Evaluation Instructions
Machining Level II: Plunge 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: Plunge EDM

Materials
1015 CRS or Low Carbon Steel Ground to specifications listed on the print – apply reference dimensions.

Duty:
Produce an electrode and operate a plunge electric discharge machine.

Performance Standard:
Given a print, process plan, select proper electrode material and produce electrode Select proper workholding devices, EDM fluids, and plunge EDM machine. Perform the EDM operation called out on the process plan.

*Accuracy Level**:*** Produce part to the requirements of the part print.

Assessment Equipment and Material:
Workstation: A standard plunge 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, to hold the part to the table. Assorted parallels, adapters fitted to the electrode holder, files, magnetic base for indicators, soft jaws for the vise 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: Plunge EDM

INSTRUCTIONS: Rate the candidate's performance for the *EDM: Plunge 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.

Candidate Name Evaluation Date

Performance Project – EDM: Plunge EDM

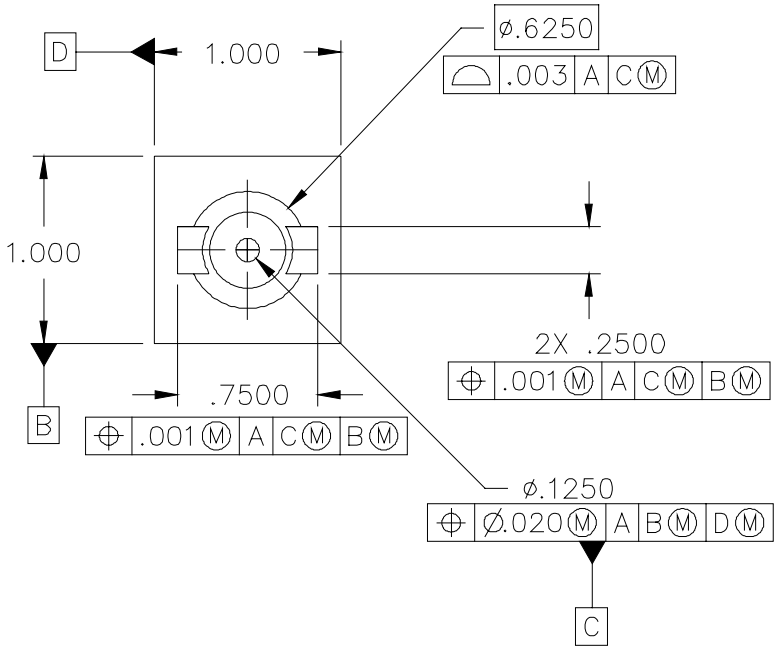
Evaluation Criteria		Pass	Fail
1. 1.000 ± .005 (2 places) Max: 1.005 Min: .995	Pass = within specified tolerance Fail = exceeds specified tolerance	☐	☐
2. Profile of a surface ∅ .6250 basic dimension with a .003 diameter tolerance zone to datum A and C. Datum C is at MMC	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	☐	☐
3. Width .2500 ± .001 (2 places) Max: .2510 Min: .2490	Pass = within specified tolerance Fail = exceeds specified tolerance	☐	☐
4. Width .7500 ± .0001 Max: .7501 Min: .7499	Pass = within specified tolerance Fail = exceeds specified tolerance	☐	☐
5. ∅ .1250 ± .0001 Max: .1251 Min: .1249	Pass = within tolerance Fail = exceeds tolerance	☐	☐
6. Depth .2500 ± .0001 Max: .2501 Min: .2499	Pass = within tolerance Fail = exceeds tolerance	☐	☐
7. Thickness .500 ± .005 Max: .505 Min: .495	Pass = within specified tolerance Fail = exceeds specified tolerance	☐	☐
8. Depth .1250 ± .0001 Max: .1251 Min: .1249	Pass: within tolerance Fail: exceeds tolerance	☐	☐

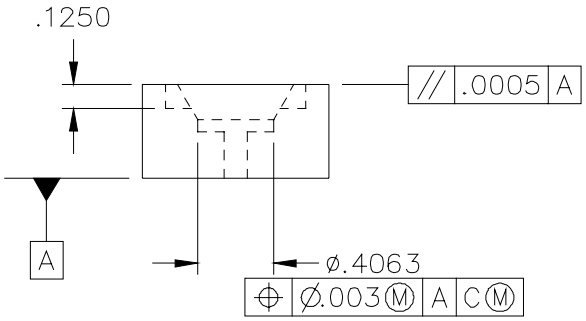
Performance Project – EDM: Plunge EDM

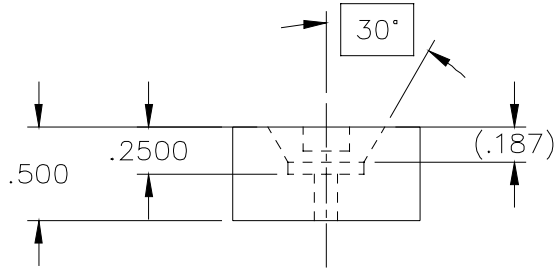
Evaluation Criteria		Pass	Fail
9. Top surface parallel to datum A within a .0005 tolerance zone	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	☐	☐
10. ∅ .4063 ± .0001 Max: .4064 Min: .4062	Pass = within tolerance Fail = exceeds tolerance	☐	☐
11. True position of the ∅ .4063 within a .003 diameter tolerance zone at MMC to datum A and C (Datum C is virtual)	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	☐	☐
12. True position .2500 width True position within a .001 tolerance zone at MMC to datum A and datum C (datum C is virtual)	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	☐	☐
13. True position .7500 width True position within a .001 tolerance zone at MMC to datum A and datum C (datum C is virtual)	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	☐	☐
14. True position ∅ .1250 True position within a .020 diameter tolerance zone at MMC to datum A and B (datum B is a center plane; no size)	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	☐	☐
15. Profile of a surface: 30° basic dimension (Reference ∅ .6250 feature control frame)	Pass = within specified tolerance zone Fail = exceeds specified tolerance zone	☐	☐
16. Surface finish of 32 microinches or better	Pass = 32 microinches or better Fail = exceeds 32 microinches	☐	☐
17. Inside and outside corners .010 inches maximum	Pass = all corners .010 inches or less Fail = sharp corners or corners exceeding .010 inches	☐	☐
END OF EDM: PLUNGE EDM EVALUATION			

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.*

NOTES
1. 1/8" DRILL AND REAM HOLE FOR CORE PIN
2. ELECTRODE TO BE PRODUCED BY THE OPERATOR (PART OF PERFORMANCE REQUIREMENT)
3. TIME: 6 HOURS
4. TIME BEGINS WHEN A SQUARED BLOCK, ELECTRODE MATERIAL AND THE NECESSARY SUPPLIES ARE GIVEN TO THE CANDIDATE TO MAKE THE PART
5. INSIDE AND OUTSIDE CORNERS: .010" MAX
6. FINISH: 32 MAX







Level	Revision	Date	By	Chkd.
A	UPDATED DRAWING AND TITLE BLOCK	5/12/03	PW	

NIMS

MACHINING SKILLS LEVEL II

Job Duty 2.19
Plunge EDM

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994

TOLERANCES
.XX ±.015 .XXXX ±.0005
.XXX ±.005 ANGLES ± 1 DEG.
FRACTIONS ± 1/64

DESIGNER	DK	12/14/01	MATERIAL
DWG CHK			1015 CRS or LOW CARBON STEEL
DWG APPD			.55 X 1.05 X 1.05

SCALE FULL | DWG.#001200 | SHEET 1 OF 1

DO NOT SCALE DRAWING