

Developing OALCF Apprenticeship Tasks for the Competency “Use Digital Tasks” (2014/2015)

Task-based Activity Cover Sheet

Task Title: HVAC Air Conditioning Replacement Parts

Learner Name:	
Date Started:	Date Completed:
Successful Completion: Yes___ No___	
Goal Path: Employment✓ Apprenticeship✓ Secondary School___ Post Secondary ___ Independence___	
Task Description: Search the internet to locate information about specific air conditioning parts	
Competency: A: Find and Use Information B: Communicate Ideas and Information D: Use Digital Technology	Task Group(s): A1: Read continuous text A2: Interpret documents B2: Write continuous text
Level Indicators: A1.3: Read longer texts to connect, evaluate and integrate ideas and information A2.1: Interpret very simple documents to locate specific details B2.2: Write texts to explain and describe information and ideas D.2: Perform well-defined, multi-step digital tasks	
Performance Descriptors: see chart on last page	
Materials Required: <ul style="list-style-type: none"> • Computer with internet access 	

Developing OALCF Apprenticeship Tasks for the Competency “Use Digital Tasks” (2014/2015)

Task Title: HVAC Air Conditioning Replacement Parts

HVAC Technicians/Professionals must have knowledge of the parts that are in air conditioners and furnaces. The internet is used to locate and troubleshoot air conditioning issues. Troubleshooting air conditioner failures includes the testing and replacement of capacitors.

Open an internet browser to complete the tasks.

Learner Information and Tasks:

Task 1: What functions do capacitors serve in air conditioners?

Task 2: How can you tell if an air conditioner capacitor is defective by inspecting it?

Task 3: How can you determine if an air conditioner capacitor is no longer working if it looks normal?

Task 4: What tools are used to test the air conditioner capacitor?

Developing OALCF Apprenticeship Tasks for the Competency “Use Digital Tasks” (2014/2015)

Task 5: Explain how to discharge the electricity from the air conditioner capacitor.

Task 6: A contractor exclusively uses Trane products, locate the cost of both a run and start capacitor to replace in a Trane air conditioner on two different websites.

Developing OALCF Apprenticeship Tasks for the Competency “Use Digital Tasks” (2014/2015)

Task Title: HVAC Air Conditioning Replacement Parts

Answer Key

Task 1:

A capacitor helps the motor run or start depending on what type of capacitor it is.

A start capacitor roughly performs the function of a centrifugal switch. There is a brief pulse to the start winding that causes the motor to rotate. This is because the voltage across a cap can't change instantaneously, so it initially acts as a short.

The run capacitors are designed to provide some sort of phase shift for the motor.

Single-phase motors in applications like air conditioners use capacitors to provide additional torque for starting and to use less electricity once they are running. The motors have both start and run capacitors, which make them more efficient.

http://www.ehow.com/info_12043127_hvac-capacitor-do.html

Task 2:

The capacitor leaks or the top is bulging.

Task 3:

It will need to be tested

Task 4:

<http://www.learningaboutelectronics.com/Articles/How-to-test-a-capacitor>

Test a Capacitor with an Ohmmeter of a Multimeter

Test a Capacitor with a Multimeter in the Capacitance Setting

Test a Capacitor with a Voltmeter

Digital Multimeter

Analog Multimeter

<http://www.electricaltechnology.org/2013/06/how-to-check-capacitor-with-digital.html>

Developing OALCF Apprenticeship Tasks for the Competency “Use Digital Tasks” (2014/2015)

Task 5:

Remove the start capacitor. The easiest and most convenient way to discharge the capacitor is to attach the terminals of a low wattage 120v light bulb (about 20 watts) to the capacitor terminals. This will safely discharge the electricity which may still be stored into it.

Touch a device to the capacitor leads for several seconds. Doing this will provide a path for the electricity to go and discharge the capacitor. You can use a 5- to 10-watt resistor, volt meter, test light or ordinary light bulb.

Using a meter or light will show the progress of the discharging, either with a digital display or a progressively dimming bulb.

Task 6:

<http://www.appliancefactoryparts.com/airconditioners/trane/trane-capacitors.html>

Start Capacitor 38.99

Run Capacitor 69.99

<http://www.supplyhouse.com/Capacitors-10574000>

Run Capacitor 25.54

Start Capacitor 29.35

Developing OALCF Apprenticeship Tasks for the Competency “Use Digital Tasks” (2014/2015)

Task Title: HVAC Air Conditioning Replacement Parts

Performance Descriptors		Needs Work	Completes task with support from practitioner	Completes task independently
A1.3	<ul style="list-style-type: none"> integrates several pieces of information from texts 			
	<ul style="list-style-type: none"> manages unfamiliar elements (e.g. vocabulary, context, topic) to complete tasks 			
	<ul style="list-style-type: none"> identifies the purpose and relevance of texts 			
	<ul style="list-style-type: none"> skims to get the gist of longer texts 			
	<ul style="list-style-type: none"> infers meaning which is not explicit in texts 			
	<ul style="list-style-type: none"> uses organizational features, such as headings, to locate information 			
	<ul style="list-style-type: none"> follows the main events of descriptive, narrative, informational and persuasive texts 			
	<ul style="list-style-type: none"> obtains information from detailed reading 			
	<ul style="list-style-type: none"> identifies sources, evaluates and integrates information 			
A2.1	<ul style="list-style-type: none"> scans to locate specific details 			
	<ul style="list-style-type: none"> interprets brief text and common symbols 			
	<ul style="list-style-type: none"> locates specific details in simple documents, such as labels and signs 			
	<ul style="list-style-type: none"> identifies how lists are organized (e.g. sequential, chronological, alphabetical) 			
B2.2	<ul style="list-style-type: none"> writes texts to explain and describe 			
	<ul style="list-style-type: none"> conveys intended meaning on familiar topics for a limited range of purposes and audiences 			

Developing OALCF Apprenticeship Tasks for the Competency “Use Digital Tasks” (2014/2015)

	<ul style="list-style-type: none"> begins to sequence writing with some attention to organizing principles (e.g. time, importance) 			
	<ul style="list-style-type: none"> uses limited range of vocabulary and punctuation appropriate to the task 			
	<ul style="list-style-type: none"> begins to select words and tone appropriate to the task 			
	<ul style="list-style-type: none"> begins to organize writing to communicate effectively 			
D2	<ul style="list-style-type: none"> selects and follows appropriate steps to complete tasks 			
	<ul style="list-style-type: none"> locates and recognizes functions and commands 			
	<ul style="list-style-type: none"> makes low-level inferences to interpret icons and text 			
	<ul style="list-style-type: none"> begins to identify sources and evaluate information 			
	<ul style="list-style-type: none"> performs simple searches using keywords (e.g. internet, software help menu) 			

This task: was successfully completed ___ needs to be tried again ___

Learner Comments

Instructor (print)

Learner Signature