

# **Evaluation Instructions**

## **Machining Level II Turning: Chucking**

### **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 the part.
4. Complete the evaluation of the credentialing 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 shaft used to complete the project agrees with the specifications stated 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 safety precautions and personal protections 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 sponsor or trainer should require the candidate to completely restart the project after the safety issue has been resolved and appropriate instruction has been given.

### **Completing the Performance Evaluation**

1. Check to see that the candidate has provided proper cleanup of tools, equipment, and work areas.
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

### Turning: Chucking

#### **Material:**

CRS or Low Carbon Steel - Ø 3.25" X 3.5"

#### **Duty:**

Write a detailed process plan that includes a quality plan for a part requiring milling, drilling, turning, or grinding. Produce an operation sheet detailing the process plan; identify all critical dimensions and required speeds and feeds. Provide sketches as needed.

#### **Performance Standard:**

Given a print detailing a part requiring milling, drilling, turning, and grinding, verbal instructions, and appropriate references, formulate a set of strategies to manufacture the part, and write a detailed process plan including a quality plan for that part. Provide sketches as needed. Make a presentation explaining each of the process plan steps to be taken; identify all major components and functions of the machine tools, and all major hand tools, measuring tools, tools and fixtures, and work materials, provide the rationale for the speeds and feeds selected.

#### **Other Evaluation Criteria:**

1. *Legibility*
2. *Clarity of the writing*
3. *Appropriate speeds and feeds*

Accuracy Level: N/A

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

*Workstation:* Standard workbench

*Material:* Part print with an appropriate part, an inventory of available tools, and necessary writing materials

*Tooling:* N/A

*Measuring Instruments:* N/A

*Reference:* Machinery's Handbook

## Performance Assessment Worksheet Machining Level II - Turning: Chucking

**INSTRUCTIONS:** Rate the candidate's performances for the *Turning: Chucking* 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 credentialing candidate/student must correct the deviation or redo the project.

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Student/Trainee Name

Evaluation Date

<b>Performance Project – Turning: Chucking</b>		<b>Pass</b>	<b>Fail</b>
<b>Evaluation Criteria</b>			
1. 1 1/8 – 12 UNF 3B RH	Pass = within tolerance Fail = out of tolerance	<input type="checkbox"/>	<input type="checkbox"/>
2. Diameter 2.750 ± .002 (2 places) Left side concentric to datum A with a maximum TIR of .003 Max: 2.752 Min: 2.748	Pass = within tolerance and TIR Fail = exceeds tolerance and TIR	<input type="checkbox"/>	<input type="checkbox"/>
3. 10° taper Max: 11° Min: 9°	Pass = within specified tolerance Fail = exceeds specified tolerance	<input type="checkbox"/>	<input type="checkbox"/>
4. Step 1.100 ± .005 Surface parallel to datum B with a maximum TIR of .002 Max: 1.105 Min: 1.095	Pass = within tolerance and TIR Fail = exceeds tolerance and TIR	<input type="checkbox"/>	<input type="checkbox"/>
5. Length 0.800 ± .005 Max: .805 Min: .795	Pass = within tolerance Fail = out of tolerance	<input type="checkbox"/>	<input type="checkbox"/>
6. Step 1.340 ± .005 Max: 1.345 Min: 1.335	Pass = within tolerance Fail = out of tolerance	<input type="checkbox"/>	<input type="checkbox"/>
7. Step 2.440 ± .005 Max: 2.445 Min: 2.435	Pass = within tolerance Fail = out of tolerance	<input type="checkbox"/>	<input type="checkbox"/>

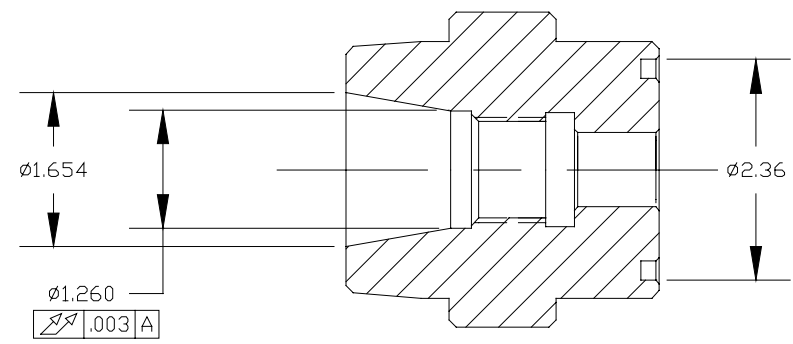
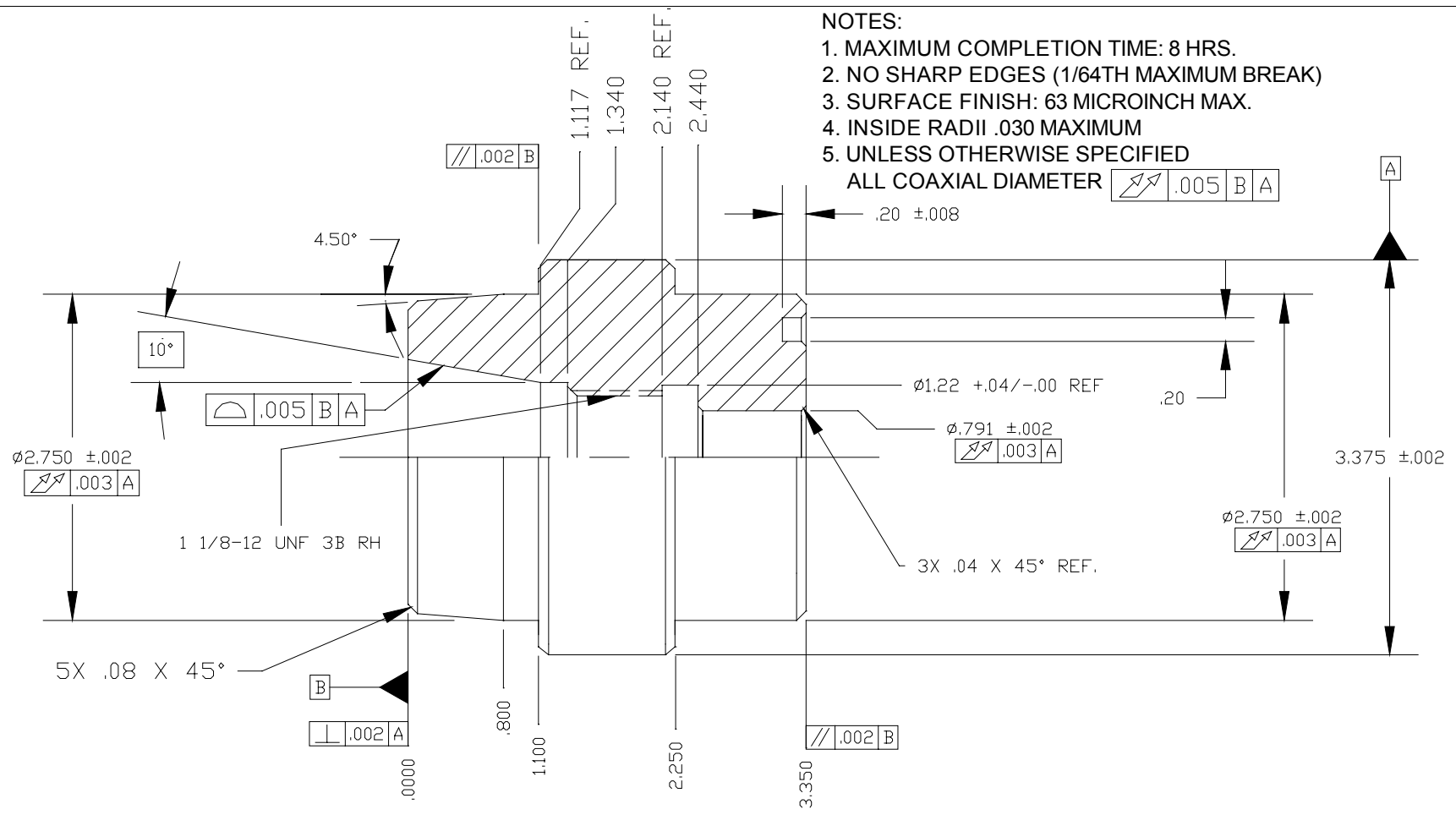
<b>Performance Project – Turning: Chucking</b>		<b>Pass</b>	<b>Fail</b>
<b>Evaluation Criteria</b>			
8. Length $3.350 \pm .005$ Surface is to be parallel to datum B with a maximum TIR of .002 Max: 3.355 Min: 3.345	Pass = within tolerance and specified TIR Fail = exceeds tolerance and specified TIR	<input type="checkbox"/>	<input type="checkbox"/>
9. $\varnothing 1.260 \pm .005$ Max: 1.265 Min: 1.255	Pass = within tolerance Fail = out of tolerance	<input type="checkbox"/>	<input type="checkbox"/>
10. $\varnothing 0.791 \pm .002$ Max: .793 Min: .789	Pass = within tolerance Fail = out of tolerance	<input type="checkbox"/>	<input type="checkbox"/>
11. Angle of taper $4.50^\circ$ Max: $5.50^\circ$ Min: $3.50^\circ$	Pass = within specified tolerance Fail = exceeds specified tolerance	<input type="checkbox"/>	<input type="checkbox"/>
12. Face groove OD $2.36 \pm .015$ Width $.20 \pm .015$ Depth $.20 \pm .008$	Pass = within tolerance and TIR Fail = exceeds tolerance and TIR	<input type="checkbox"/>	<input type="checkbox"/>
13. Chamfers .08 x $45^\circ$ (5 places) Max: .095 x $46^\circ$ Min: .065 x $44^\circ$	Pass = within tolerance Fail = out of tolerance	<input type="checkbox"/>	<input type="checkbox"/>
14. $\varnothing 3.375 \pm .002$ (Datum A) Max: 3.377 Min: 3.373	Pass = within tolerance Fail = out of tolerance	<input type="checkbox"/>	<input type="checkbox"/>
15. Datum B perpendicular to datum A within a .002 TIR	Pass = within specified TIR Fail = exceeds specified TIR	<input type="checkbox"/>	<input type="checkbox"/>
16. $\varnothing 2.750$ runout to datum A within a .003 TIR	Pass = within specified TIR Fail = exceeds specified TIR	<input type="checkbox"/>	<input type="checkbox"/>
17. $\varnothing .791$ runout to datum A within a .003 TIR	Pass = within specified TIR Fail = exceeds specified TIR	<input type="checkbox"/>	<input type="checkbox"/>
18. Length $2.250 \pm .005$ Max: 2.255 Min: 2.245	Pass = within tolerance Fail = exceeds tolerance	<input type="checkbox"/>	<input type="checkbox"/>
19. $1.654 \pm .005$ Max: 1.659 Min: 1.649	Pass = within tolerance Fail = exceeds tolerance	<input type="checkbox"/>	<input type="checkbox"/>
20. $\varnothing 1.260$ concentric to datum A within a .003 TIR	Pass = within specified TIR Fail = exceeds specified TIR	<input type="checkbox"/>	<input type="checkbox"/>

<b>Performance Project – Turning: Chucking</b>		<b>Pass</b>	<b>Fail</b>
<b>Evaluation Criteria</b>			
21. Surface finish	Pass = 63 microinch finish or finer Fail = surface finish exceeds 63 microinches	<input type="checkbox"/>	<input type="checkbox"/>
22. No sharp edges, edges broken a maximum of 1/64 <sup>th</sup> inches	Pass = no sharp edges, all edges broken 1/64 <sup>th</sup> inch or less Fail = sharp edges or broken edges exceeding 1/64 <sup>th</sup> inch	<input type="checkbox"/>	<input type="checkbox"/>
<b>END OF TURNING: CHUCKING 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.*


- NOTES:
1. MAXIMUM COMPLETION TIME: 8 HRS.
  2. NO SHARP EDGES (1/64TH MAXIMUM BREAK)
  3. SURFACE FINISH: 63 MICROINCH MAX.
  4. INSIDE RADII .030 MAXIMUM
  5. UNLESS OTHERWISE SPECIFIED

ALL COAXIAL DIAMETER  .005 B A



FULL SECTION VIEW

DO NOT SCALE DRAWING

A		UPDATED DRAWING AND TITLE BLOCK		5/12/03	PW
Level	Revision	Date	By	Chkd.	
			MACHINING SKILLS LEVEL II		
			Job Duty 2.5 Turning - Chucking		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994		DESIGNER	DK	12/12/01	MATERIAL
TOLERANCES		DWG CHK			COLD ROLL STEEL or LOW CARBON STEEL
.X ±.032 .XXX ±.005		DWG APPD			3.50 Dia. X 3.5
.XX ±.015 ANGLES ± 1 DEG.		SCALE FULL		DWG.#986001	SHEET 1 OF 1
FRACTIONS ± 1/64					