



7.9.5a. Flexible Ducts This duct is filled with water. The bathroom above flooded because the toilet overflowed. The duct can't deliver air-conditioning because it is filled with sewage. It would be best to have this duct replaced rather than just drained.

7.9.6 DUCTBOARD This is a board of high density fiberglass which can be folded and cut on the site into rectangular sections. The insulation is already in place as is the exterior vapor barrier. Fiberglass ductboard is suspect when used in crawl spaces. The fastening system holding the ductboard together (usually foil tape and staples) has not always been successful in damp environments and main ducts are sometimes waterlogged and collapsed in wet crawl spaces. The ducts in attics are sometimes damaged or crushed by homeowner storage or from people stepping on them. There is some question of fiberglass ductboard allowing the fibers to slough off inside and circulate in the air of the living space.

7.10 REGISTERS and GRILLS Supply registers and return grills are important parts of an air distribution system. Return grills may contain air filters. Air filters are essential to air-conditioning systems. Supply registers often contain dampers to allow the homeowner to balance the system.

Balancing the system is the idea of providing more or less air supply to individual spaces to accommodate the orientation of the house, the size of the rooms, wind angles, etc. which influence the room's temperature. These dampers and internal dampers in the system give the owner a chance to tune the system and balance it. You can have bedrooms cooler than the living room or vice versa.

Balancing is essential in two story houses and often must be adjusted seasonally. In the summer, cold air settles, so open upstairs registers completely to allow air conditioning to enter and close or restrict first floor registers to force air upstairs. In winter the procedure can be reversed by closing the second floor registers and opening the first floor registers completely to force heat to the first floor.

The veins in the supply registers disperse the air over a wide area to achieve even distribution of cool air from the system. It is important the registers and grills properly distribute the air throughout the house and allow the owner to adjust or balance the system. In some systems the supply grills are in the ceiling or high in the side wall and return grills near the floor level. The problem is to force a wide and even distribution of air in the house. In other systems supply grills are at floor level and the return grills are near the ceiling. Occasionally dual duct systems are seen where there are supply and return grills in each room. With these the supplies can be along the outside wall and the returns in the center of the room or vice versa. For comfort it seems best to distribute the supply around the outer perimeter and collect the returning air near the center.

All these systems have been devised to provide a comfortable environment. It is important the flow of air from the grills not be totally restricted. With heat pumps, they are designed so each