

**Refrigeration Air Conditioning & Heat Pump Competitions  
CORE COMPETENCIES**

Skills & Knowledge to be demonstrated	Heat	Final
Work safely (work organisation)	#	#
Follow detailed work plan instructions	#	#
Calculate the area and volume of shapes	#	#
Measure, cut and fabricate materials used in RACHP industry	#	#
Assemble pipe work, insulation and components to prescribed instructions	#	#
Join materials using non-permanent mechanical fixing methods (i.e., flare)	#	#
Join materials using permanent non mechanical methods (i.e., braze, solder, glue)	#	#
Join materials using permanent mechanical fixing methods (e.g., Lokring/Maxipro)		#
Pressure test pipe work and components to BSEN 378 standard	#	#
Evacuation to industry standards	#	#
Test control wiring and basic components for electrical faults	#	#
Interpret simple ladder/connection wiring diagrams for RACHP systems	#	#
Correct use of tools, materials and components used in the RACHP industry	#	#
Completion of commissioning sheets and F-Gas records (communication)	#	#
Refrigerant Recovery, Charging, Leak testing and record completion (F-Gas cat 1)	#	#
Analyse information in order to overcome challenges (problem solve)	#	#
Analyse operation and use test instruments to find faults	#	#
Install control wiring and electrical components		#
Interpret simple ladder/connection wiring diagrams		#
Measure and plot condition of air on a Psychrometric chart		#
Measure and plot condition of refrigerant on a Pressure Enthalpy diagram		#

**Safe Working:**

Work safely at all times, take the appropriate precautions when working with any tools that have a potential hazard.

No power tools are required. No open bladed knives are to be used for wire stripping.

Appropriate workshop / site work wear is to be worn during flame brazing and refrigerant handling activities.

Appropriate safety glasses/goggles are to be worn during any cutting, flame brazing, pressure testing or refrigerant handling activities.

**The recommended tools required are identified on a Tool List that can be provided.**

**The standard of work required to gain maximum marks are:**

- The measurements should be within +/- 2mm of the specification
- All components to be positioned according to manufacturers instructions
- All brazed joints to be performed using oxygen free nitrogen; be full all round; no excess alloy; no parent metal loss; no sharp peaks; no component burn marks
- Correct strength & leak testing to BSEN 378 process demonstrated
- Wiring terminations to be tight and without conductors showing when viewed at 90°
- All components to be earth bonded
- Electrical tests to prove the installation is safe to energise
  - Earth continuity, Insulation resistance, Polarity 'dead' & 'live'.
- Correct operational control 'set up' of all devices including temperature and/or zone controllers according to a design specification.