

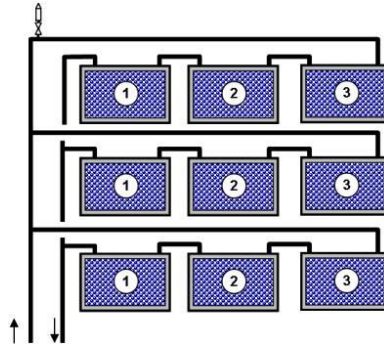
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HVAC Learning.com

# Exercise Booklet

Print this exercise booklet before studying the lesson on-line. It will enable you to write your answers to the HVAC learning exercises. You will thus be able to switch between reading or listening to the file on-line and writing in the booklet.



## INSTALLATION, CONNECTIONS AND WATER SUPPLY FOR SOLAR COLLECTORS

English lesson

<https://hvac-learning.com/renewable-energy/solar-thermal-energy-training/installation-connections-and-water-supply-for-solar-collectors/>

French version:

<https://formation.xpair.com/cours/installation-raccordement-irrigation-capteurs-solaires.htm>

For each exercise, you will write your answer, then you will study its correction on-line before going to the next exercise.

If you cannot do an exercise, you will be able to study its correction directly, but **force yourself to write your answer** as often as possible.

Note that between 2 exercises, you will find it necessary to study the course. As a warning, in the booklet, you will sometimes find the following indication:

- “ **Study the course on-line before doing the next exercise**” or
- “ **Study the course on-line before going to the next paragraph**”

Only study the paragraphs or the exercises which have an equal or a lower level than the one your training requires.

NVQ Level = Vocational Certificate

A Level = High school Diploma

HND Level = Associate's Degree

MSC Level = Engineering Schools

Then, when you have completed a file, you will be able to assess your level on-line through a Multiple Choice Questionnaire in which you will only answer the questions related to the themes you have studied.

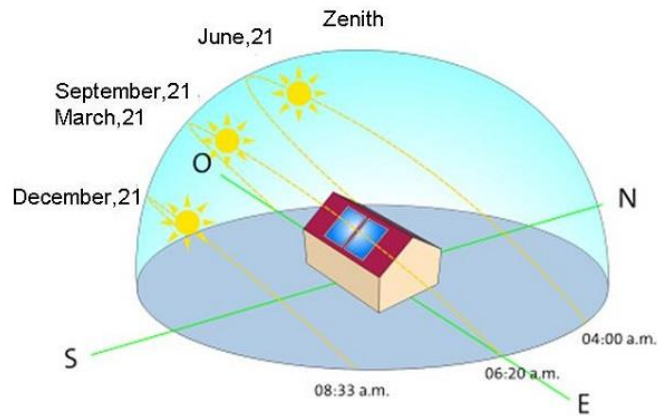
So now off you go and work well!

Good luck!

The Authors.

## N°1 – Movements of the sun and orientation of collectors training – NVQ to A level

**Study the course on-line.**



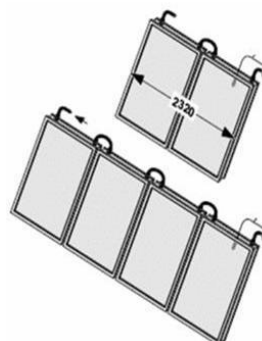
## N°2 – Principles of collector installation training – NVQ level

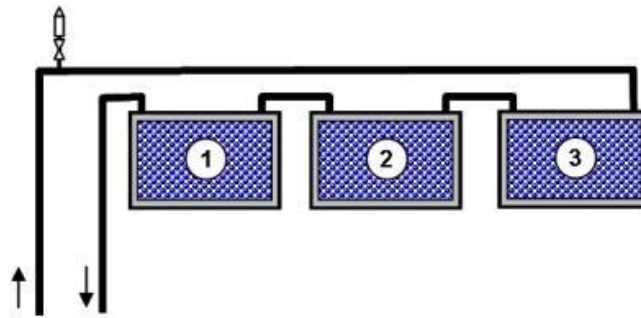
**Study the course on-line.**



## N°3 – Principles of connecting solar thermal collectors training – A to HND level

**Study the course on-line before treating the next exercise.**



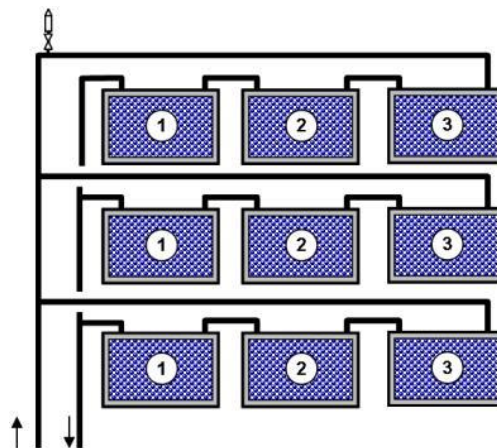


Question 1

For the connection above which collector will be the most efficient, and which one the least?  
 The most efficient collector will be the less hot.

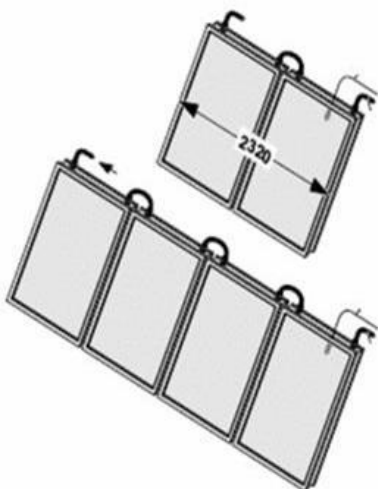
### N°4 – Connecting thermal collectors to collective installations – A to HND level

**Study the course on-line before treating the next exercise.**



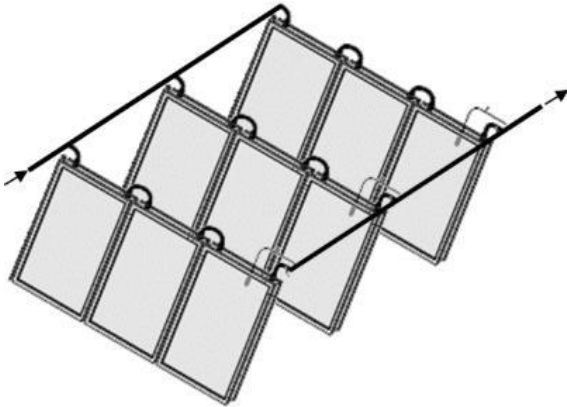
Question 1

Define the type of connection for the 2 groups of collectors below.



Question 2

Define the type of connection for the 2 groups of collectors below.  
Is part of the supply connected in a Tichelmann loop?



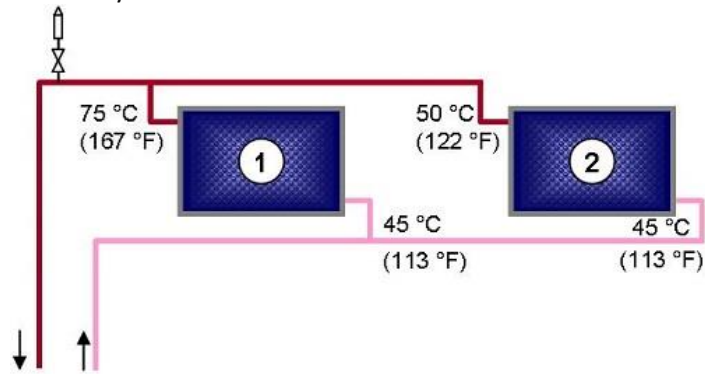
### N°5 – Collector water supply training – A to HND level

*The hotter the collectors the greater will be the heat losses.*

*Therefore, whatever their appearance, the less hot the collectors are, the greater will be the power recovery*

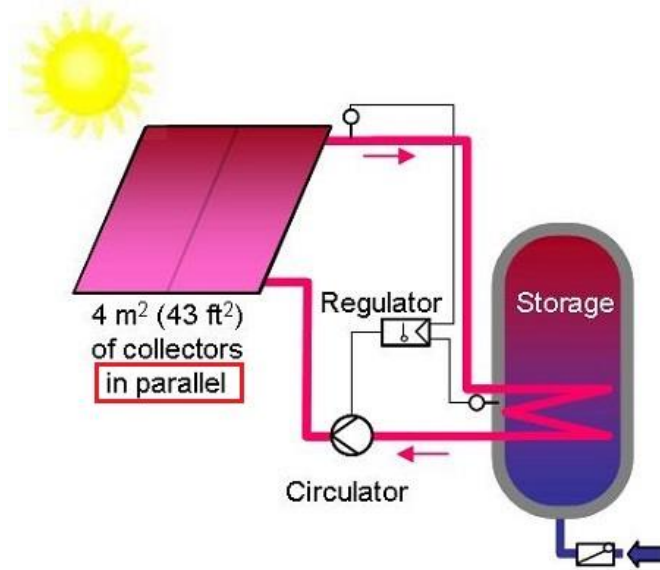
Question 1

The 2 collectors below are identical, but fed differently. Look at the temperatures and indicate which of the 2 collectors achieves the most recovery?



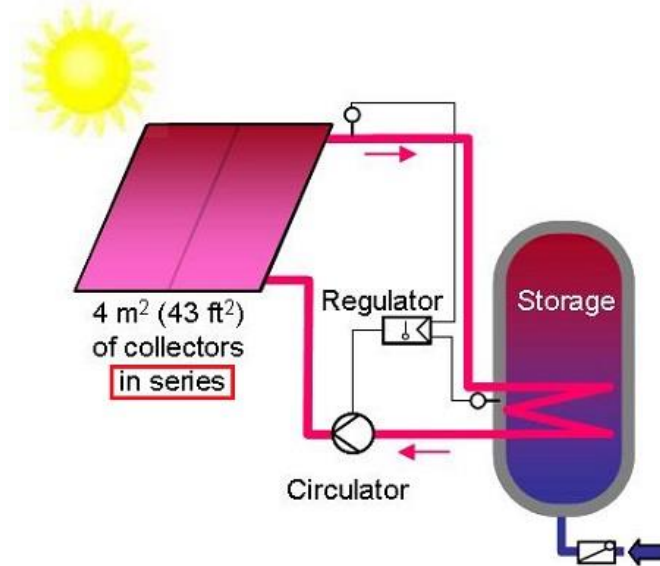
Question 2

The 4 [m<sup>2</sup>] (43 ft<sup>2</sup>) of collectors below are connected in parallel.  
Give an approximate value of the circulator flow rate of the installation below.



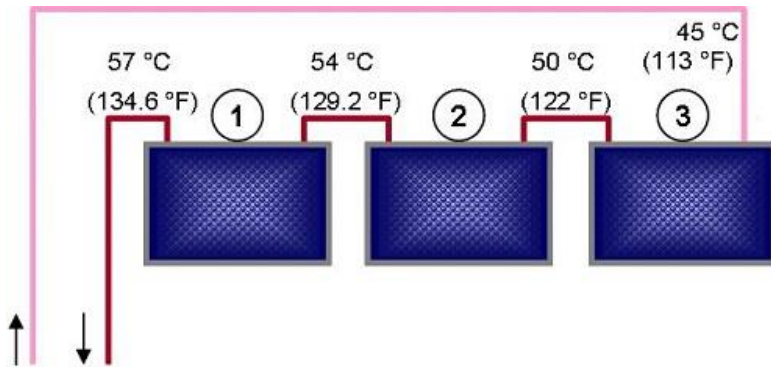
Question 3

The 4 [m<sup>2</sup>] (43 ft<sup>2</sup>) of collectors below are connected in series.  
Give an approximate value of the circulator flow rate of the installation below.



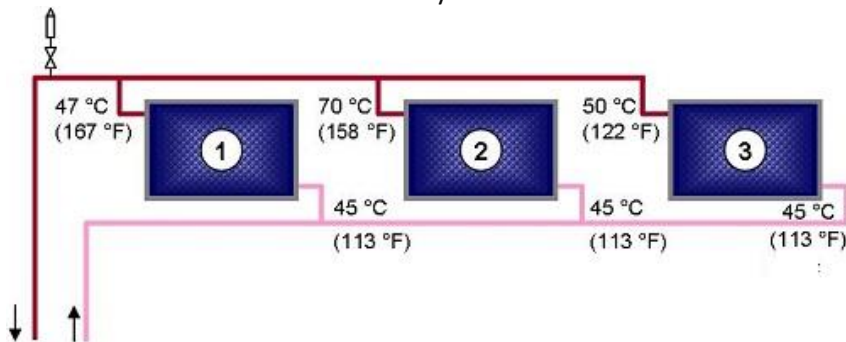
Question 4

In the installation below the 3 collectors are identical. Which of the 3 collectors will ensure the greatest power recovery?



Question 5

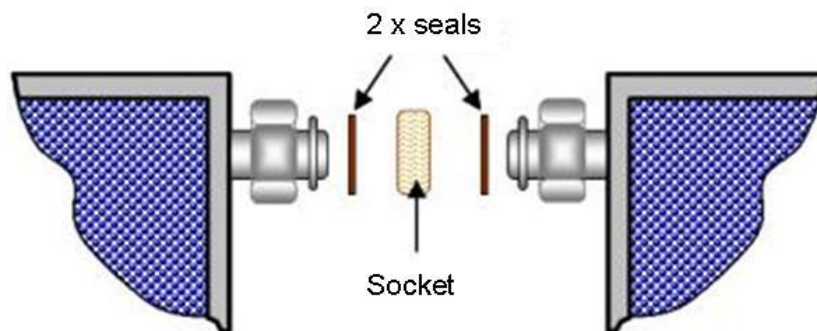
The collectors are identical in the installation below. Which is the best fed collector? Which is the least fed collector? Why?



**Study the course on-line.**

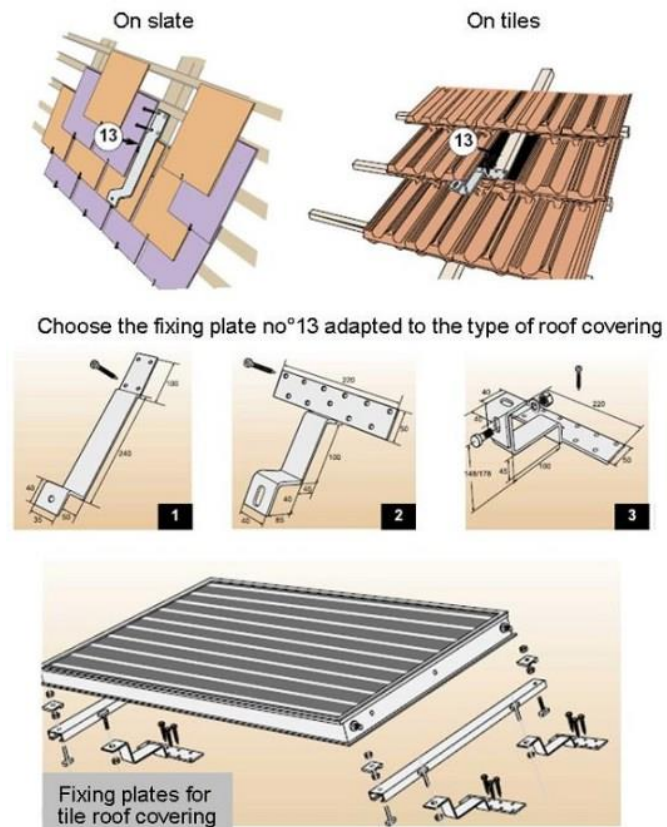
## N°6 – Liaisons and accessories training – NVQ level

**Study the course on-line.**



## N°7 – Installing thermal collectors training – NVQ level

**Study the course on-line.**



## N°8 – Storage and maintenance of collectors training – NVQ level

**Study the course on-line.**



*English lesson*

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