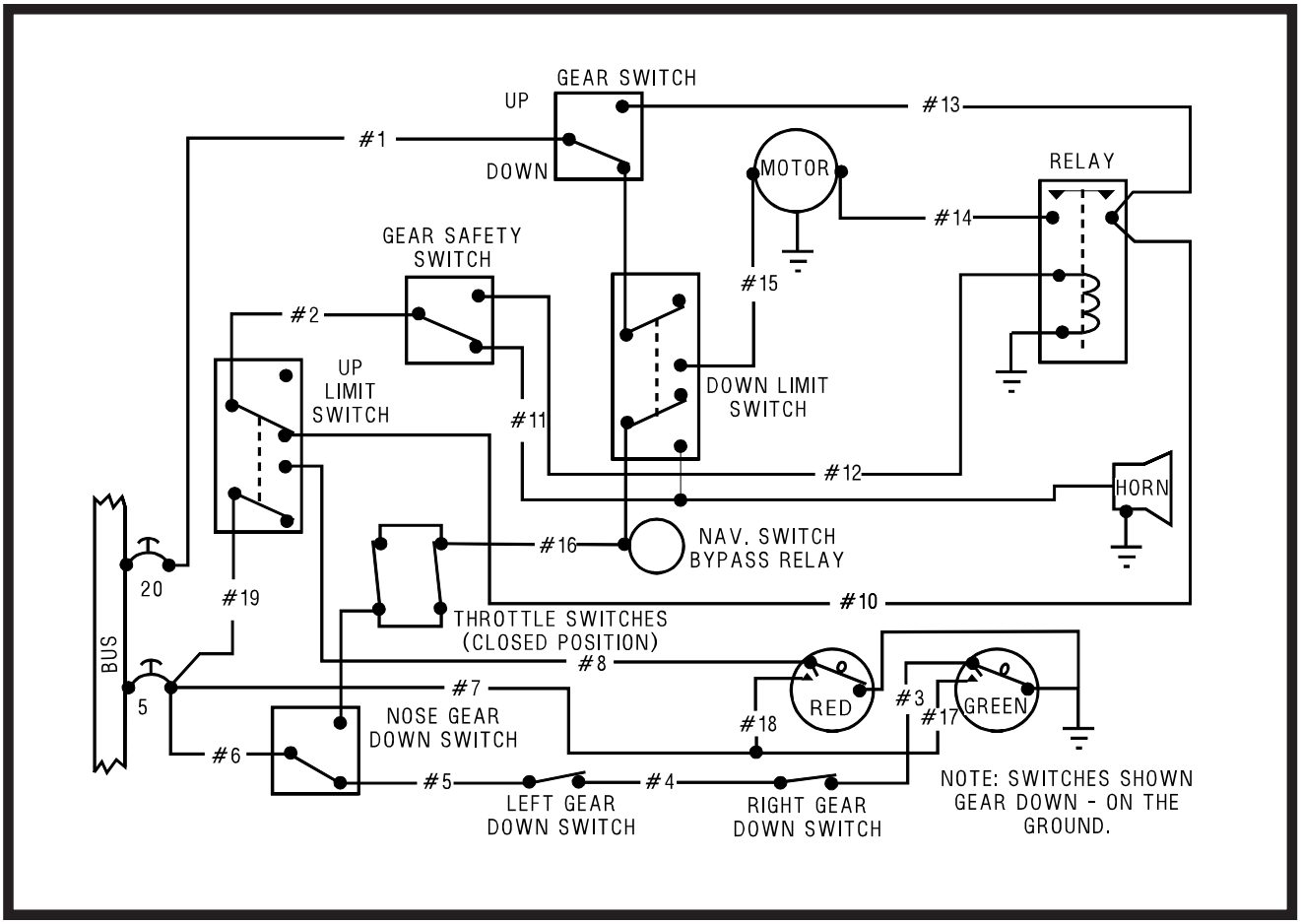

FIGURE 15.—Landing Gear Circuit.

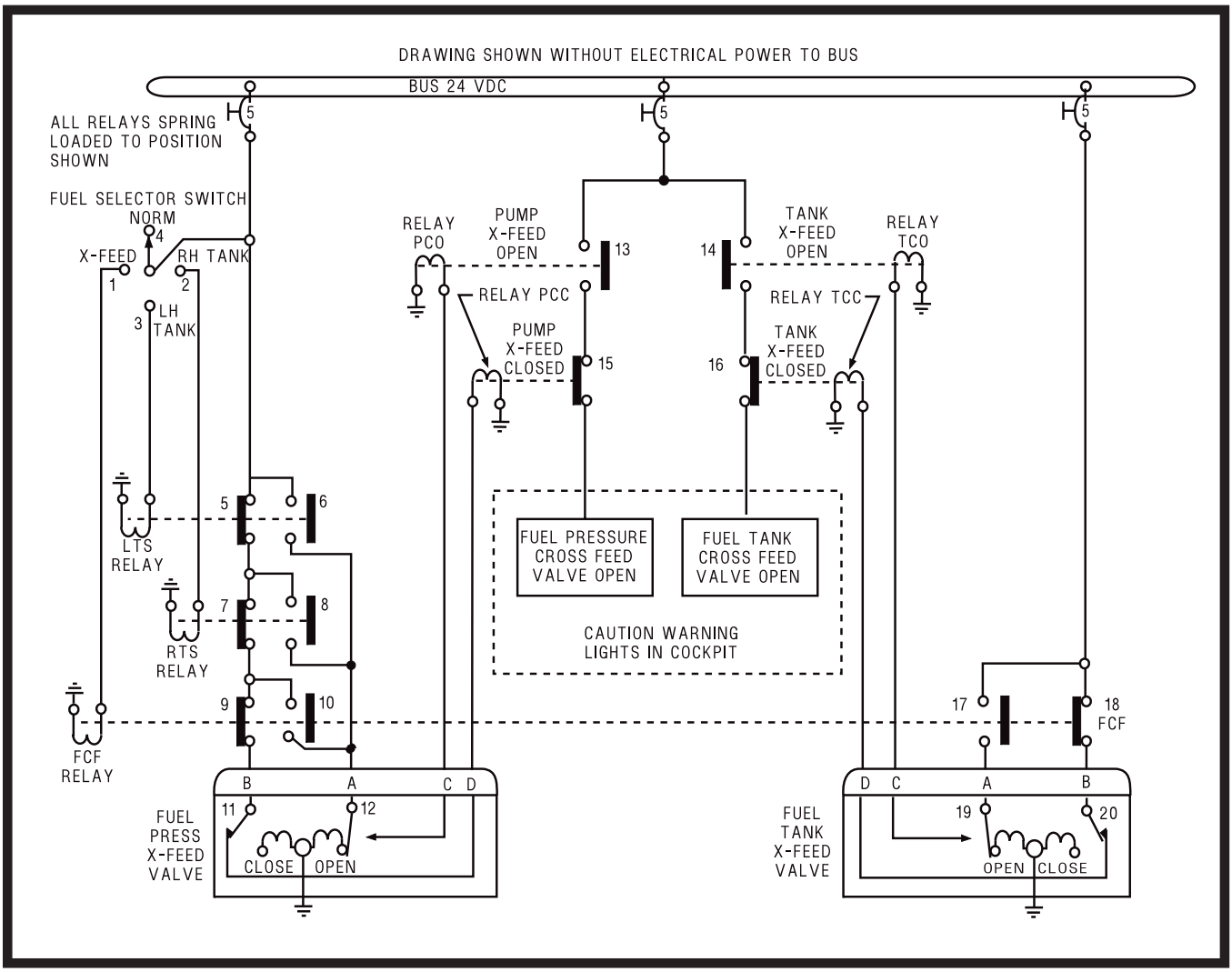

FIGURE 16.—Fuel System Circuit.

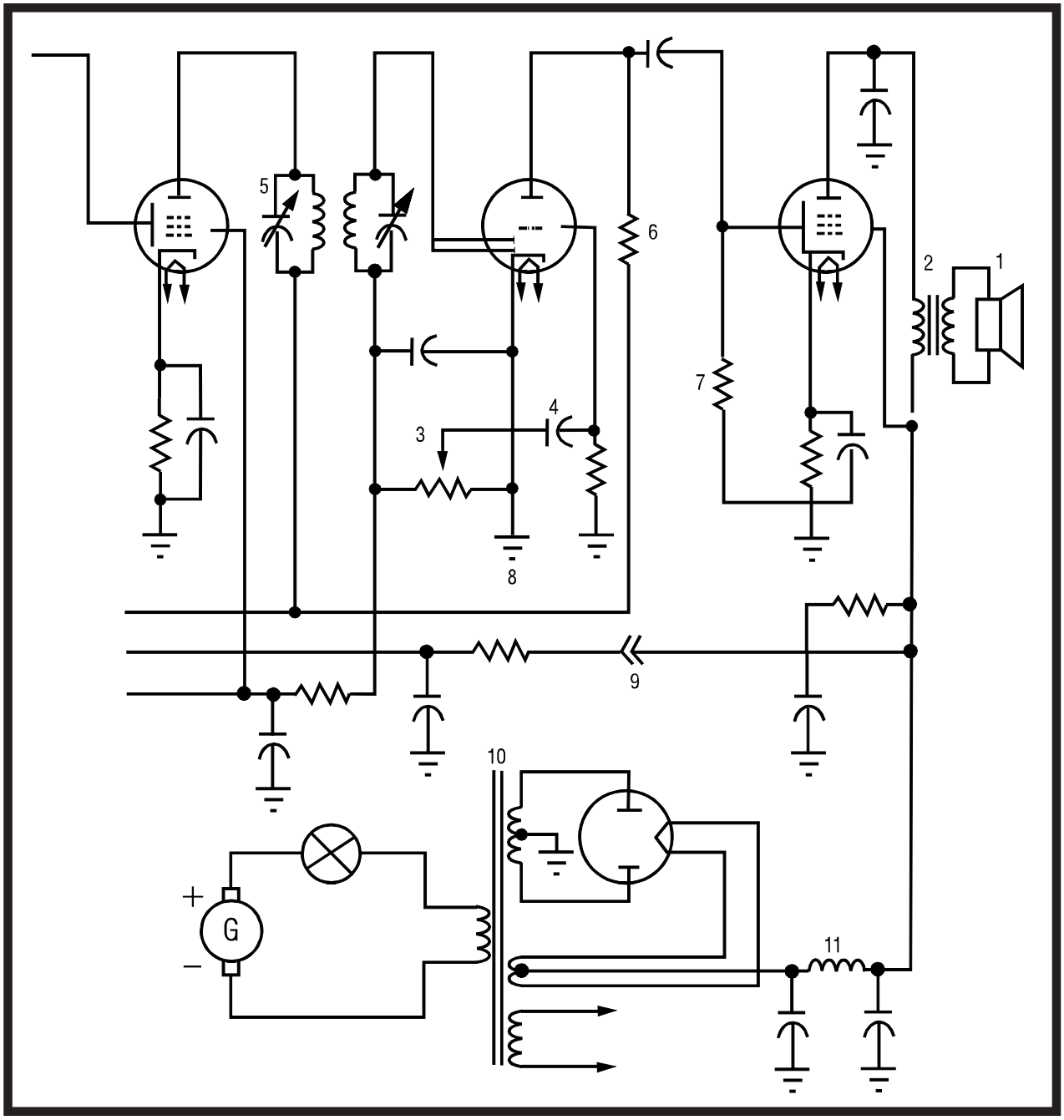

FIGURE 17.—Electrical Symbols.

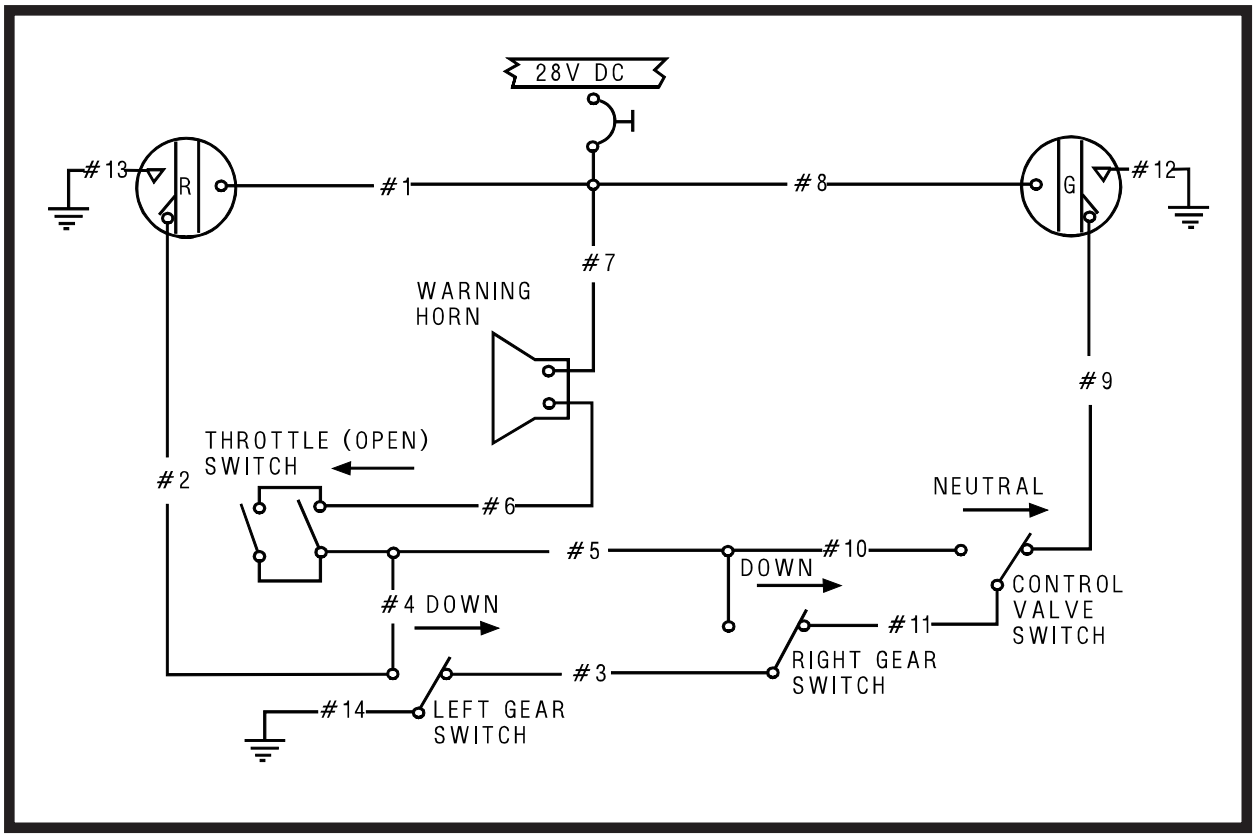

FIGURE 18.—Landing Gear Circuit.

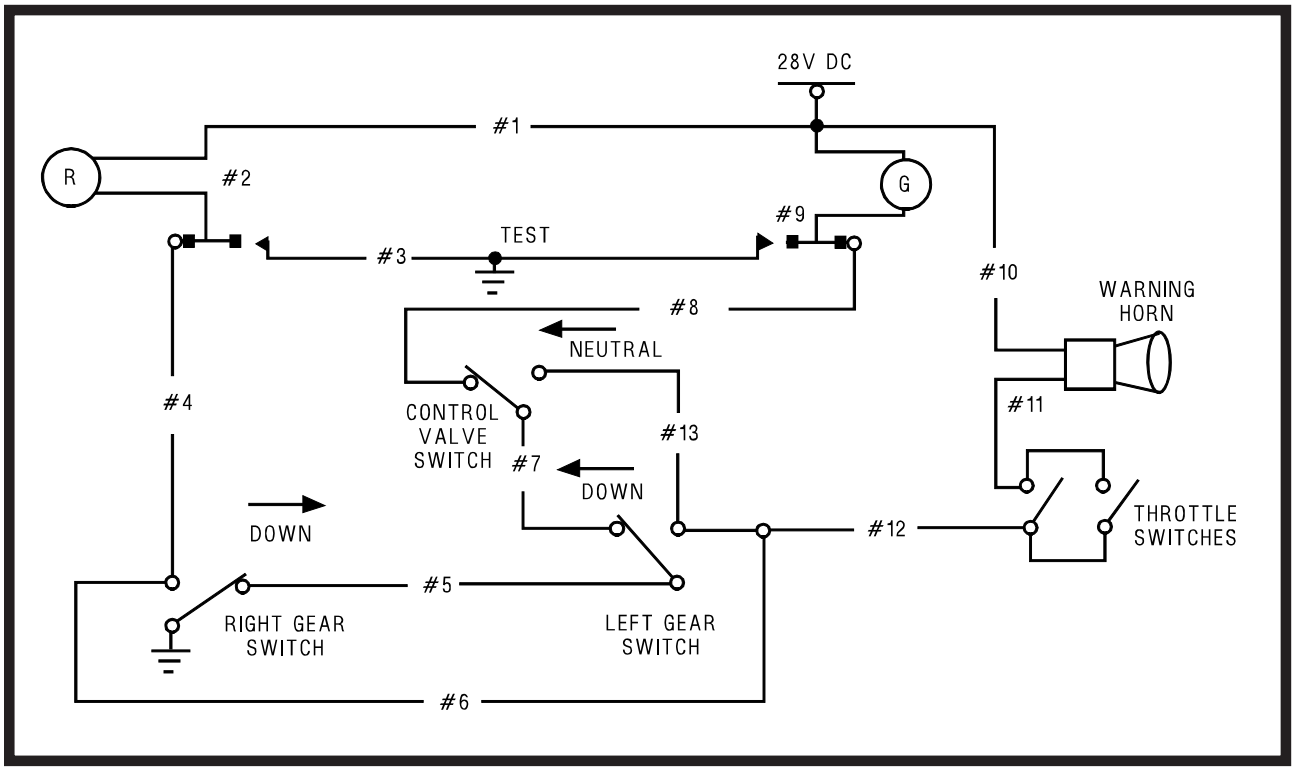

FIGURE 19.—Landing Gear Circuit.

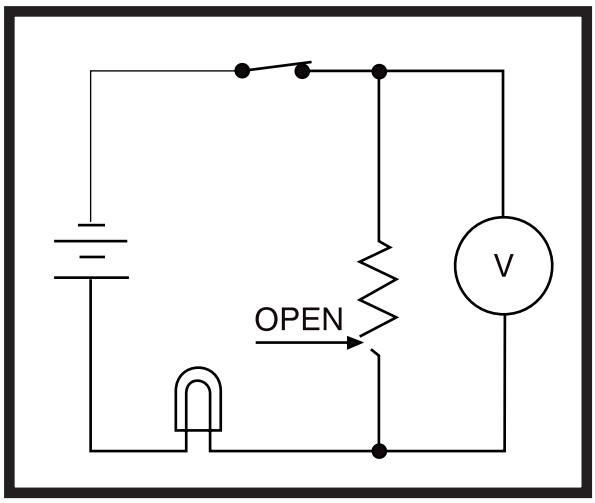

FIGURE 20.—Circuit Diagram.

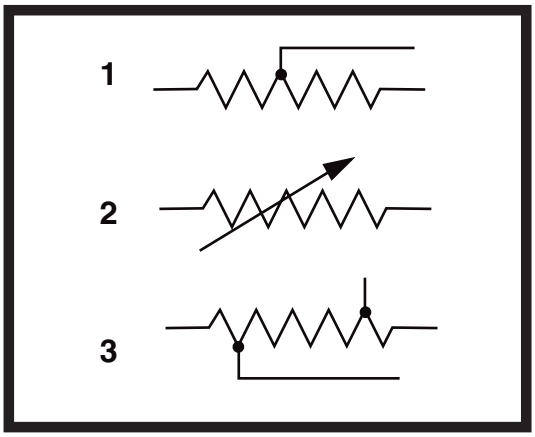

FIGURE 21.—Electrical Symbols.

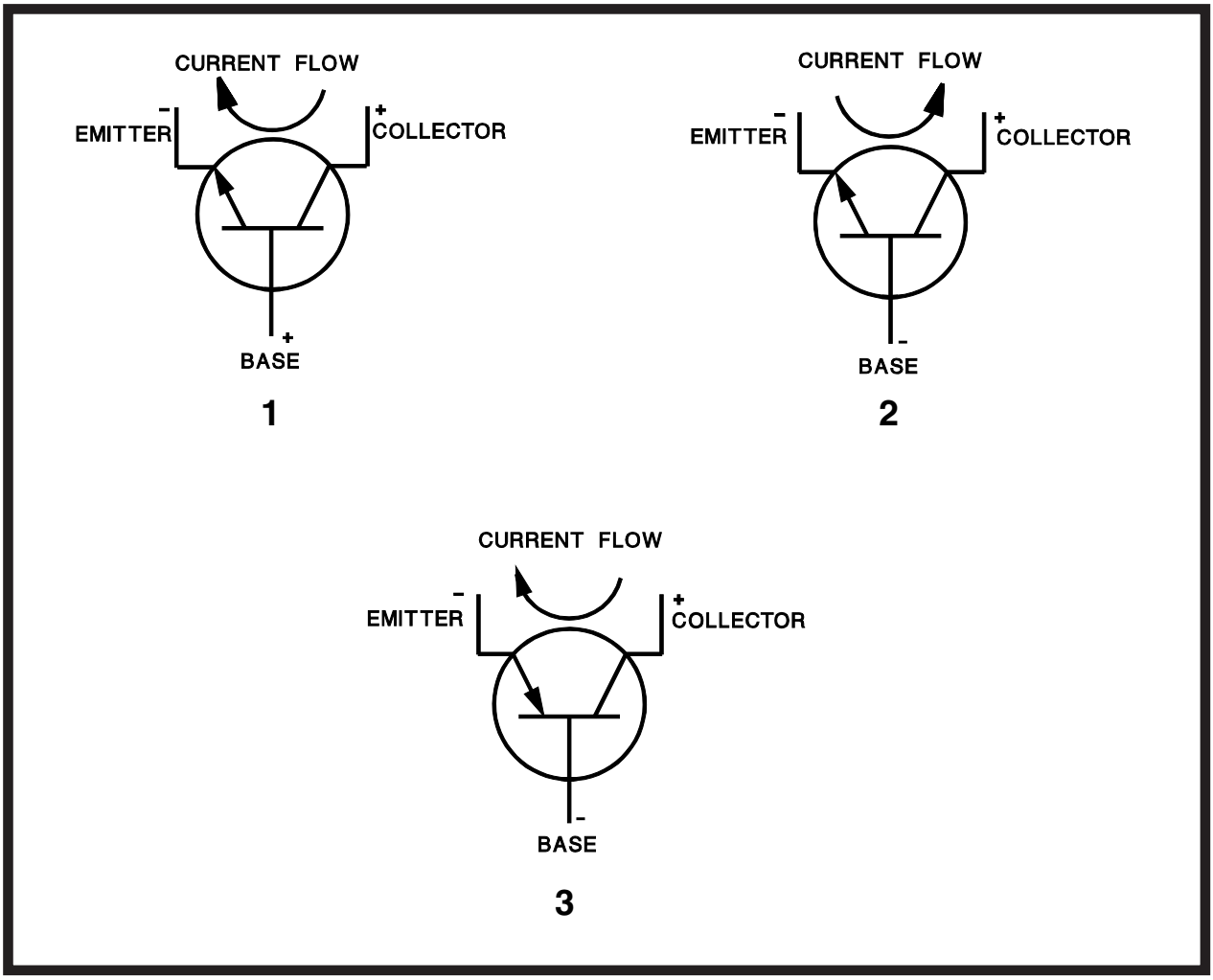

FIGURE 22.—Transistors.

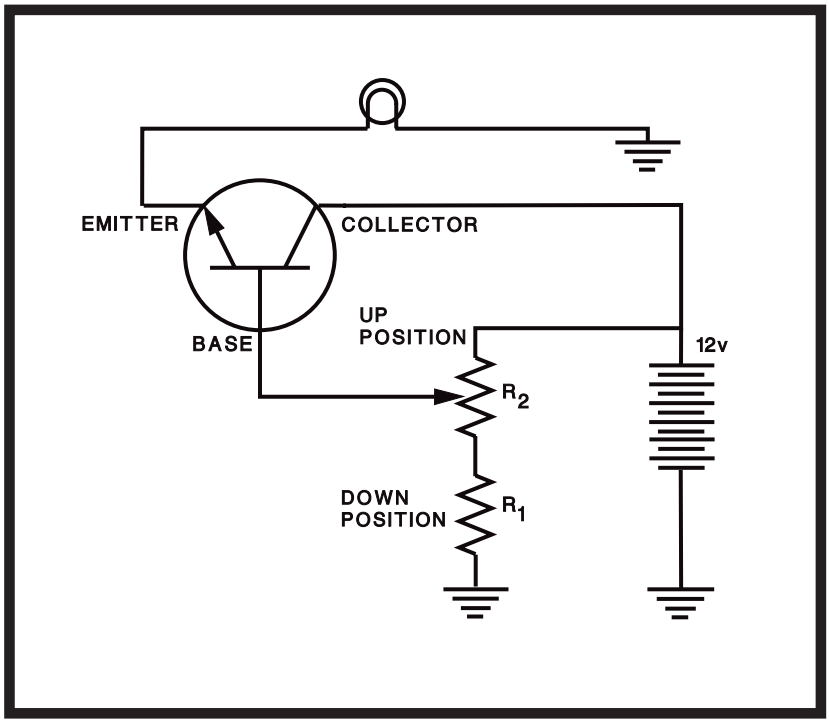

FIGURE 23.—Transistorized Circuit.

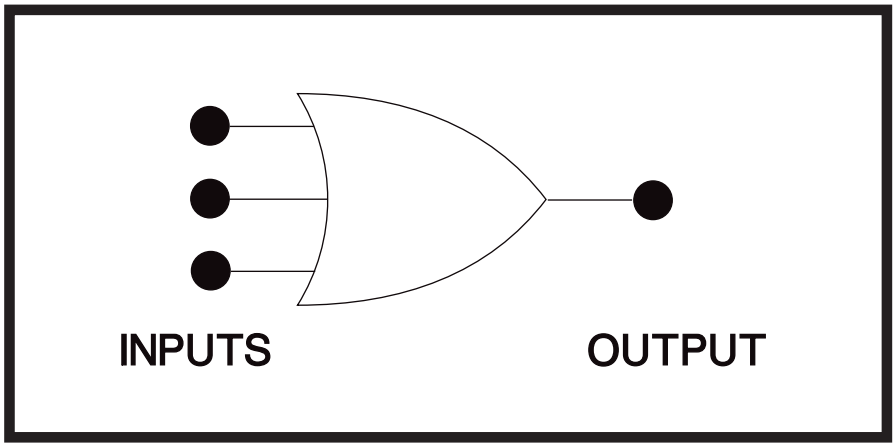

FIGURE 24.—Logic Gate.

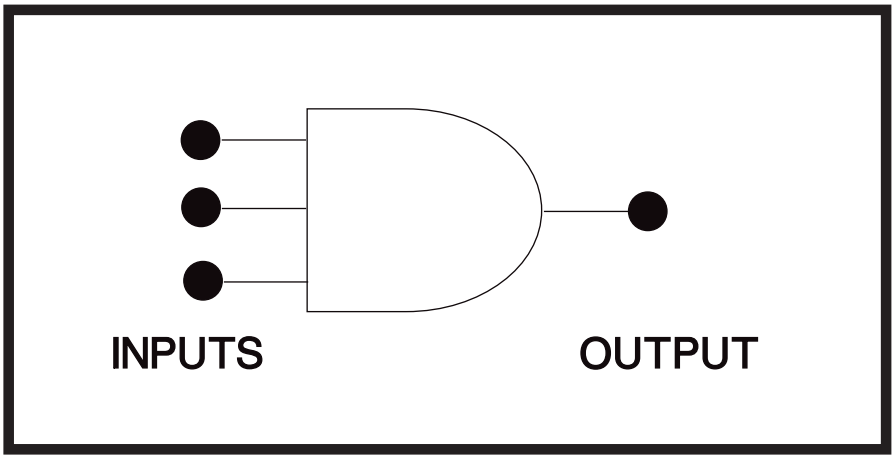

FIGURE 25.—Logic Gate.

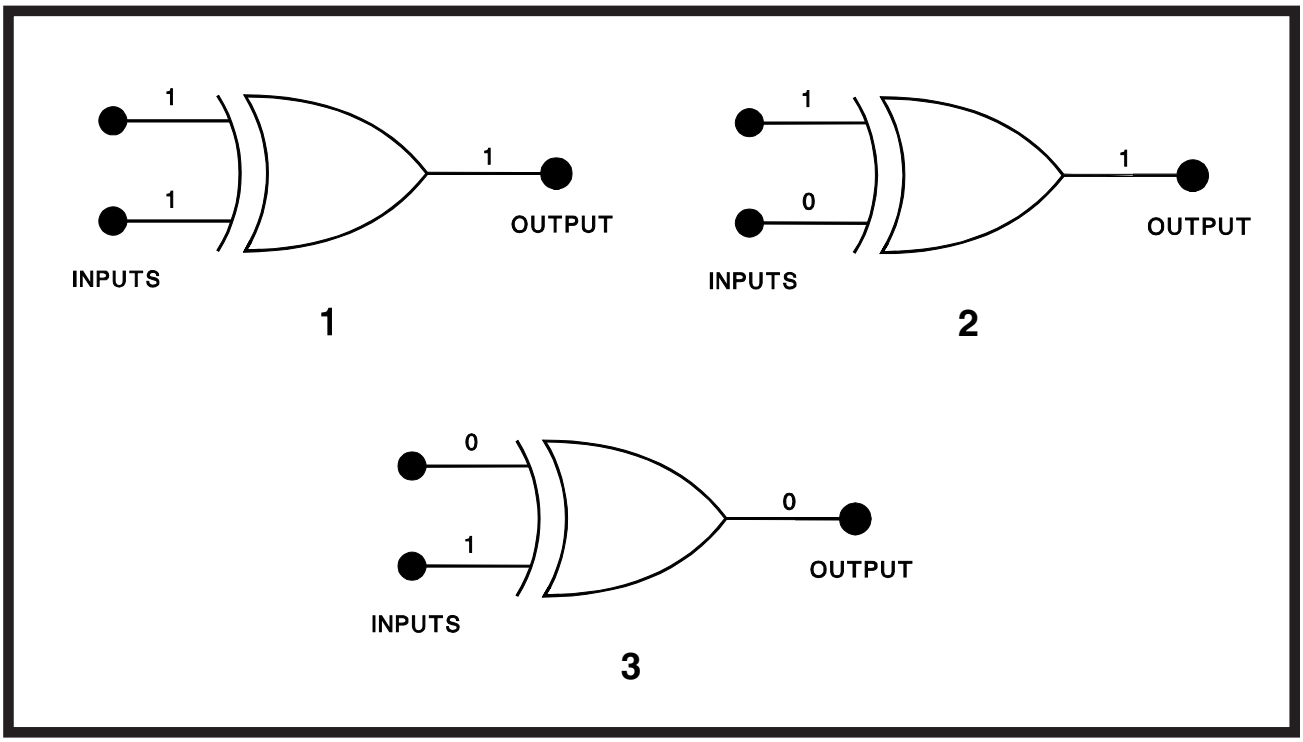

FIGURE 26.—Logic Gates.

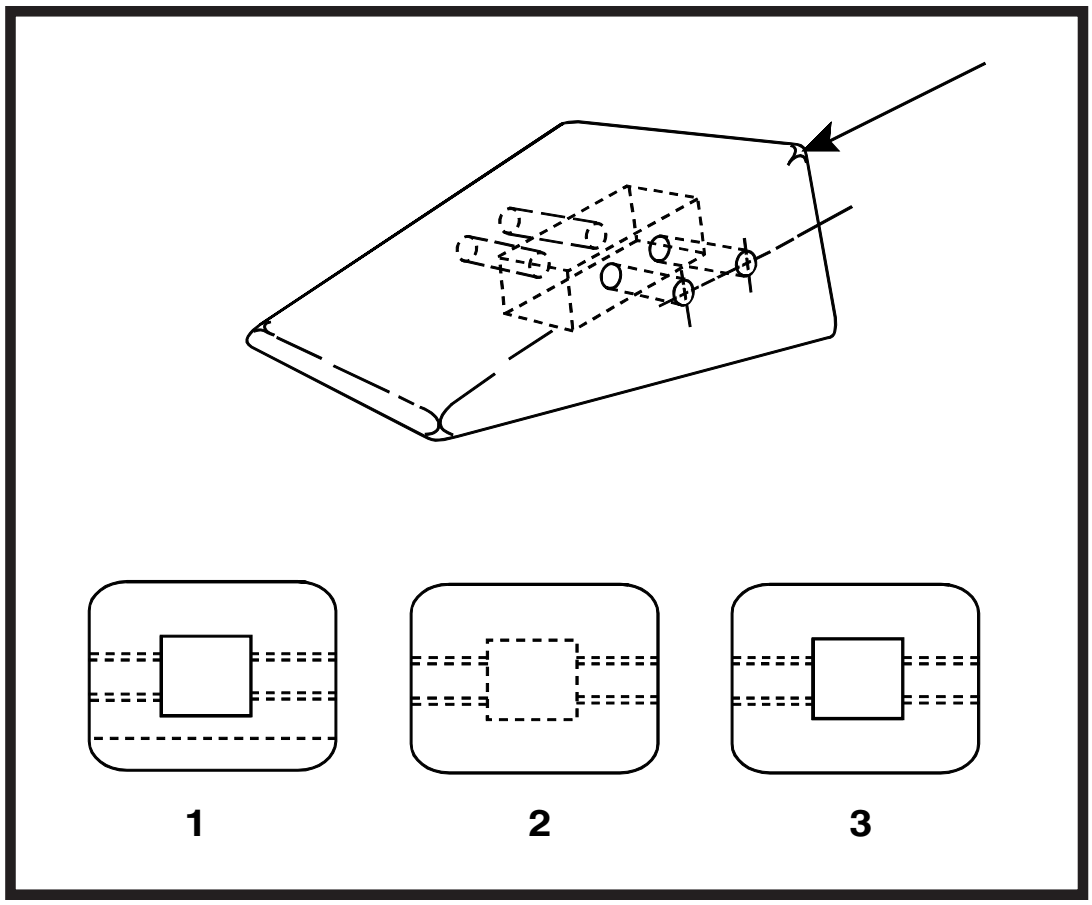

FIGURE 27.—Object Views.

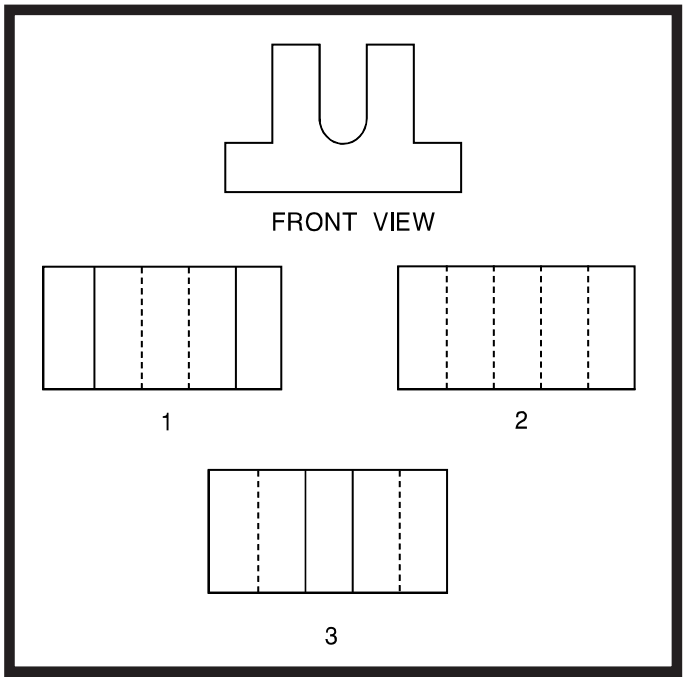

FIGURE 28.—Object Views.

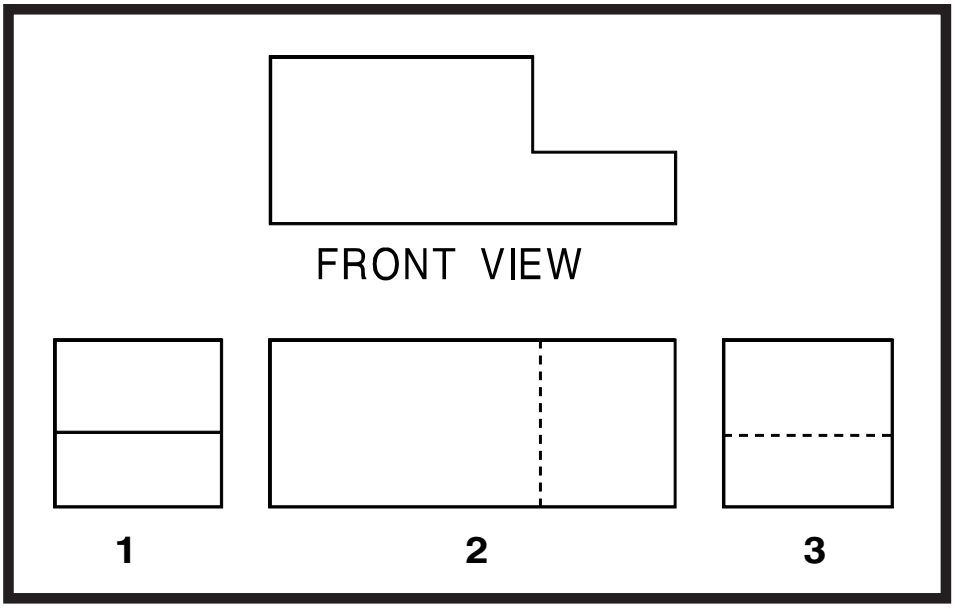

FIGURE 29.—Object Views.

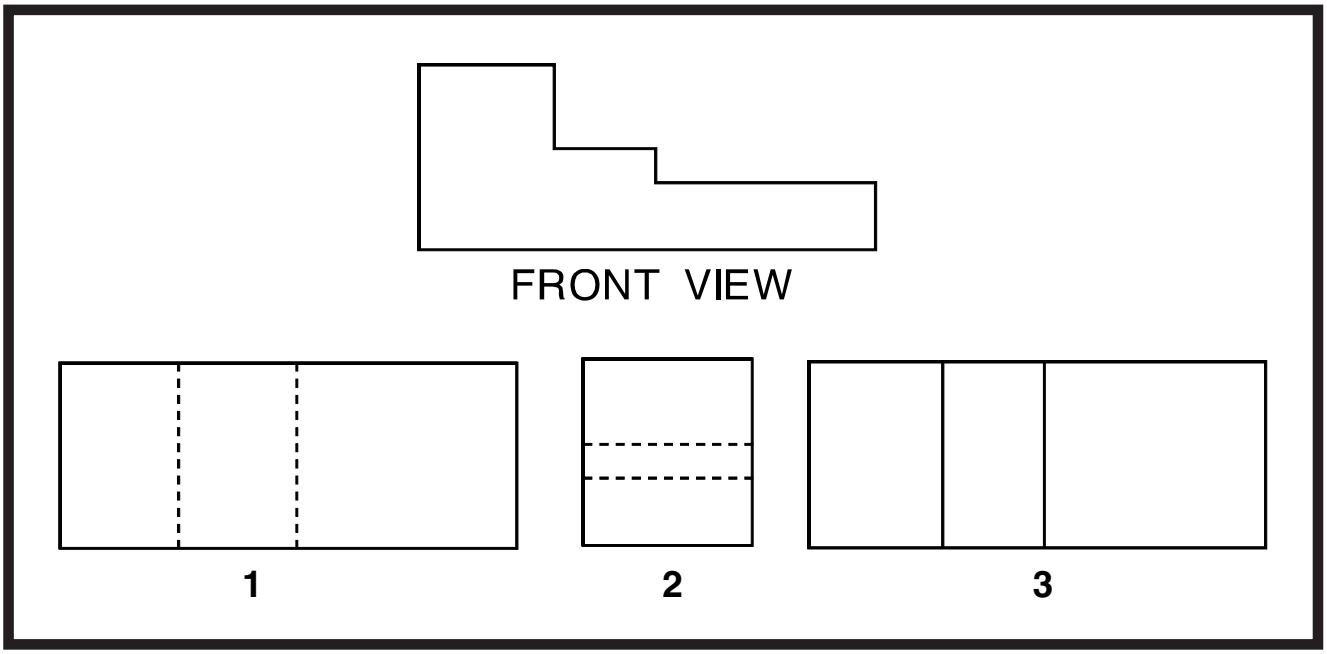

FIGURE 30.—Object Views.

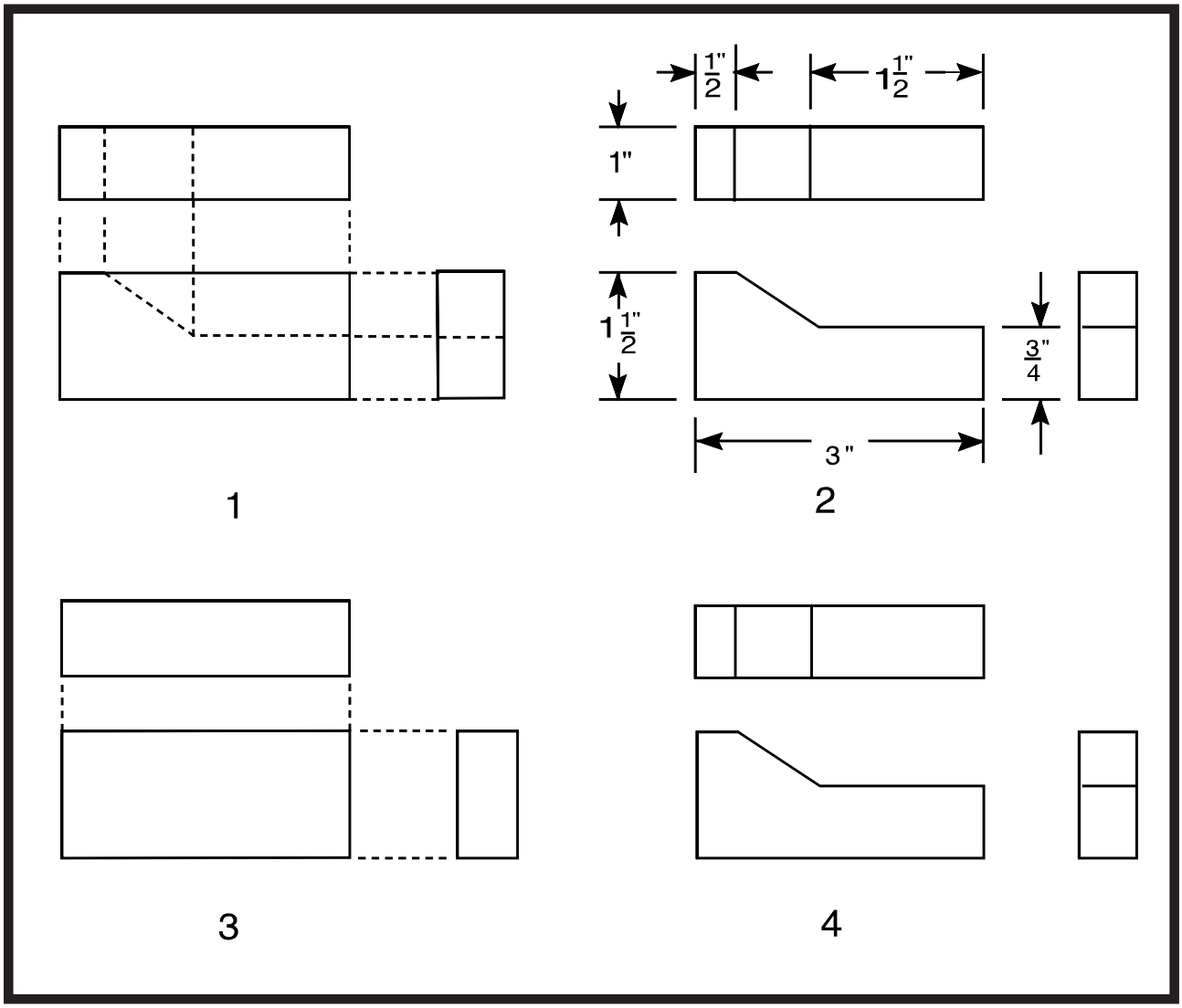

FIGURE 31.—Sketches.

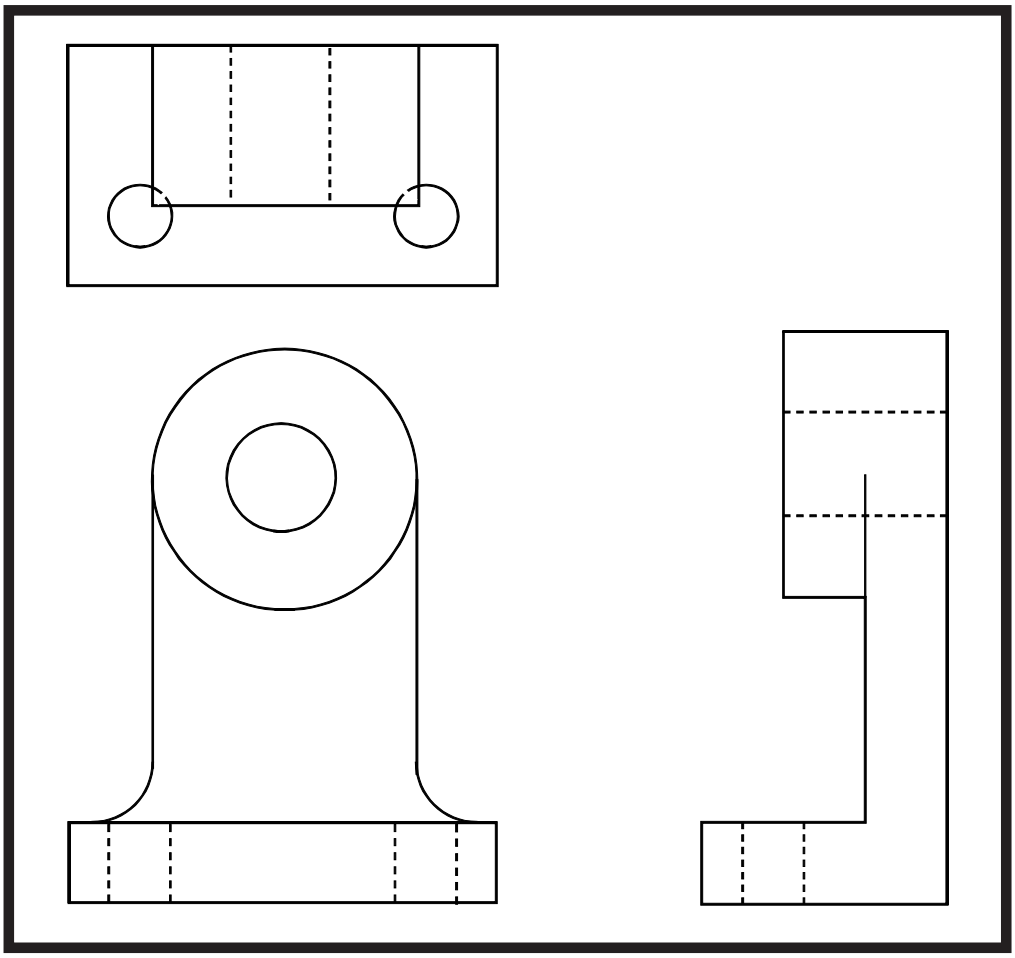

FIGURE 32.—Sketches.

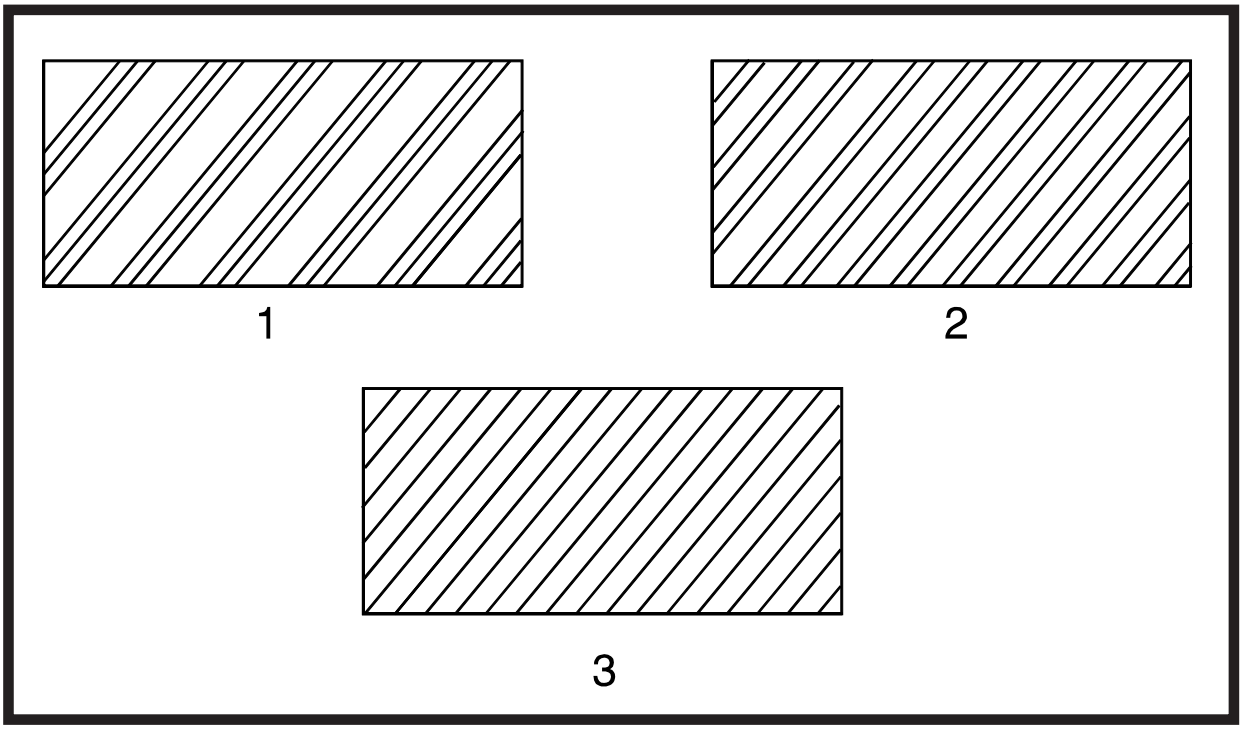

FIGURE 33.—Material Symbols.

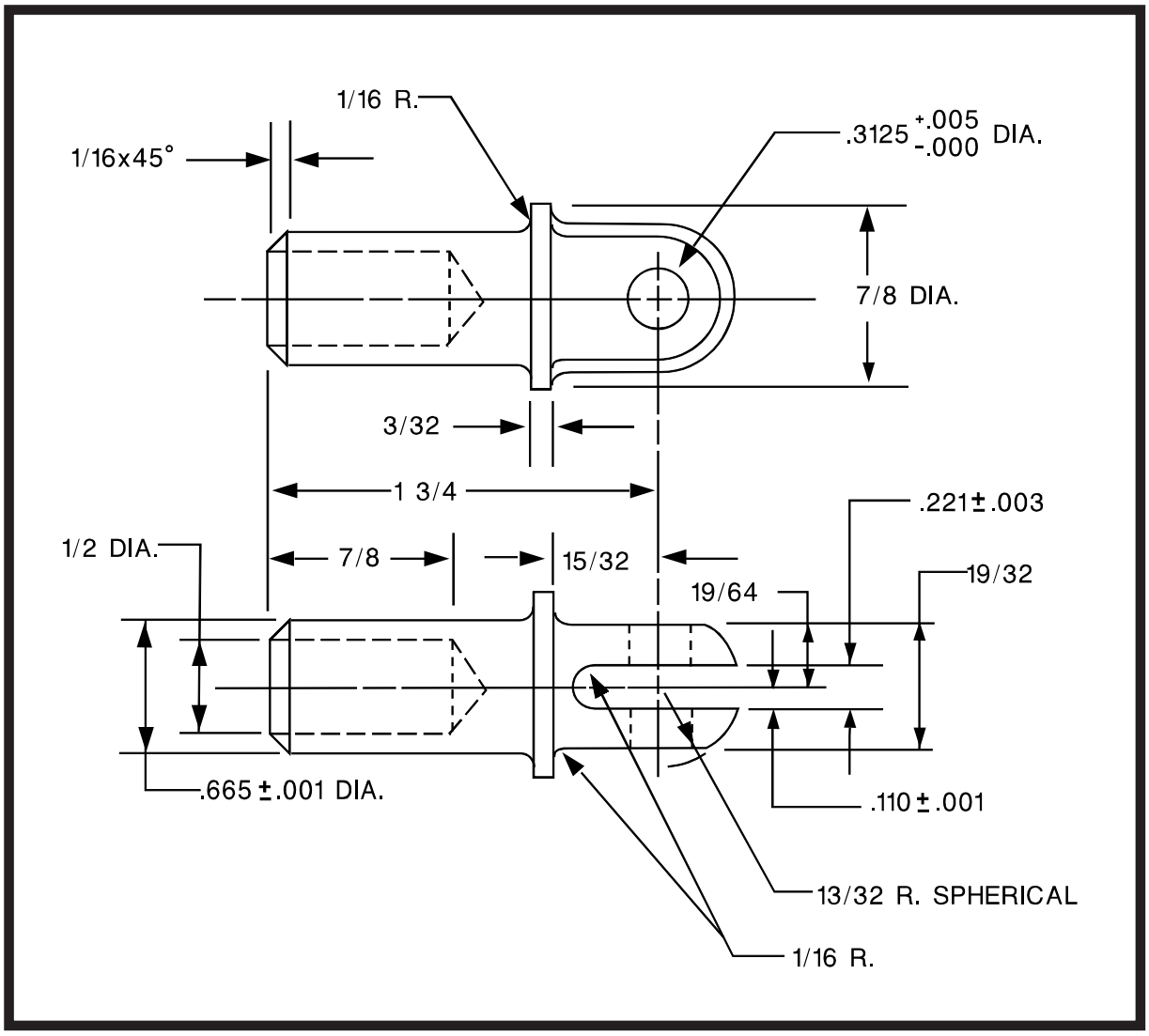

FIGURE 34.—Aircraft Drawing.

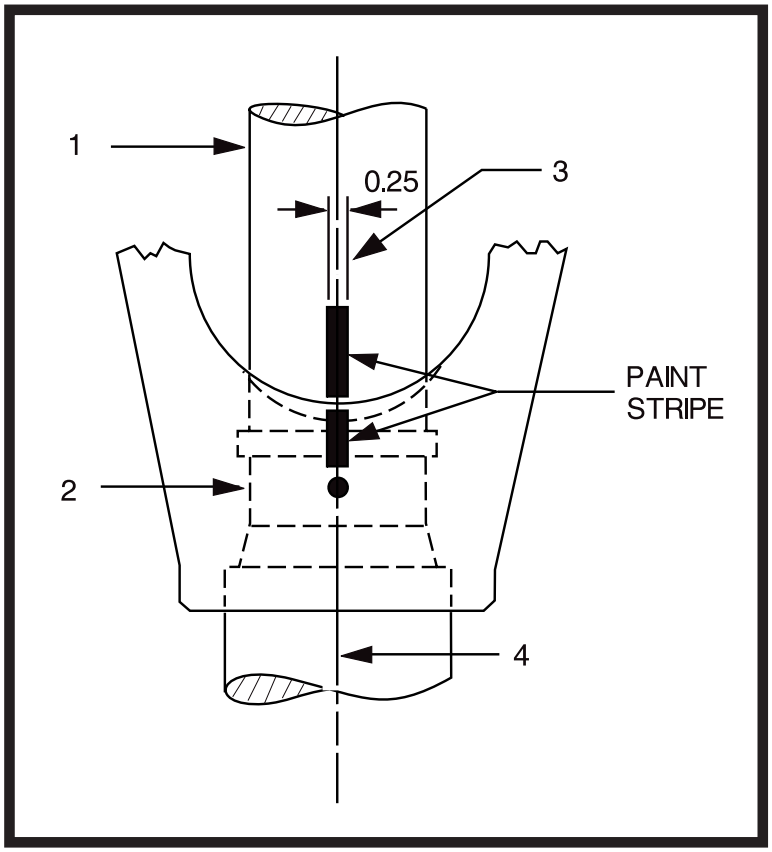

FIGURE 35.—Aircraft Drawing.

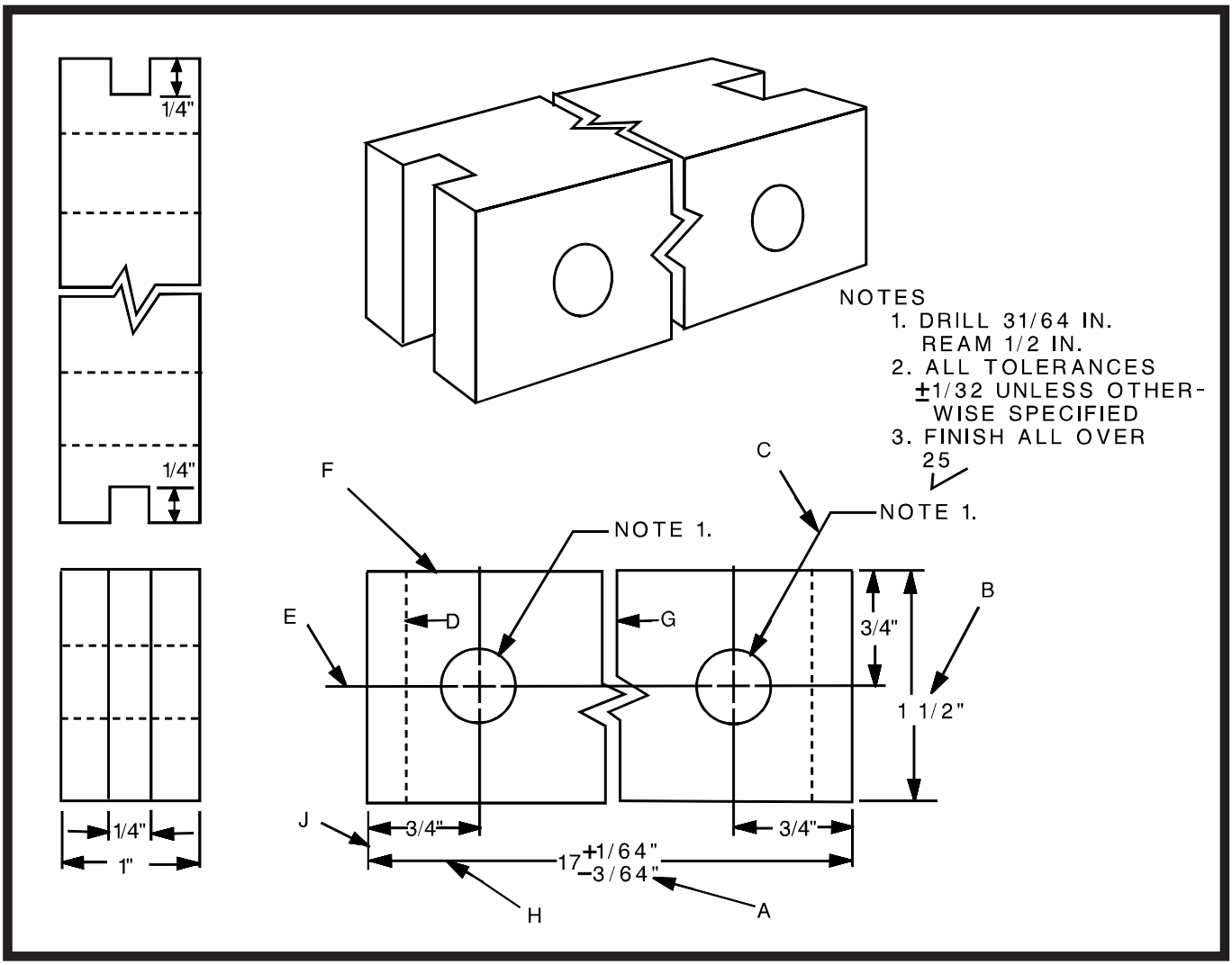

FIGURE 36.—Aircraft Drawing.

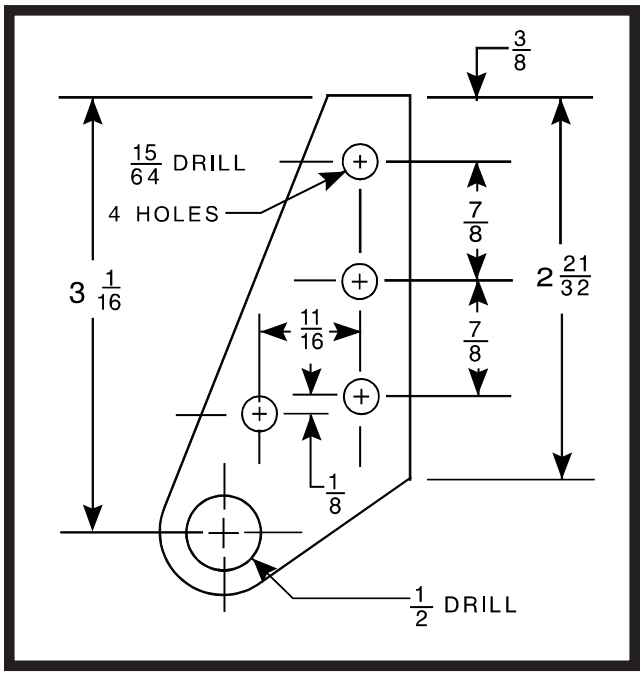

FIGURE 37.—Aircraft Drawing.

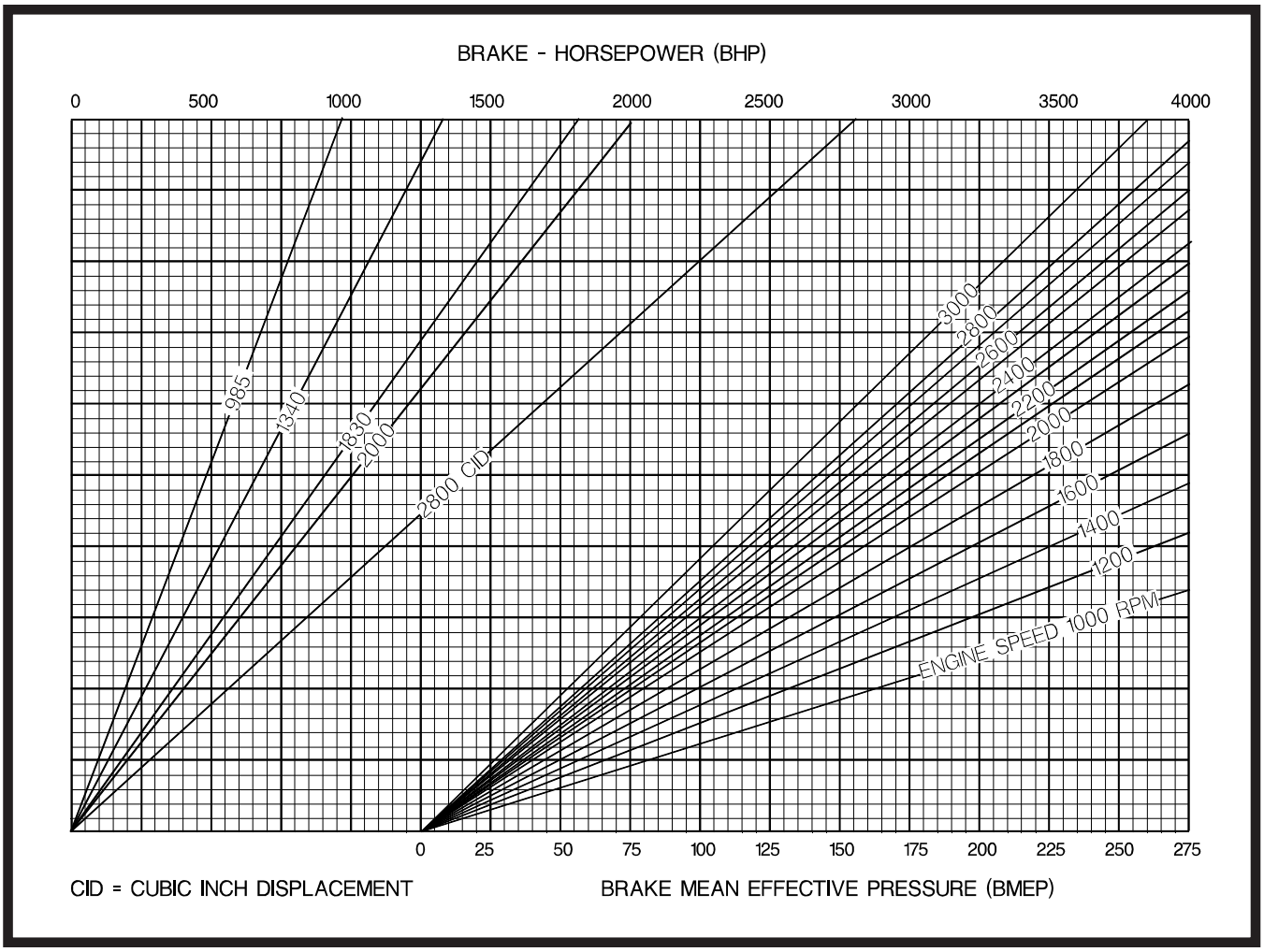

FIGURE 38.—Performance Chart.

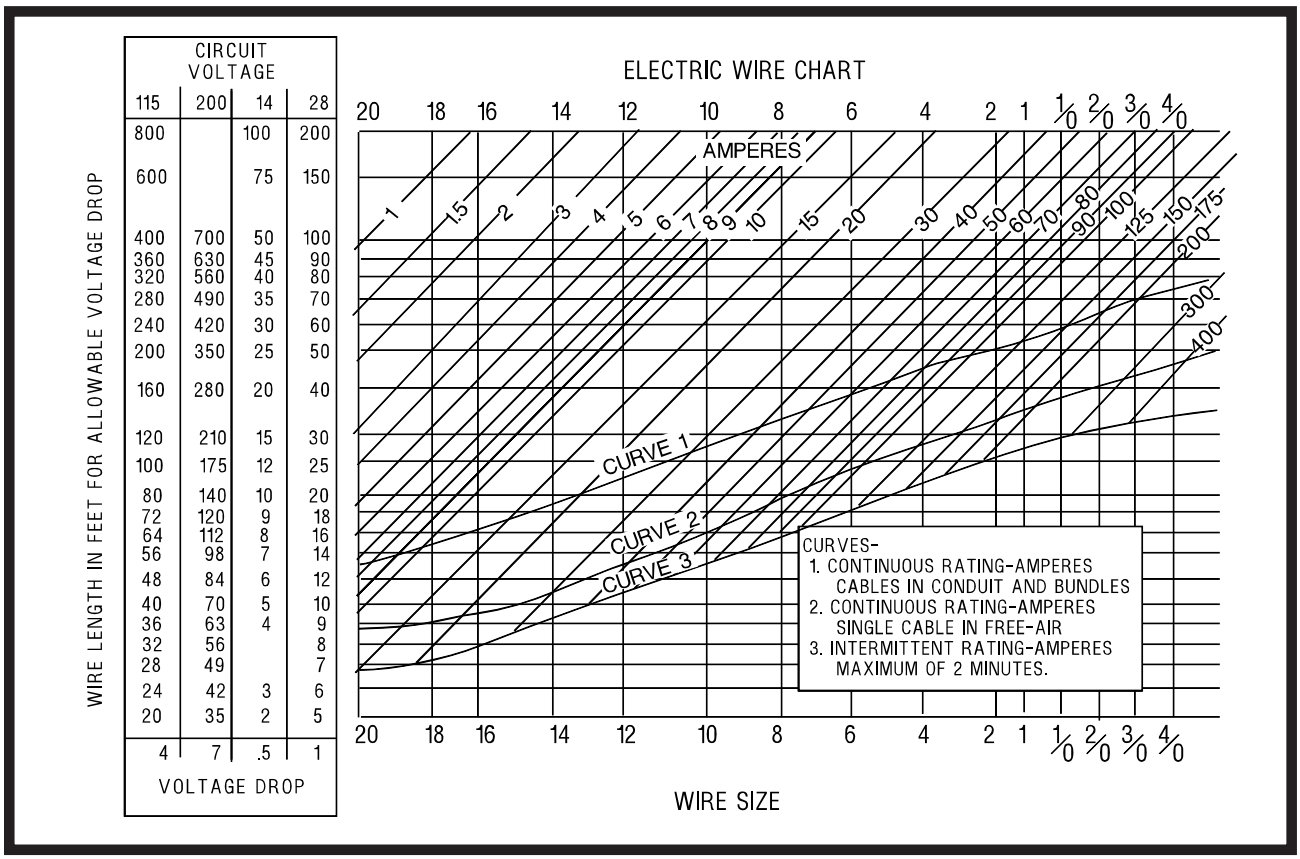

FIGURE 39.—Electric Wire Chart.

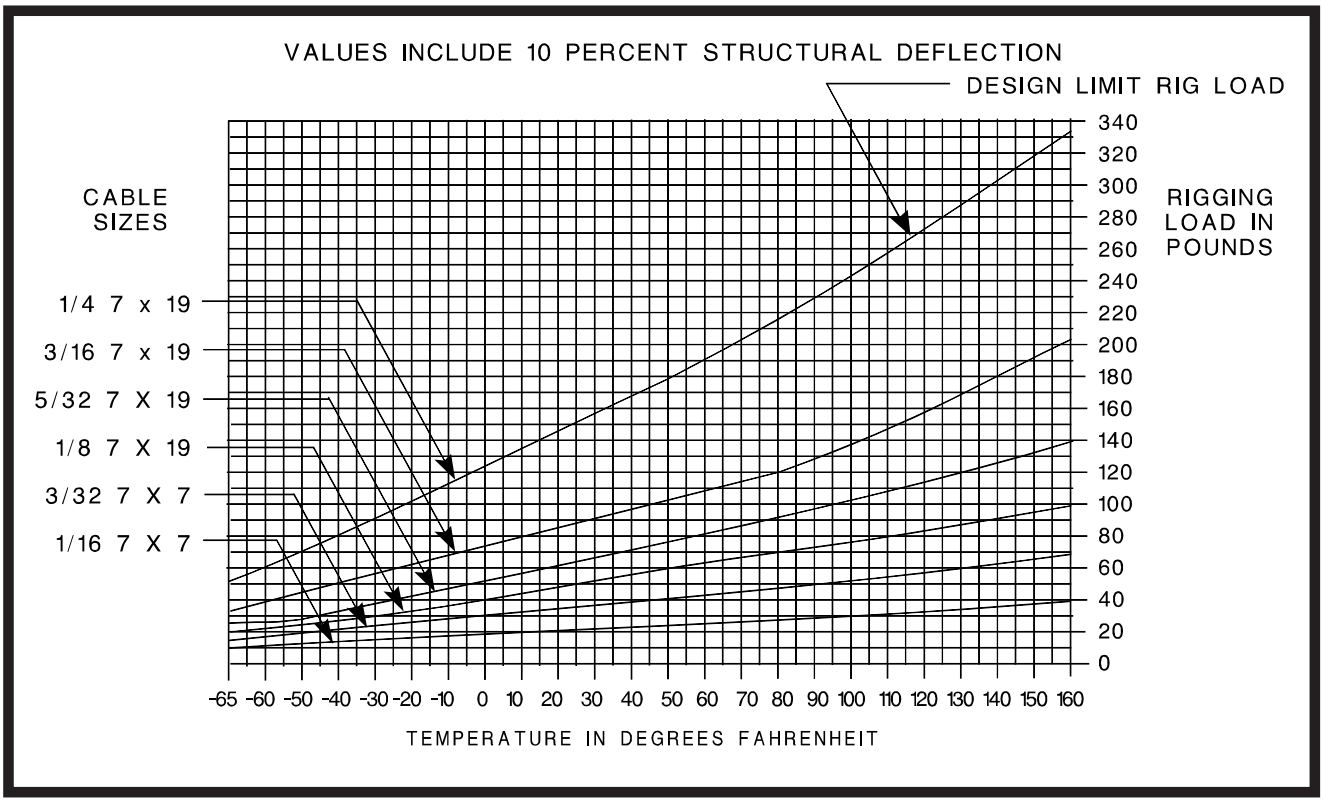

FIGURE 40.—Cable Tension Chart.

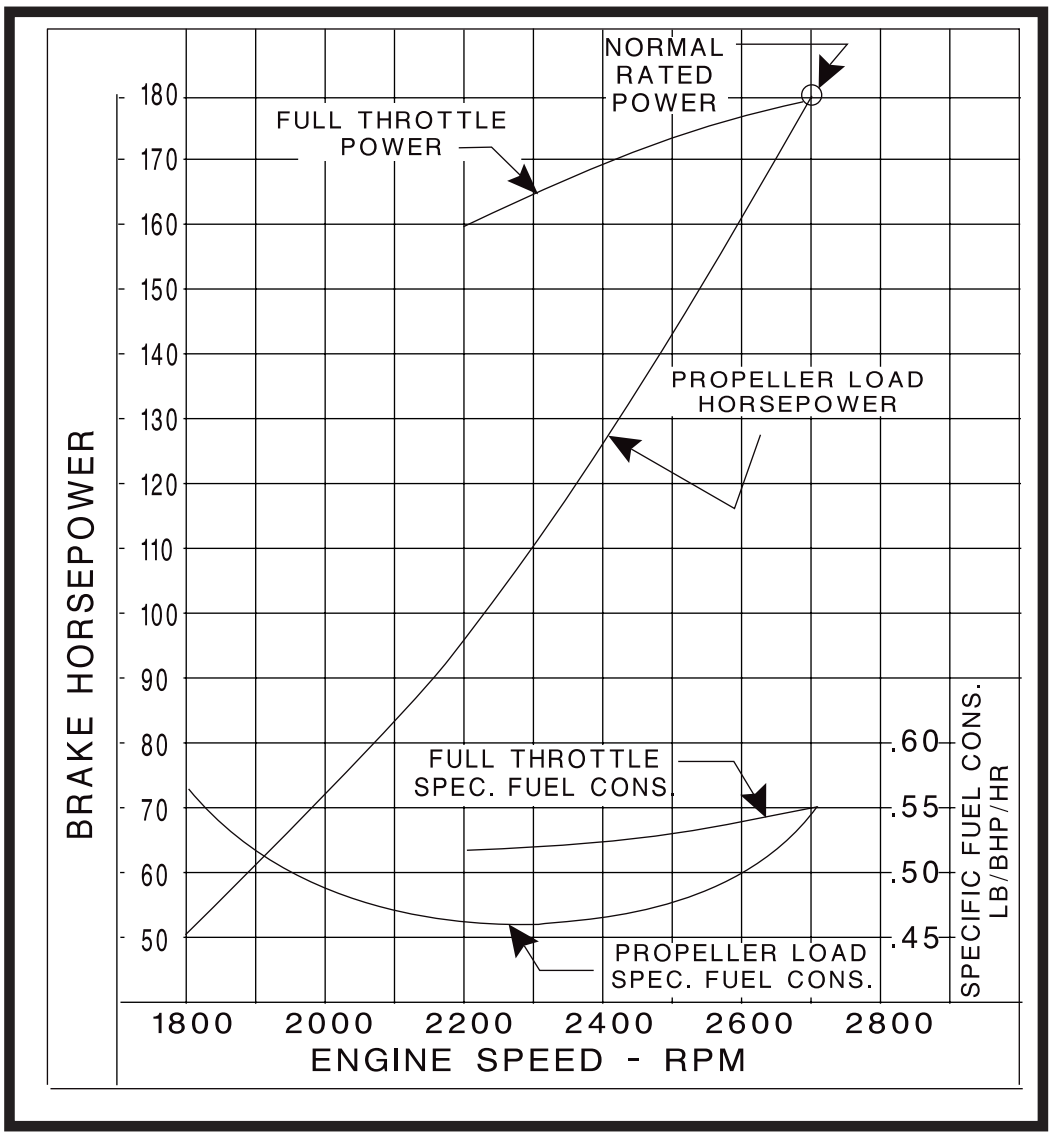

FIGURE 41.—Performance Chart.

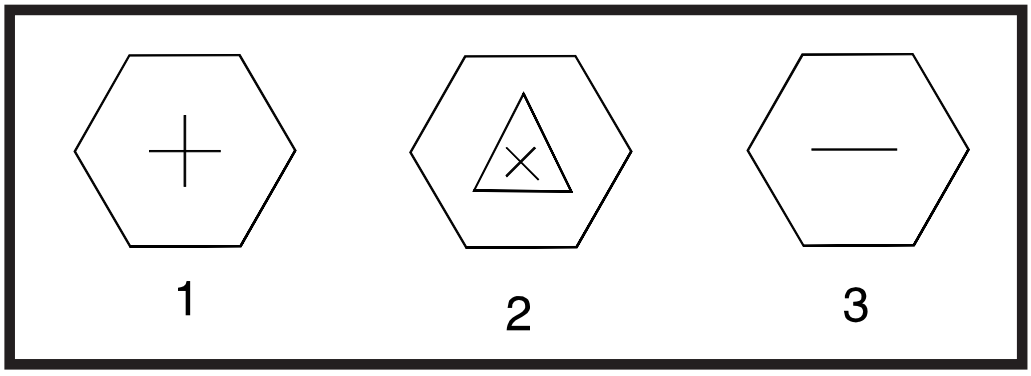

FIGURE 42.—Aircraft Hardware.

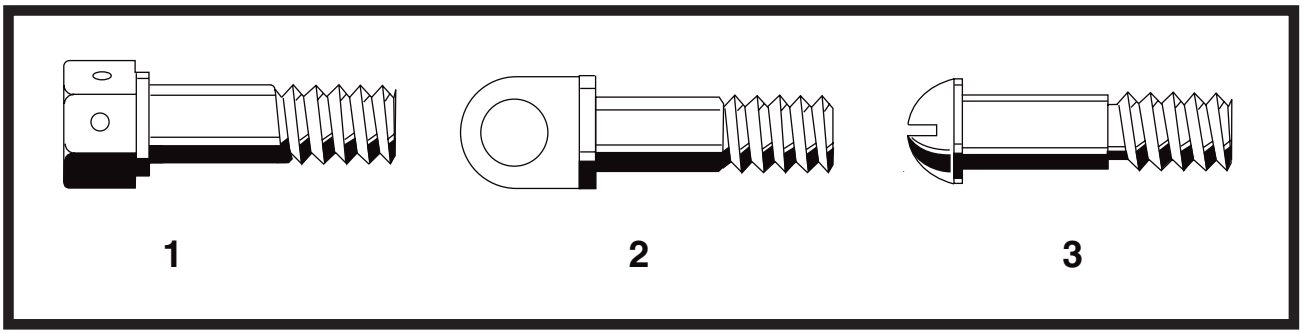

FIGURE 43.—Aircraft Hardware.

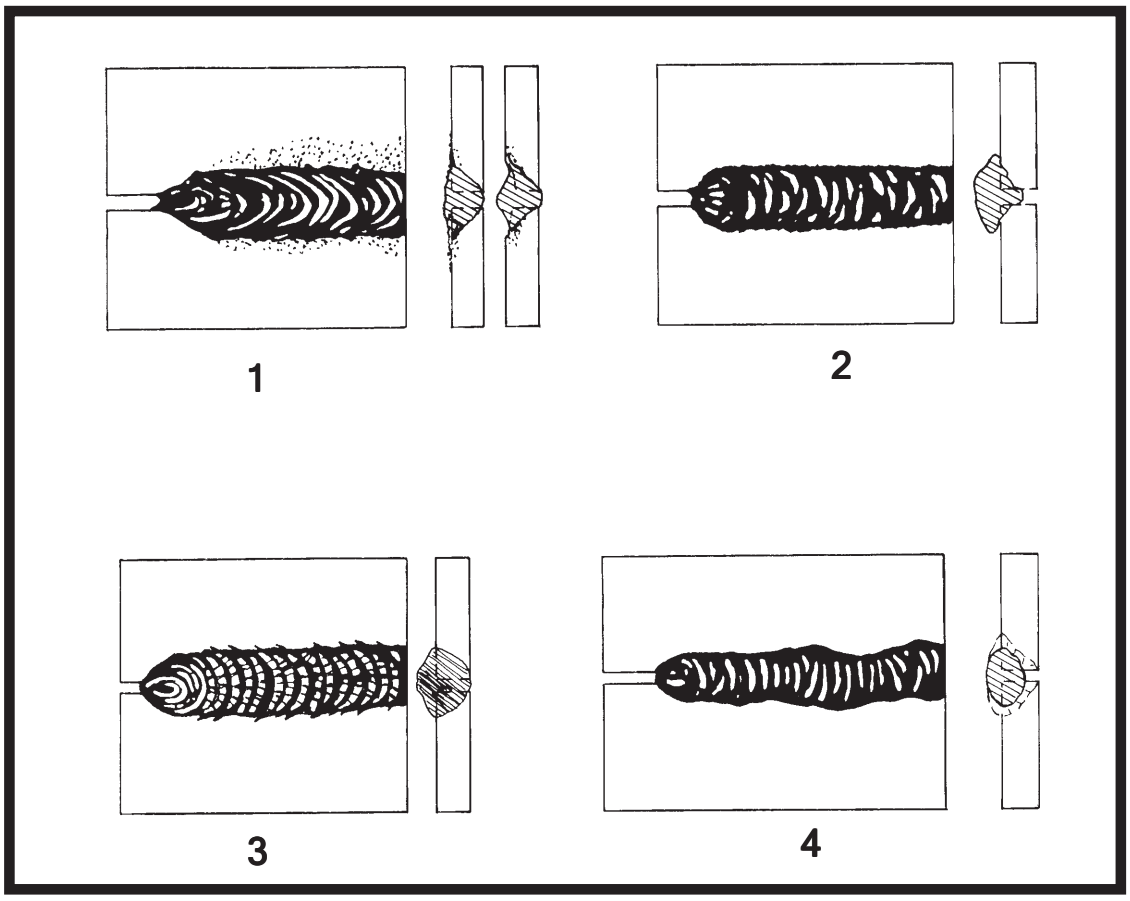

FIGURE 44.—Welds.

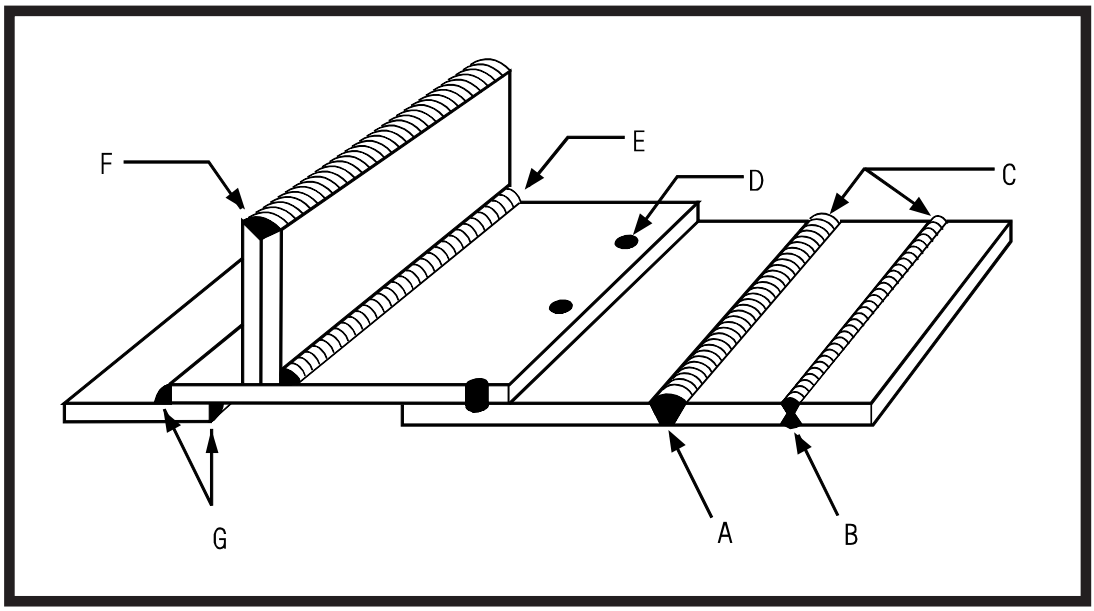

FIGURE 45.—Welds.

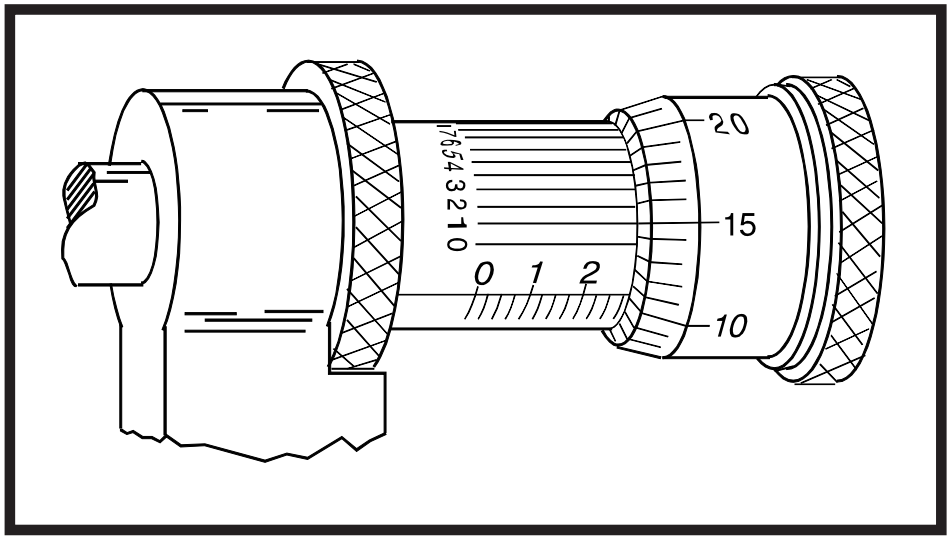

FIGURE 46.—Precision Measurement.

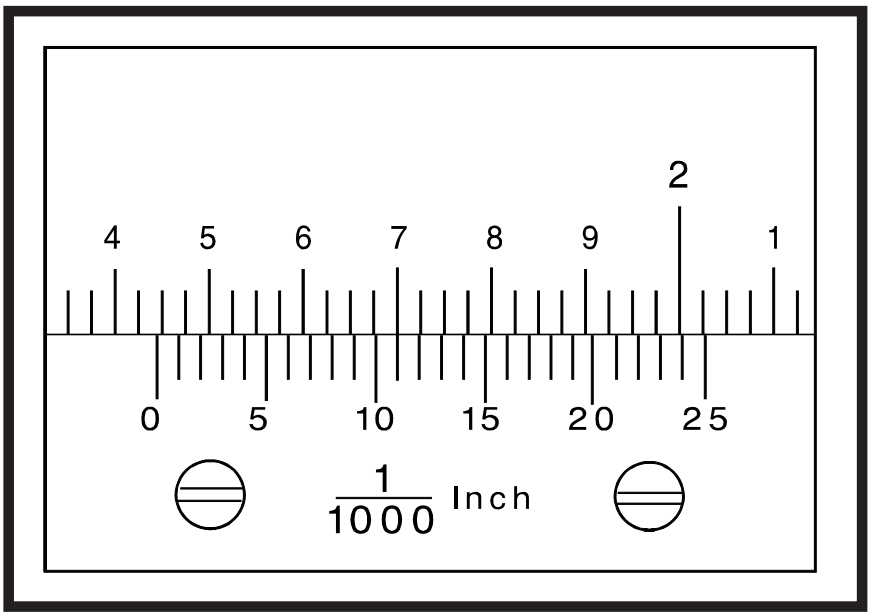

FIGURE 47.—Precision Measurement.

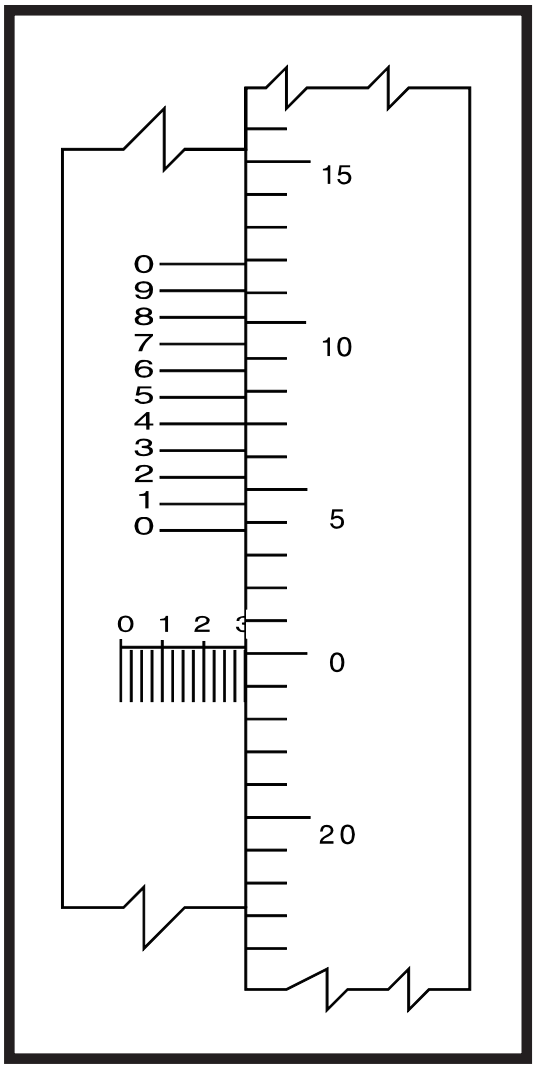

FIGURE 48.—Precision Measurement.

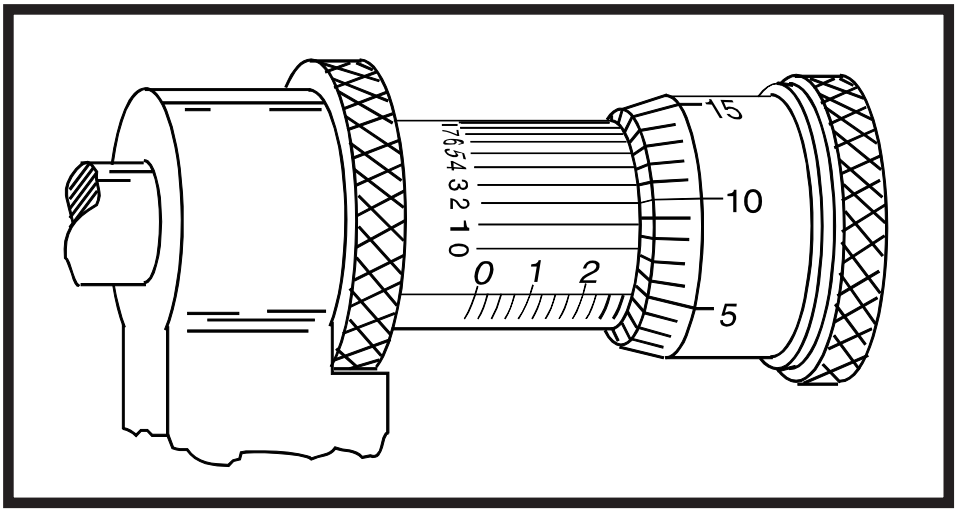

FIGURE 49.—Precision Measurement.

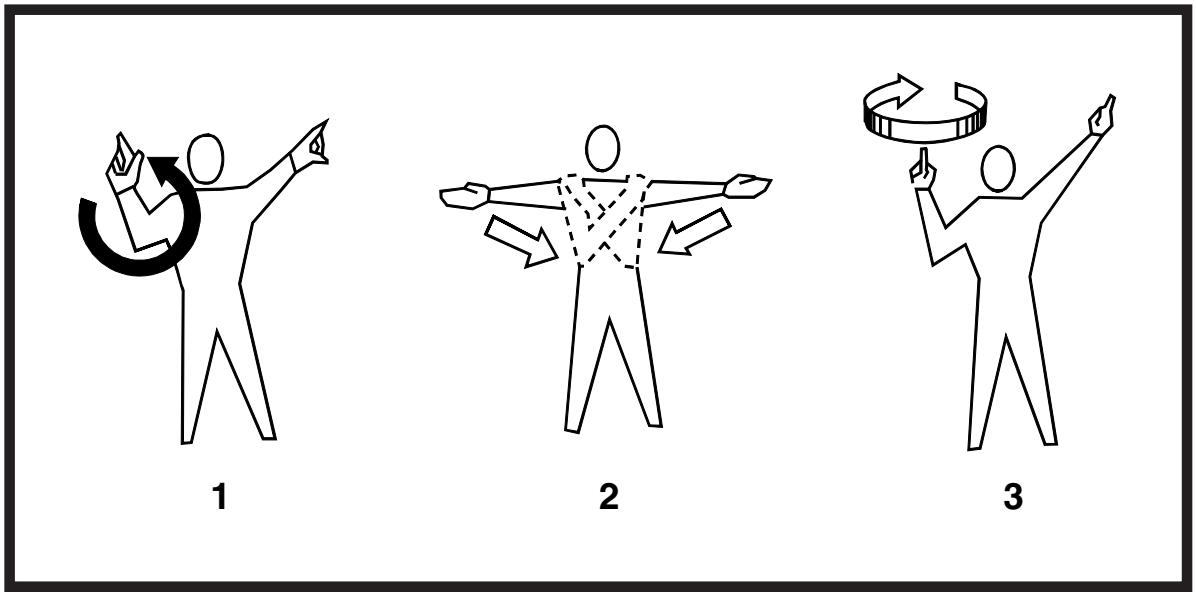

FIGURE 50.—Marshalling Signals.

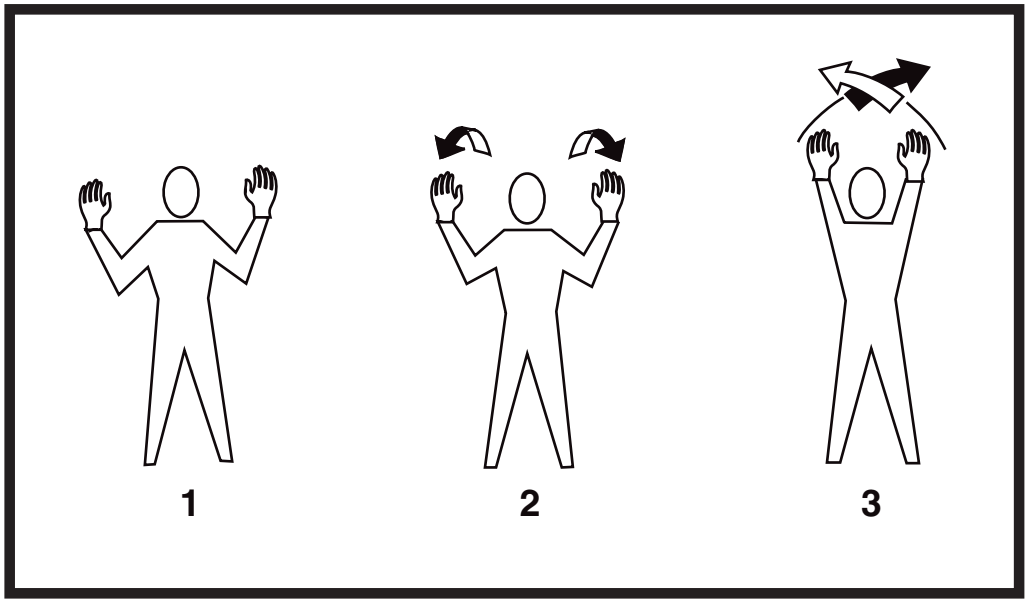

FIGURE 51.—Marshalling Signals.

$$\sqrt{(-4)^0 + 6 + (\sqrt[4]{1296})\,(\sqrt{3})^2} =$$

FIGURE 52.—Equation.

$$\frac{\sqrt[2]{31} + \sqrt[2]{43}}{(17)^2} =$$

FIGURE 53.—Equation.

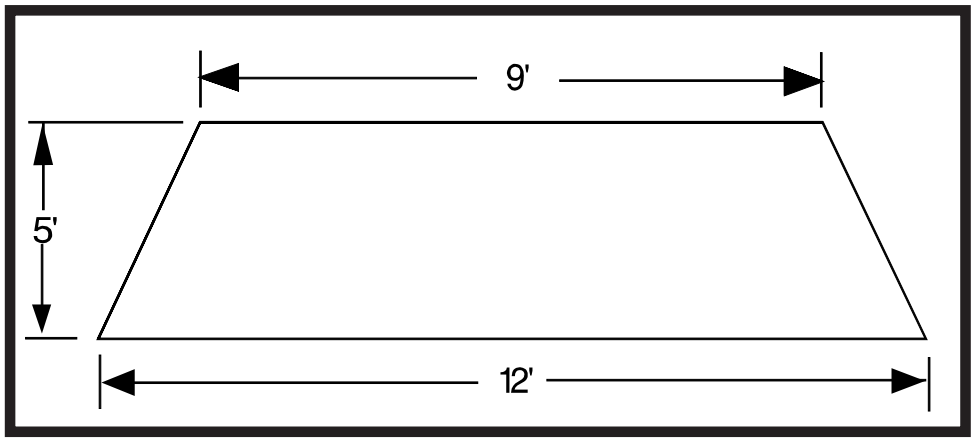

FIGURE 54.—Trapezoid Area.

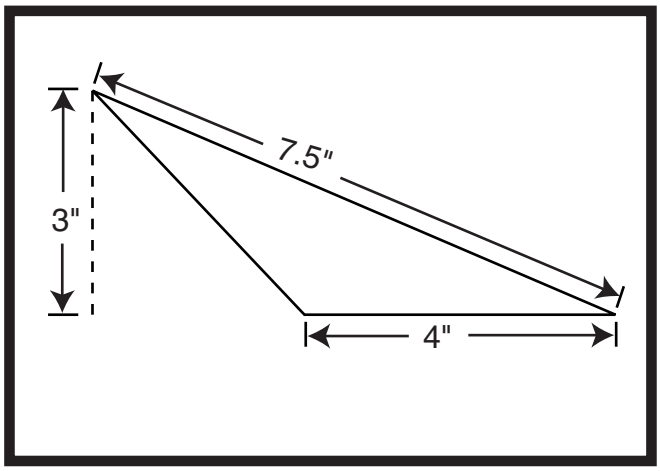

FIGURE 55.—Triangle Area.

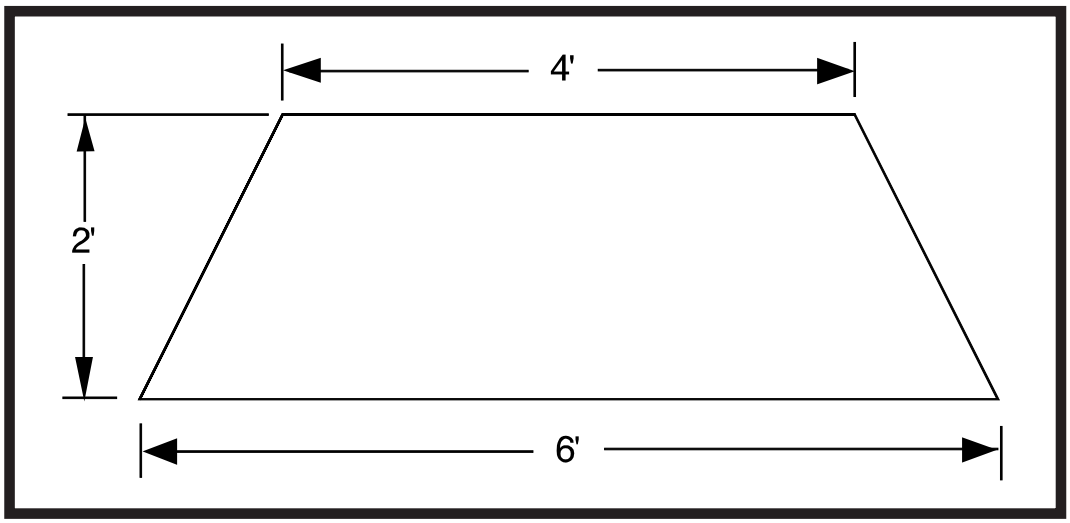

FIGURE 56.—Trapezoid Area.

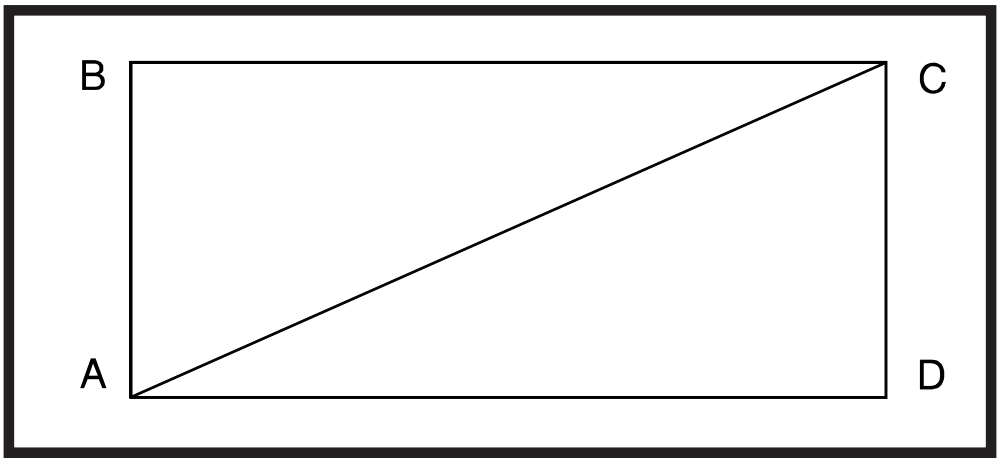

FIGURE 57.—Triangle Area.

$$\frac{(-35 + 25)(-7) + (\pi)(16^{-2})}{\sqrt{25}} =$$

FIGURE 58.—Equation.

$$\frac{-4\overline{)125}}{-6\overline{)-36}} =$$

FIGURE 59.—Equation.

$$\frac{(-5 + 23)(-2) + (3^{-3})(\sqrt{64})}{-27 \div 9} =$$

FIGURE 60.—Equation.

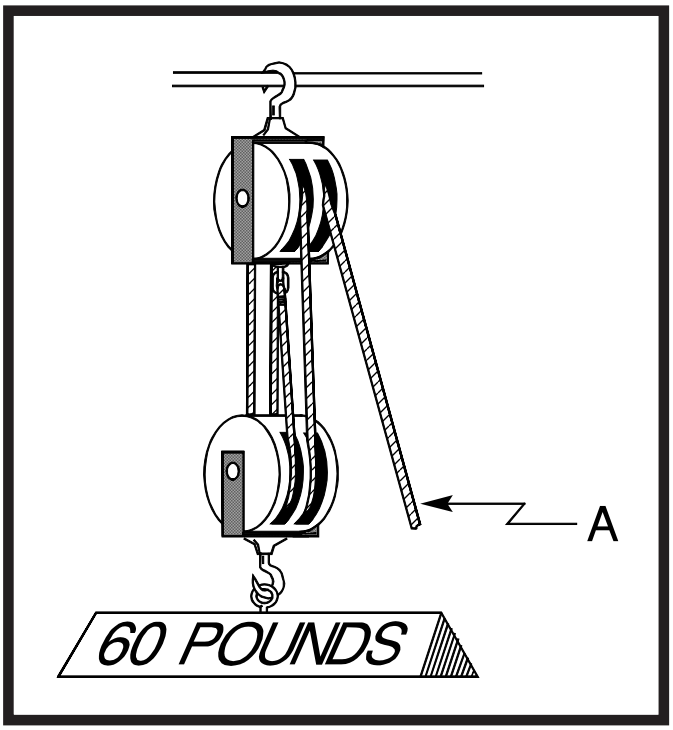

FIGURE 61.—Physics.

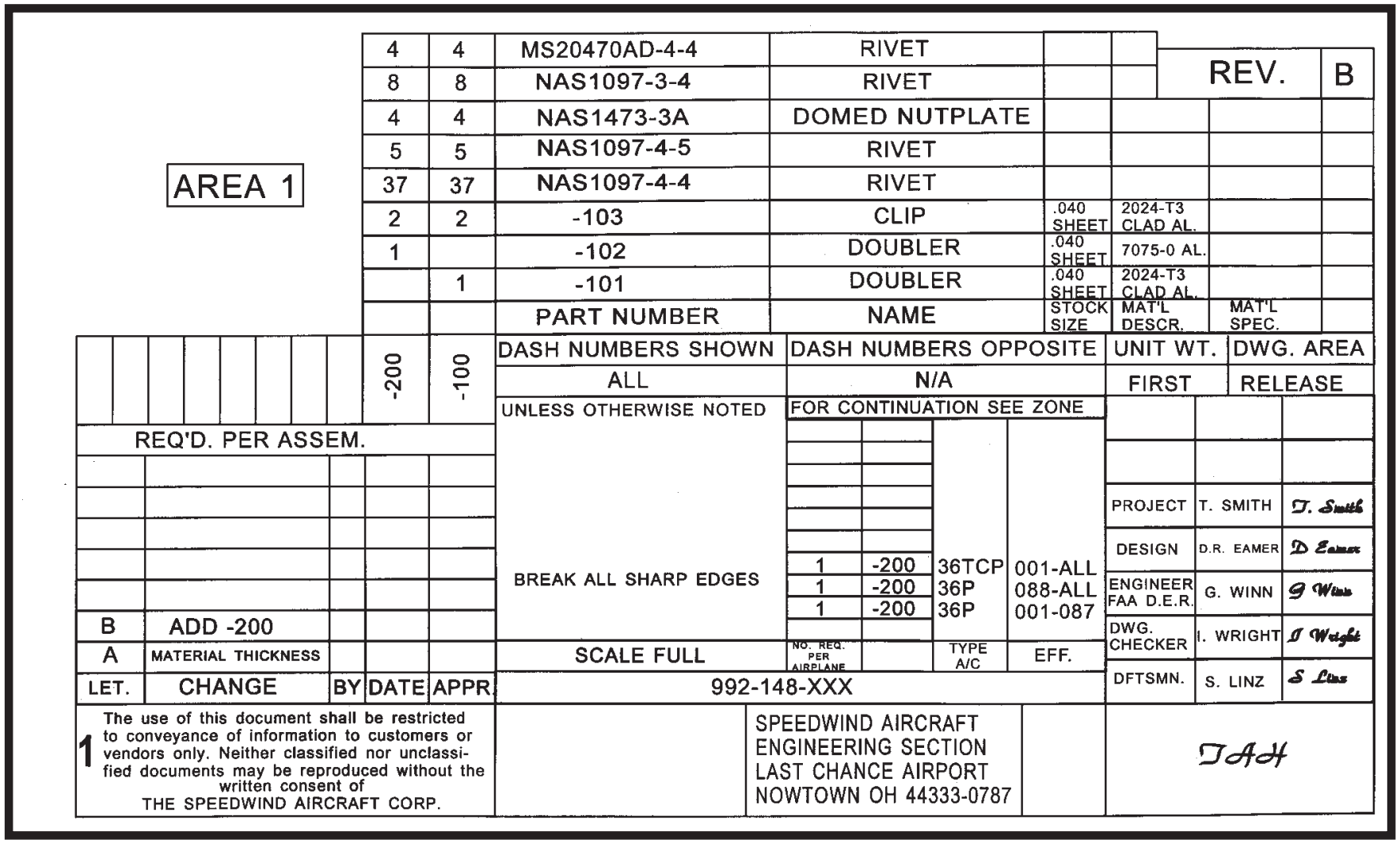

FIGURE 62.—Part 1 of 3 – Maintenance Data.

Area 2

GENERAL NOTES -100

1. ALL BENDS +/- .5 deg.
2. All holes +/- .003.
3. Apply Alodine 1000.
4. Prime with MIL-P-23377 or equivalent.
5. Trim S-1 C just aft of the clip at STA. 355.750 and forward of the front face of the STA. 370.25 frame and remove from the airplane.
6. Position the -101 doubler as shown. Install wet with NAS1097AD-4-4 and -4-5 rivets and a faying surface seal of PR 1422. Pick up the rivet row that was in S-1 C and the aft rivets in sta. 370.25. Tie doubler into front frame with clips as shown using MS20470AD-4-4 rivets through the clips and the frame.
7. Install 4 NAS1473-3A nutplates with NAS1097-3-4 rivets through the skin and doubler to retain the antenna.
8. Strip paint and primer from under the antenna footprint.
9. Treat skin with Alodine 1000.
10. Install antenna and apply weather seal fillet around antenna base.

Area 3

GENERAL NOTES -200

Note: P. S. = Process Specification
IAW = in accordance with

1. All bends IAW P. S. 1000.
2. All holes IAW P. S. 1015.
3. Heat treat -102 to -T6 IAW P. S. 5602.
4. Alodine IAW P. S. 10000.
5. Prime IAW P. S. 10125.
6. Trim S-1 C just aft of the clip at STA. 355.750 and forward of the front face of the STA. 370.25 frame and remove from airplane.
7. Position the -102 doubler as shown. Install wet with NAS1097AD-4-4 and -4-5 rivets, and a faying surface seal IAW P. S. 41255. Pick up the rivet row that was in S-1 C and the aft rivets in STA. 370.25. Add two edge rows as shown. Tie doubler into front frame with clips as shown using MS20470AD-4-4 rivets through the clips and the frame.
8. Install 4 NAS1473-3A nutplates with NAS1097-3-4 rivets through the skin and doubler to retain the antenna.
9. Strip paint and primer from under the antenna footprint.
10. Treat skin IAW P.S. 10000.
11. Install antenna and apply weather seal fillet around antenna base.

FIGURE 62A.—Part 2 of 3 – Maintenance Data.

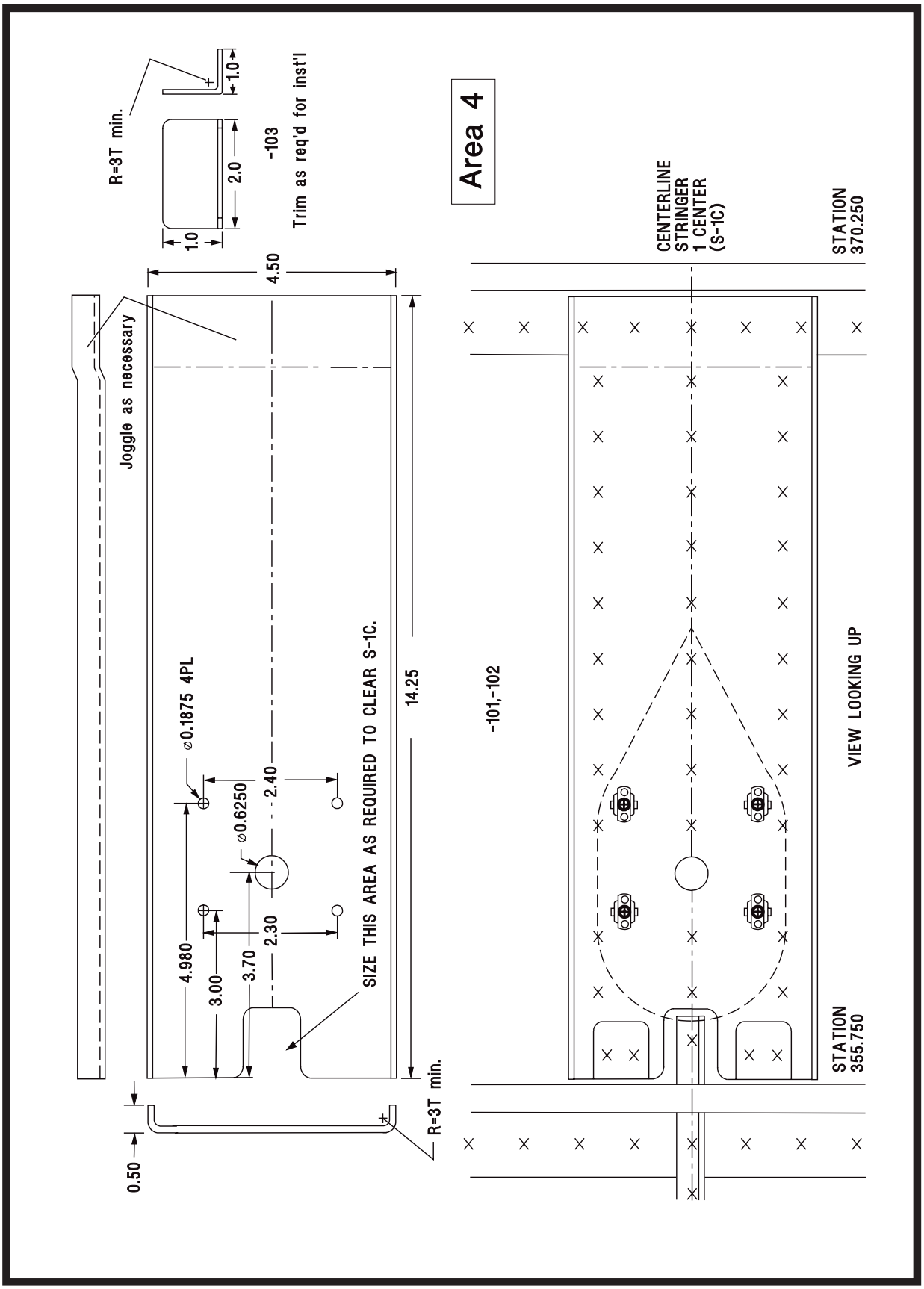

FIGURE 62B.—Part 3 of 3 – Maintenance Data.

The following is the compliance portion of an Airworthiness Directive. "Compliance required as indicated, unless already accomplished:

I. Aircraft with less than 500-hours' total time in service: Inspect in accordance with instructions below at 500-hours' total time, or within the next 50-hours' time in service after the effective date of this AD, and repeat after each subsequent 200 hours in service.

II. Aircraft with 500-hours' through 1,000-hours' total time in service: Inspect in accordance with instructions below within the next 50-hours' time in service after the effective date of this AD, and repeat after each subsequent 200 hours in service.

III. Aircraft with more than 1,000-hours' time in service: Inspect in accordance with instructions below within the next 25-hours' time in service after the effective date of this AD, and repeat after each subsequent 200 hours in service."

FIGURE 63.—Airworthiness Directive Excerpt.

$$R_t = E^2/P$$

FIGURE 64.— Resistance Total.

1 $3.47 \times 10^4 = 34{,}700.$

2 $2(4^{10}) = 2{,}097{,}152.$

FIGURE 65.—Scientific Notation.

$$-4 + 6 + 10^3 \left(\sqrt{1296}\right) =$$

FIGURE 66.— Equation.

$$\frac{\sqrt{31} + \sqrt{43}}{(17)^2} =$$

FIGURE 67.—Equation.

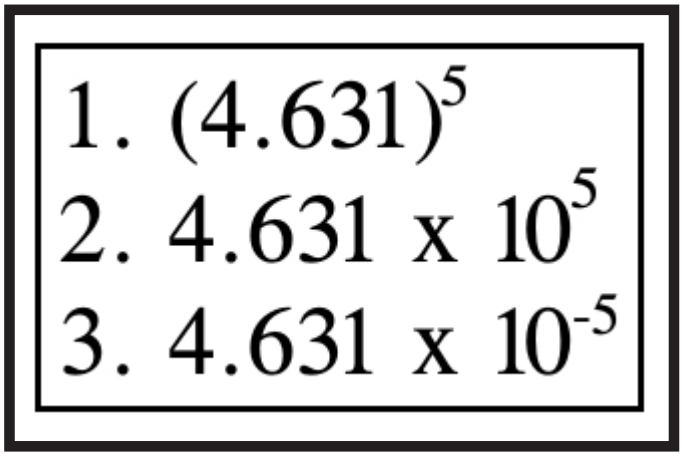

FIGURE 68.—Alternative Answer.

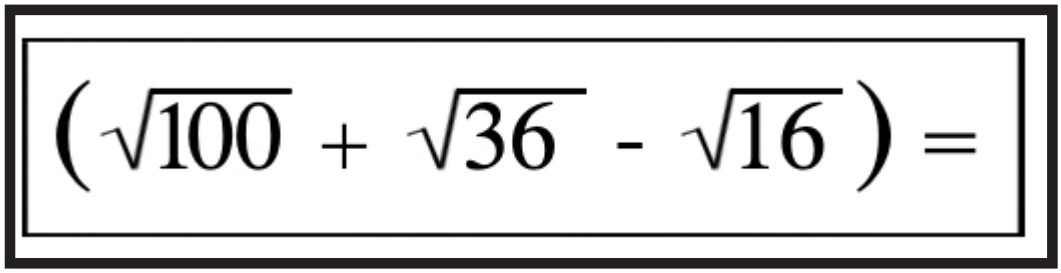

FIGURE 69.—Equation.

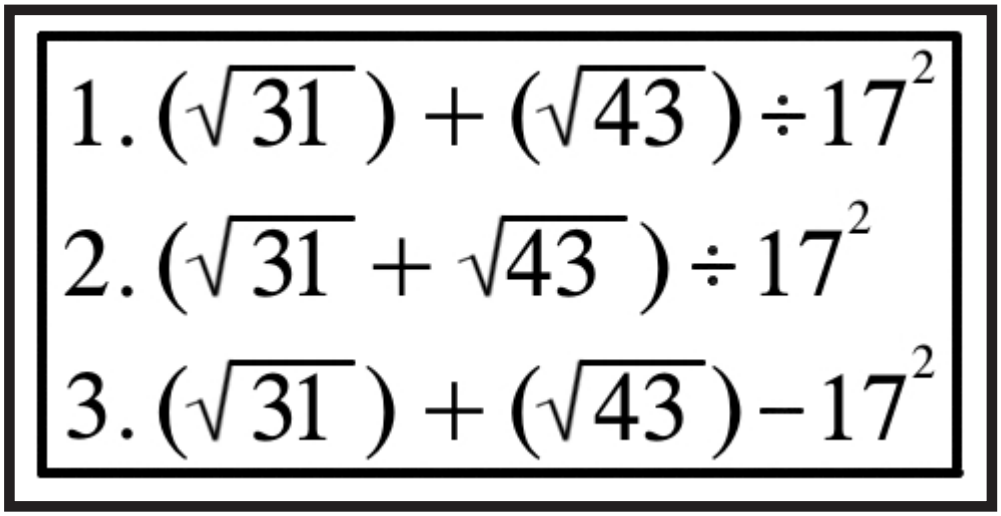

FIGURE 70.—Alternative Answer.

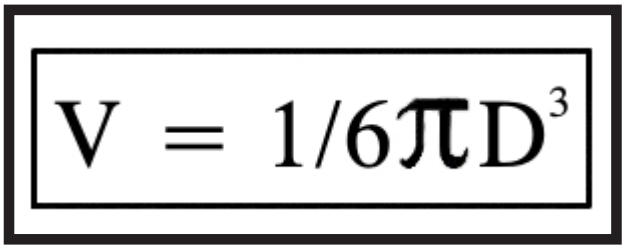

FIGURE 71.—Volume of a Sphere.

Aviation Mechanic Powerplant

This is the compliance portion of an FAA Airworthiness Directive.

Compliance required as indicated:

(A) For model O-690 series engines, serial Nos. 101-40 through 5264-40 and IO-690 series engines, serial Nos. 101-48 through 423-48, compliance with (C) required within 25 hours' time in service after the effective date of this AD and every 100 hours' time in service thereafter.

(B) For Model O-690 series engines, serial Nos. 5265-40 through 6129-40 and IO-690 series engines, serial Nos. 424-48 through 551-48, compliances with (C) required as follows:

(1) Within 25 hours' time in service after the effective date of this AD and every 100 hours' time in service thereafter for engines with more than 275 hours' time in service on the effective date of this AD.

(2) Prior to the accumulation of 300 hours total time in service and every 100 hours' time in service thereafter for engines with 275 hours or less time in service on the effective date of this AD.

(C) Inspect the oil pump drive shaft (P/N 67512) on applicable engines in accordance with instructions contained in Connin Service Bulletin No. 295. Any shafts which are found to be damaged shall be replaced before further flight. These inspections shall be continued until Connin P/N 67512 (redesigned) or P/N 74641 oil pump drive shaft is installed at which time the inspections may be discontinued.

FIGURE 1.—Airworthiness Directive Excerpt.

CONTAINER PRESSURE VERSUS TEMPERATURE		
TEMPERATURE °F	CONTAINER PRESSURE (PSIG)	
	MINIMUM	MAXIMUM
-40	60	145
-30	83	165
-20	105	188
-10	125	210
0	145	230
10	167	252
20	188	275
30	209	295
40	230	317
50	255	342
60	284	370
70	319	405
80	356	443
90	395	483
100	438	523

FIGURE 2.—Fire Extinguisher Pressure Chart.

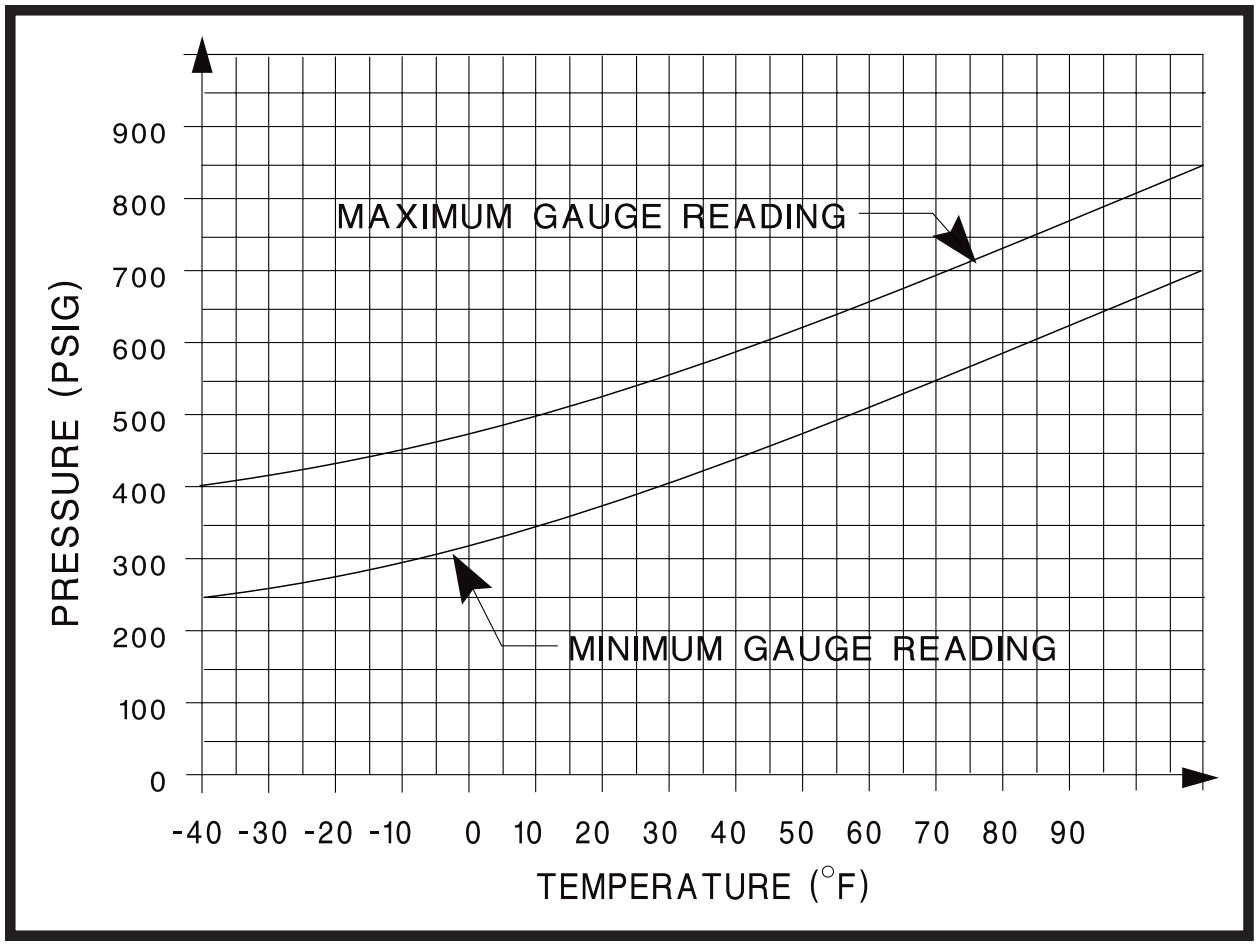

FIGURE 3.—Fire Extinguisher Pressure Chart.

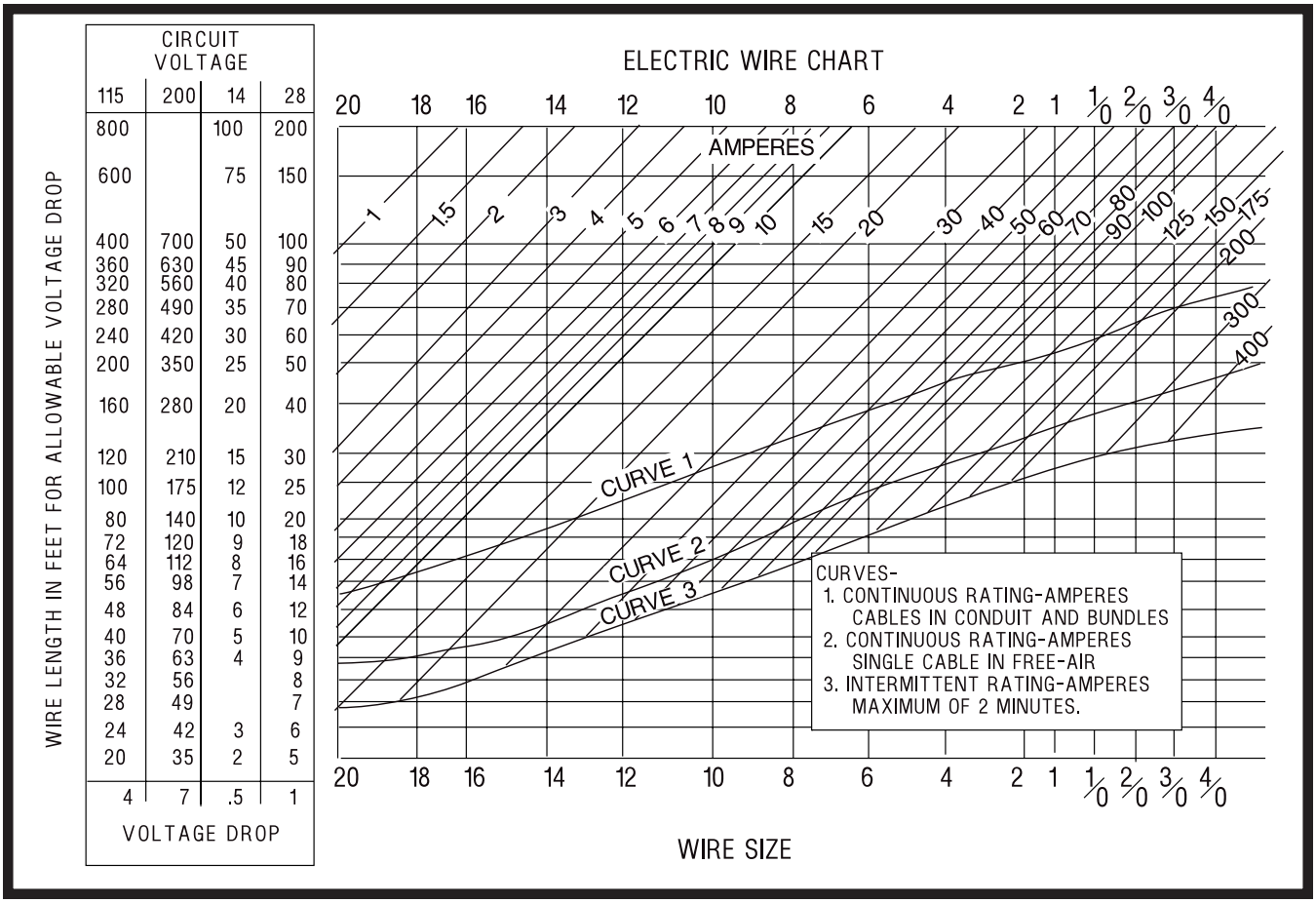

FIGURE 4.—Electric Wire Chart.

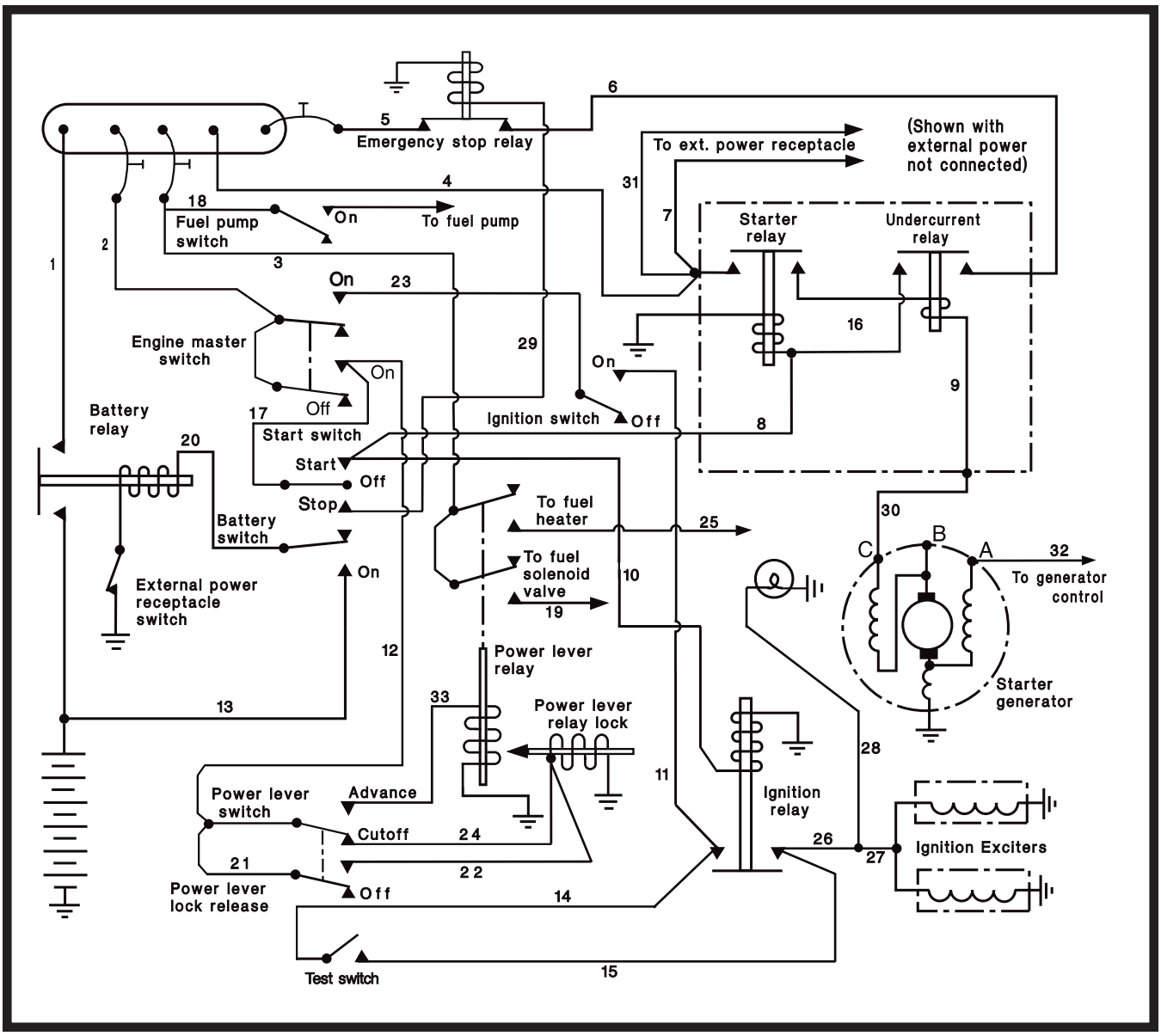

FIGURE 5.—Starter-Generator Circuit.

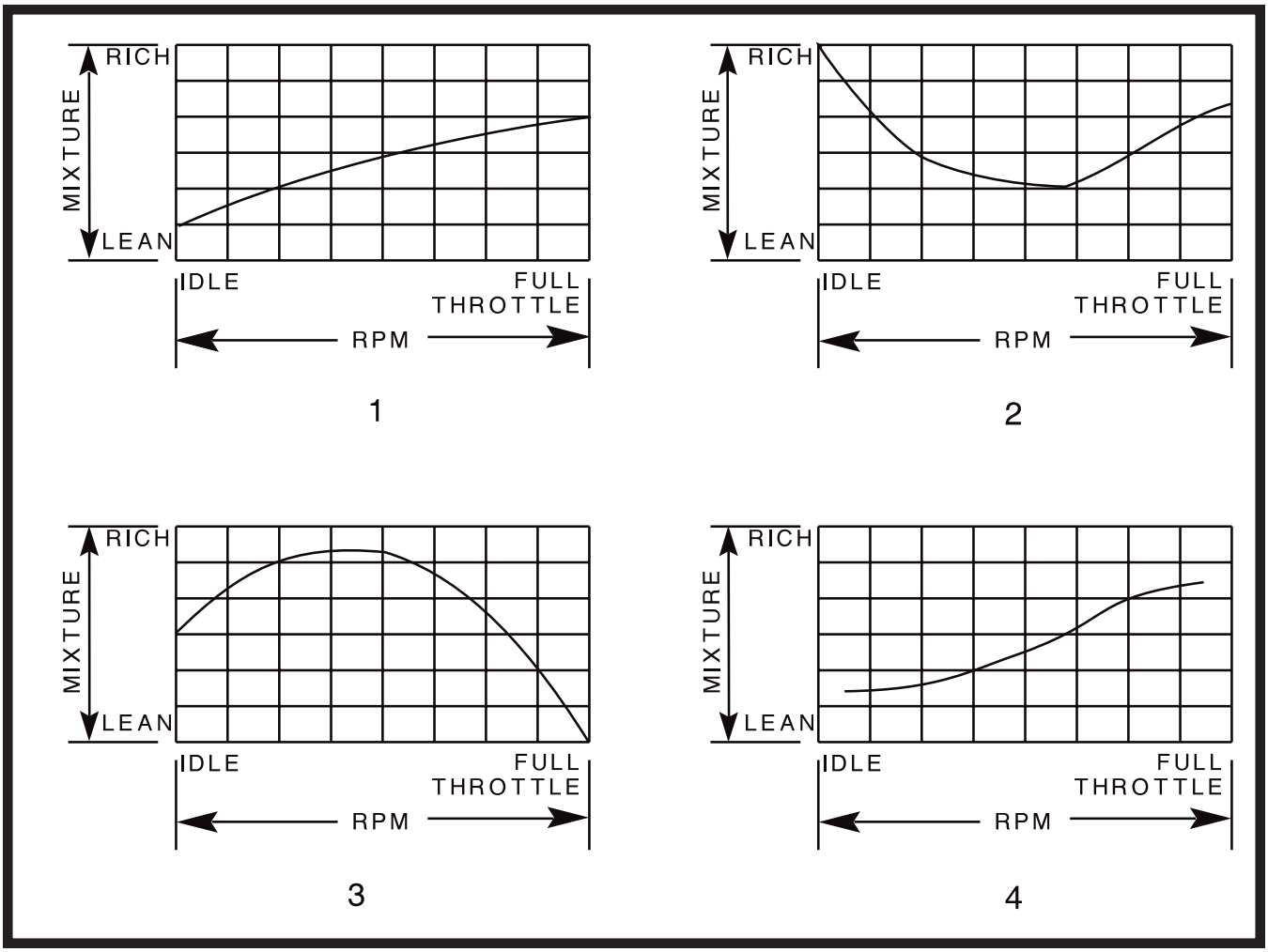

FIGURE 6.—Fuel/Air Ratio Graphs.

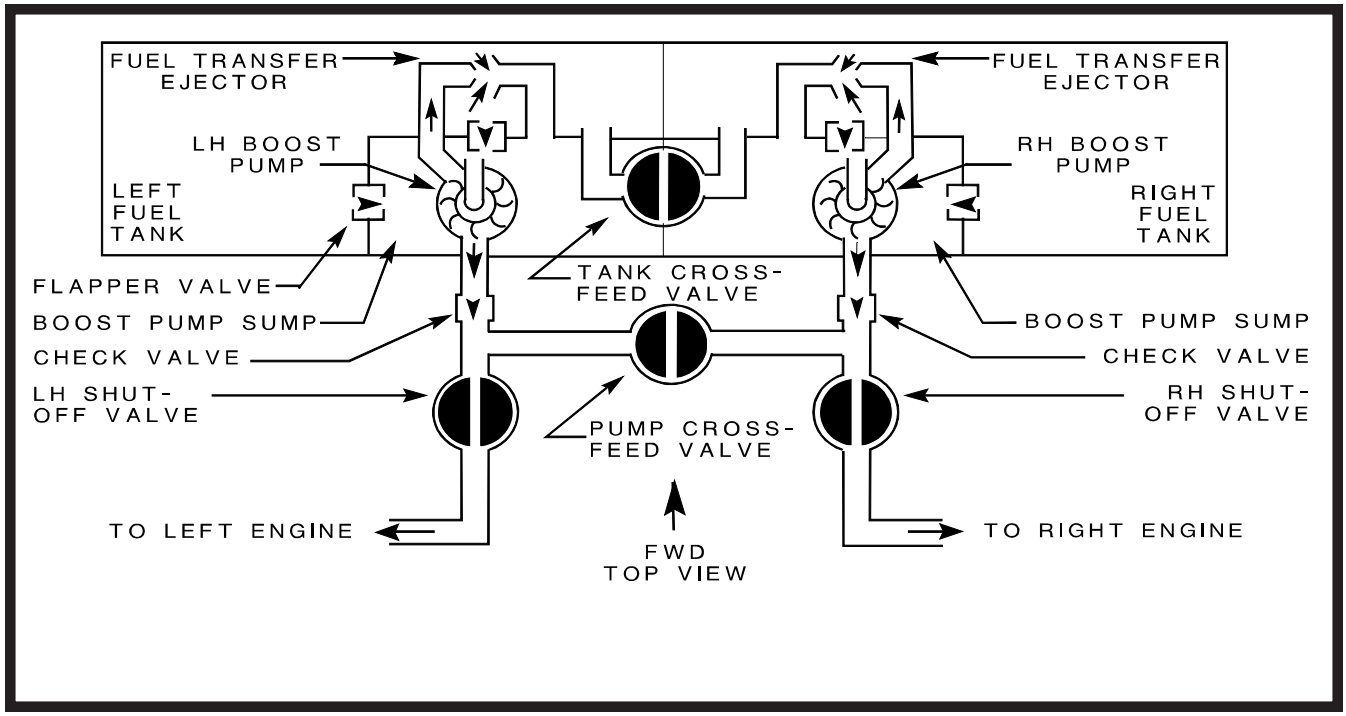

FIGURE 7.—Fuel System.

Aviation Mechanic Airframe

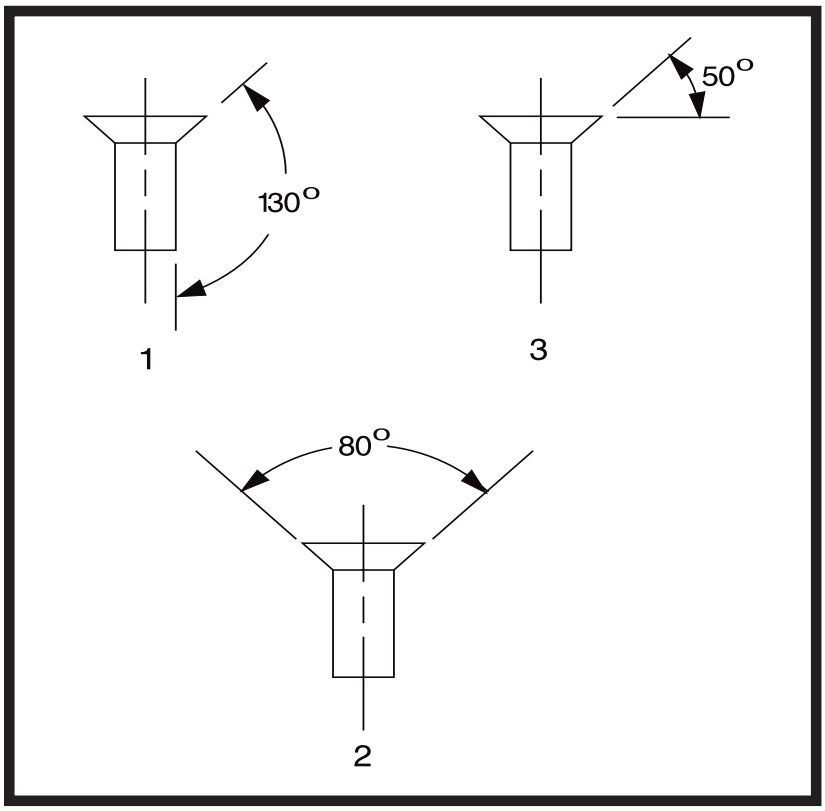

FIGURE 1.—Rivets.

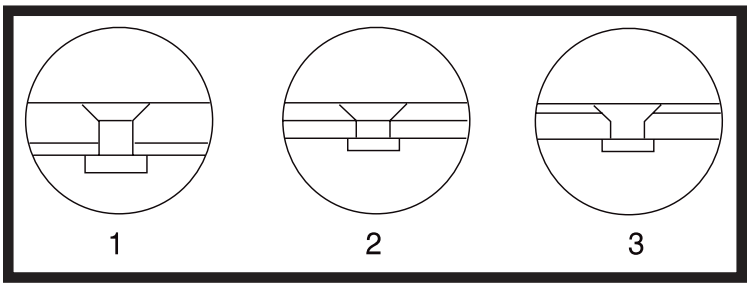

FIGURE 2.—Countersinking.

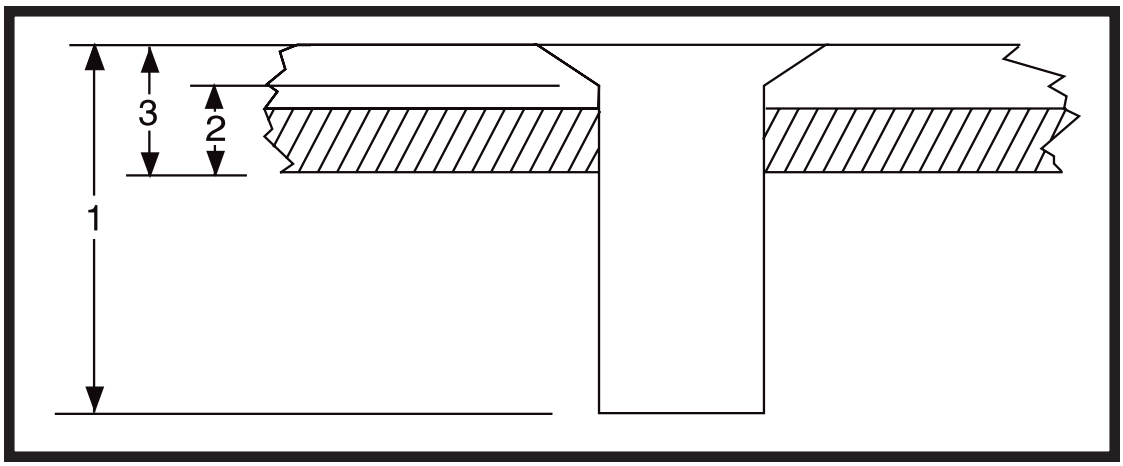

FIGURE 3.—Grip Length.

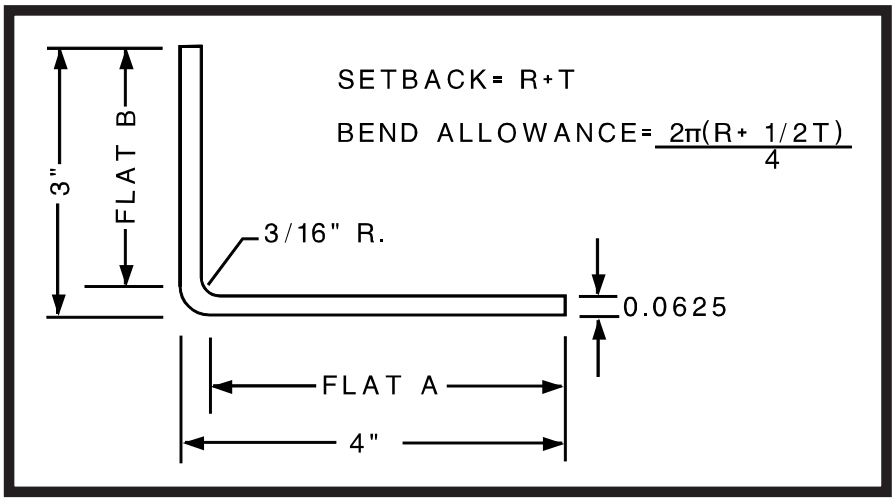

FIGURE 4.—Bending Sheet Metal.

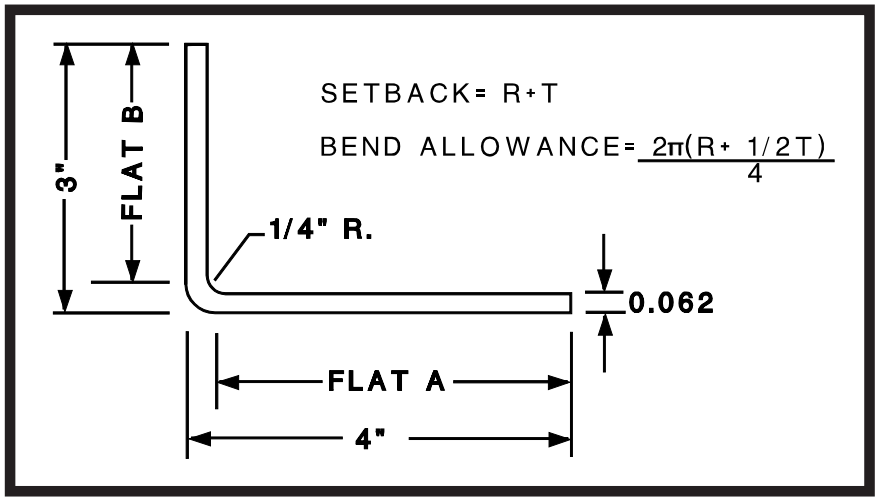

FIGURE 5.—Sheet Metal Layout.

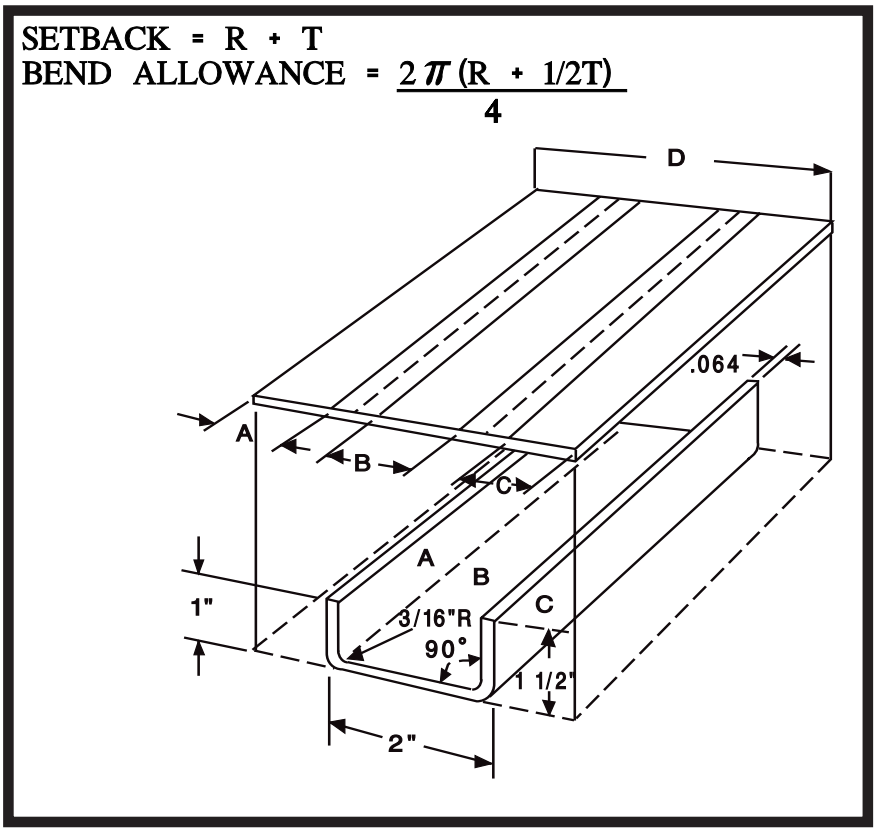

FIGURE 6.—Sheet Metal Layout.

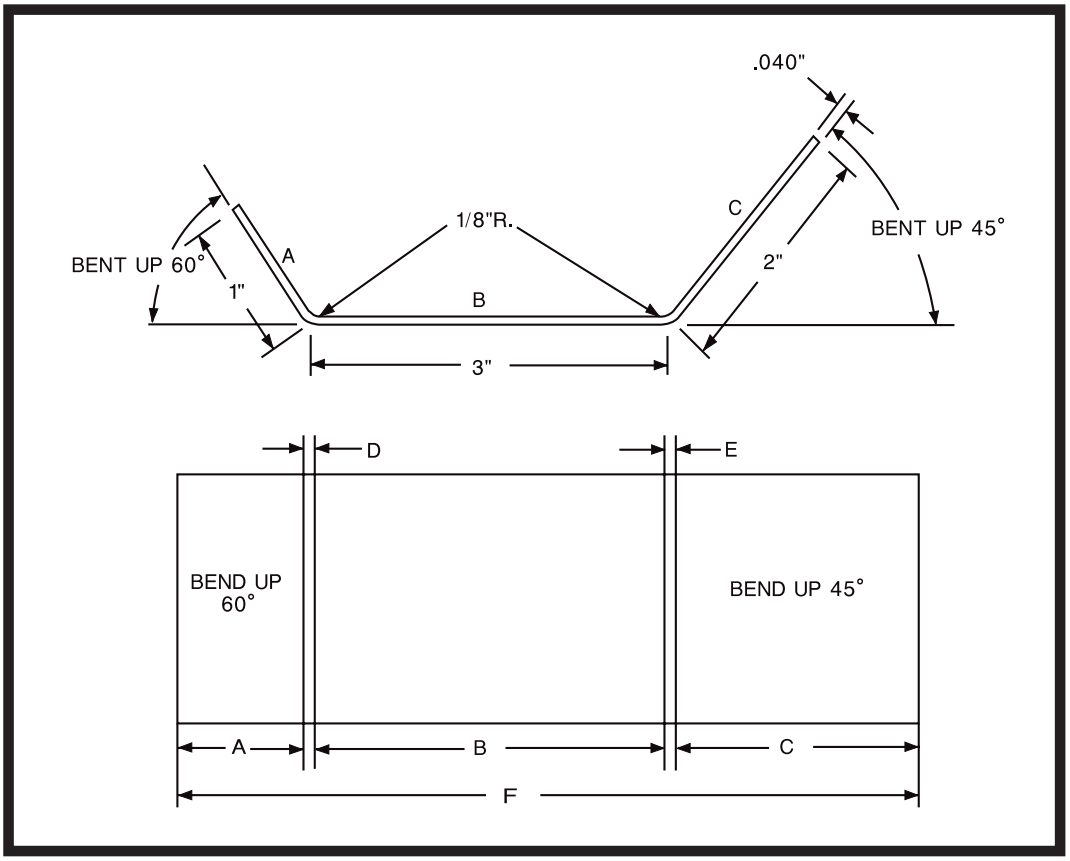

FIGURE 7.—Sheet Metal Layout.

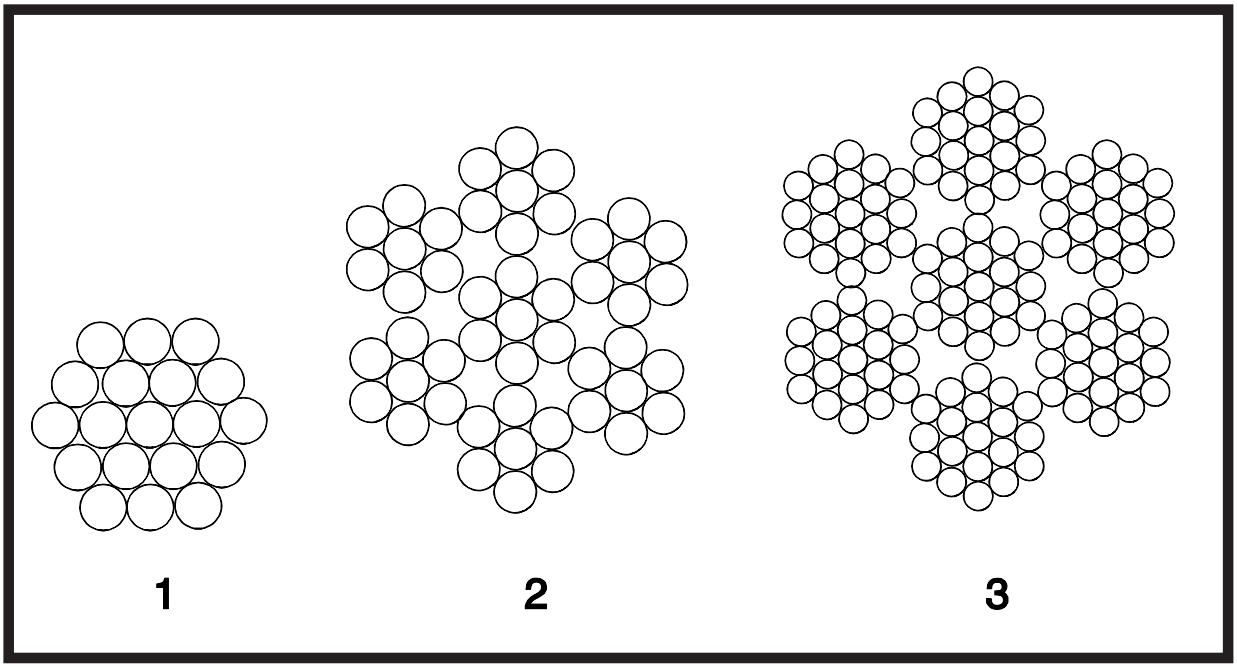

FIGURE 8.—Control Cable.

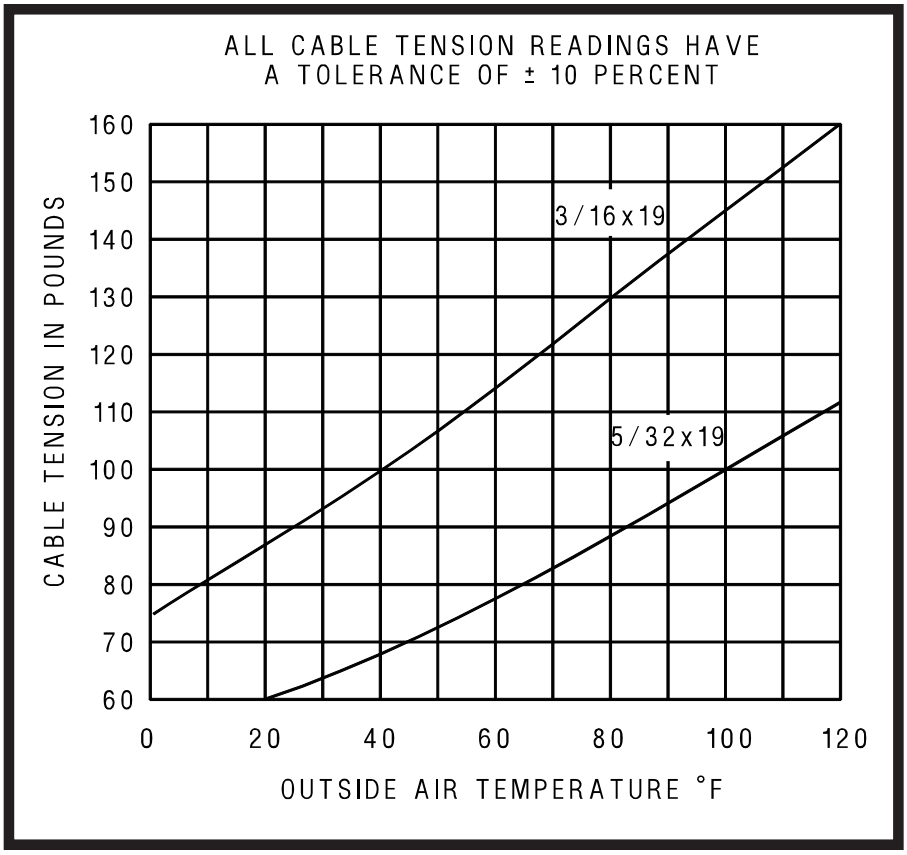

FIGURE 9.—Cable Tension Chart.

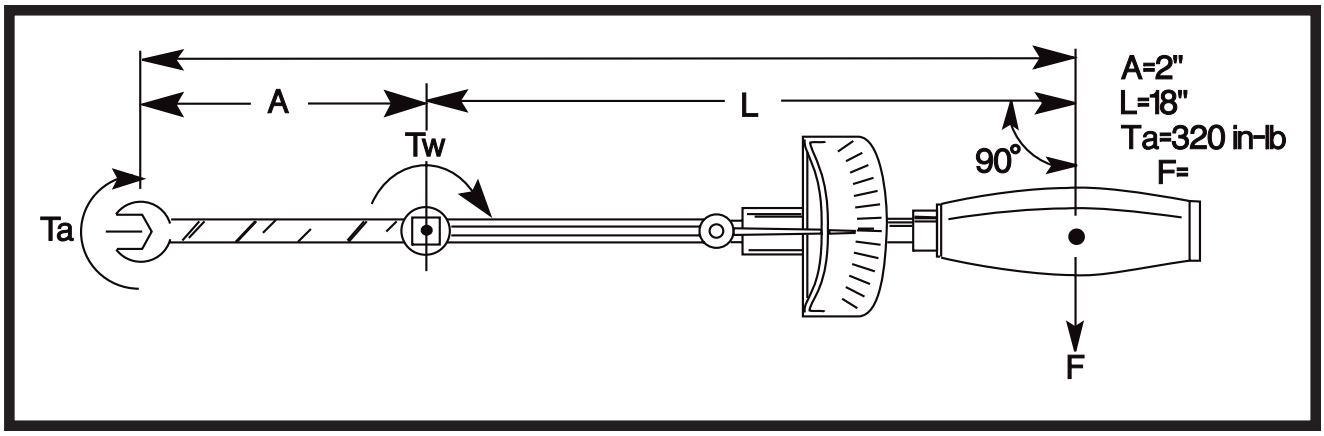

FIGURE 10.—Torque Value.

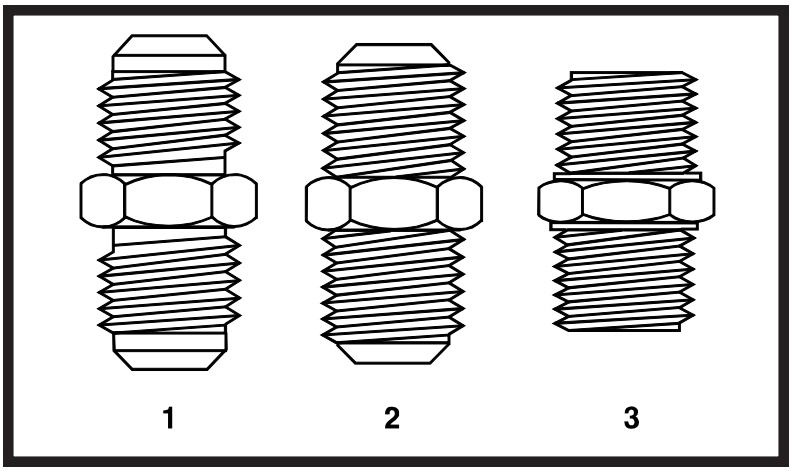

FIGURE 11.—Fittings.

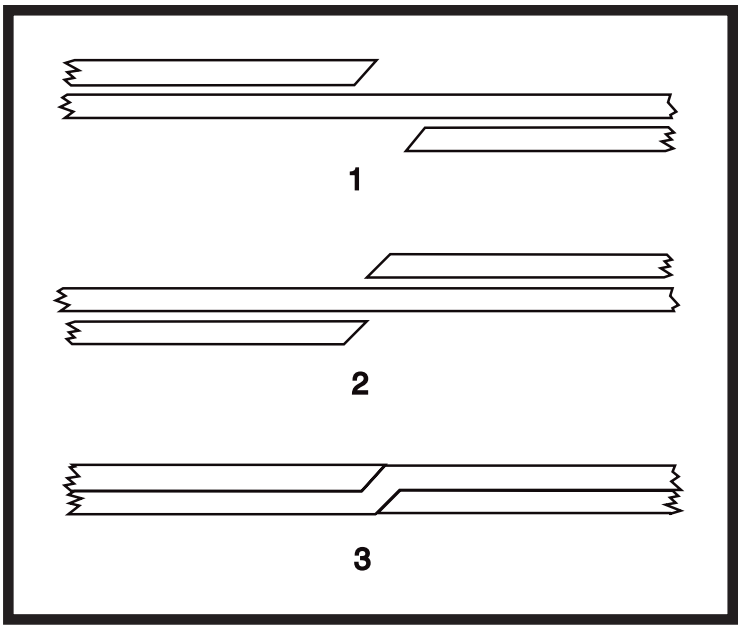

FIGURE 12.—Backup Rings.

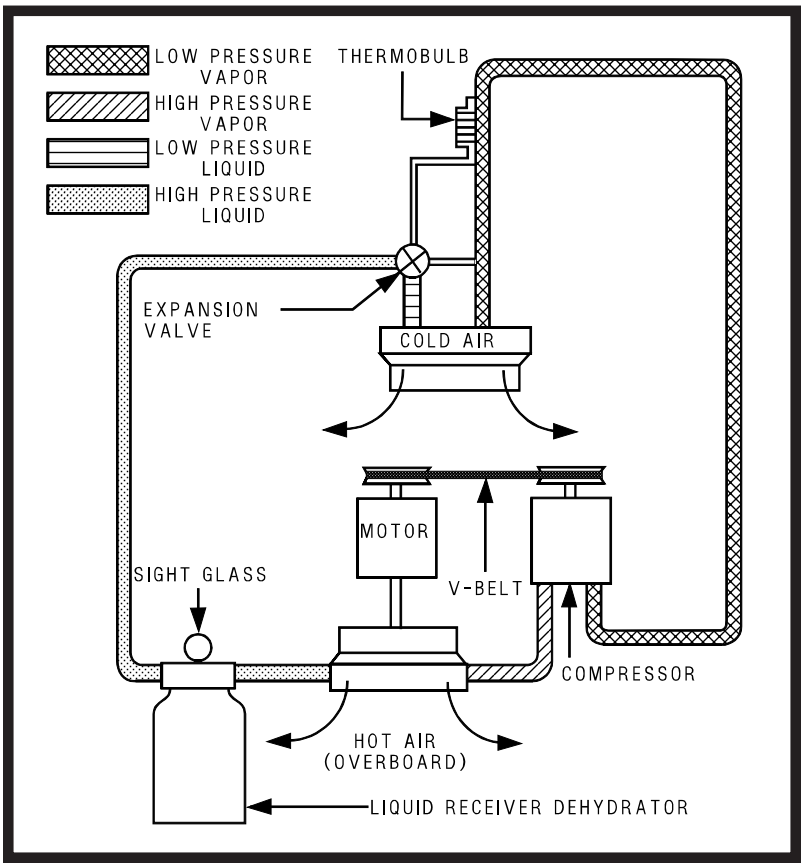

FIGURE 13.—Cooling System.

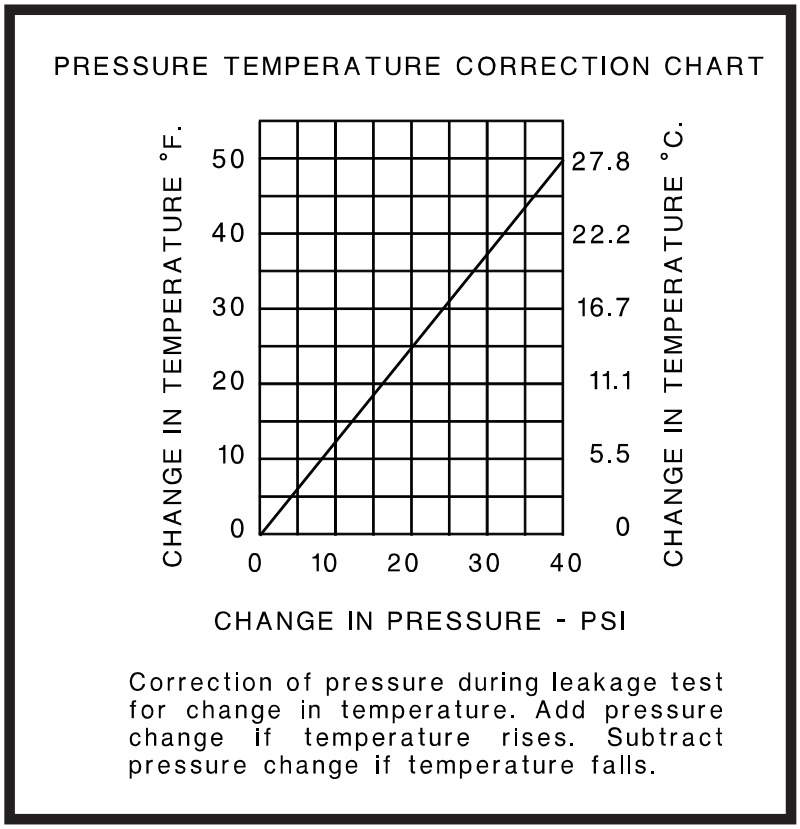

FIGURE 14.—Pressure Temperature Correction Chart.

$$D=.000327AV^2$$

FIGURE 15.—Formula.

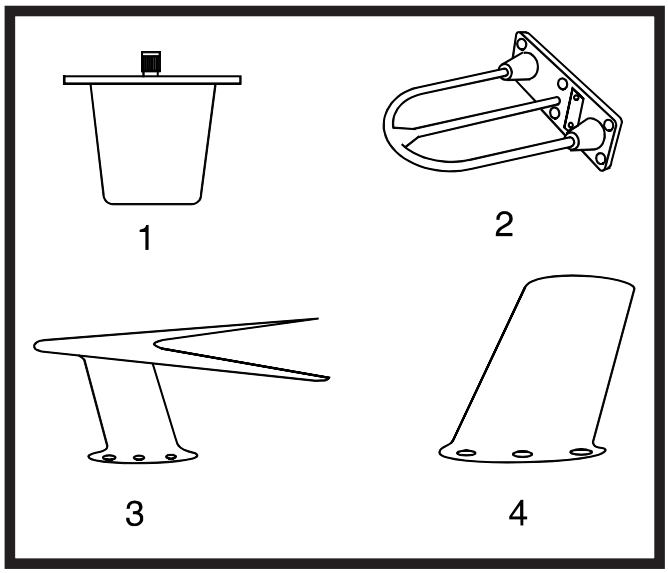

FIGURE 16.—Antennas.

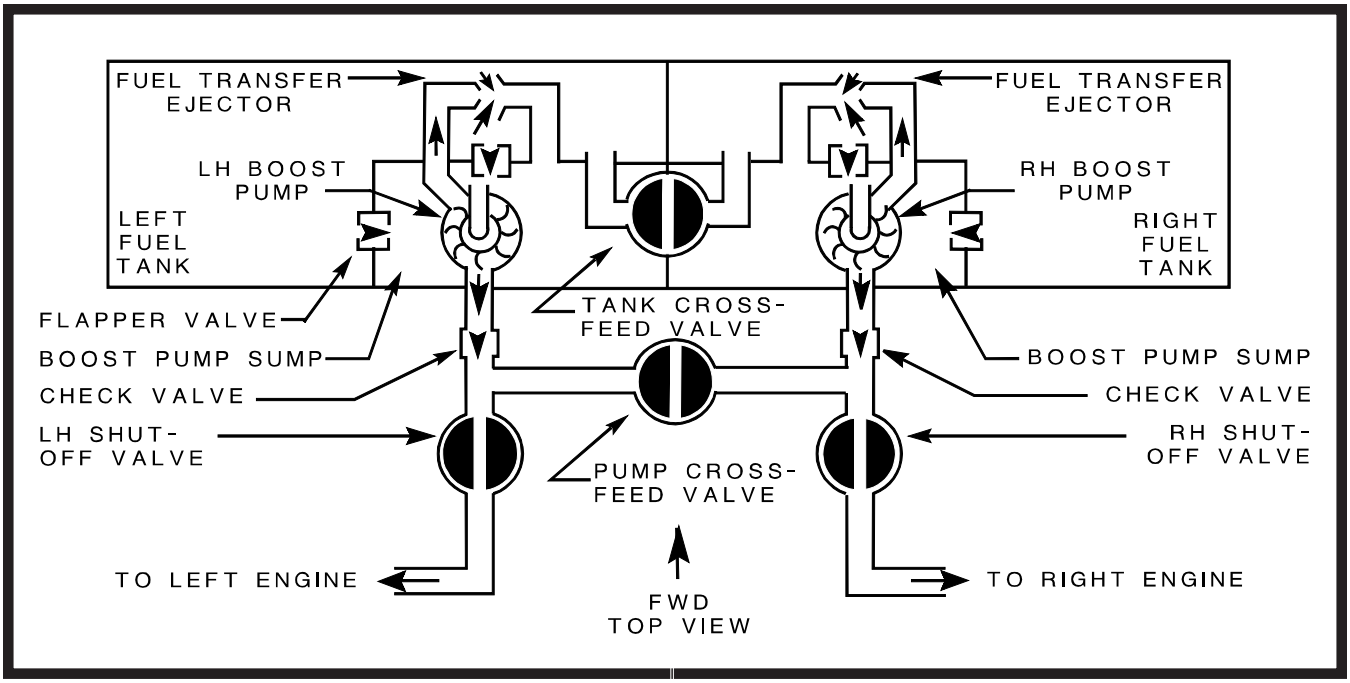

FIGURE 17.—Fuel System.

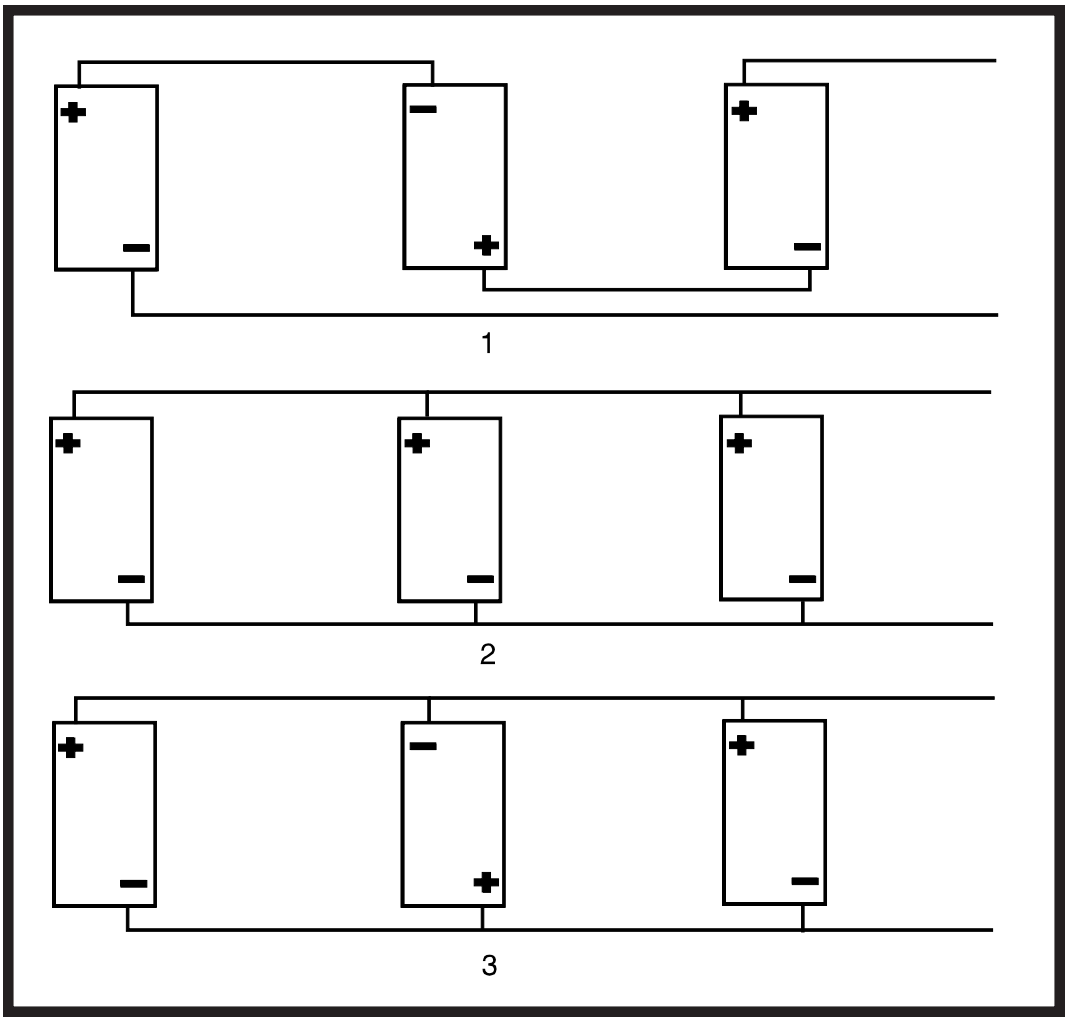

FIGURE 18.—Battery Connections.

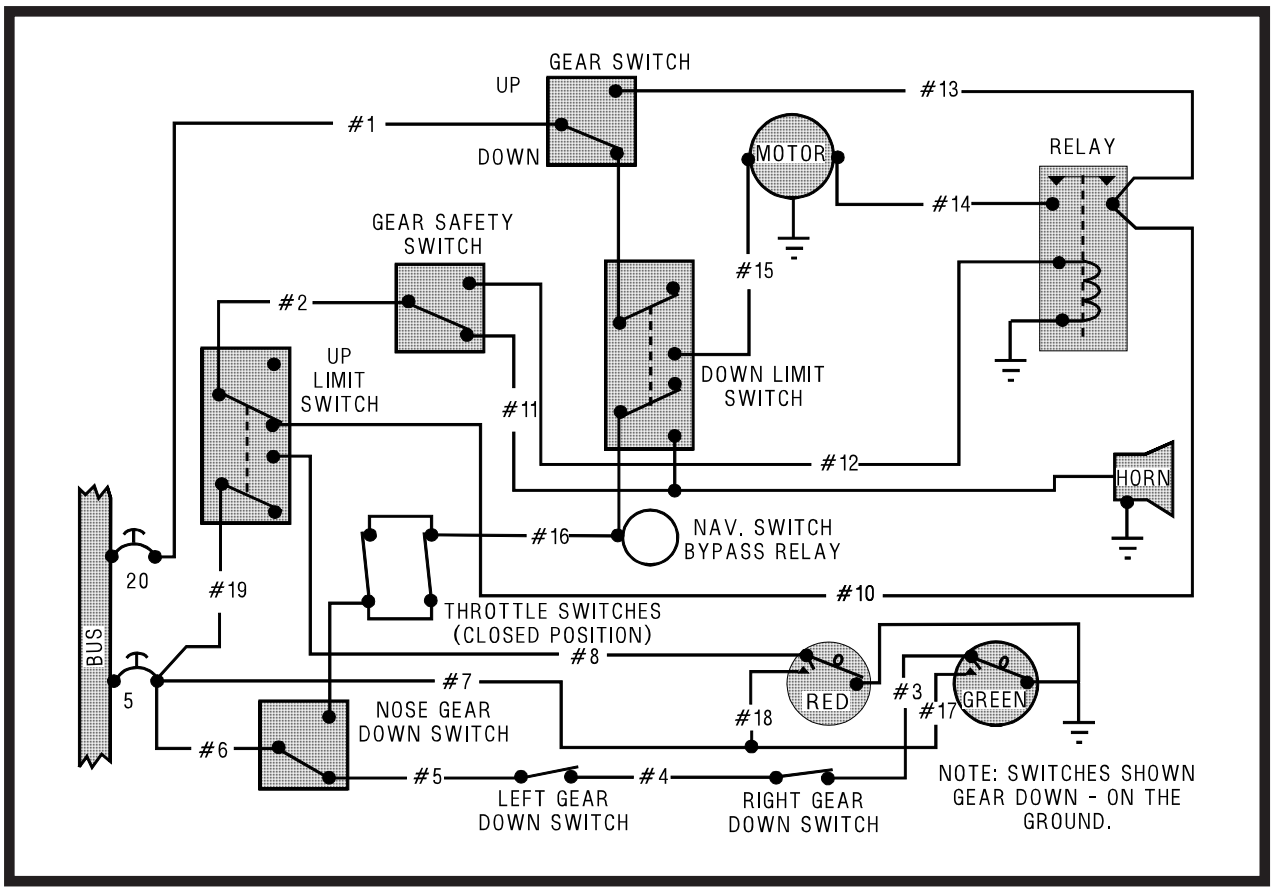

FIGURE 19.—Landing Gear Circuit.

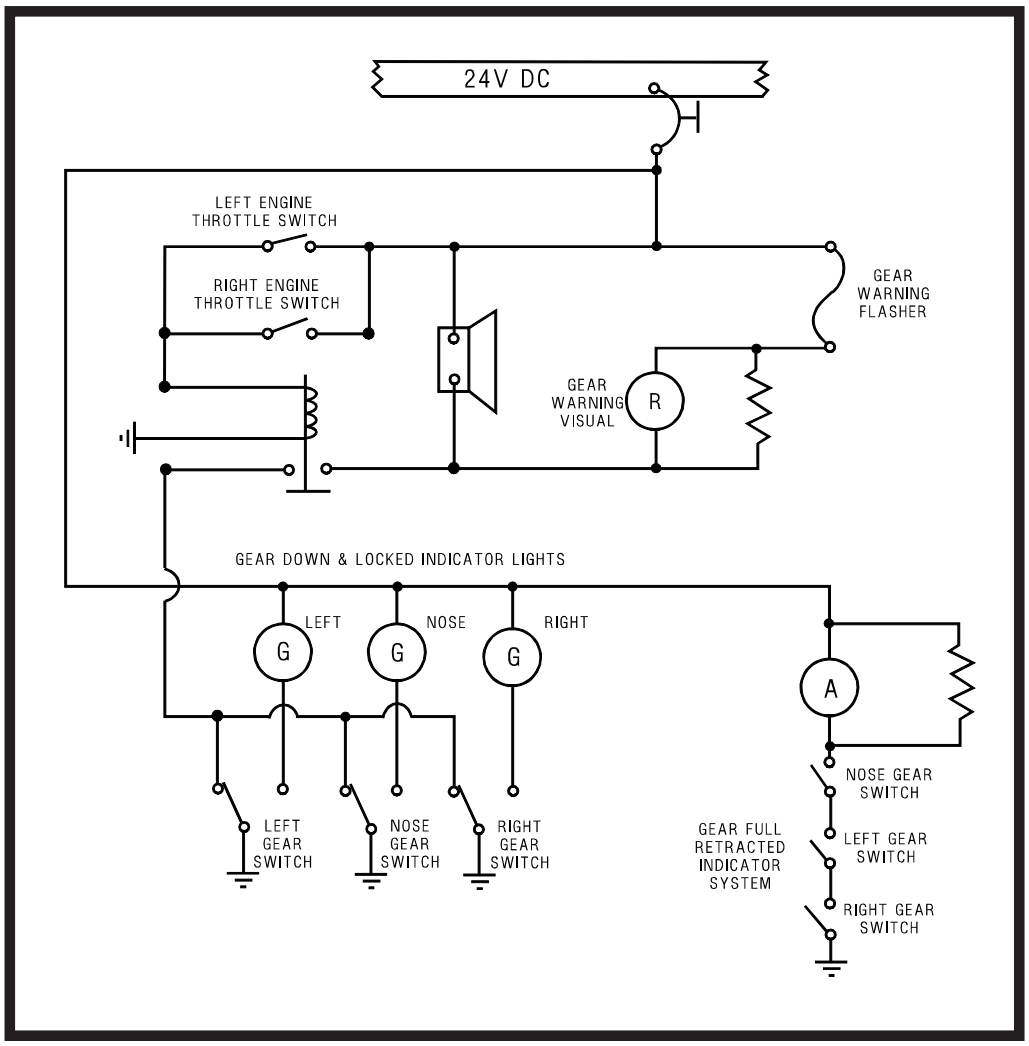

FIGURE 20.—Landing Gear Circuit.

CONTAINER PRESSURE VERSUS TEMPERATURE

TEMPERATURE °F	CONTAINER PRESSURE (PSIG)	
	MINIMUM	MAXIMUM
-40	60	145
-30	83	165
-20	105	188
-10	125	210
0	145	230
10	167	252
20	188	275
30	209	295
40	230	317
50	255	342
60	284	370
70	319	405
80	356	443
90	395	483
100	438	523

FIGURE 21.—Fire Extinguisher Chart.