

# **Evaluation Instructions**

## **Machining Level II – EDM: 2 - Axis Wire EDM**

### **General Instructions**

1. Make sure that the candidate has his/her own copy of the part print, job instructions and understands the criteria for performance evaluation. Times indicated are guidelines and will not be part of the assessment.
2. Provide access to the tools, equipment and materials as suggested on the next page.
3. Identify each candidate's work upon completion and permanently mark all parts.
4. Complete the evaluation of the candidate's project as soon as possible after completion. Be sure to complete the SPONSOR portion of the Performance Affidavit for successful projects.

### **Monitoring the Performance**

1. Make sure that the steel block used to complete the project agrees with the specifications on the part print.
2. Always check to see that the candidate is using the workholding devices and tooling in a safe and secure manner.
3. Check that all personal protection and safety precautions are being employed. Stop any candidate from creating an unsafe condition. A candidate should not be allowed to start, continue, or return to the project until an unsafe condition is resolved. If the unsafe condition is of the candidate's making, the evaluator or sponsor should require that the candidate completely restart the project after the safety issue has been resolved and appropriate instruction has been given.

### **Completion of the Performance Evaluation**

1. Check to see that the candidate has provided proper cleanup of tools, equipment and work area.
2. Check to see that tools are returned to their proper storage locations.
3. Check to see that equipment is returned to an appropriate condition and setting.
4. Complete the evaluation worksheet and file with your records.
5. Complete the SPONSOR portion of the Performance Affidavit.
6. Send the part, part print and Performance Affidavit to MET-TEC for review.

## **Performance Standards**

### **EDM: 2 - Axis Wire EDM**

#### **Materials**

1.12" x 2.21" x 3.12" Hardened Tool Steel (54 – 62 Rc)

Ground to specifications listed on the print – apply reference dimensions

#### **Duty:**

Operate a 2 axis wire electric discharge machine.

#### **Performance Standard:**

Given a print, process plan, an appropriate selection of wire electrodes, workholding devices, EDM fluids, and 2 axis wire EDM machine, perform the EDM operation called out on the process plan.

*Accuracy Level:* Match the requirements of the part print. 125 microinch finish or better

#### **Assessment Equipment and Material:**

*Workstation:* A 2 axis wire EDM and a workbench.

*Material:* A part matching the material requirements of the part print, material: mild steel.

*Tooling:* An appropriate workholding device, screws, studs, nuts, washers, and clamps sufficient to secure the part to the table. Assorted parallels, files, magnetic base for indicators, and assorted hand tools.

*Measuring Inst:* Required micrometers, combination set, dial indicator, 6" rule, a 6" vernier, dial, or electronic caliper, adjustable parallels, edge finder, appropriate tools for determining squareness, and surface finish comparison standards.

*Reference:* Machinery's Handbook.

## Performance Assessment Worksheet

### Machining Level II – EDM: 2 - Axis Wire EDM

**INSTRUCTIONS:** Rate the candidate’s performance for the *EDM: 2 – Axis Wire EDM* project according to the criteria below. The checklist below represents a listing of criteria to be evaluated. It is **not** a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

Remember, NIMS requires that all specifications must be met within the allowable tolerance limits. If the part does not meet all specifications, the candidate must correct the deviation or redo the project.

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Candidate Name \_\_\_\_\_

Evaluation Date \_\_\_\_\_

<b>Performance Project – EDM: 2 – Axis Wire EDM</b>			
<b>Evaluation Criteria</b>		<b>Pass</b>	<b>Fail</b>
1. Punch: 1.0000 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
2. Punch: 1.010 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
3. Punch: .159 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
4. Punch: 90° angle basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
5. Punch: .680 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
6. Punch: .324 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
7. Punch: R.0310 basic dimension (.600 basic dimension) Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
8. Punch: R.0100 basic dimension (16 places) Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>

## Performance Project – EDM: 2 – Axis Wire EDM

Evaluation Criteria		Pass	Fail
9. Punch: .838 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
10. Surface finish on punch: 32 RMS or better	Pass = surface finish 32 RMS or better Fail = surface finish exceeds 32 RMS	<input type="checkbox"/>	<input type="checkbox"/>
11. Start element ground flush to EDM surface of punch ( $\pm .0002$ )	Pass = start element ground flush within tolerance Fail = start element exceeds tolerance range	<input type="checkbox"/>	<input type="checkbox"/>
12. Punch: All surfaces to be perpendicular or parallel within .0005 per 1"	Pass = within tolerance Fail = exceeds tolerance	<input type="checkbox"/>	<input type="checkbox"/>
13. Die: 1.0000 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
14. Die: 1.010 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
15. Die: .159 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
16. Die: 90° angle basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
17. Die: .680 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
18. Die: .3240 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
19. Die: R.0310 basic dimension (.600 basic dimension) Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
20. Die: R.0100 basic dimension (16 places) Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
21. Die: .8380 basic dimension Profile of a surface within a .0005 tolerance zone to Datum A	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	<input type="checkbox"/>	<input type="checkbox"/>
22. Surface finish on die: 32 RMS or better	Pass = surface finish 32 RMS or better Fail = surface finish exceeds 32 RMS	<input type="checkbox"/>	<input type="checkbox"/>

<b>Performance Project – EDM: 2 – Axis Wire EDM</b>			
<b>Evaluation Criteria</b>		<b>Pass</b>	<b>Fail</b>
24. Die: All surfaces to be perpendicular or parallel within .0005 per 1”	Pass = within tolerance Fail = exceeds tolerance	<input type="checkbox"/>	<input type="checkbox"/>
25. Punch has to slide into die	Pass = punch slides into die Fail = punch does not slide into die or must be forced into die opening	<input type="checkbox"/>	<input type="checkbox"/>
<b>END OF EDM: 2 – AXIS WIRE EDM EVALUATION</b>			

*It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. The part print and the Performance Affidavit should be sent along with the part to the MET-TEC for evaluation. Send to NIMS only the completed Performance Affidavit, signed by the MET-TEC members. A copy of the Performance Affidavit should be retained in the candidate's file documenting completed performance for this credential.*

