



**COOL
&
CONFIDENT**

**A Reference Guide To Your
Air Conditioning System**

by

Layton Air LLC

Phone: (602) 475-6252

Email: zachary@laytonair.com

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Types of System

**BELOW ARE THE TWO COMMON STYLES OF AC SYSTEMS.
THESE STYLES CAN BE A HEAT PUMP, WHICH USES REFRIGERANT FOR
HEAT AND COOL**

OR

COOLING ONLY SYSTEMS WITH GAS OR ELECTRIC HEATERS

PACKAGE UNIT:

**ALL COMPONENTS ARE HOUSED IN ONE LARGE CABINET, USUALLY
PLACED ON THE ROOF OR GROUND OUTSIDE.**

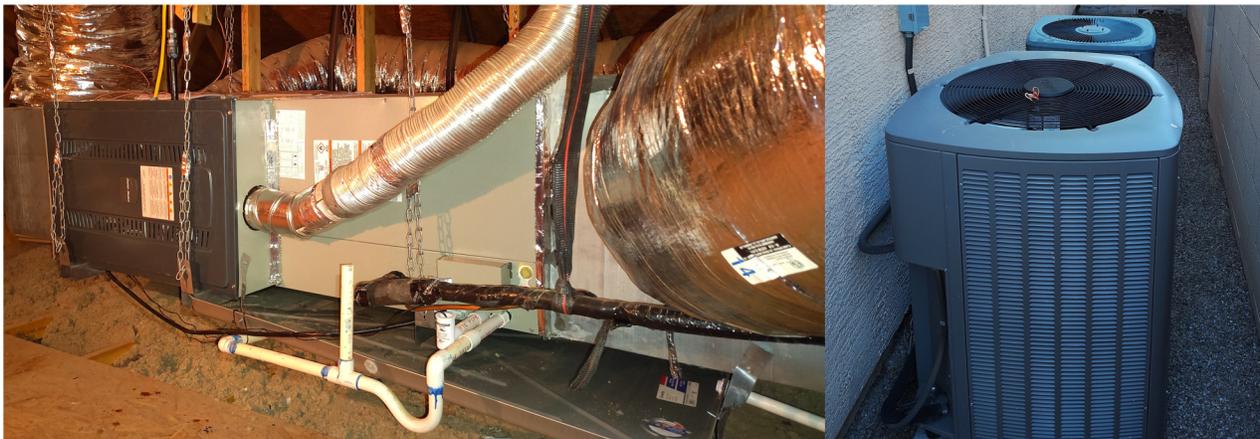


SPLIT SYSTEM:

ALL COMPONENTS ARE SPLIT BETWEEN TWO UNITS

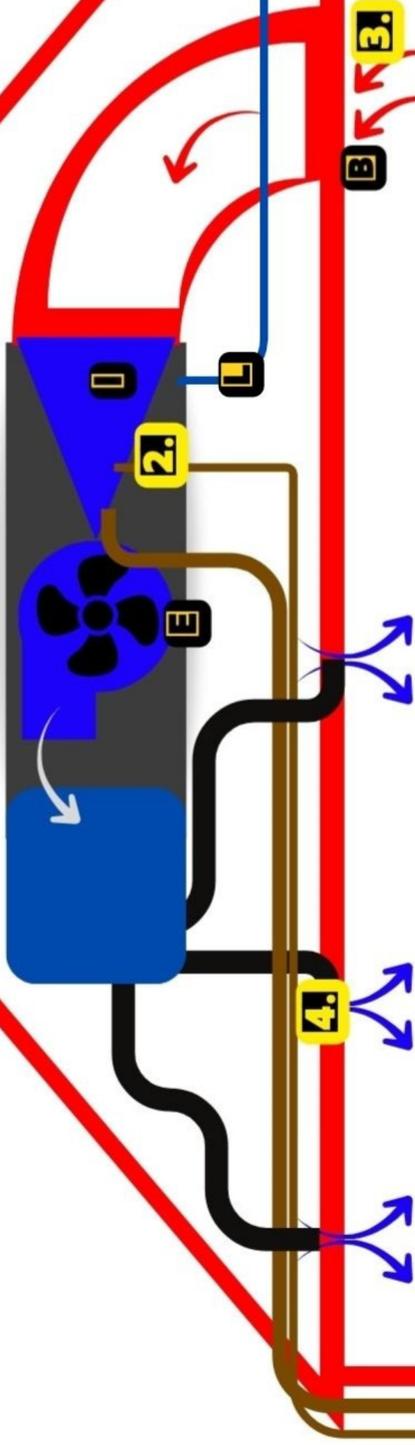
- **OUTDOOR UNIT (CONDENSING UNIT) SITS OUTSIDE AND HOLDS THE COMPRESSOR AND FAN.**
- **INDOOR UNIT (AIR HANDLER) IS USUALLY INSIDE AN ATTIC, CLOSET OR CRAWLSPACE. IT CONTAINS A BLOWER MOTOR, COIL AND/OR FURNACE**

**THE TWO UNITS ARE CONNECTED BY REFRIGERANT LINES THAT
CYCLE REFRIGERANT BETWEEN THEM.**

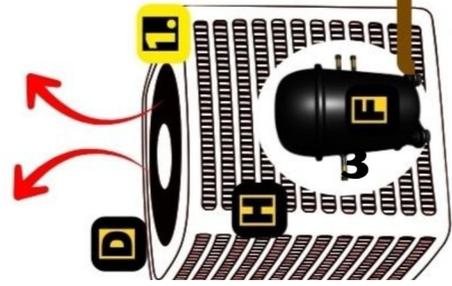




How It Works:



1. Compressor discharges high pressure+high temperature vapor refrigerant into the condensing coil where it is then cooled by a fan into a high pressure High temperature liquid.
2. The liquid refrigerant leaves the condenser coil and enters into the metering device where it is flashed into a high temperature+low pressure liquid into the evaporator coil.
3. The heat drawn in by the blower motor from the return air of the house then boils that liquid refrigerant into a low pressure+low temperature vapor.
4. The same blower motor is then able to supply cooled air into the home through the supply ducts from the low temperature coil.
5. As the refrigerant leaves the evaporator coil, it is sucked back into the compressor where the low temperature+low pressure vapor is compressed into a high pressure+high temperature vapor and the process starts all over.





Parts of an Air Conditioner

The following is list of components within an AC System

A. THERMOSTAT: A DEVICE THAT SENSES THE AIR TEMPERATURE AND AUTOMATICALLY TURNS THE HEATING OR COOLING EQUIPMENT ON OR OFF TO MAINTAIN YOUR DESIRED TEMPERATURE SETPOINT. THINK OF IT AS THE BRAIN TELLING THE SYSTEM WHAT TO DO.

B. AIR FILTER: A BREATHABLE MATERIAL DESIGNED TO CATCH HOUSEHOLD DEBRIS SUCH AS DUST, DIRT, AND PET HAIR. ITS MAIN PURPOSE IS TO KEEP THE INDOOR COIL CLEAN AND MAINTAIN PROPER AIRFLOW THROUGH THE SYSTEM, HELPING IT RUN EFFICIENTLY AND KEEPING THE AIR IN YOUR HOME CLEANER.

C. CONTACTOR: A HEAVY-DUTY ELECTRICAL SWITCH BUILT TO HANDLE LARGE AMOUNTS OF ELECTRICAL CURRENT. IT'S USED TO TURN A MAJOR PIECE OF EQUIPMENT, LIKE THE COMPRESSOR AND FAN MOTOR ON OR OFF BASED ON A LOW-VOLTAGE SIGNAL FROM THE THERMOSTAT OR A RELAY.

D. FAN MOTOR: AN ELECTRIC MOTOR THAT TURNS THE PROPELLER-STYLE FAN LOCATED ON THE OUTDOOR UNIT (THE CONDENSER) TO BLOW AIR ACROSS THE COIL.

E. BLOWER MOTOR: AN ELECTRIC MOTOR LOCATED INSIDE THE INDOOR FURNACE OR AIR HANDLER UNIT. ITS JOB IS TO TURN THE LARGE SQUIRREL-CAGE STYLE BLOWER (A CENTRIFUGAL FAN) THAT PUSHES CONDITIONED AIR (HEATED OR COOLED) THROUGH THE DUCTWORK AND INTO THE BUILDING.

F. COMPRESSOR: OFTEN CALLED THE HEART OF THE AIR CONDITIONING OR HEAT PUMP SYSTEM. IT'S A POWERFUL PUMP THAT TAKES THE LOW-PRESSURE, COOL REFRIGERANT GAS, SQUEEZES IT TO RAISE ITS PRESSURE AND TEMPERATURE, AND THEN SENDS THE HOT, HIGH-PRESSURE GAS TO THE OUTDOOR COIL. THIS COMPRESSION IS WHAT MAKES COOLING POSSIBLE.

G. CAPACITOR: AN ELECTRICAL COMPONENT THAT STORES ENERGY AND RELEASES IT QUICKLY. IT ACTS LIKE A TEMPORARY BATTERY TO GIVE A MOTOR (LIKE A FAN OR COMPRESSOR) THE INITIAL ELECTRICAL "KICK" IT NEEDS TO START RUNNING. IT HELPS THE MOTOR GET UP TO SPEED EFFICIENTLY.



Parts of an Air Conditioner

H. CONDENSER COIL: A CIRCUIT OF COPPER (OR ALUMINUM) TUBING LOCATED IN THE OUTDOOR UNIT. DURING THE COOLING PROCESS, THIS COIL ALLOWS THE HOT, HIGH-PRESSURE REFRIGERANT TO RELEASE ITS HEAT INTO THE COOLER OUTSIDE AIR, EFFECTIVELY CONDENSING THE REFRIGERANT GAS BACK INTO A LIQUID.

I. EVAPORATOR COIL: A CIRCUIT OF COPPER (OR ALUMINUM) TUBING LOCATED IN THE INDOOR UNIT (AIR HANDLER) DURING THE COOLING PROCESS, THE COLD, LOW-PRESSURE LIQUID REFRIGERANT INSIDE THIS COIL ABSORBS HEAT FROM THE WARM INDOOR AIR BLOWN ACROSS IT, CAUSING THE LIQUID TO EVAPORATE INTO A GAS AND COOL THE AIR BEFORE IT ENTERS THE DUCTS.

J. REVERSING VALVE (HEAT PUMPS): A VALVE FOUND ONLY IN HEAT PUMP SYSTEMS. ITS FUNCTION IS TO SWITCH THE DIRECTION OF THE REFRIGERANT FLOW. THIS ALLOWS THE HEAT PUMP TO CHANGE FROM COOLING MODE (MOVING HEAT OUT OF THE HOUSE) TO HEATING MODE (MOVING HEAT INTO THE HOUSE)

K. DEFROST CONTROL (HEAT PUMPS): A MECHANISM IN A HEAT PUMP THAT SENSES WHEN ICE OR FROST IS BUILDING UP ON THE OUTDOOR COIL DURING COLD WEATHER. ITS JOB IS TO AUTOMATICALLY INITIATE A SHORT DEFROST CYCLE, TEMPORARILY SWITCHING THE SYSTEM TO COOLING MODE TO WARM THE OUTDOOR COIL AND MELT THE ICE, ENSURING EFFICIENT OPERATION.

L. CONDENSATE DRAIN LINE: A RUN OF PVC PIPE CONNECTED TO THE EVAPORATOR COIL'S DRAIN PAN. AS WARM, HUMID AIR PASSES OVER THE COLD EVAPORATOR COIL, MOISTURE IN THE AIR CONDENSES INTO LIQUID WATER. THAT WATER DRIPS INTO THE DRAIN PAN AND FLOWS OUT THROUGH THE CONDENSATE DRAIN LINE TO A SAFE DISCHARGE POINT—TYPICALLY OUTSIDE THE HOME OR INTO A PLUMBING DRAIN.

M. DISCONNECT BOX: A WEATHERPROOF ELECTRICAL SWITCH MOUNTED NEAR THE OUTDOOR UNIT (AND SOMETIMES THE INDOOR UNIT). IT SERVES AS A LOCAL, MANUAL SHUTOFF FOR THE HIGH-VOLTAGE POWER GOING TO THE EQUIPMENT. THIS IS A CRUCIAL SAFETY FEATURE, ALLOWING A HOMEOWNER OR TECHNICIAN TO COMPLETELY AND SAFELY CUT POWER TO THE UNIT BEFORE PERFORMING MAINTENANCE OR REPAIRS.



Frequently Asked Questions

HOW MUCH DOES A NEW AC SYSTEM COST?

THE COST OF A NEW AC SYSTEM CAN VARY WIDELY BASED ON FACTORS LIKE EFFICIENCY RATINGS (SEER), UNIT SIZE, BRAND, AND INSTALLATION COMPLEXITY. FOR AN ACCURATE ESTIMATE TAILORED TO YOUR HOME OR BUSINESS, IT'S BEST TO GET A PROFESSIONAL EVALUATION FROM LAYTON AIR LLC. WE OFFER TRANSPARENT PRICING WITH NO HIDDEN FEES. FEEL FREE TO CALL OR EMAIL US FOR MORE INSIGHT AND A HASSLE FREE ESTIMATE.

HOW LONG DOES AN AC SYSTEM LAST?

TYPICALLY, A WELL-MAINTAINED AC SYSTEM CAN LAST BETWEEN 10 TO 15 YEARS. REGULAR MAINTENANCE, PROPER INSTALLATION, AND EFFICIENT USAGE CAN EXTEND ITS LIFESPAN, WHILE NEGLECT OR OVERUSE CAN SHORTEN IT.

WHAT CAN I DO TO HELP MAINTAIN MY AC SYSTEM?

SIMPLE STEPS LIKE REGULARLY CHANGING YOUR AIR FILTERS (EVERY 1-3 MONTHS), KEEPING OUTDOOR UNITS CLEAR OF DEBRIS, AND ENSURING VENTS AREN'T BLOCKED CAN SIGNIFICANTLY IMPROVE PERFORMANCE AND LONGEVITY. HOWEVER, ANNUAL PROFESSIONAL TUNE-UPS ARE ESSENTIAL FOR THOROUGH MAINTENANCE.

HOW OFTEN SHOULD I HAVE MY AC SYSTEM SERVICED?

IT'S HIGHLY RECOMMENDED TO HAVE YOUR AC SYSTEM SERVICED AT LEAST 1-2 TIMES A YEAR, IDEALLY IN THE SPRING BEFORE THE EXTREME PHOENIX SUMMER HEAT. A HEATING SYSTEM (FURNACE OR HEAT PUMP) SHOULD ALSO BE SERVICED ANNUALLY IN THE FALL.

WHAT'S INCLUDED WITH PREVENTATIVE MAINTENANCE?

WE OFFER A MULTI-POINT INSPECTION THAT INCLUDES THOROUGHLY CHECKING YOUR AC SYSTEM TO ENSURE ALL PARTS ARE OPERATING EFFECTIVELY TO KEEP YOUR UNIT RUNNING WITH MAXIMUM EFFICIENCY. THIS INSPECTION INCLUDES CHECKING REFRIGERANT LEVELS, ELECTRICAL COMPONENTS LIKE MOTORS AND CAPACITORS, AIR VENTS, CONDENSATE DRAIN LINES AND MORE. DOWNLOAD OUR HVAC INSPECTION CHECKLIST AT LAYTONAIR.COM FOR MORE DETAILS

HOW CAN I REDUCE MY ENERGY BILL WITH MY AC SYSTEM?

MANY HOMEOWNERS ARE CONCERNED ABOUT HIGH ENERGY USAGE, ESPECIALLY EXTREME HEAT IN SUMMERTIME. TO LOWER YOUR UTILITY BILLS, WE OFTEN ADVISE SETTING YOUR AC TO A MORE CONSERVATIVE TEMPERATURE (E.G., 78-80°F WHEN HOME, HIGHER WHEN AWAY), ENSURING YOUR UNIT RECEIVES REGULAR MAINTENANCE, AND PROMPTLY REPLACING ANY POORLY OPERATING PARTS. CRUCIALLY, REGULARLY REPLACING YOUR AIR FILTER IS A SIMPLE YET EFFECTIVE WAY TO IMPROVE EFFICIENCY AND REDUCE ENERGY CONSUMPTION.