

RADAR PRESSURIZATION SYSTEM

GENERAL

The AN/ASQ-70 system maintains approximate sea level pressure within the receiver-transmitter unit and antenna waveguide assembly of the AN/APN-59B radar set.

AIRCRAFT INSTALLATION

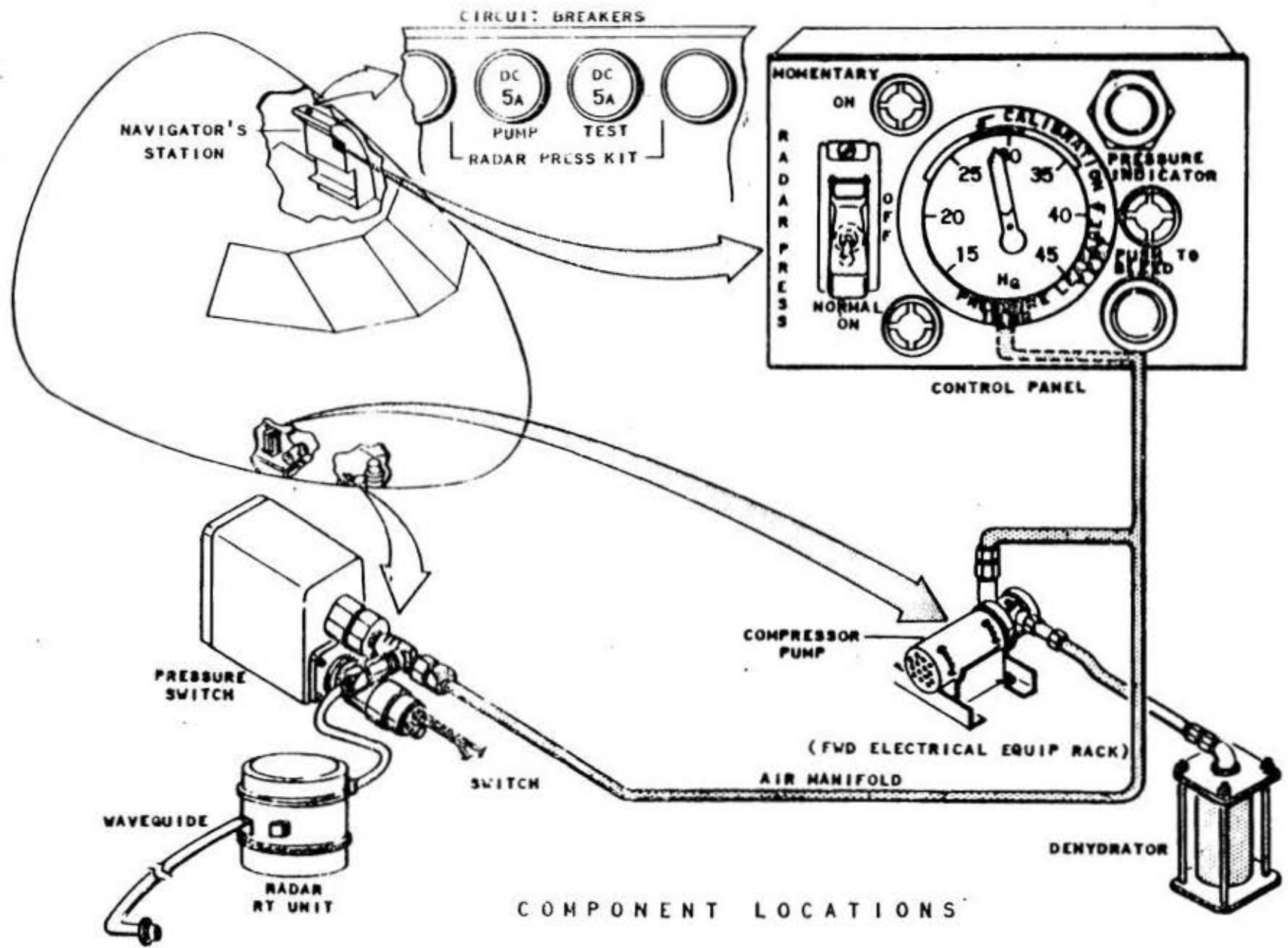
The system is independent of all other pressurization systems on the airplane. It consists of a control panel, dehydrator, air compressor, and pressure switch. The control panel is on the navigator's panel above the APN-59B radar set control; the dehydrator and compressor are mounted in the forward electrical equipment rack on the right-hand side of the underdeck area, and the pressure switch is located on the right side of the nose wheel well next to the APN-59B RT unit.

Aircraft power for system operation is supplied through circuit breakers on the avionics circuit breaker panel above the navigator's station. Power required is 28 volts, DC from the main D-C avionics bus number one.

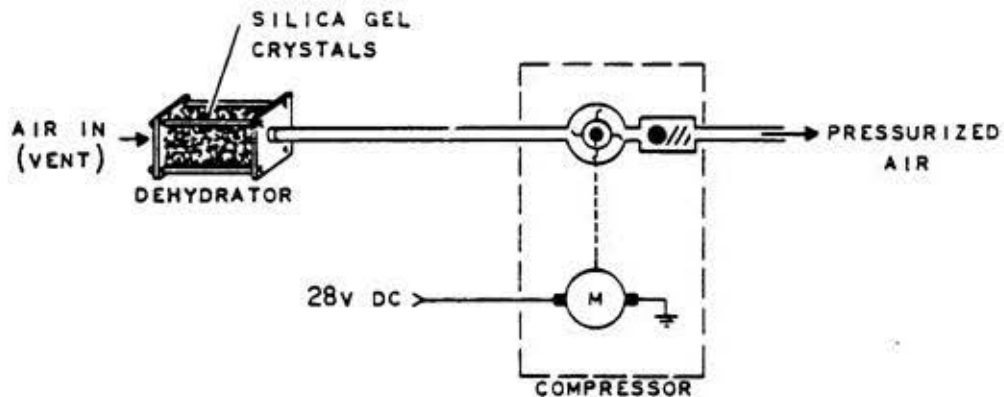
SYSTEM OPERATION

The pressurization system maintains the density of the air close to that of air at sea level within the APN-59B RT unit and waveguide assembly. High voltage circuits are located within these units. Spacing of terminals and components is designed for safe operation, based upon the insulating properties of air at sea level pressure.

At lower pressures, the insulating ability of air decreases. Between two voltage points, therefore, arcing might occur at altitudes. Sea level pressure alone would not be sufficient to prevent arcing, since excessive moisture in the air also decreases its insulating ability. For this reason, the air used for pressurization is dehydrated.

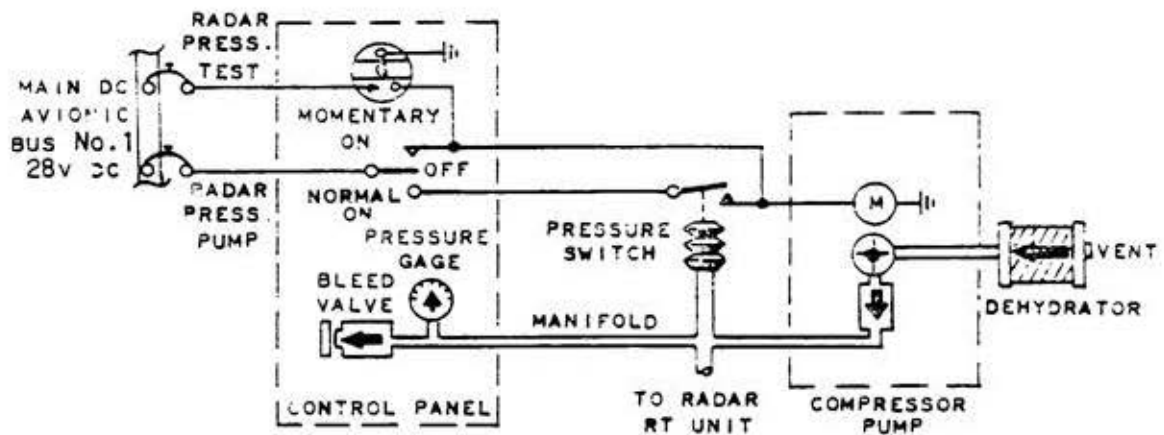


COMPONENT LOCATIONS



DEHYDRATOR AND COMPRESSOR

The compressor consists of a vane-type air pump and a D-C motor mounted on the same shaft. The air intake port is connected to the dehydrator. The dehydrator removes any moisture or foreign matter from the air before it enters the pump. The dehydrator is a clear plastic cylinder filled with silica gel dehydrator crystals. A filter pad is installed at each end of the cylinder. The dehydrator crystals are normally deep blue in color. As they absorb moisture, their color gradually turns pink. A multicolored humidity indicator label in the cylinder serves as a guide for checking the condition of the crystals. When the color of the crystals matches the UNSAFE area of the label, the crystals are saturated with moisture and should be replaced.



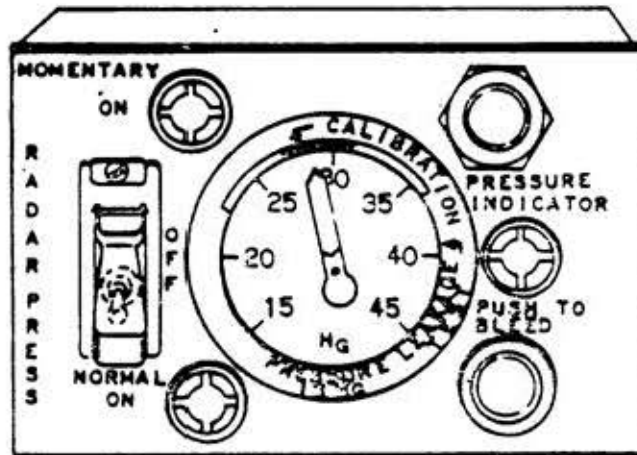
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When the system is operating, air is drawn into the compressor from the aircraft cargo compartment. After being compressed, the air is delivered to a common manifold which connects the pressure gauge, pressure switch, and

radar receiver-transmitter. A check valve, mounted on the compressor air outlet port, prevents the loss of pressure through the compressor when it is stopped.

The control panel provides a means of reading system pressure and for starting and stopping the compressor. The panel contains a power-controlling RADAR PRESS switch, an absolute pressure gauge, a PRESSURE INDICATOR light, and a PUSH TO BLEED button.

Placing the RADAR PRESS switch in the "NORMAL ON" position applies power to the pressure switch. The pressure switch determines when the compressor will run. The switch senses pressure existing in the radar receiver-transmitter unit and waveguide assembly. If pres-

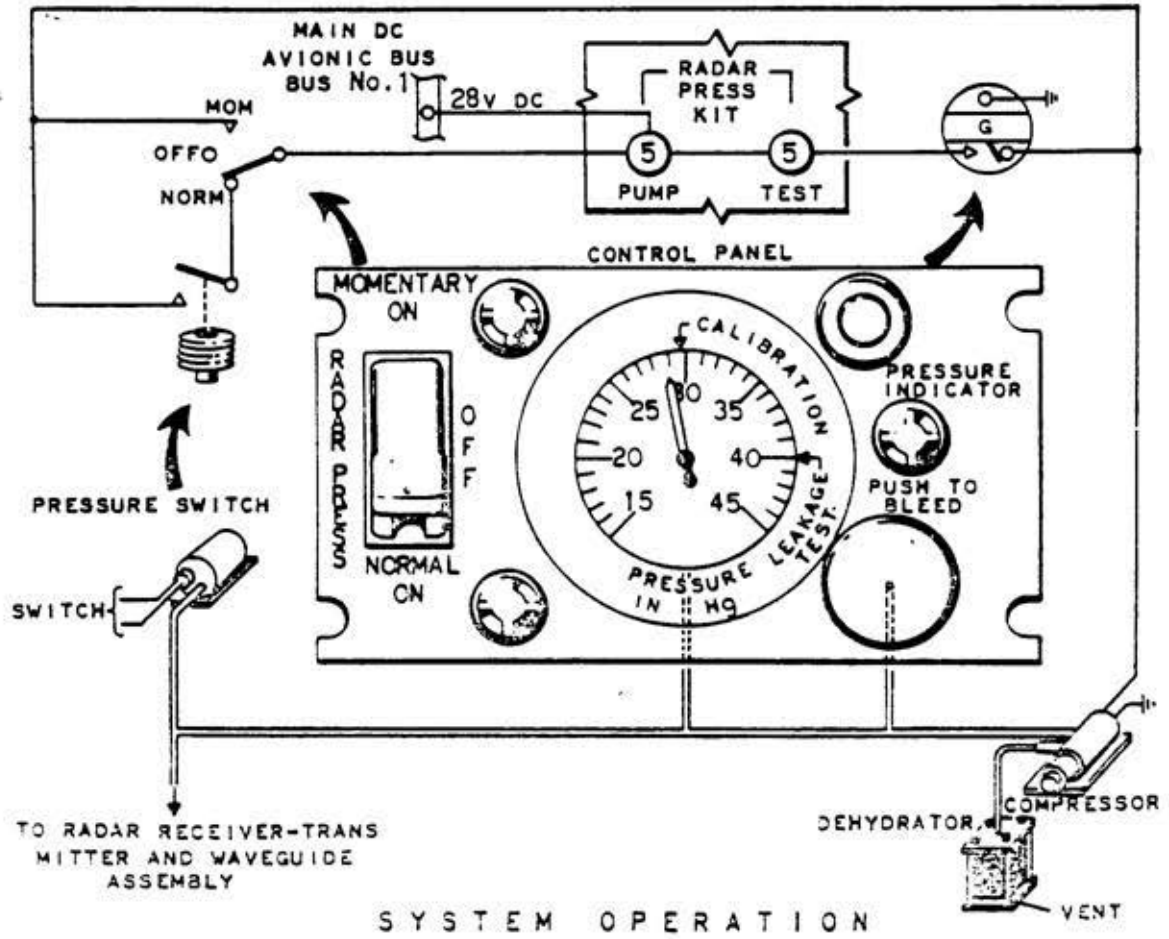


CONTROL PANEL

sure is less than that of sea level atmosphere (approximately 30 inches of mercury), contacts of the switch close and supply voltage to the compressor motor. The motor runs until system pressure builds up to slightly more than 30 inches of mercury. At this time the pressure switch contacts open. In this manner the required system pressure is automatically maintained. A slotted screw extending through the front of the pressure switch permits the closing point of the contacts to be varied from 24 to 32 inches of mercury. It is normally preset to 30.15 inches of mercury. The contacts open when pressure is increased approximately 3.5 inches of mercury above the preset level (differential between "on" and "off" is 3.5 inches of mercury).

The "OFF" position of the RADAR PRESS switch deenergizes the system. The "MOMENTARY ON" position applies power directly to the compressor motor. This permits compressor operation to be checked. The PRESSURE INDICATOR light glows whenever the compressor is running, regardless of the method used to turn the system on. System pressure is continuously indicated in inches of mercury (Hg) on the pressure gauge. An adjustable calibration mask on the face of the gauge is set to the desired pressure range.

The PUSH TO BLEED button actuates a bleed valve to depressurize the system to the air pressure inside the flight station.



SYSTEM OPERATION