

Dry-Cleaning

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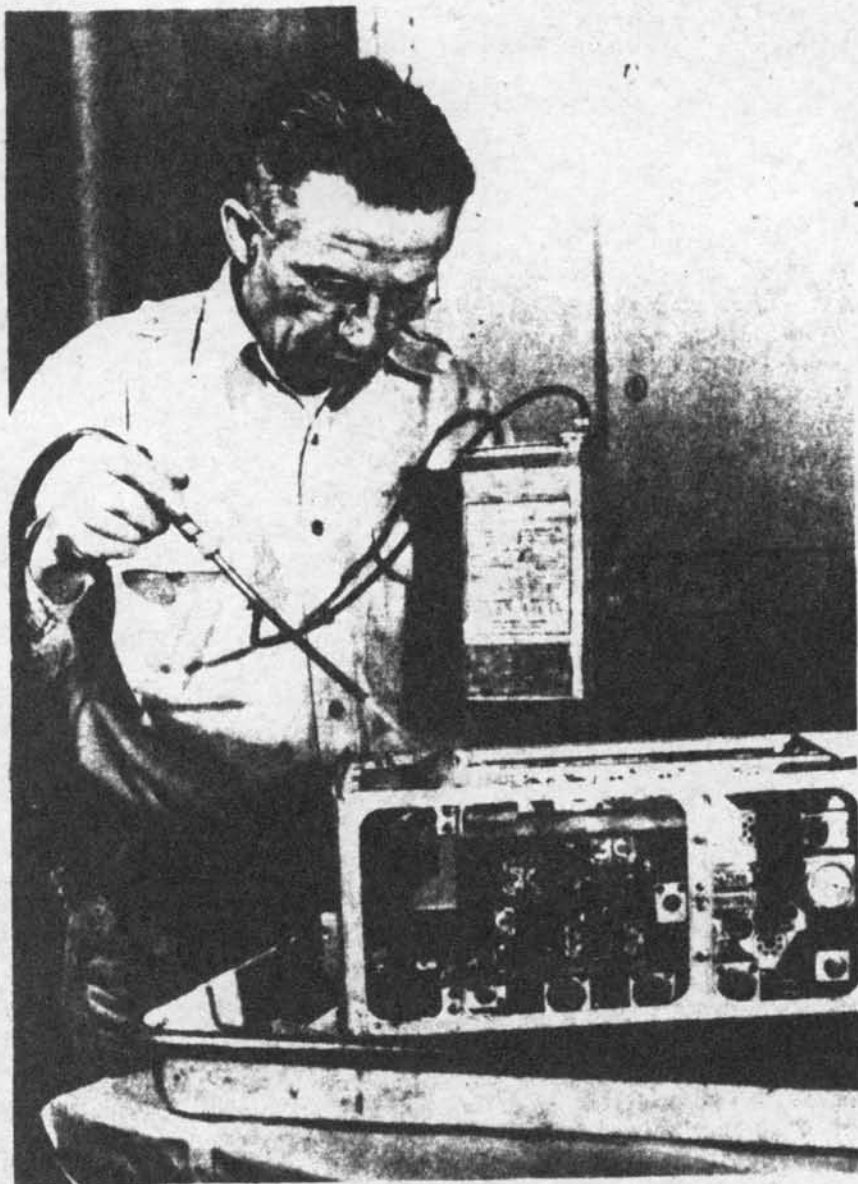


FIG. 1—In well-ventilated working areas, a source of compressed air, gun, tray, Venturi fitting and a solvent can be used for dry cleaning of chassis

SOLVENT-SPRAY cleaning is one of the maintenance operations undergone by all aircraft and ground radio equipment that is sent to the American Airlines radio overhaul base at La Guardia Field, New York. Overhaul is scheduled after 90 days (average of 900 hours) of operation even though the equipment is operating perfectly. The types of electronic gear cleaned by the spray method include h-f and vhf communication units, adf receivers and indicators, marker, range, glide path and localizer receivers.

A member of the maintenance crew is shown in Fig. 1 going over the chassis of a ground transmitter in one of the hangars. He uses an improvised spray gun constructed as shown in principle in Fig. 2 and connected to a compressed-air line. Solvent contained in the can feeds to the nozzle of the air gun and is sprayed as a fine mist. Because of the pressure, hard to reach places such as capacitor plates and tube sockets are quickly cleaned.

The chassis is supported on blocks in a tray which serves to catch the dirty solvent. As this operation is done in an open space within the hangar, ventilation does not become a problem. To air-dry the equipment after cleaning, it is only necessary to lift the rubber hose out of the solvent can.

The nozzle for the air gun operates on the Venturi principle and consists of a section of metal tubing through which the solvent is aspirated by the air blast. A connection for a rubber hose for insertion in the liquid solvent is made on the side of the tubing a few inches from

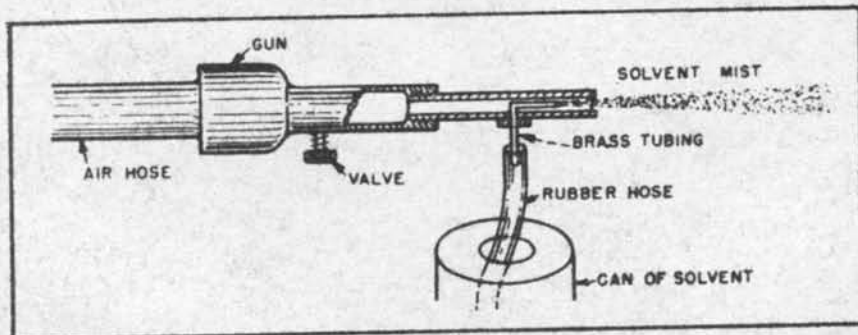


FIG. 2—Construction of simple fitting for air gun to provide fine spray of solvent under pressure

Electronic Equipment

Rapid removal of soot, dirt and grime is accomplished with pressurized air and a solvent. Used at an airline radio overhaul base, the method can be adapted to maintenance of other electronic equipment

the end. Pressure control is obtained by means of the valve on the air gun.

With a nozzle orifice diameter of 0.125 inch, and air pressure of 40 pounds, the discharge of free air amounts to 12.4 cubic feet per minute. At 90 pounds pressure, the volume is slightly less than double this figure. For an orifice diameter of 0.25 inch, the volume is roughly quadrupled.

An installation suitable for factory applications is shown in Fig. 3. A large container of solvent is attached to the side of the booth and replenished as required. The solvent fluid reaches the nozzle through one of the flexible hoses; the other is for compressed air. Pressure is regulated and monitored by a valve and gage mounted in front of the booth. The cylindrical section contains a filter unit to remove moisture and scale. If driven out by high air pressure, the scale is likely to abrade or otherwise damage the radio equipment.

The booth is similar in all respects to the type used in spray painting, and is vented in the upper rear portion. Used solvent flows down a drain into a receptacle located below the booth.

In cleaning the radio unit shown, the air pressure is between 30 and 40 pounds. To dry, the operator turns a valve which shuts off the flow of solvent into the nozzle. In the overhaul shop, each man cleans the particular piece of equipment he is assigned to service.

A few changes are necessary when cleaning parts having more tenacious deposits of dirt, hence requiring higher air pressure, some-

times as high as 110 pounds. An extra long nozzle is used as well as protective gloves for the operator. Higher pressures can be safely applied to motors and heavy equipment.

Dry-cleaning solvents are of comparatively low inflammability and are nonexplosive. They follow in general the specification for Stoddard solvent, a standard fraction of petroleum, having a flash point between 100 and 105 F. At this temperature sufficient vapor is given off to flash momentarily on the application of a small flame.

In the Airlines laboratory, the chief characteristic checked in solvents is a minimum flash point of 110 F, determined by the Cleveland

open-cup test. This is slightly higher than Stoddard solvent. Clarity and dryness are important factors. These flash points may be compared with that of ordinary gasoline at room temperature.

For regular production schedules, solvent-spray cleaning is best done for general comfort and health in a hood or booth that is vented to the outside atmosphere by means of a blower. Where the booth is lacking, the spraying should be carried out in an open and well-ventilated area. Ordinary fire extinguishers, such as those containing carbon tetrachloride, are precautionary equipment. A settling tank can be used for reclaiming a high percentage of the solvent.

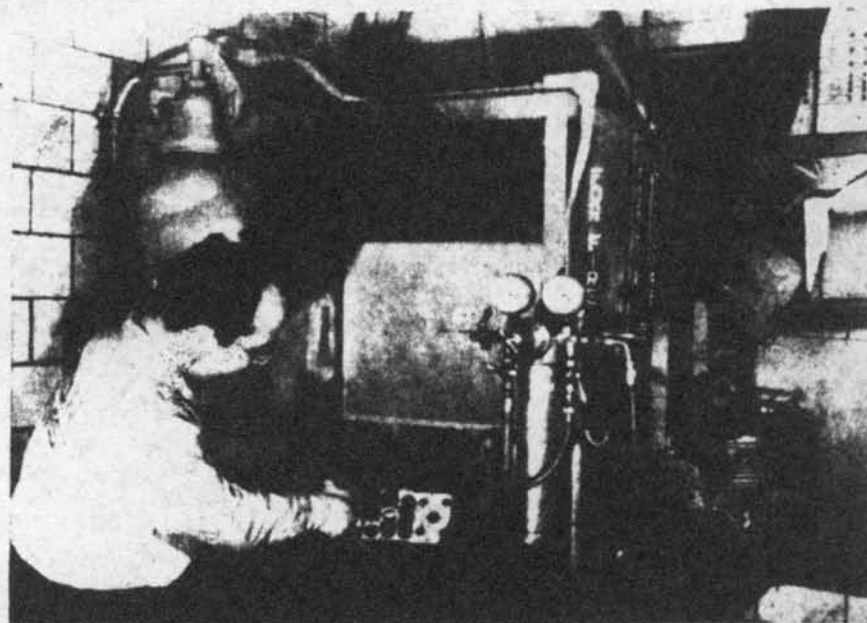


FIG. 3—Solvent spray booth for permanent installation in a factory, shop or laboratory. Fumes are vented to the outside air and additional equipment provided for control of air pressure, filtering and safety