Skills Compétences Canada
Vancouver2022

SKILL SETS

Industrial Mechanics

POST-SECONDARY

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1 INTRODUCTION

Industrial Mechanics Skill # 1 Skill Set Information

2 DESCRIPTION OF SKILL SETS

Listed below are the skill sets competitors should be familiar with prior to SCNC Vancouver. 2022

2.1 Total Competition time: 12hrs

- 1: Predictive Maintenance = 15 marks
- 2: Laser Shaft Alignment = 15 marks
- 3: Fabrication & Welding = 20 marks
- Precision Hand Layout & component install = 20 marks
- Stainless Steel Tube Bending = 15 marks
- Pneumatics (circuit build and test) = 15 marks

2.2 Detail and Assembly Drawings will be in third angle projection.

2.3 Drawings will be dimensioned using the imperial system.

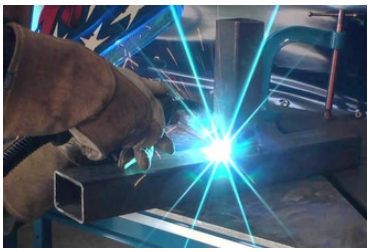
2.4 Safe Working Procedures/Practices must be demonstrated at all times during the competition.

Module # 1:

Fabrication; Welding; Precision Layout; Stainless Steel Tube Bending and Mechanical Assembly Build.

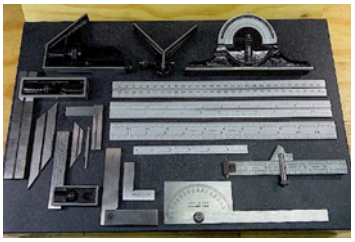
- **Fabrication:** Calculations, developments, layout and cutting. Tolerances +/- 1/16" (.0625")





- **MIG Welding:** Mild steel box section, square or rectangular. Wall thickness 1/8" " (.125").

- **Precision Hand Layout/Work and Hand Tools:** Combination squares, scribers, center punches, hammers, drilling, tapping, hand tools; files, hand drills, etc. Tolerances +/- 1/64" (.015").



- **Stainless Steel Tube Bending:** Calculations and allowances, preperation for bending, bending to angles ranging from: 15° to 180°, perform required tube bending operations to the specifications and tolerances, stainless steel tubing will be 6.0 mm in diameter. Tolerances +/- 1/16” (.0625”). Tube will be pressure tested upon completion.



- **Mechanical Assembly:** Installation and operation of supplied Festo fluid power components as per schematics, engineering and assembly drawings.

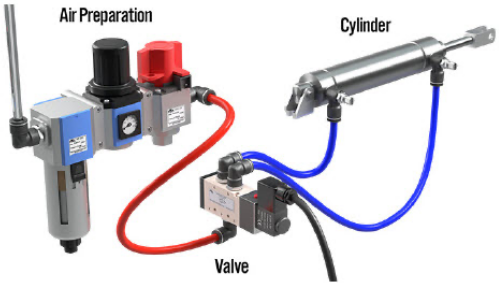
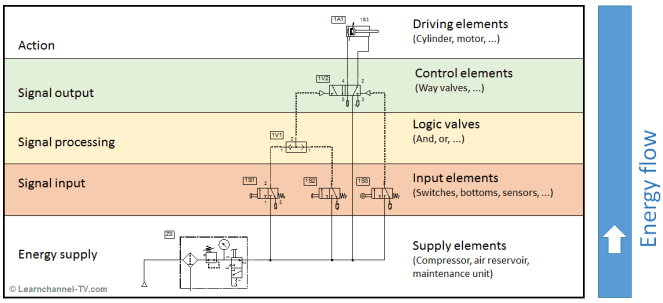


Figure 1C : Basic pneumatic system



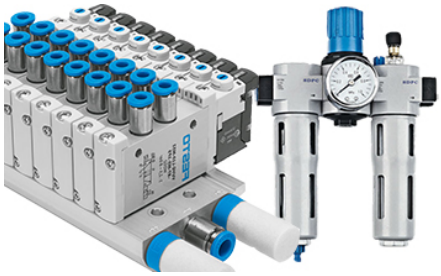
Equipment:

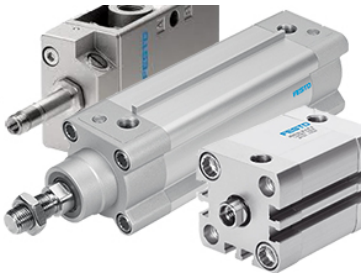
- Lincoln Electric MIG Welder
- (.035” diameter MIG welding wire)

Module # 2:

Fluid Power – Pneumatics – Build and Test.

- Build and test the function of a Pneumatic Sequential **"OR"** Cascade circuit as per the supplied schematic diagram, Festo components and accessories.





Module # 3:

Predictive Maintenance and Laser Shaft Alignment.

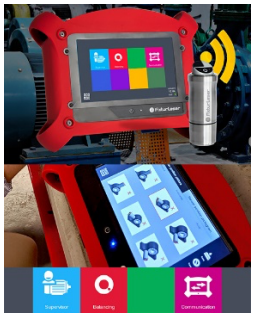
- With the supplied diagnostic equipment record and analyze the machine vibration signature.
- Using standard procedures and protocols rectify the vibration (single plane balancing) and alignment issues using calibrated weights, shims, diagnostic equipment and tooling.

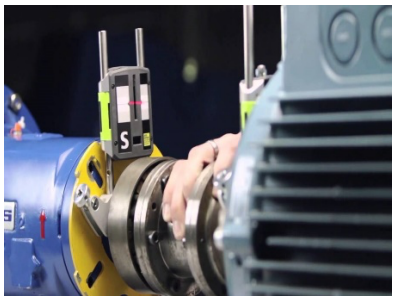
Record the following:

- The exact conditions found (before)
- What actions were performed (with documentation)
- The condition at completion

Equipment:

- SMC-Balancer http://www.fixturlaser.com/Shaft-Alignment/Fixturlaser-SMC/
- NXA Pro http://www.fixturlaser.com/Shaft-Alignment/Fixturlaser-NXA/FIXTURLASER-NXA-Pro/




<u>Additional Training on SMC for Predictive Maintenance Project:</u>

Fixturlaser (Nathalie Drouin) has kindly agreed to do training via “Skype” for competitors and trainers closer to the competition next year. Time and date to be announced.