Task Title: Ductwork Installation Guide

OALCF Cover Sheet – Practitioner Copy

Learner Name: _____

Date Started: _____

Date Completed: _____

Successful Completion: Yes ☐ No ☐

Goal Path:	Employment	☐	Apprenticeship	■
Secondary School	☐	Post Secondary	☐	Independence	☐

Task Description:

Read a Ductwork Installation Guide to answer questions about home installation.

Main Competency/Task Group/Level Indicator:

- Find and Use Information/Interpret documents/A2.2

Materials Required:

- Pen and Paper and/or digital device

Learner Information

Installation guides give homeowners tips on how to complete simple construction projects at home. Scan the Ductwork Installation Guide.

DUCTWORK

Do-it-Yourself Installation

Tips on selecting the Air-handling Products you need to expand or replace your current Heating or Air-conditioning Duckwork System

Thank you for purchasing Don Park Inc. quality sheet metal products. We have designed this helpful handout to assist you with your installation. On the reverse side, we have included typical system diagrams along with illustrations and descriptions of the various components. Letters indicated in brackets in the following text refer to these illustrations.

■ ■ ■ The Process

With just a little planning, the right parts, and the proper tools, installing air handling ductwork can be a hassle-free task.

First off, for each branch of ductwork you plan to install, you must decide, 1) Where is my start point?, and 2) Where is my end point?

If your start point is at a **Rectangular Main Duct (dia. 1)**, a **Take-Off (B)** is needed. If your start point is at a **Round Main Duct (dia. 2)**, a **Tee (M)** or a **Tee Wye (N)** is needed.

Whether your end point is at a room floor, wall, or ceiling, a **Boot (E)** is required to connect the **Stack Duct (J)**, or **Round Duct (C)**, with the room Register.

Usually your branch ductwork will have to make one or more turns to span the distance between start point and end point, using adjustable **Elbows (D)**.

At the location of your installation, follow these steps:

- **Draw** a diagram on a piece of paper.
- **Write** out a checklist of the duct, pipe and fittings, plus any necessary tools and supplies you may require to complete your installation.
- **Estimate** the type of joints you'll need where the straight sections come together. Whenever practical, use full lengths of pipe to avoid having to cut on site.
- **Measure** the length of distances to be covered by the long, straight sections and write the measurements on the diagram.
- **Discuss** your diagram with a store Representative where you are buying your parts.

■ ■ ■ The Parts

Because there are so few types of ductwork parts, learning their names is easy.

Most round **Pipe (C)** is rigid, but itís also available in a **Flexible (G)** style for hard-to-fit spaces. To hold flex duct securely in place, **Duct Strap (F)** is used.

The large duct that comes directly out of the furnace or central air source is the Main Duct, sometimes called a Trunk.

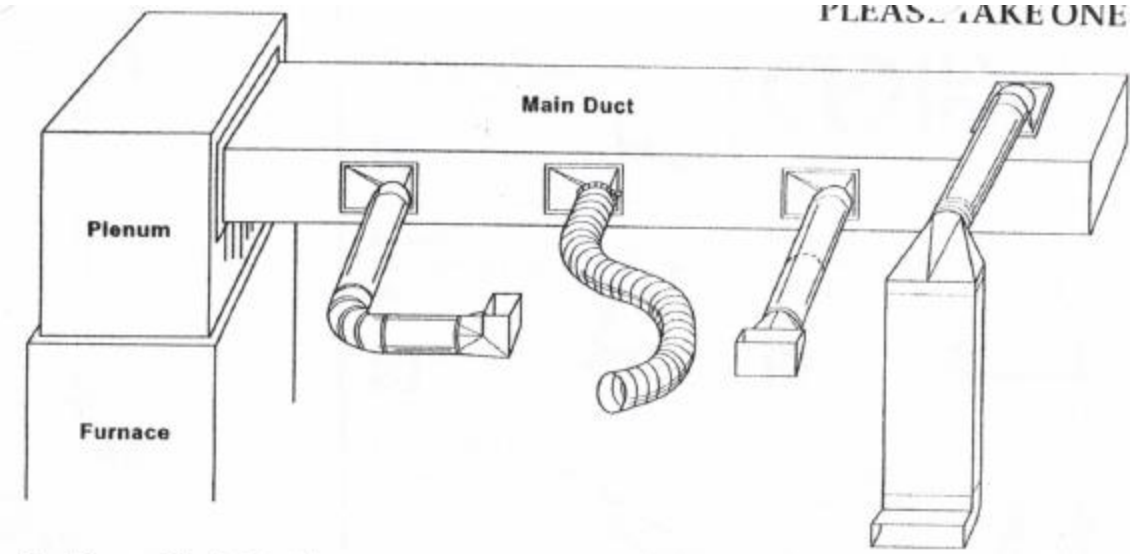
The Main Duct attaches to the furnace at the Plenum ñ a large chamber atop the furnace ñ by use of a **Fishlock Collar (A, L)**.

The **Branch Ducts (C)** are smaller sections of pipe that carry air from the Main Duct to individual rooms.

Connectors are the parts that connect the Main Duct with the branches, or that change the direction of the Branch Ducts.

If your system has a rectangular Main Duct, a **Take-Off (I)** is used to connect the Main Duct with each round branch. (One end of a **Take-Off** fits into a hole cut into the side or top of a rectangular duct by folding the fishlock over. The other end of a **Take-Off** connects with

PLEAS. TAKE ONE



the Pipe or Stack Duct.)

If your system has a round Main Duct, a **Tee (M)** allows a 90∫ branch, and a **Tee Wye (N)** permits branching at the end of a Main Duct in two directions.

Elbows (D) are used to change the direction of air flow through duct.

The rectangular ductwork that is usually installed in the wall between the studs is called a **Stack Duct (J)**. A **Stack Elbow (K)** can be used to link ductwork to a floor or ceiling Register.

A **Damper (H)** can be installed inside a duct so that the airflow in that pipe can be regulated.

■ ■ ■ The System

If you are adding to or changing existing ductwork, it will be one of two types of systems.

If yours is a **Basement System**, the Main Duct that comes out of the Plenum on top of the Furnace is usually rectangular, feeding branches that direct the air UP into the primary living area.

If itis a **Ceiling System** (sometimes called an Attic System), the Main Duct is usually round and travels above the ceiling, feeding branches that direct the air DOWN into the primary living area.

In a Basement System, itis easiest to connect the ducts with Registers located in the floor; in a Ceiling System, Registers in the ceiling are easiest to install.

We do not recommend installing registers in side walls on retro jobs, as it is quite difficult.

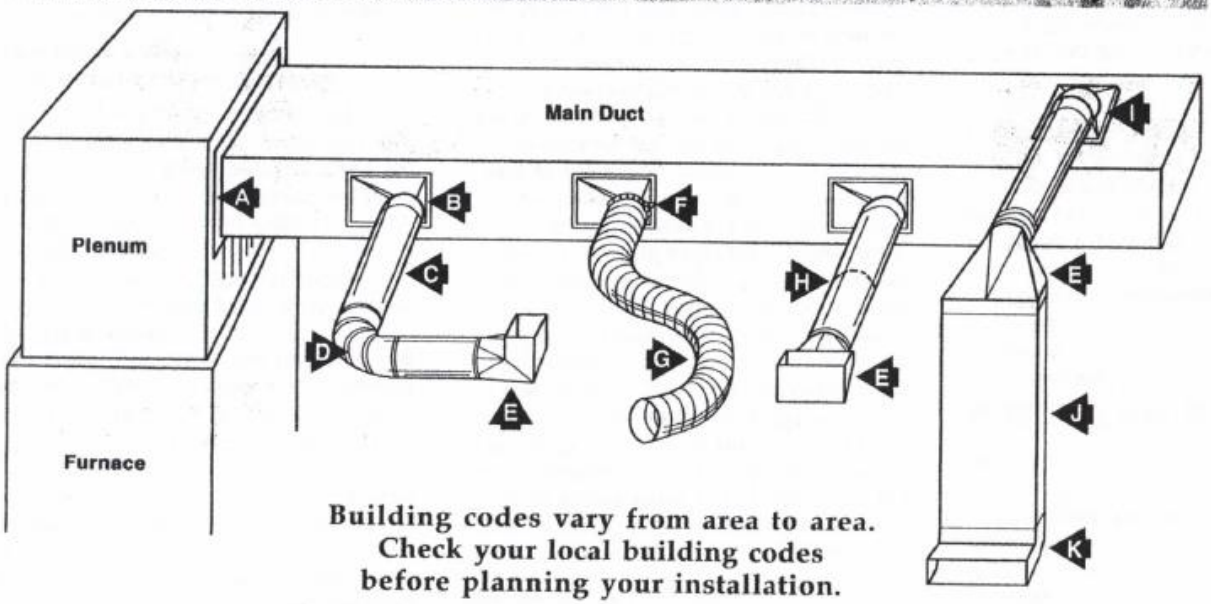
■ ■ ■ Air In Motion

This isnit the time or place for a detailed study of the science of Fluid Dynamics. But physically speaking, air is a fluid and there are a few things you should keep in mind regarding airflow.

1. The total amount of air that the fan on your furnace or central air conditioning system is capable of moving will stay the same, even though you may add a branch.
2. Therefore, after you add a branch, itis possible that the fan on your furnace may not be able to provide enough air to all rooms for satisfactory comfort.
3. For acceptable comfort and control, an adequate AMOUNT of air, moving at an adequate VELOCITY (Speed) are both needed to properly heat or cool each room.
4. To an extent, your system can be balanced by the use of **Reducers (O)** (not adjustable) and **Dampers (H)** (adjustable) inside your Ducts.

Diagram 1: Basement Installation

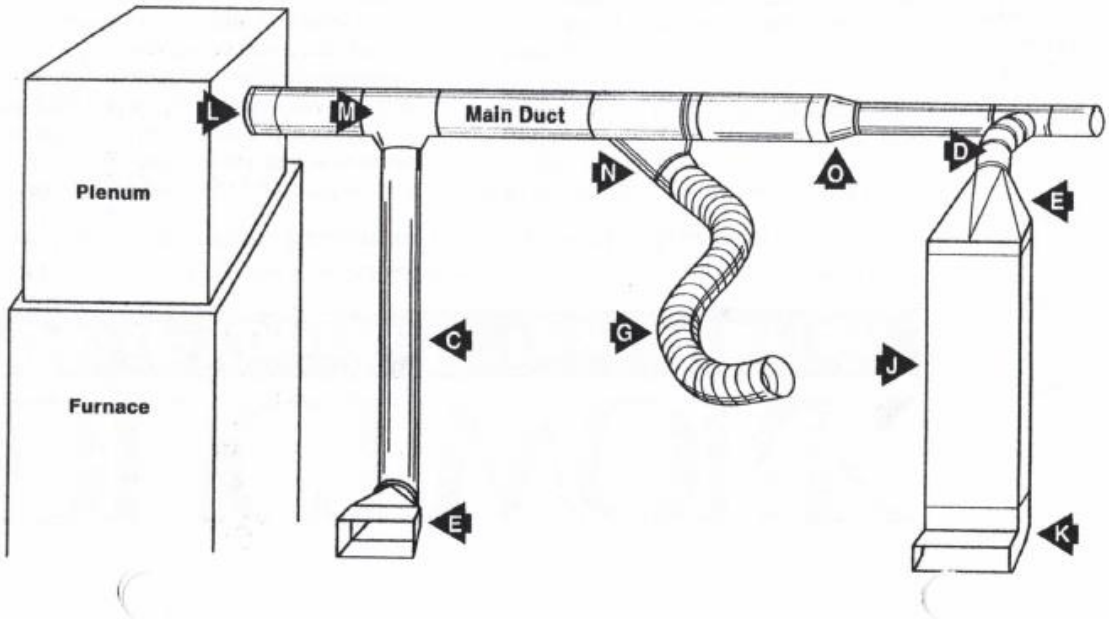
APPLICATIONS: • Heating & A/C - uses all parts
• Dryers & Ranges - uses parts C - D - J - E only
• Bath Fans & Water Heaters - uses parts C - D only



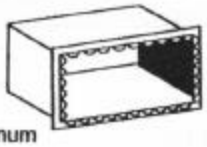
Building codes vary from area to area.
Check your local building codes
before planning your installation.

Diagram 2: Ceiling Installation

APPLICATIONS: • Heating & A/C - uses all parts
• Dryers & Ranges - uses parts C - D - J - E only
• Bath Fans & Water Heaters - uses parts C - D only



A



Fishlock Collar
Connects Plenum to Main Duct

B

Side Take-Off
Connects Rectangular Duct to Pipe or Flex Duct

C

Round Pipe
Basic air carrier for multiple applications

D

90° Elbow
(Adjustable)
To change direction of flow up to 90∫

E

Angle Boot
Connects Pipe or Flex Duct to Register or to Stack Duct

F

Duct Strap
To hang and connect Flex Duct

G Flex Duct
(Insulated)

Ready to install. Greater friction loss occurs with flex duct, itfs use should be limited.

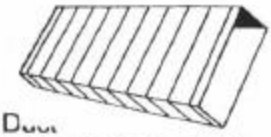
H

Damper
Regulates airflow through Pipe

I

Top Take-Off
Connects Rectangul Duct to Pipe or Flex Duct

J



Stack D
Fits between wall studs or joists

K

Stack Elbow
Connects Stack Duct to Wall Register

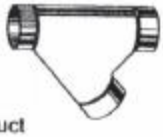
L

Fishlock Collar
Connects Plenum to Main Duct

M

Tee
Connects Main Duct to branch

N



Tee Wye
Connects Main Duct to branch

O

Reducer/Increaser
To reduce or increase between different diameters of pipe

DON PARK

Work Sheet:

Task 1: Which 2 types of installations are found in the instructions?

Answer:

Task 2: Which code must the installer check before planning the installation?

Answer:

Task 3: List the 5 steps that are part of the Process.

Task 4: How does someone know this installation does not need to be done by an expert?

Task# 5: Where does an installer use a "reducer/increaser"?

Answers

Task 1: Which 2 types of installations are found in the instructions?

Answer: Basement, ceiling

Task 2: Which code must the installer check before planning the installation? (answer is difficult to find)

Answer: (Local) building codes

Task 3: Locate where the Process is explained. List the 5 steps that are part of the Process. (distractors: another list is numbered while this list is not)

Answer:

1. Draw a diagram.
2. Write a checklist of the ducts, fittings, pipes, and tools and supplies needed
3. Estimate the type of pipes needed.
4. Measure the lengths of distances and write down these measurements.
5. Discuss the diagram with a store representative to be sure you have everything needed.

Task 4: How does someone know this installation does not need to be done by an expert? (low-level inference required)

Answer: This is a "Do It Yourself" instruction sheet so the process does not need to be done by an expert.

Task 5: Where does an installer use a "reducer/increaser"?

Answer: To reduce or increase between diameters of pipe

Performance Descriptors

Levels	Performance Descriptors	Needs Work	Completes task with support from practitioner	Completes task independently
A2.1	Scans to locate specific details			
A2.1	Locates specific details in simple documents			
A2.2	Makes low-level inferences			
A2.2	Uses layout to locate information			

This task: Was successfully completed ☐ Needs to be tried again ☐

Learner Comments:

Instructor (print): _____

Learner (print): _____