2-93. CHANGING OIL IN COMPRESSOR.

a. Place can under bottom oil plug, then cut safety wire and remove oil plug.

b. While oil is draining, remove oil filler plug.

c. After oil has drained, replace bottom oil plug.

d. Add approximately two ounces of oil, Specification MIL-O-6085, through oil filler plug hole.

e. Replace oil filler plug and safety wire two oil plugs together.

2-94. CLEANING INTAKE AIR FILTER.

a. Remove nut and bolt from clamp assembly. With bolt removed from clamp assembly, clamp and outside screen can be spread and slipped off over low pressure cylinder head. Unwrap cotton gauze.

b. Wash outside screen and cotton gauze in kerosene. Let dry and evenly oil outside and inside of screen and cotton gauze.

c. Wrap cotton gauze around inside screen. Clamp outside screen over low pressure cylinder head. Replace bolt and self-locking nut and tighten clamp into position.

2-95. INSTALLATION.

a. Place unit in its position on turret.

b. Install bolts attaching compressor and pressure cylinder to shock mounting bracket.

c. Connect air lines.

d. Connect electrical connection to motor.

2-96. TESTING.

a. Remove power supply to air compressor drive motor.

b. Release air supply from pressure cylinder by pulling up on BLOW OFF valve handle.

c. Remove air line from nipple in OUT hole and connect a pressure gage with range of 0 to 1500 psi.

d. Open shut-off valve by turning handle as far as possible counterclockwise.

e. The compressor should run no longer than four minutes at sea level or 25 minutes at 40,000 feet altitude.

f. The pressure in pressure cylinder should be from 900 to 1100 psi at the time the compressor stops.

2-97. AMMUNITION BOOSTER. (See figure 2-44.)

2-98. DESCRIPTION. The ammunition booster provisions on the upper turret include a sprocket wheel for each gun and a d-c series-wound motor. The motor is used to drive both booster units by mounting the motor on one unit and driving the other through a flexible drive shaft. The booster is designed to insure continuous feed of the ammunition belt under conditions of maximum drag on the belt. When the gunner depresses the firing trigger, the booster motor, through a reduction gear and a free wheeling unit, feeds ammunition into gun. The free wheeling unit makes it possible for ammunition to be drawn through booster by rotating the sprocket wheel without rotating motor and gear train. Thus, firing of the gun is not interrupted by booster motor or drive failure.

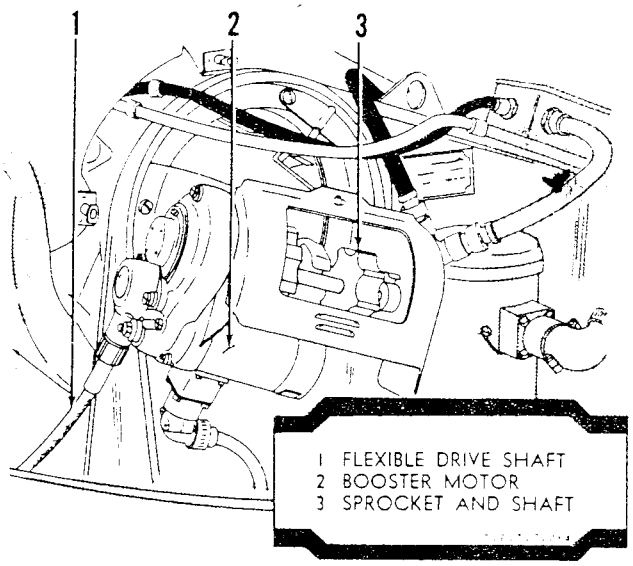

Figure 2-44. Ammunition Booster Motor

2-99. REMOVAL.

a. Remove retaining spring from end of lower feed guide that extends through hole in elevation feed bracket.

b. Withdraw panel pin on machine gun far enough to free other end of lower feed guide.

c. Remove lower feed guide.

d. Remove screws which secure upper feed guide to bearing retainer and elevation saddle support.

e. Remove upper feed.

f. Remove flexible cable from elevation ammunition booster by unscrewing knurled nut and withdrawing flexible cable from output drive assembly.

g. Remove screws which secure elevation ammunition booster to bearing retainer and elevation saddle support.

h. Remove elevation ammunition booster.

i. Loosen knurled nut which secures conduit assembly to connector on motor in azimuth ammunition booster and disconnect conduit assembly from motor.

j. Loosen knurled nut which secures conduit assembly to connector on interrupter and collector assembly, and disconnect conduit.

k. Remove clamps, screws and lockwasher which secure conduit assembly to azimuth saddle support.

l. Remove clamps which secure conduit assembly to ammunition frame assembly.

m. Remove conduit assembly.

n. Repeat steps a. through h. for azimuth ammunition booster.

o. Cut safety wire and remove screws which hold a lower ammunition guide on each side of saddle.

p. Remove upper ammunition guides.

2-100. MINOR REPAIR.

a. Replace faulty parts.

b. Replace motor brushes when worn to within 1/8-inch of brush holder.

c. Run motor for approximately two hours to properly seat brushes.

2-101. INSTALLATION.

a. Replace upper ammunition guides on each side of saddle.

b. Secure each upper ammunition guide to saddle with fillister head screws.

c. Safety wire screws.

d. Replace lower ammunition guides on each side of saddle.

e. Secure each lower ammunition guide to saddle with fillister head screws.

f. Safety wire screws.

g. Place elevation booster on elevation saddle support.

h. Secure elevation booster to bearing retainer and elevation saddle support with fillister head screws.

i. Connect flexible cable to elevation ammunition booster by inserting spline in output drive assembly and tighten knurled nut.

j. Repeat steps g., h. and i., for azimuth ammunition booster.

k. Thread conduit through proper openings in azimuth saddle support and ammunition between motor and interrupter and collector assembly.

l. Connect conduit to interrupter and collector assembly and tighten knurled nut.

m. Connect conduit to electric connector on motor in azimuth booster assembly and tighten knurled nut.

n. Replace clamps which secure conduit to azimuth saddle support with fillister head screws and lockwashers.

o. Replace clamps which secure conduit to ammunition frame assembly.

p. Replace upper feed guides on each saddle support so that end of guide rod passes through proper hole in feed bracket of booster assembly.

q. Secure each upper feed guide to bearing retainer and saddle support with fillister head screws.

r. Insert ends of lower feed guides in proper holes in feed brackets.

s. Replace retaining springs on ends of lower feed guides which extend through hole in feed bracket.

t. Withdraw panel pin on machine guns far enough to insert lower feed guides in proper place.

u. Push panel pins back into position so that they pass through holes in ends of lower feed guides and thus secure lower feed guides to machine guns.

2-102. TELL-TALE INDICATOR. (See figure 2-45.)

2-103. DESCRIPTION. The indicator is a cathode ray oscilloscope, RCA No. 3 API/906-P1, housed in a triple magnetic shield, located on the pilot's instrument panel. On the face of the instrument is a square decal including a representation of the airplane empennage. Two horizontal lines represent limit of fire of turret guns. The upper line represents upper limit of fire of the lower turret; the lower line represents lower limit of fire of the upper turret. The shaded portion of the outline of the empennage indicates area into which no turret guns can fire; the

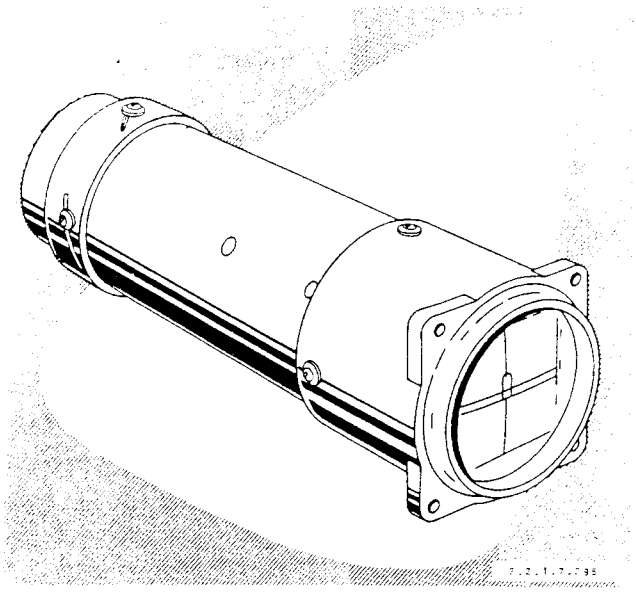

Figure 2-45. Tell-Tale Indicator

clean space within the outline indicates that area into which one gun can fire. A luminous spot appears on the indicator face to indicate direction of fire of turret guns. This spot moves around on the indicator face to show corresponding movement of turrets. When guns are pointed in aft hemisphere, a horn appears on the spot. The edge of the indicator face represents the maximum side fire, or 90 degree rotation from direct forward or aft position.

2–104. REMOVAL.

a. Remove left-hand cover plate forward of windshield by removing attaching screws.

b. Detach electrical connection at end of instrument tube housing.

c. At same time that instrument housing forward of instrument panel is being supported, screws attaching indicator to instrument panel can be removed.

d. Remove attaching clamp and remove indicator unit.

2–105. MINOR REPAIR.

a. If cathode ray tube is damaged or burned out, replace it.

b. Any other damage will necessitate replacement of indicator unit.

2–106. INSTALLATION.

a. Place indicator in instrument panel and attach clamp.

b. Install screws securing indicator to panel.

c. Connect electrical connection at end of instrument tube housing.

d. Replace left-hand cover plate forward of windshield and install attaching screws.

2–107. ADJUSTMENT. The indicator is adjusted through converter controls. (Refer to paragraph 2–113.)

2–108. TELL-TALE CONVERTER. (See figure 2–46.)

2–109. DESCRIPTION. The converter is located forward of the pilot's instrument panel and is an electronic device which converts the a-c selsyn signal from the turret into a d-c potential which is applied to the deflection plates of the cathode ray tube in the indicator. The converter is connected to the turret one-speed selsyn and to the indicator. Controls for adjusting intensity focus, centering and deflection in both azimuth and elevation are located on the face of the cover box. The adjustment knobs are provided with caps. On the side of the converter, inside the box, is a wiring diagram of the component parts. Each converter contains three 6H6 and one 2X2-879 tubes.

2–110. REMOVAL.

a. Remove left-hand cover plate forward of windshield by removing attaching screws.

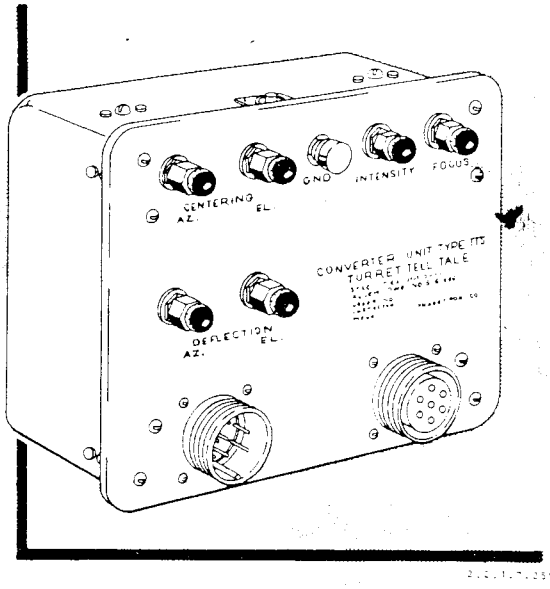

Figure 2–46. Tell-Tale Converter

b. Detach electrical connection.

c. Remove front cover screws and pull forward, out of converter box.

2–111. MINOR REPAIR. Tubes may be replaced when found defective. Any other damage to unit will necessitate replacement of converter.

2–112. INSTALLATION.

a. Place unit in converter box and slide into place.

b. Install front cover screws.

c. Connect the electrical connection.

d. Replace left-hand cover plate forward of the windshield and install attaching screws.

2–113. ADJUSTMENT.

a. Turn on turret dynamotor and latch the sighting station in the aft position.

b. Adjust intensity control so that spot appearing on indicator is of satisfactory but not excessive brilliance.

CAUTION

If intensity is adjusted too high, it might eventually burn a dead spot on fluorescent screen of cathode ray tube.

c. Adjust focus control so that spot on the indicator face is round and distinct.

d. Adjust azimuth centering control so that spot is centered in azimuth.

e. Adjust elevation centering control so that spot is centered in elevation (on lower horizontal line).

f. Swing guns in azimuth 90 degrees from aft position on each side and adjust azimuth deflection con-

trol so that spot on indication touches edge of each side of decal.

Note

It may be necessary to recenter the spot in order to make it touch both edges of the decal for full 180 degree swing while setting deflection. When spot moves from edge to edge of decal in both azimuth and elevation with corresponding 180 degree movement of guns, it should center when guns are in latched aft position. However, if spot will not center due to orientation of turret selsyn, it is advisable to center spot again as described in steps d. and e.

g. Swing turret into forward hemisphere and check indicator face for a horn appearing on the spot.

Note

If spot on indicator face moves in opposite direction that guns are moved, reversal of the pin connections C and D of electrical connection from converter to turret will correct an azimuth reversal. Reversal of pin connections E and F will correct an elevation reversal.