Test Project

Module D

Industrial Mechanics

Submitted by:

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Introduction

The Competitor will build the Pneumatic and Mechanical Assembly for the 007 IM production line.

You may perform the work in any order you prefer.

Instructions to the Competitor

READ THE ENTIRE DOCUMENT BEFORE PROCEDING.

ALL PROPER SAFETY PROCEDURES MUST BE DEMONSTRATED AS YOU WOULD ON THE JOB SITE. YOU ARE BEING OBSERVED AT ALL TIMES.

IF YOU HAVE TO BE ADVISED OF SAFETY INFRACTIONS DURING THIS MODULE, 0.5 MARKS WILL BE DEDUCTED FOR EACH INFRACTION.

Experts will not intervene unless there is a safety concern.

On the 3rd infraction, the Competitor will be stopped, evaluation will be based on the work already completed.

REMEMBER:

Experts MUST sign off at designated module points in the documentation. If a Sign Off point is missed all marks for that section of the project will be deducted from the overall project total.

Description of project

Competitors will complete the final assembly of the mechanical system, install and commission the pneumatic system, and demonstrate the complete operation of the machine in accordance with the supplied engineering drawings, assembly drawings, and pneumatic schematic.

Competitors are responsible for ensuring all components are assembled correctly, all fasteners are securely tightened, all pneumatic tubing is installed correctly, and the completed machine functions safely and reliably.

1: Precision Hand Layout

Detail 301 will/may require additional layout, drilling, tapping, deburring, and preparation for final assembly.

Requirements:

1. Complete all required hand layout operations.
2. Drill and/or tap holes as specified on the supplied blueprint drawings.

Submit Detail 301 to the Experts immediately upon completion for evaluation.

Failure to do so will result in a score of zero (0) for this task.

Expert Initials: _____

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2: Mechanical System Assembly

1. Secure Detail 301 to the competitor fabricated and welded assembly using only the supplied fasteners.
2. Assemble all supplied pre-machined components.
3. Assemble all competitor-manufactured components.
4. Install all supplied pneumatic hardware.
5. Assemble the complete mechanical system in accordance with the supplied assembly drawings.
6. Tighten all fasteners to the specified torque, where applicable.
7. Ensure all moving components operate freely without binding or interference.
8. Verify component orientation and alignment.

Notify the Experts upon completion of the mechanical assembly.
Pneumatic assembly shall not begin until Expert evaluation has been completed.
Failure to obtain Expert approval will result in a score of zero (0) for this task.
Expert Initials: _____

3: Pneumatics System Assembly

1. Install all pneumatic tubing in accordance with the supplied pneumatic schematic and ISO 4414 protocols.
2. Set the operating pressure to 8.0 bar (800 kPa).

Notify the Experts upon completion of the pneumatic installation.

Functional Test

1. Ensure the pneumatic sequence operates exactly as shown on the supplied schematic.
2. Competitors will be permitted one (1) functional test without penalty under Expert supervision.
3. A deduction of 2 marks will be applied for each additional attempt required to achieve correct operation.
4. A maximum of three (3) attempts will be permitted.

Failure to obtain Expert approval will result in a score of zero (0) for this task.
Expert Initials: _____

4: System Commissioning and Functional Testing

1. Install the supplied workpiece blank into the completed machine.
2. Operate the machine using the two-hand safety control.
3. Demonstrate safe machine operation.
4. Produce one acceptable workpiece.
5. If successful, continue production until two (2) more acceptable workpieces have been completed.
6. Produced workpieces shall conform to the supplied drawings.

Troubleshooting:

If the machine fails to operate correctly: the Competitor can troubleshoot and repair the assembly.

1. One repair attempt will be permitted without penalty under Expert supervision.
2. A deduction of two (2) marks will be applied for each additional repair attempt.
3. A maximum of three (3) attempts will be permitted.

Notify the Experts for final evaluation immediately upon completion.

Failure to obtain Expert approval will result in a score of zero (0) for this task.

Expert Initials: _____

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