



National Institute for Metalworking Skills, Inc.

Credentialing Achievement Record

**Press Brake
LEVEL III
Set Up and Operate
CNC Drive**

National Institute for Metalworking Skills
3251 Old Lee Highway, Suite 205
Fairfax, VA 22030
<http://nims-skills.org>



PRESS BRAKE CREDENTIALING PROGRAM
LEVEL III CREDENTIALING ACHIEVEMENT RECORD (CAR)
 and
Official Performance CHECKLISTs (Skill Checks)

Please print

NAME:	Reg. No.	Job Title:
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Site Name:	Site No.
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STATUS:	<i>Non-Completer</i> <input type="checkbox"/>	<i>Candidate has Successfully Completed all NIMS Performance Requirements in the Following Credentialing Area:</i>
	Reason:	Duty Cluster Name: SETUP CNC DRIVE PRESS BRAKE Date Completed: _____

Directions

This *Credentialing Achievement Record (CAR)* is the official training and performance document for the above named NIMS credentialing candidate. The CAR is used by the trainer/supervisor and candidate as a record (or logbook) of individual on-the-job performance. The CAR is the *vehicle* that will allow eligible candidates to take the NIMS written credentialing examination(s). Supervisors, trainers, and candidates should take care of this record and be sure that it is accurate, kept up to date, filled out correctly, and properly stored. All information recorded in the CAR should be considered **CONFIDENTIAL**.

Candidates may select as many credentialing Duty Clusters as applicable to the facility or appropriate to the job. There are separate CAR booklets for each credentialing Duty Cluster. The CAR opens with a list of Critical Work Activities (or experience statements) that must be acknowledged and documented. However, actual performance is assessed two ways: **1)** by fulfilling these general experience and historical statements and **2)** by an examiner administering *Skill Checks* (or performance assessments). Three successful Skill Check attempts are required. Skill Checks are clearly marked with the title - **CAR SKILL CHECK**. Candidate performance is documented by a on the Examiner's CHECKLIST. All Skill Checks must be co-signed and dated by the trainer/supervisor and candidate. Work Activity sign-offs must be co-initialed by the trainer/supervisor or manager and candidate then dated. If a particular Skill Check step or standard does not apply at your facility, check-off the *NA* box (not applicable) and continue. Skill Checks may require the candidate to perform work a bit differently than your normal procedure or learn how to do something that may not be part of their typical day-to-day responsibilities. However, you may only check-off *NA* if the process-standard does not apply because the equipment or tooling is not available or the metalforming process itself does not require this activity or competency.

For additional information about administering CAR Skill Checks, see the CAR Administration Guide or consult with your facility Credentialing Coordinator.



PRESS BRAKE CREDENTIALING PROGRAM
LEVEL III CREDENTIALING ACHIEVEMENT RECORD (CAR)

Setup a CNC Drive Press Brake

Level III – Electrical or Hydraulic Brake with a CNC Controlled Ram and Gaging

Critical Work Activities & Experience	Date Completed	Supervisor Initials	Trainer Initials	Trainee Initials
All of the following statements must be completed prior to submission of the CAR		and	or	
Setup CNC Controlled Press Brake				
Candidate has successfully completed all required safety training/courses as specified by the work facility or required by OHSA. Candidate has working knowledge of applicable OHSA and ISO regulations and American National Standards (B-11.3)				
Candidate has successfully completed the probationary period for this position (job title) as specified by the work facility.				
Candidate has met the attendance policy of the facility over the last 12 consecutive months.				
Candidate has no company documented safety violations within the last 12 consecutive months.				
Candidate has no reported incidents of non-conforming parts contaminating quality parts over the last three (3) consecutive months.				
Candidate has demonstrated the ability to maintain a clean and orderly work area in compliance with facility housekeeping policies and has no reported violations for a period of three (3) consecutive months.				
Candidate demonstrated the ability to recognize and explain the type of press brake and its function (including setup devices or simulators, computerized controls, electro-mechanical devices, drive and servo mechanisms, cnc gaging, tooling and Quick-Change type tooling, work holding devices, etc.).				
Candidate has demonstrated expert knowledge of material/part conformance standards and/or SPC recording techniques.				



Critical Work Activities & Experience	Date Completed	Supervisor Initials	Trainer Initials	Trainee Initials
Given specific duties to perform, multi-step instructions, and necessary written documentation, candidate has demonstrated the ability to locate, read and use information to setup, execute, and control a press brake process to defined quality and safety standards.				
Candidate has demonstrated ability in decision making and problem solving when deviating from a particular sequence or process.				
Candidate has demonstrated appropriate social behaviors and communicative skills with customers, supervisors, teams leaders, and/or co-workers.				
Candidate has worked cooperatively with others and has contributed to company efforts with ideas, suggestions, and/or feedback to improve a process, resolve a problem, or introduce a new method.				
Candidate can recognize appropriate codes of conduct and values in the workplace and has exhibited honesty, integrity, and responsibility when doing work, reporting findings, and when communicating with others.				
Candidate can use standard algebraic, geometric and trigonometric formulas to solve for an unknown and to calculate dimensions, patterns, coordinates, and angles.				
Candidate can perform statistical calculations, using standard formulas to determine means, medians, modes, and ranges and accurately record/input data (QC/SPC) on forms, reports, information/spread sheets, and controlled documents.				
Candidate has demonstrated competency interpreting blueprints and/or technical drawings (Standard and GDT orthographics, geometric dimensioning and tolerancing, control charts and graphs, etc.)				
Candidate has expert knowledge of precision measuring and transfer instruments and has selected and used those devices to confirm work piece compliance (as per blueprints, technical drawings and/or reference part).				



Critical Work Activities & Experience	Date Completed	Supervisor Initials	Trainer Initials	Trainee Initials
Candidate can select and use precision tools/instruments for surface plate work (i.e., angle plates, tool blocks, transfer gages, height gages) and determine a part's compliance on selected dimensions.				
Candidate can recognize common materials and their metallurgical properties (ferrous and non-ferrous, magnetic, heat treated, and ductile materials). Candidate can predict material formability based on its appearance, hardness, treatment/coating, size, and call-out print specifications.				
Candidate understands forming procedures, can select an appropriate machine for the process, and can setup machine gaging and tooling as per bend sequence, tonnage, and material integrity.				

NOTE: For details and specifics regarding worker competencies, see [Duties & Standards for Metalworking - Press Brake](#), Level II & III, National Institute for Metalworking Skills/Precision Metalforming Association

Skill Checks begin on next page



NIMS PRESS BRAKE SKILL CHECK
Level III

Candidate:	Date:
Examiner:	(For examiner use only) Results: Pass <input type="checkbox"/> Yes Date Started: Date Ended:

Work Activity **Setup, Verify and Operate a CNC Press Brake**

Performance Conditions

Setting: Shop, bench, and QC area(s). Candidate will perform pre-setup and job planning activities, program and setup a CNC Press Brake (Electrical or Hydraulic) for a new or different job, verify operations, inspect parts for quality (*setup and in-process frequency inspections required*), run and control the process for at least 1 hour (*or up until and after the first QC inspection*), and perform handoff or shutdown activities. Three (3) successful Skill Check attempts on at least two (2) different part setups are required for on-the-job performance recognition.

In addition, the candidate will respond to in-process problems, troubleshoot (isolate) the cause of those problems, and perform appropriate corrective actions necessary to maintain equipment function, process integrity, and quality control. Candidate may also participate in preventive maintenance activities.

☞ To take this Skill Check, the metal piece-parts to be made must have (at minimum) the following attributes and characteristics:

- **At least 6 bends with**
- **2 different (multiple degree) or opposing angles, and**
- **2 or more different flange lengths.**

Safety Equipment:

- *Personal Protection Equipment/Clothing (PPE/PPC)*
- Lockout/Tagout and /or Safety Blocks (if applicable)



Tools, Equipment and Materials:

- Allen Wrenches
- Die Truck
- Calculator
- Common Hand/Setup Tools
- Conversion Charts/Tables
- Grease/Lubricants
- Hand Truck/Fork Lift (if applicable)
- Housekeeping Supplies
- Manufacturer's Operations Manual
- CNC Press Brake
- Pen/Pencil
- Pre-Cut Raw Material
- Prints, Charts, Drawings
- Production and QC Documentation
- Rubber Mallet
- Scribe
- Changeover Tooling and Accessories
- Shims
- Shop Wipes
- Sockets
- Scrap and Part Containers/Pallets

Measuring Instruments:

- Calipers
- Checking Gages
- Combination Square (or Square)
- Fixture Gages
- Micrometer
- Protractor
- Scales/Tape Measure
- SPC Input (if applicable)

Attainment Standards

1. 100% of all applicable procedural steps and process standards (without assistance and within company-specific time limit) following all shop and OSHA safety requirements, ISO standards, equipment manufacturer specifications, and plant-specific processes, practices and procedures.
2. 100% conformance with all QC/SPC final product standards and other performance criteria.

Trainee Directions

The skill checks you are about to take are hands-on assessments that are part of the credentialing process. These assessments will enable you to verify your experience and demonstrate your competency by completing practical job tasks. The Skill Checks will cover areas that you should know and problems you should be able to solve. If you need any additional materials or experience any problems with equipment during the assessment, notify the examiner immediately.



Trainee Directions

The previously referenced tools, equipment, materials and supplies may be used to Setup, Verify, and Operate a CNC (controlled ram) Press Brake (either electrically or hydraulically powered). All safety and plant-specific procedures must be followed. The examiner will evaluate both the process used and the final result of the process. Process steps should be performed in sequence according to your SOP/job aid, Layout Sheet, Setup/Process Plan, software, etc. However, all applicable outcomes (product standards) must meet process-specific criteria, customer specifications, QC/SPC requirements, and NIMS criteria for successful completion.

Examiner Instructions

For successful completion of this Skill Check, the candidate must demonstrate the ability to successfully complete the work activity under controlled assessment conditions. All work must be completed to standard.

Before administering the Skill Check:

- ◆ Read/review the CAR *Administration Guide* developed for the program.
- ◆ Ensure that you have a copy of this Skill Check for the candidate to use while he/she is working. Be sure all applicable equipment and supplies are available.

Do not provide assistance during the Skill Check. Monitor work in-progress and evaluate for **process standard**. Assess the completed work for conformance with **final product** criteria. Mark *NA* if a *process-product* is not appropriate. To successfully complete each Skill Check, all boxes must be marked **YES** or *NA*.



Stop the Skill Check immediately if the candidate violates a safety/environmental regulation or procedure or if there is any possibility of personal injury or damage to equipment.

Before assessment, the examiner may discuss appropriate safety requirements and loss potential issues (*i.e.*, *Lock and Tag/Zero Energy*, *HAZMAT/HAZCOM*, *personal protection equipment/devices*, *pinch points*, *compressed air/fluid*, *high or residual voltage*, *E-Stops*, *OHSA-1910 Loss Potential*, *etc.*).



EXAMINER: Read aloud the *Skill Check Script* from the *Administration Guide* (*verbatim*).



When the candidate indicates that he/she has completed the Skill Check or when your maximum time allowed has run out, assess Final Product Standards and follow the closing procedures outlined in the *Administration Guide*.

Checklist

Scoring Procedures: Observe the candidate's performance for each Process Step and mark the *CHECKLIST* whether or not the *Process-Product Standards* were attained (*Do not rely on your memory*). *Process-Product Standards* are to be marked as each element is completed.

(C) Critical. Failure to meet the standard will result in immediate Skill Check termination.

Note: The evaluator will terminate the assessment and schedule the individual for further training.

SKILL CHECKS BEGIN ON NEXT PAGE




Process Steps	Process-Product Standards			
	Yes	No	NA	
A - PRE-SETUP, JOB PLANNING & STAGING <i>Continued</i>				
2. Remove Previous Job and Clean Machine	<ul style="list-style-type: none"> • All previous tooling removed in closed-gap ram position without damaging tool or holder. <input type="checkbox"/> • Old tools were separated and stored to the previous job (ram blocked). <input type="checkbox"/> • Damaged tooling identified and prepared for refurbishing. <input type="checkbox"/> • All gages, parts, scrap, and documentation/data from previous job removed from setup site. <input type="checkbox"/> • Previous CNC program cleared and stored. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Verify and Stage Raw Material/Blanks	<ul style="list-style-type: none"> • Material matched setup plan (type, metallurgy, OAL, width, thickness, finish, etc.). (C) <input type="checkbox"/> • Material tag/ID controlled. <input type="checkbox"/> • P/N and revision level matched to print. <input type="checkbox"/> • Sufficient raw material at job site. <input type="checkbox"/> • Demonstrated ability transporting or ordering raw materials to job site. <input type="checkbox"/> • Part/scrap containers/pallets in correct positions. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B- SETUP PRESS BRAKE, TOOLING ACCESSORIES & CONTROLS				
4. Setup Press Brake	<ul style="list-style-type: none"> • Brake energized (ram will move when activated) and safety blocks removed. <input type="checkbox"/> • Existing program successfully retrieved from library and verified or edited for process. (C) or <input type="checkbox"/> • New bend sequence and orientation layout created and verified for process (determined gage parameters, flange lengths, angles, special features, direction layout, sequence, etc.). (C) <input type="checkbox"/> • Ram correctly positioned during tool changeover and configuration. <input type="checkbox"/> • Machine and die area clean and no foreign objects in tool assembly. <input type="checkbox"/> • Punch installed flush (calibrated) and securely set into position with die. <input type="checkbox"/> • Die centered, calibrated and secured in place. <input type="checkbox"/> • Tip of punch aligned and centered (calibrated) in die (left-right). <input type="checkbox"/> • Tooling depth set (calibrated) to accommodate material thickness and part angles. <input type="checkbox"/> • Ram returned to production-ready position. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Process Steps	Process-Product Standards			
	Yes	No	NA	
B- SETUP PRESS BRAKE, TOOLING ACCESSORIES & CONTROLS <i>Continued</i>				
<i>Setup Press Brake Continued</i>	<ul style="list-style-type: none"> • Back gage stops set and oriented to raw material (CNC). <input type="checkbox"/> • Back gage height and finger location established (CNC). <input type="checkbox"/> • Side stops installed and set to part specifications (CNC or manual). <input type="checkbox"/> • 1st angle made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • 1st flange made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • 2nd flange made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • Remaining angles and/or flanges bent (or simulated) in sequence and individually programmed for initial conformance. <input type="checkbox"/> • Part orientation, tooling clearances, bend sequence, angles, and flange dimensions tested, established, and programmed for repeatability. <input type="checkbox"/> • First article (6 angles/2 flange lengths) formed. <input type="checkbox"/> • Tooling clearance accommodated part movement during all bending operations. <input type="checkbox"/> • Demonstrated ability manipulating CNC and when handling raw material. <input type="checkbox"/> • Hands/fingers kept clear of ram and secondary pinch points. <input type="checkbox"/> • Ram speed-change adjusted and cycle mode set. <input type="checkbox"/> • Safety devices/sensors and guards installed and verified for function. (C) <input type="checkbox"/> • Setup articles brought to and staged at inspection area. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Skill Check Continued on Next Page



Process Steps	Process-Product Standards			
	Yes	No	NA	
C – INSPECT FIRST ARTICLE/PARTS AND VERIFY PRESS BRAKE FOR FUNCTION				
5. Inspect First Article/Samples Using Hand Held Measuring Devices <div style="text-align: center;">  <i>First Required Part Inspection</i> </div>	<ul style="list-style-type: none"> • Bend sequence and orientation conformed to part characteristics ("part looks like print") based on visual inspection. <input type="checkbox"/> • OAL in conformance with part specifications. <input type="checkbox"/> • Cosmetic attributes and finish met quality requirements (no cracking, tool marks, rough finish, etc.) <input type="checkbox"/> • Part angles/radii conformed to print specifications and tolerances. <input type="checkbox"/> • Flange lengths, squareness, parallelism, and perpendicularity conformed to print specifications. <input type="checkbox"/> • Other dimensions conformed to print specifications (e.g., <i>hole-to-hole</i>). <input type="checkbox"/> • Process adjusted/edited until part was brought into compliance. (C) <input type="checkbox"/> • Achieved reliable part compliance or notified proper authority of any non-conformance issues. (C) <input type="checkbox"/> • Inspection documentation completed/input accurately. <input type="checkbox"/> • Setup documentation completed and submitted in a timely manner (includes "sign-offs"). <input type="checkbox"/> • First article/sample parts approved for production run (Press brake and control panel production-ready). <input type="checkbox"/> • Demonstrated expert ability using and reading hand-held precision measuring instruments. (C) <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Skill Check Continued on Next Page



Process Steps	Process-Product Standards			
	Yes	No	NA	
D - PRODUCTION OPERATIONS & PROCESS CONTROL <i>Continued</i>				
<i>Inspect Parts In-Process Using Hand-Held Precision Measurement Devices Continued</i>	<ul style="list-style-type: none"> Flange squareness, perpendicularity, and/or parallelism conformed to dimensional standards and part characteristics. (C) Other critical dimensions in-conformance with quality control chart or standards (i.e., OAL, hole-to-hole, height, setbacks, etc.). Demonstrated expert ability using and reading hand-held precision measuring instruments. Completed/input in-process inspection and quality control documentation accurately. (C) Piece-parts inspected met all quality and layout standards (process adjusted as needed and parts brought into compliance). (C) Good parts were not mixed with bad, “out-of-spec” parts (<i>Yes = no cross contamination occurred</i>). (C) 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E – HAND-OFF PRESS BRAKE TO OPERATOR				
8. Hand Off Press Brake to Operations	<ul style="list-style-type: none"> Communicated safety issues and programming procedures or restrictions to operator. Secondary pinch points and ram opening communicated to operator for safety. (C) Communicated bend sequence, bend orientations and frequency of part inspections to operator (operator acknowledged and understood information provided). (C) Material handling equipment/devices in correct position. Part counters re-set/read or set @ zero. Monitored (troubleshoot) operations for quality reliability, integrity, and repeatability. *See Part 2 Equipment checked for maintenance (servicing provided or requested). *See Part 2 Lubricate/coolant levels @ indicated marks for smooth and continuous operation. *See Part 2 No unusual noises, odors, smoke, excessive vibrations or alarms (<i>Yes = conditions were not present</i>). Machine production ready or safely shutdown. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DATE FINISHED:	<ul style="list-style-type: none"> Floor clean, dry and free of debris. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End of Skill Check I, Part 1



FINAL PRODUCT STANDARDS

“Work is Done As Expected When:”

- a. All written/verbal instructions, checklists, and setup guidelines were followed and candidate demonstrated safe work practices in material handling, tool installation, machine setup and operations, and guarding.
- b. All quality control inspections were performed to Quality/Process Plan criteria, results within QC/SPC specifications, and accurately recorded compliance within the part’s required features, tolerances, and dimensions.
- c. Following the setup plan, machine was verified for function and safety as necessary for hand off. Demonstrated effective communication skills at hand-off.
- d. Parts were inspected under setup conditions and on an on-going production basis without contaminating good/bad parts.
- e. Current prints and tangible part features, characteristics and processes met specified or implied needs as per usability, reliability, maintainability, and economics.
- f. Candidate showed ability to link *cause and effect* in simple to moderately complex problems and dig for root cause skillfully to isolate or correct the problem.
- g. All shop safety, environmental, and housekeeping practices were followed.

PART NUMBER USED FOR THIS SKILL CHECK:

COMMENTS

Setup CNC Press Brake

Candidate: _____

Examiner: _____

Signatures: _____ Date: _____

(Examiner/Advisor)

_____ Date: _____

(Monitor/Trainer)

_____ Date: _____

(Candidate)




Process Steps	Process-Product Standards			
	Yes	No	NA	
A - PRE-SETUP, JOB PLANNING & STAGING <i>Continued</i>				
2. Remove Previous Job and Clean Machine	<ul style="list-style-type: none"> • All previous tooling removed in closed-gap ram position without damaging tool or holder. <input type="checkbox"/> • Old tools were separated and stored to the previous job (ram blocked). <input type="checkbox"/> • Damaged tooling identified and prepared for refurbishing. <input type="checkbox"/> • All gages, parts, scrap, and documentation/data from previous job removed from setup site. <input type="checkbox"/> • Previous CNC program cleared and stored. <input type="checkbox"/> 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3. Verify and Stage Raw Material/Blanks	<ul style="list-style-type: none"> • Material matched setup plan (type, metallurgy, OAL, width, thickness, finish, etc.). (C) • Material tag/ID controlled. <input type="checkbox"/> • P/N and revision level matched to print. <input type="checkbox"/> • Sufficient raw material at job site. <input type="checkbox"/> • Demonstrated ability transporting or ordering raw materials to job site. <input type="checkbox"/> • Part/scrap containers/pallets in correct positions. <input type="checkbox"/> 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
B- SETUP PRESS BRAKE, TOOLING ACCESSORIES & CONTROLS				
4. Setup Press Brake	<ul style="list-style-type: none"> • Brake energized (ram will move when activated) and safety blocks removed. <input type="checkbox"/> • Existing program successfully retrieved from library and verified or edited for process. (C) or <input type="checkbox"/> • New bend sequence created and verified for process (determined gage parameters, flange lengths, angles, special features, direction layout/orientation, sequence, etc.). (C) <input type="checkbox"/> • Ram correctly positioned during tool changeover and configuration. <input type="checkbox"/> • Machine and die area clean and no foreign objects in tool assembly. <input type="checkbox"/> • Punch installed flush (calibrated) and securely set into position with die. <input type="checkbox"/> • Die centered, calibrated and secured in place. <input type="checkbox"/> • Tip of punch aligned and centered (calibrated) in die (left-right). <input type="checkbox"/> • Tooling depth set (calibrated) to accommodate material thickness and part angles. <input type="checkbox"/> • Ram returned to production-ready position. <input type="checkbox"/> 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>



Process Steps	Process-Product Standards			
	Yes	No	NA	
B- SETUP PRESS BRAKE, TOOLING ACCESSORIES & CONTROLS <i>Continued</i>				
<i>Setup Press Brake Continued</i>	<ul style="list-style-type: none"> • Back gage stops set and oriented to raw material (CNC). <input type="checkbox"/> • Back gage height and finger location established (CNC). <input type="checkbox"/> • Side stops installed and set to part specifications. <input type="checkbox"/> • 1st angle made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • 1st flange made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • 2nd flange made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • Remaining angles and/or flanges bent (or simulated) in sequence and individually programmed for initial conformance. <input type="checkbox"/> • Part orientation, tooling clearances, bend sequence, angles, and flange dimensions tested, established, and programmed for repeatability. <input type="checkbox"/> • First article (6 angles/2 flange lengths) formed. <input type="checkbox"/> • Tooling clearance accommodated part movement during all bending operations. <input type="checkbox"/> • Demonstrated ability manipulating CNC and when handling raw material. <input type="checkbox"/> • Hands/fingers kept clear of ram and secondary pinch points. (C) <input type="checkbox"/> • Ram speed-change adjusted and cycle mode set. <input type="checkbox"/> • Safety devices/sensors installed and/or verified for function. (C) <input type="checkbox"/> • Setup articles brought to and staged at inspection area. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Skill Check Continued on Next Page

Process Steps	Process-Product Standards			
	Yes	No	NA	
C – INSPECT FIRST ARTICLE/PARTS AND VERIFY PRESS BRAKE FOR FUNCTION				
5. Inspect First Article/Samples Using Hand Held Measuring Devices <div style="text-align: center;">  <i>First Required Part Inspection</i> </div>	<ul style="list-style-type: none"> • Bend sequence and orientation conformed to part characteristics ("part looks like print") based on visual inspection. <input type="checkbox"/> • OAL in conformance with part specifications. <input type="checkbox"/> • Cosmetic attributes and finish met quality requirements (no cracking, tool marks, rough finish, etc.) <input type="checkbox"/> • Part angles/radii conformed to print specifications and tolerances. <input type="checkbox"/> • Flange lengths, squareness, parallelism, and perpendicularity conformed to print specifications. <input type="checkbox"/> • Other dimensions conformed to print specifications (e.g., <i>hole-to-hole</i>). <input type="checkbox"/> • Process adjusted/edited until part was brought into compliance. (C) <input type="checkbox"/> • Achieved reliable part compliance and/or notified proper authority of any non-conformance issues. (C) <input type="checkbox"/> • Inspection documentation completed/input accurately. <input type="checkbox"/> • Setup documentation completed and submitted in a timely manner (includes "sign-offs"). <input type="checkbox"/> • First article/sample parts approved for production run (Press brake and control panel production-ready). <input type="checkbox"/> • Demonstrated expert ability using and reading hand-held precision measuring instruments. (C) <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Skill Check Continued on Next Page



FINAL PRODUCT STANDARDS

“Work is Done As Expected When:”

- a. All written/verbal instructions, checklists, and setup guidelines were followed and candidate demonstrated safe work practices in material handling, tool installation, machine setup and operations, and guarding.
- b. All quality control inspections were performed to Quality/Process Plan criteria, results within QC/SPC specifications, and accurately recorded compliance within the part’s required features, tolerances, and dimensions.
- c. Following the setup plan, machine was verified for function and safety as necessary for hand off. Demonstrated effective communication skills at hand-off.
- d. Parts were inspected under setup conditions and on an on-going production basis without contaminating good/bad parts.
- e. Current prints and tangible part features, characteristics and processes met specified or implied needs as per usability, reliability, maintainability, and economics.
- f. Candidate showed ability to link *cause and effect* in simple to moderately complex problems and dig for root cause skillfully to isolate or correct the problem.
- g. All shop safety, environmental, and housekeeping practices were followed.

PART NUMBER USED FOR THIS SKILL CHECK:

COMMENTS

Setup CNC Press Brake

Candidate: _____

Examiner: _____

Signatures:	_____	Date:	_____
	(Examiner/Advisor)		
	_____	Date:	_____
	(Monitor/Trainer)		
	_____	Date:	_____
	(Candidate)		




Process Steps	Process-Product Standards			
	Yes	No	NA	
A - PRE-SETUP, JOB PLANNING & STAGING <i>Continued</i>				
2. Remove Previous Job and Clean Machine	<ul style="list-style-type: none"> • All previous tooling removed in closed-gap ram position without damaging tool or holder. <input type="checkbox"/> • Old tools were separated and stored to the previous job (ram blocked). <input type="checkbox"/> • Damaged tooling identified and prepared for refurbishing. <input type="checkbox"/> • All gages, parts, scrap, and documentation/data from previous job removed from setup site. <input type="checkbox"/> • Previous CNC program cleared and stored. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Verify and Stage Raw Material/Blanks	<ul style="list-style-type: none"> • Material matched setup plan (type, metallurgy, OAL, width, thickness, finish, etc.). (C) <input type="checkbox"/> • Material tag/ID controlled. <input type="checkbox"/> • P/N and revision level matched to print. <input type="checkbox"/> • Sufficient raw material at job site. <input type="checkbox"/> • Demonstrated ability transporting or ordering raw materials to job site. <input type="checkbox"/> • Part/scrap containers/pallets in correct positions. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B- SETUP PRESS BRAKE, TOOLING ACCESSORIES & CONTROLS				
4. Setup Press Brake	<ul style="list-style-type: none"> • Brake energized (ram will move when activated) and safety blocks removed. <input type="checkbox"/> • Existing program successfully retrieved from library and verified or edited for process. (C) or <input type="checkbox"/> • New bend sequence created and verified for process (determined gage parameters, flange lengths, angles, special features, direction layout/orientation and sequence, etc.). (C) <input type="checkbox"/> • Ram correctly positioned during tool changeover and configuration. <input type="checkbox"/> • Machine and die area clean and no foreign objects in tool assembly. <input type="checkbox"/> • Punch installed flush (calibrated) and securely set into position with die. <input type="checkbox"/> • Die centered, calibrated and secured in place. <input type="checkbox"/> • Tip of punch aligned and centered (calibrated) in die (left-right). <input type="checkbox"/> • Tooling depth set (calibrated) to accommodate material thickness and part angles. <input type="checkbox"/> • Ram returned to production-ready position. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Process Steps	Process-Product Standards			
	Yes	No	NA	
B- SETUP PRESS BRAKE, TOOLING ACCESSORIES & CONTROLS <i>Continued</i>				
<i>Setup Press Brake Continued</i>	<ul style="list-style-type: none"> • Back gage stops set and oriented to raw material (CNC). <input type="checkbox"/> • Back gage height and finger location established (CNC). <input type="checkbox"/> • Side stops installed and set to part specifications. <input type="checkbox"/> • 1st angle made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • 1st flange made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • 2nd flange made (or simulated) and adjusted/programmed for initial conformance. <input type="checkbox"/> • Remaining angles and/or flanges bent (or simulated) in sequence and individually programmed for initial conformance. <input type="checkbox"/> • Part orientation, tooling clearances, bend sequence, angles, and flange dimensions tested, established, and programmed for repeatability. <input type="checkbox"/> • First article (6 angles/2 flange lengths) formed. <input type="checkbox"/> • Tooling clearance accommodated part movement during all bending operations. <input type="checkbox"/> • Demonstrated ability manipulating CNC and when handling raw material. <input type="checkbox"/> • Hands/fingers kept clear of ram and secondary pinch points. (C) <input type="checkbox"/> • Ram speed-change adjusted and cycle mode set. <input type="checkbox"/> • Safety devices/sensors and guards installed and/or verified for function. (C) <input type="checkbox"/> • Setup articles brought to and staged at inspection area. <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Skill Check Continued on Next Page



Process Steps	Process-Product Standards			
	Yes	No	NA	
C – INSPECT FIRST ARTICLE/PARTS AND VERIFY PRESS BRAKE FOR FUNCTION				
5. Inspect First Article/Samples Using Hand Held Measuring Devices <div style="text-align: center;">  <i>First Required Part Inspection</i> </div>	<ul style="list-style-type: none"> • Bend sequence and orientation conformed to part characteristics ("part looks like print") based on visual inspection. <input type="checkbox"/> • OAL in conformance with part specifications. <input type="checkbox"/> • Cosmetic attributes and finish met quality requirements (no cracking, tool marks, rough finish, etc.) <input type="checkbox"/> • Part angles/radii conformed to print specifications and tolerances. <input type="checkbox"/> • Flange lengths, squareness, parallelism, and perpendicularity conformed to print specifications. <input type="checkbox"/> • Other dimensions conformed to print specifications (e.g., <i>hole-to-hole</i>). <input type="checkbox"/> • Process adjusted/edited until part was brought into compliance. (C) <input type="checkbox"/> • Achieved reliable part compliance and/or notified proper authority of any non-conformance issues. (C) <input type="checkbox"/> • Inspection documentation completed/input accurately. <input type="checkbox"/> • Setup documentation completed and submitted in a timely manner (includes "sign-offs"). <input type="checkbox"/> • First article/sample parts approved for production run (Press brake and control panel production-ready). <input type="checkbox"/> • Demonstrated expert ability using and reading hand-held precision measuring instruments. (C) <input type="checkbox"/> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Skill Check Continued on Next Page



FINAL PRODUCT STANDARDS

“Work is Done As Expected When:”

- a. All written/verbal instructions, checklists, and setup guidelines were followed and candidate demonstrated safe work practices in material handling, tool installation, machine setup and operations, and guarding.
- b. All quality control inspections were performed to Quality/Process Plan criteria, results within QC/SPC specifications, and accurately recorded compliance within the part’s required features, tolerances, and dimensions.
- c. Following the setup plan, machine was verified for function and safety as necessary for hand off. Demonstrated effective communication skills at hand-off.
- d. Parts were inspected under setup conditions and on an on-going production basis without contaminating good/bad parts.
- e. Current prints and tangible part features, characteristics and processes met specified or implied needs as per usability, reliability, maintainability, and economics.
- f. Candidate showed ability to link *cause and effect* in simple to moderately complex problems and dig for root cause skillfully to isolate or correct the problem.
- g. All shop safety, environmental, and housekeeping practices were followed.

PART NUMBER USED FOR THIS SKILL CHECK:

COMMENTS

Setup CNC Press Brake

Candidate: _____

Examiner: _____

Signatures: _____ Date: _____

(Examiner/Advisor)

Date: _____

(Monitor/Trainer)


Date: _____

(Candidate)



<i>Opportunity, situational, or simulated demonstrations</i>	In-Process Opportunity Observations	Done Successfully	Not Performed
TROUBLESHOOT IN-PROCESS OPERATIONS	<p>To be credentialed at Level III, the candidate must successfully demonstrate troubleshooting abilities in at least <u>10</u> of the following situations. <i>(Identify and respond to the condition, diagnose symptoms, and isolate the cause of the problem)</i></p>	<p>Yes ☺</p>	<p>NA</p>
	<ol style="list-style-type: none"> 1. Assess why tooling is not making contact over the entire length of the flange or bend. 2. Determine why “back bending” is occurring. 3. Determine why a CNC program cannot be edited or revised. 4. Determine why a CNC program will not repeat or advance to next step. 5. Determine why a pre-existing feature is deformed. 6. Determine why an angle or flange is out of specification. 7. Determine why electronic information or data is lost or not available. 8. Determine why equipment is over heating. 9. Determine why the RAM is not stopping @ TDC. 10. Determine why the “cosmetics” of the part are not acceptable. 11. Determine why the RAM will not complete a cycle. 12. Determine why the RAM will not cycle or move. 13. Determine why oil, coolant, or hydraulic fluid is leaking. 14. Diagnose an equipment “no-start” condition. 15. Diagnose why a part is not making contact with the back or side gages. 16. Diagnose why an angle is not consistent over the length of the bend. 17. Diagnose why press brake is smoking or shaking. 18. Diagnose why tooling is breaking, bending, or cracking. 19. Diagnose why tooling is going out of alignment. 20. Evaluate why a CNC back gage will not move. 21. Isolate the cause of changing/varying part dimensions. 22. Isolate the cause of excessive scrap or re-work. 23. Isolate the cause of excessive tool marks on a part. 24. Respond to “belt squeal.” 25. Respond to a tooling crash. 26. Respond to an out-of-square flange. 27. Respond to changing thickness, coating, or hardness of raw material that is negatively effecting the process. 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/> 12. <input type="checkbox"/> 13. <input type="checkbox"/> 14. <input type="checkbox"/> 15. <input type="checkbox"/> 16. <input type="checkbox"/> 17. <input type="checkbox"/> 18. <input type="checkbox"/> 19. <input type="checkbox"/> 20. <input type="checkbox"/> 21. <input type="checkbox"/> 22. <input type="checkbox"/> 23. <input type="checkbox"/> 24. <input type="checkbox"/> 25. <input type="checkbox"/> 26. <input type="checkbox"/> 27. <input type="checkbox"/> 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/> 12. <input type="checkbox"/> 13. <input type="checkbox"/> 14. <input type="checkbox"/> 15. <input type="checkbox"/> 16. <input type="checkbox"/> 17. <input type="checkbox"/> 18. <input type="checkbox"/> 19. <input type="checkbox"/> 20. <input type="checkbox"/> 21. <input type="checkbox"/> 22. <input type="checkbox"/> 23. <input type="checkbox"/> 24. <input type="checkbox"/> 25. <input type="checkbox"/> 26. <input type="checkbox"/> 27. <input type="checkbox"/>



<i>Opportunity, PM, situational, or simulated demonstrations</i>	Opportunity Observations for Corrective Actions	Done Successfully	Not Performed
PM/MAINTAIN EQUIPMENT & IN-PROCESS OPERATIONS	<i>To be credentialed at Level III, the candidate must successfully demonstrate at least <u>7</u> maintenance work activities from the following task list.</i>	Yes 	NA
	<ol style="list-style-type: none"> 1. Adjust a drive belt, chain, or pulley (for speed, tension or alignment). 2. Adjust/edit CNC software pre-sets. 3. Calibrate a precision measurement instrument (e.g., micrometer). 4. Change an indicator light on a control or display panel. 5. Change/clean air filters. 6. Check and fill oil or coolant reservoirs. 7. Drain water or oil trap. 8. Edit a CNC program for an in-process adjustment. 9. Free up memory on a computer. 10. Grease EZ-access fittings or bearings. 11. Grease Clevis pins. 12. Lockout and tagout equipment (elec., mech., hyd.). 13. Lubricate back gage rails. 14. Replace a sight glass. 15. Replace EZ-access, low voltage fuses. 16. Replace screw-on/snap-on fittings or gaskets. 17. Reset a breaker or overload (one shot). 18. Square (re-calibrate) a back/side gage. 19. Tighten flanges and fittings. 20. Makeup and install a new hose. 21. Tighten/torque nuts and bolts. 22. Unjam a stuck part or material from tool and/or RAM. 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/> 12. <input type="checkbox"/> 13. <input type="checkbox"/> 14. <input type="checkbox"/> 15. <input type="checkbox"/> 16. <input type="checkbox"/> 17. <input type="checkbox"/> 18. <input type="checkbox"/> 19. <input type="checkbox"/> 20. <input type="checkbox"/> 21. <input type="checkbox"/> 22. <input type="checkbox"/> 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/> 12. <input type="checkbox"/> 13. <input type="checkbox"/> 14. <input type="checkbox"/> 15. <input type="checkbox"/> 16. <input type="checkbox"/> 17. <input type="checkbox"/> 18. <input type="checkbox"/> 19. <input type="checkbox"/> 20. <input type="checkbox"/> 21. <input type="checkbox"/> 22. <input type="checkbox"/>



COMMENTS

Troubleshoot and Maintain CNC Press Brake

Candidate: _____

Examiner: _____

Signatures: _____	Date: _____
(Examiner/Advisor)	
_____	Date: _____
(Monitor/Trainer)	
_____	Date: _____
(Candidate)	

Machine Models/Manufacturer(s) Used for Troubleshooting & Maintenance



Affidavit of Successful Completion

NIMS Level III CNC Press Brake Credentialing Program

Credentialing Achievement Record

Please print

Candidate Name	Reg. No.	Date Completed:
-----------------------	-----------------	------------------------

The credentialing candidate named above has completed all necessary CAR requirements for NIMS Level III OJT recognition.

Site Name and Address:	Site No.
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Indicate in the number of Skill Checks completed and dates of successful performance for each Skill Check

Duty Cluster Name <i>SETUP CNC PRESS BRAKE</i>	Required Skill Checks	Number of Skill Checks Completed
	3	
Successful Skill Check Attempt #1	Date:	
Successful Skill Check Attempt #2	Date:	
Successful Skill Check Attempt #3	Date:	
Work activity experience-eligibility statements have been completed, dated, and co-initialed.	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Site Coordinator/Manager Signature

Date

Supervisor/Trainer Signature

Date

Candidate Signature

Date

Make a copy of the completed *Affidavit of Successful Completion* for your records and send original CAR to:



The National Institute for Metalworking Skills
3251 Old Lee Highway, Suite 205
Fairfax, Virginia, 22030
<http://nims-skills.org>

