

# COMPETENCY-BASED OCCUPATIONAL FRAMEWORK FOR REGISTERED APPRENTICESHIP

## Stamping Press Operator

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**RAPIDS Code: 0928CB**

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# Competency-Based Occupational Frameworks

The Urban Institute, under contract with the US Department of Labor, has worked with employers, subject matter experts, labor unions, trade associations, credentialing organizations, and academics to develop Competency-Based Occupational Frameworks (CBOFs) for Registered Apprenticeship programs. These frameworks define the **purpose** of an occupation, the **job functions** that are carried out to fulfill that purpose, the **competencies** that enable the apprentice to execute those job functions well, and the **performance criteria** that define the specific knowledge, skills, and personal attributes associated with high performance in the workplace. This organizational hierarchy—job purpose, job functions, competencies, performance criteria—is designed to illustrate that performing work well requires more than just acquiring discrete knowledge elements or developing a series of manual skills. To perform a job well, the employee must be able to assimilate knowledge and skills learned in various settings, recall and apply that information to the present situation, and carry out work activities using sound professional judgment, demonstrating an appropriate attitude or disposition and achieving a level of speed and accuracy necessary to meet the employer’s business need.

The table below compares the terminology of Functional Analysis with that of traditional Occupational Task Analysis to illustrate the important similarities and differences. While both identify the key technical elements of an occupation, functional analysis includes the identification of behaviors, attributes, and characteristics of workers necessary to meet an employer’s expectations.

Framework Terminology	Traditional Task Analysis Terminology
Job Function: the work activities that are carried out to fulfill the job purpose	Job Duties: roles and responsibilities associated with an occupation
Competency: the actions an individual takes and the attitudes he/she displays to complete those activities	Task: a unit of work or set of activities needed to produce some result
Performance Criteria: the specific knowledge, skills, dispositions, attributes, speed, and accuracy associated with meeting the employer’s expectations	Subtask: the independent actions taken to perform a unit of work or activity

Although designed for use in competency-based apprenticeship, these Competency-Based Occupational Frameworks also support time-based apprenticeship by defining more clearly and precisely what an apprentice is expected to learn and do during the allocated time period.

CBOFs are comprehensive to encompass the full range of jobs that may be performed by individuals in the same occupation. As employers or sponsors develop their individual apprenticeship programs, they can extract from or add to the framework to meet their unique organizational needs.

## Components of the Competency-Based Occupational Framework

**Occupational Overview:** This section of the framework provides a description of the occupation including its purpose, the setting in which the job is performed, and unique features of the occupation.

**Work Process Schedule:** This section includes the job functions and competencies that would likely be included in an apprenticeship sponsor's application for registration. These frameworks provide a point of reference that has already been vetted by industry leaders so sponsors can develop new programs knowing that they will meet or exceed the consensus expectations of peers. Sponsors maintain the ability to customize their programs to meet their unique needs, but omission of a significant number of job functions or competencies should raise questions about whether or not the program has correctly identified the occupation of interest.

**Cross-Cutting Competencies:** These competencies are common among all workers and focus on the underlying knowledge, attitudes, personal attributes, and interpersonal skills that are important regardless of the occupation. That said, while these competencies are important to all occupations, the relative importance of some versus others may change from one occupation to the next. These relative differences are illustrated in this part of the CBOF and can be used to design pre-apprenticeship programs or design effective screening tools when recruiting apprentices to the program.

**Detailed Job Function Analysis:** This portion of the framework includes considerable detail and is designed to support curriculum designers and trainers in developing and administering the program. The detail in this section may be confusing to those seeking a more succinct, higher-level view of the program. For this reason, we recommend that the Work Process Schedule be the focus of program planning activities, leaving the detailed job function analysis sections to instructional designers as they engage in their development work.

- a. **Related Technical Instruction:** Under each job function appears a list of foundational knowledge, skills, tools, and technologies that would likely be taught in the classroom to enable the apprentice's on-the-job training safety and success.
- b. **Performance Criteria:** Under each competency, we provide recommended performance criteria that could be used to differentiate between minimally, moderately, and highly competent apprentices. These performance criteria are generally skills based rather than knowledge based, but may also include dispositional and behavioral competencies.

## Using the Competency-Based Occupational Framework to Develop a Registered Apprenticeship Program

When developing a registered apprenticeship program, the Work Process Schedule included in this CBOF provides an overview of the job functions and competencies an expert peer group deemed to be important to this occupation. The Work Process Schedule in this document can be used directly, or modified and used to describe your program content and design as part of your registration application.

When designing the curriculum to support the apprenticeship program—including on-the-job training and related technical instruction—the information the Detailed Job Functions section could be helpful. These more detailed job function documents include recommendations for the key knowledge and skills that might be included in the classroom instruction designed to support a given job function, and the performance criteria provided under each competency could be helpful to trainers and mentors in evaluating apprentice performance and insuring inter-rater reliability when multiple mentors are involved.

# Stamping Press Operator Occupational Overview

## Occupational Purpose and Context

Stamping Press Operators set up, operate, or tend machines to inspect, cut, shear, slit, punch, crimp, notch, bend, or straighten metal or plastic material.

## Potential Job Titles

Die Setter, Fabrication Operator, Machine Operator, Machine Setter, Operator, Press Operator, Punch Press Operator, Saw Operator, Setup Operator, Slitter Operator

## Attitudes and Behaviors

Stamping press operators should have well-developed critical thinking skills to solve problems quickly, must have strong interpersonal skills including good listening skills and cultural sensitivity, and must be able to understand implications of new information used in problem solving and decision making. They should be able to pay attention to specifics or details, stay focused despite distractions, combine pieces of information to form general rules or conclusions, and arrange objects or actions in an order or pattern related to a specific rule or set of rules.

## Apprenticeship Prerequisites

Existing workers may be able to demonstrate their competence against the standards in shorter time periods and access necessary education and training through community colleges, private programs, training centers, retraining, or upgrading.

## Occupational Pathways

n/a

## Certifications, Licensure, and Other Credential Requirements

Credential	Offered by	Before, During, or After Apprenticeship
Metalforming Level I	NIMS	During
Parts Inspection and Quality Control	NIMS	During
Operate with Single-Hit Tooling II	NIMS	During
Operate with Compound Dies II	NIMS	During
Operate with Progressive Dies II	NIMS	During
Operate with Deep-Draw Dies II	NIMS	During
Operate with Transfer Dies II	NIMS	During
Setup with Single-Hit Tooling III	NIMS	During
Setup with Compound Dies III	NIMS	During
Setup with Progressive Dies III	NIMS	During
Setup with Deep-Draw Dies III	NIMS	During
Setup with Transfer Dies III	NIMS	During

## Job Functions

Job Functions	Core or Optional
1. Inspects parts for quality and compliance	Core
2. Plans job and prepares for setup and production	Core
3. Sets up safety equipment and devices	Core
4. Sets up die	Core
5. Sets up auxiliaries and press	Core
6. Runs production	Core
7. Troubleshoots operations	Core
8. Conducts end-of-run requirements	Core

# Stackable Programs

This occupational framework is designed to link to the following additional framework(s) as part of a career laddering pathway.

Stackable Programs	Base or Higher Level	Stacks on Top of
n/a		

# Options and Specializations

The following options and specializations have been identified for this occupation. The Work Process Schedule and individual job function outlines indicate which job functions and competencies were deemed by industry advisors to be optional. Work Process Schedules for Specializations are included at the end of this document.

Options and Specializations	Option	Specialization
Die Setter		
Machine Setter		
Operator		
Press Operator		
Punch Press Operator		
Setup Operator		

# Levels

Industry advisors have indicated that individuals in this occupation may function at different levels, based on the nature of their work, the amount of time spent in an apprenticeship, the level of skills or knowledge mastery, and the degree of independence in performing the job or supervisory/management responsibilities.

Level	Distinguishing Features	Added Competencies	Added Time Requirements
n/a			

# Work Process Schedule

WORK PROCESS SCHEDULE		ONET Code: 51-4031
Stamping Press Operator		RAPIDS Code: 0928CB
<b>Job Title: Stamping Press Operator</b>		
<b>Level:</b>	<b>Specialization:</b>	
Stackable Program: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Base Occupation Name:		
Company Contact:		
<b>Address:</b>	<b>Phone:</b>	<b>Email:</b>
<b>Apprenticeship Type:</b> <input type="checkbox"/> Competency Based <input type="checkbox"/> Time Based <input type="checkbox"/> Hybrid		<b>Prerequisites:</b>

Job Function 1: Inspects parts for quality and compliance			
Competencies	Core or Optional	RTI	OJT
A. Measures and verifies materials for quality and size	Core		
B. Matches and inspects parts to print	Core		
C. Measures heights and depths	Core		
D. Checks and records part profiles	Core		

Job Function 2: Plans job and prepares for setup and production			
Competencies	Core or Optional	RTI	OJT
A. Reliably follows the instructions of others	Core		
B. Willingly asks questions about things not fully understood	Core		
C. Works with due regard for the safety of others	Core		

D. Establishes a system of maintaining appropriate notes and reminders and completes any required logs, calibration records, etc.	Core		
E. Ensures proper communications between previous and next shifts, with both operations and supervision	Core		
F. Identifies problems and changes that could lead to problems by exchanging information with operators, supervisors, and others	Core		
G. Establishes trust and rapport with operators, supervisors, and others	Core		

### Job Function 3: Sets up safety equipment and devices

Competencies	Core or Optional	RTI	OJT
A. Cleans, connects, and verifies shortfeed detectors and sensors	Core		
B. Tests and verifies operation of light curtains and mats	Core		
C. Installs and inspects safety equipment	Core		
D. Sets program tonnage monitor to predetermined engineering specifications	Core		

### Job Function 4: Sets up die

Competencies	Core or Optional	RTI	OJT
A. Determines and sets shut height	Core		
B. Cleans bolster, ram, and top/bottom of die	Core		
C. Selects clamping devices and aligns and places die in press	Core		
D. Checks, installs, and sets bolster blocks, dies, and material bridge	Core		
E. Replaces/cleans filters and greases/lubes guide components	Core		
F. Sets pilot release, knockouts, air cushion, and manifold pressure	Core		
G. Installs and adjusts lubrication system or equipment	Core		
H. Runs and inspects first parts	Core		
I. Inspects parts for compliance during run, makes adjustments, and seeks approval	Core		

<b>Job Function 5: Sets up auxiliaries and press</b>			
<b>Competencies</b>	<b>Core or Optional</b>	<b>RTI</b>	<b>OJT</b>
A. Installs conveyors, stackers, and part-out conveyors	Core		
B. Positions/sets uncoiler, magazine or blank, and material/feeder	Core		
C. Sets/adjusts straightener, feed length, and leveler	Core		
D. Sets tension on slack loop	Core		
E. Installs/sets transfer or automated system or devices and hydraulic and/or pneumatic systems	Core		
F. Orients parts for secondary operations, prepares/positions part-cleaning equipment, and sets/positions packaging for production	Core		
G. Cleans feed and straightener rollers	Core		

<b>Job Function 6: Runs production</b>			
<b>Competencies</b>	<b>Core or Optional</b>	<b>RTI</b>	<b>OJT</b>
A. Loads coil, strip, or blanks	Core		
B. Starts and stops press	Core		
C. Feeds and welds material properly	Core		
D. Monitors, removes and replaces, and replenishes parts if necessary	Core		
E. Sets press speed and adjusts shut height	Core		
F. Packages finished parts	Core		
G. Sets and adjusts counter balance	Core		
H. Monitors and adjusts controls and, if necessary, transfers them	Core		

<b>Job Function 7: Troubleshoots operations</b>			
<b>Competencies</b>	<b>Core or Optional</b>	<b>RTI</b>	<b>OJT</b>
A. Determines cause of double hits	Core		
B. Finds out why material has buckled	Core		
C. Diagnoses the cause of a short/overfeed condition	Core		
D. Finds out why press will not start	Core		
E. Responds to sensor faults	Core		
F. Determines why parts have visual defects	Core		

<b>Job Function 8: Conducts end-of-run requirements</b>			
<b>Competencies</b>	<b>Core or Optional</b>	<b>RTI</b>	<b>OJT</b>
A. Submits final parts for inspection and receives approval	Core		
B. Completes end-of-run documentation	Core		
C. Removes die from press, stages for storage, and organizes die-clamping devices for next setup	Core		
D. Stages and organizes die-clamping devices for next setup	Core		
E. Empties scrap bins/containers, cleans conveyors and/or chutes, and stages completed parts for pickup	Core		
F. Returns or prepares unused material (pickup or inventory)	Core		

# Related Technical Instruction Plan

COURSE NAME	Course Number
	Hours
LEARNING OBJECTIVES	

COURSE NAME	Course Number
	Hours
LEARNING OBJECTIVES	

COURSE NAME	Course Number
	Hours
LEARNING OBJECTIVES	

COURSE NAME	Course Number
	Hours
LEARNING OBJECTIVES	

# Cross-Cutting Competencies

COMPETENCY**		0	1	2	3	4	5	6	7	8
Personal Effectiveness	Interpersonal Skills	2	3	4	5	6	7	8	9	10
	Integrity	2	3	4	5	6	7	8	9	10
	Professionalism	2	3	4	5	6	7	8	9	10
	Initiative	2	3	4	5	6	7	8	9	10
	Dependability and Reliability	2	3	4	5	6	7	8	9	10
	Adaptability and Flexibility	2	3	4	5	6	7	8	9	10
	Lifelong Learning	2	3	4	5	6	7	8	9	10
Academic	Reading	2	3	4	5	6	7	8	9	10
	Writing	2	3	4	5	6	7	8	9	10
	Mathematics	2	3	4	5	6	7	8	9	10
	Science and Technology	2	3	4	5	6	7	8	9	10
	Communication	2	3	4	5	6	7	8	9	10
	Critical and Analytical Thinking	2	3	4	5	6	7	8	9	10
	Basic Computer Skills	2	3	4	5	6	7	8	9	10
Workplace	Teamwork	2	3	4	5	6	7	8	9	10
	Customer Focus	2	3	4	5	6	7	8	9	10
	Planning and Organization	2	3	4	5	6	7	8	9	10
	Creative Thinking	2	3	4	5	6	7	8	9	10
	Problem Solving and Decision Making	2	3	4	5	6	7	8	9	10
	Working with Tools and Technology	2	3	4	5	6	7	8	9	10
	Checking, Examining, and Recording	2	3	4	5	6	7	8	9	10
	Business Fundamentals	2	3	4	5	6	7	8	9	10
	Sustainable	2	3	4	5	6	7	8	9	10
	Health and Safety	2	3	4	5	6	7	8	9	10

\*\* The names of the cross-cutting competencies come from the US Department of Labor’s Competency Model Clearinghouse, and definitions for each can be viewed at <https://www.careeronestop.org/CompetencyModel/competency-models/building-blocks-model.aspx>.

Cross-cutting competencies identify transferable skills—sometimes called “soft skills” or “employability skills”—that are important for workplace success, regardless of a person’s occupation. Still, the relative

importance of specific cross-cutting competencies differs from occupation to occupation. The cross-cutting competencies table, above, provides information about which of these competencies is most important to be successful in a particular occupation. This information can be useful to employers or intermediaries in screening and selecting candidates for apprenticeship programs, or to pre-apprenticeship providers who seek to prepare individuals for successful entry into an apprenticeship program.

The scoring system utilized to evaluate competency levels required in each cross-cutting skill aligns with the recommendations of the Lumina Foundation's Connecting Credentials Framework. The framework can be found at <http://connectingcredentials.org/wp-content/uploads/2015/05/ConnectingCredentials-4-29-30.pdf>.

# Detailed Job Functions

## Job Function 1: Inspects parts for quality and compliance

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> <li>• Measurements</li> <li>• Material standards</li> <li>• Part profiles</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting proper tools and procedures</li> <li>• Using proper procedures when working</li> <li>• Maintaining situational awareness</li> <li>• Clear thinking</li> <li>• Identifying problems and correcting them</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaning materials</li> <li>• Parts marker</li> <li>• Pen and inspection documentation</li> <li>• Quality specifications or process plan</li> <li>• Shop wipes (lint-free cloth)</li> <li>• Surface/crown plate</li> <li>• Checking fixtures</li> <li>• Micrometers, calipers, height gauge, dial indicators, and/or attribute/go-no-go gauges</li> <li>• Test blocks and/or calibration standards</li> </ul>

Competency A: Measures and verifies materials for quality and size	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Identifies the required instruments to be checked out according to part, process plan, print, and/or tolerance specifications	Core
2. Successfully checks out instruments from lab, quality department, stores, or tool crib	Core
3. Checks calibration stickers/tags to ensure dates are current	Core
4. Transports instruments to inspection site without incident	Core

Competency B: Matches and inspects parts to print	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Lays instruments out in logical order	Core
2. Surfaces plate so it's level/flat and clean	Core
3. Ensures instruments free of any oils, dust, debris, and dirt	Core
4. Cleans contact points	Core
5. Checks instruments (moving parts and/or readouts) for function	Core

<b>Competency C: Measures heights and depths</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Tests block and/or conducts standard clean and setup		Core
2. Demonstrates skill and accuracy comparing readings to standard		Core
3. Verifies for calibration against known standards		Core
4. Confirms instruments are accurate		Core

<b>Competency D: Checks and records part profiles</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Ensures parts are properly positioned/set for profile, feature inspection, and comparison verification (dimensional and geometric)		Core
2. Initializes controlled and program initiated		Core
3. Checks part profile and hole positions(s) and size (CMM/OGP only)		Core
4. Ensures comparator (shadow or reflection) is in correct position and candidate accurately checks part profile/control limits and features (location, position, and size)		Core
5. Shuts down equipment and records results		Core

## Job Function 2: Plans job and prepares for setup and production

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> <li>Company policies and hierarchy</li> </ul>	<ul style="list-style-type: none"> <li>Using proper procedures when working</li> <li>Maintaining situational awareness</li> <li>Logical thinking</li> <li>Clear oral communication</li> <li>Identifying problems and correcting them</li> <li>Teamwork</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>

Competency A: Reliably follows the instructions of others	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Follows the instructions of supervisors and offers constructive feedback to ensure proper completion of tasks	Core

Competency B: Willingly asks questions about things not fully understood	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Asks about techniques, components, installation, technical aspects, and other key areas of job that are not fully clear	Core

Competency C: Works with due regard for the safety of others	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Demonstrates safe workplace practices in material and tool handling and in machine operations	Core
2. Explains actions that directly or indirectly affect safe practices during assigned responsibilities	Core

<b>Competency D: Establishes a system of maintaining appropriate notes and reminders and completes any required logs, calibration records, etc.</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Writes and records critical information for proper job functioning	Core
2. Types information into easily accessible computer filing systems	Core

<b>Competency E: Ensures proper communications between previous and next shifts, with both operations and supervision</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Demonstrates appropriate interpersonal skills with a supervisor or team leader and other team members to ensure work is smoothly continued from one shift to the next	Core

<b>Competency F: Identifies problems and changes which could lead to problems by exchanging information with operators, supervisors, and others</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Analyzes the problem(s) and proposes remedies when authorized to carry them out	Core

<b>Competency G: Establishes trust and rapport with operators, supervisors, and others</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Reaches out to and communicates with members of the team to discuss work and any issues that may arise	Core

## Job Function 3: Sets up safety equipment and devices

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> <li>• OSHA safety standards</li> <li>• Safety equipment functionality</li> <li>• Weight standards</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting proper tools and procedures</li> <li>• Using proper procedures when working</li> <li>• Maintaining situational awareness</li> <li>• Clear thinking</li> <li>• Identifying problems and correcting them</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical tape (as needed)</li> <li>• Screwdrivers</li> <li>• Sensor test box (as needed)</li> <li>• Shop cloth (lint-free) or air duster</li> <li>• Solder/heat gun and solder (as needed)</li> <li>• Wire clamps or hold-down devices (as needed)</li> <li>• Wiring diagram (as needed)</li> <li>• Wrenches (assorted)</li> </ul>

Competency A: Cleans, connects, and verifies shortfeed detectors and sensors	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Connects plugs/ports or wiring securely to matching readout devices/safeties, ensuring all sensors and marks/labels match.	Core
2. Checks wiring or pneumatic lines and reroutes them as needed	Core
3. Ensures sensors are in proper alignment/position	Core
4. Cleans sensors	Core
5. Performs lockout procedures	Core
6. Powers up presses	Core

Competency B: Tests and verifies operation of light curtains and mats	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Ensures light curtains and safety mats are present, hooked up, and showing no signs of damage	Core
2. Places hand in front of light and stops press	Core
3. Steps on and off safety mat to stop press	Core
4. Stops presses at OSHA designated distance	Core
5. Ensures light curtains and safety mats work properly	Core

<b>Competency C: Installs and inspects safety equipment</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Carries out routine maintenance, reports problems that are beyond the scope of authority, and fills out the history forms for tracking maintenance	Core

<b>Competency D: Sets program tonnage monitor to predetermined engineering specifications</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Selects correct program for die limits (range) set on monitor	Core
2. Limits range set on tonnage monitor—not to exceed 90% of press capacity	Core
3. Does not set tonnage monitor in excess of die tonnage requirement	Core
4. Verifies maximum allowable tonnage was not exceeded	Core
5. Sets tonnage monitor to allow specified tonnage range	Core

## Job Function 4: Sets up die

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> <li>• Measurements</li> <li>• Material standards</li> <li>• Part profiles</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting proper tools and procedures</li> <li>• Using proper procedures when working</li> <li>• Maintaining situational awareness</li> <li>• Clear thinking</li> <li>• Identifying problems and correcting them</li> </ul>	<ul style="list-style-type: none"> <li>• Die record/information sheet</li> <li>• Process/setup plan</li> <li>• Shop wipes</li> <li>• Stone/file</li> <li>• Tape measure</li> </ul>

Competency A: Determines and sets shut height	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Calculates shut height	Core
2. Cleans rams/slides and bolsters, ensuring no visual signs of damage	Core
3. Removes accessories	Core
4. Sets aside and removes safety blocks	Core
5. Presses set at BDC (bottom of stoke)	Core
6. Measures distance from the ram to the bolster plate	Core
7. Initiates shut height preset just above (or greater than) the required shut height	Core

Competency B: Cleans bolster, ram, and top/bottom of die	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Cleans rams/slides and bolsters, ensuring no visual signs of damage	Core
2. Removes accessories (as needed)	Core
3. Removes and sets aside safety blocks	Core
4. Sets presses at bottom of stoke	Core
5. Measures distance from the ram to the bolster plate	Core
6. Initiates shut height preset just above (or greater than) the required shut height	Core

<b>Competency C: Selects clamping devices and aligns and places die in press</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Installs clamps or clamping devices		Core
2. Demonstrates safe work practices in proper use of safety blocks		Core
3. Verifies installation by dry run and jog/inch mode, ensuring die did not move, remained tight, and functioned as designed		Core
4. Clamps die square and properly into place		Core
5. Cleans and readies work area and die assembly to accept material for final adjustments		Core

<b>Competency D: Checks, installs, and sets bolster blocks, dies, and material bridge</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Puts die on-center and square to bolster plate		Core
2. Places die against locators		Core
3. Demonstrates accuracy when measuring gap between shoe and ram face		Core
4. Establishes initial gap between upper shoe and ram face, allowing for final shut height adjustments (typically 1.0" ± 0.25)		Core
5. Sets die in position to accept material		Core
6. Demonstrates accuracy and skill manipulating ram in jog or inch mode		Core

<b>Competency E: Replaces/cleans filters and greases/lubes guide components</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Follows login and start-up procedures: controller communicating with computer, program selected, parameters/coordinates set, fixtures/workholders set, and psi, voltage, and/or filtering correct and stable		Core
2. Completes equipment setup and readies inspection		Core

<b>Competency F: Sets pilot release, knockouts, air cushion, and manifold pressure</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Enters pilots into material		Core
2. Evens stripper with stock guides		Core
3. Ensures pilots are entering die face		Core
4. Releases material from feed rolls and material held by pilots		Core
5. Matches settings to setup-sheet specifications		Core
6. Places pilots' strip/coil in the correct progression as die is closed		Core
7. Releases and verifies pilots set		Core
8. Holds material with pilots when feed rolls are open		Core
9. Ensures press is ready to run in auto mode		Core

<b>Competency G: Installs/adjusts lubrication system or equipment</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Sets and supports line run into connectors from source to press		Core
2. Checks that there are no kinks, leaks, or extreme bends in and throughout length of line		Core
3. Ensures line not contaminated		Core
4. Flows lube or coolant at designed pressure through line without incident or malfunction		Core
5. Sets pressure/flow rate and ensures the right amount of coolant or lubrication is being delivered to the proper location, device, or output		Core

<b>Competency H: Runs and inspects first parts</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Removes and sets aside safety blocks		Core
2. Checks all safety devices (e.g., light curtains) for reliability and function		Core
3. Starts press without incident		Core
4. Dry cycles press, ensuring press does not crash and verifying minimum allowable space to install die easily and safely		Core
5. Verifies clearances (stroke plus the minimum height allowance)		Core
6. Returns ram to TDC—Top of stroke		Core
7. Shuts down power and ensures press shutdown		Core
8. Reinstalls safety blocks		Core
9. Readies presses to install die		Core

Competency I: Inspects parts for compliance during run, makes adjustments, and seeks approval		Core or Optional
<b>PERFORMANCE CRITERIA</b>		
1. Measures part with the correct instruments/devices		Core
2. Obtains dimensions within the following minimum tolerances: a. Caliper measurements $\pm .005$ b. Micrometer measurements $\pm .001$ Indicator measurements $\pm .0005$		Core
3. Demonstrates competency and accuracy in positioning and using handheld measuring instruments when taking measurements		Core
4. Identifies and legibly records conformance (within tolerance)/nonconformance (out of tolerance) of part as per sampling, print, or process/inspection plan		Core
5. Checks that parts and instruments were not damaged during the measuring process		Core

## Job Function 5: Set up auxiliaries and press

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> <li>• Measurements</li> <li>• Material standards</li> <li>• Part profiles</li> <li>• Installation</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting proper tools and procedures</li> <li>• Using proper procedures when working</li> <li>• Maintaining situational awareness</li> <li>• Clear thinking</li> <li>• Identifying problems and correcting them</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable Logic Controllers (PLCs)</li> <li>• Coilers</li> <li>• Guides/rollers</li> <li>• Slack loop</li> <li>• Press (coil fed or single hit)</li> <li>• Pry bar</li> <li>• Shop wipes</li> <li>• Sockets and ratchet</li> <li>• Solvents</li> <li>• Stone</li> <li>• Tee nuts and bolts</li> <li>• Wrenches (Allen and adjustable)</li> </ul>

Competency A: Installs conveyors, stackers, and part-out conveyors	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Describes how to interface a PLC to a robot using discrete I/O	Core
2. Designs a mechatronics PLC-to-robot workstation interface wiring diagram using discrete I/O	Core

Competency B: Positions/sets uncoiler, magazine or blank, and material/feeder	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Places material onto uncoiler/rereeling device without incident	Core
2. Accepts stock of reel mandrels/coil keepers while material secured to uncoiling/rereeling device	Core
3. Accepts width of stock cradle, confining plates of coil while material secured to cradle	Core

Competency C: Sets/adjusts straightener, feed length, and leveler	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Selects manual mode of operation	Core

2. Tests manual mode to ensure it's operational	Core
3. Opens pinch rolls	Core
4. Opens entrance/guide rollers	Core
5. Cleans rollers and checks material for coil set	Core
6. Guides rolls reset	Core
7. Lowers adjusting rollers and pinch rollers and initiates JOG mode (forward)	Core
8. Ensures material accepted by straightener	Core

<b>Competency D: Sets tension on slack loop</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Sets the feed according to the type of feed, following manufacturer's instructions	Core
2. Establishes correct slack loop length and height	Core
3. Ensures material at correct start position and ready for first hit	Core

<b>Competency E: Installs/sets transfer or automated system or devices and hydraulic and/or pneumatic systems</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Checks connections for damage and cleanliness	Core
2. Installs/replaces lines of proper gauge	Core
3. Ensures lines receiving power/pressure without malfunction, surge, or brownout	Core
4. Checks that auxiliary equipment is receiving power and working	Core

<b>Competency F: Orients parts for secondary operations, prepares/positions part cleaning equipment, and sets/positions packaging for production</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Identifies material by ID tag, customer, heat number, or SO number	Core
2. Recognizes material type and any special conditions (i.e., clad, galvanized, Teflon, etc.)	Core
3. Removes and disposes of any material packaging or covering	Core
4. Verifies material against process plan/production packet or router	Core

<b>Competency G: Cleans feeds and straightener rollers</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Selects manual mode of operation		Core
2. Tests manual mode to see if operational		Core
3. Opens pinch rolls		Core
4. Opens entrance and guides rollers		Core
5. Cleans and checks material for coil set		Core
6. Resets guide rolls		Core
7. Lowers adjusting rollers and pinch rollers and initiates JOG mode		Core
8. Ensures material accepted by straightener		Core

## Job Function 6: Runs production

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> <li>• Measurements</li> <li>• Material standards</li> <li>• Part profiles</li> <li>• Installation</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting proper tools and procedures</li> <li>• Using proper procedures when working</li> <li>• Maintaining situational awareness</li> <li>• Clear thinking</li> <li>• Identifying problems and correcting them</li> </ul>	<ul style="list-style-type: none"> <li>• Band cutter</li> <li>• Coil, strip, or blanks</li> <li>• Die bar</li> <li>• Setup sheet</li> <li>• Screwdriver</li> <li>• Stamping press and feeder</li> <li>• Wrenches</li> <li>• Forklift and/or crane/hoist with rigging</li> <li>• Nibbler/snips</li> <li>• Process plan/production Packet</li> <li>• Uncoiler, cradle, lift table, or magazine</li> <li>• Micrometer</li> <li>• Pilot hole verification device</li> </ul>

Competency A: Loads coil, strip, or blanks	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Identifies material by ID tag, customer, heat number, or SO number	Core
2. Recognizes material type and any special conditions (i.e., clad, galvanized, Teflon, etc.)	Core
3. Removes and disposes of any material packaging or covering	Core
4. Verifies material against process plan/production packet or router	Core

Competency B: Starts and stops press	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Checks safety devices/safeguarding for reliability and function	Core
2. Checks lubrication system for function	Core
3. Ensures press motor started without incident	Core
4. Ensures press powered-up and operational	Core

<b>Competency C: Feeds and welds material properly</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Feeds material (inch/JOGmode) straight into press without buckling		Core
2. Demonstrates skill and ability using press mode controls		Core
3. Locates first hit/punch location correctly		Core
4. Stocks material at first hit location		Core
5. Locks feed into first-hit position		Core
6. Ensures feeder is in setup mode		Core
7. Clears die and area of any loose scrap or parts		Core
8. Ensures first-hit punch is in position		Core
9. Initiates first hit successfully		Core
10. Ensures first hit is retracted		Core
11. Ensures material is fed smoothly to next progression/station		Core
12. Checks for loose scraps and obstruction in all stations		Core
13. Confirms part off of die		Core
14. Confirms scrap came out of die		Core
15. Checks if die lubrication and sensors working properly		Core
16. Inspects part visually for flaws, damage, or defects		Core
17. Feeds material flat and smooth through each die station and to payout area		Core
18. Ensures die/press runs on auto or continuous mode		Core

<b>Competency D: Monitors, removes and replaces, and replenishes parts if necessary</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Checks coil/strip visually for adverse conditions (i.e., oxidation, lamination, telescoping, clock spring, etc.)		Core
2. Verifies material dimensions against process plan/production packet specifications		Core

<b>Competency E: Sets press speed and adjusts shut height</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Verifies lead/solder readings		Core
2. Confirms all stop-block readings with lead or solder		Core
3. Ensures ram/slide successfully adjusted to attain lead/solder reading on setup sheet		Core
4. Ensures ram/slide manipulation performed safely and accurately to shut height requirements		Core
5. Checks ram to be relocked or tightened		Core
6. Checks if proper shut height is accomplished		Core

<b>Competency F: Packages finished parts</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Demonstrates safe work practices when using forklift or coil cart		Core
2. Moves material to and places it in staging area		Core
3. Ensures material was not damaged during transport		Core
4. Demonstrates ability when rigging, positioning, and distancing material onto mandrel, cradle, or lift table		Core
5. Ensures load did not exceed rated capacity of crane, hoist, or forklift		Core
6. Places material (coil eye) onto uncoiler/rereeling device without incident		Core
7. Ensures stock reel mandrels/coil keepers accepted ID of coil; material secured to uncoiling/rereeling device		Core
8. Confirms stock cradle confining plates accepted width (or outside diameter of coil; material secured to cradle		Core
9. Demonstrates safe work practices when removing coil bands or stock binding		Core
10. Stacks and aligns strips or blanks on lift table or in magazine		Core
11. Removes (cuts) damaged or unusable leading edge of material		Core
12. Ensures sufficient amount of material loaded for production and leading edge ready to advance		Core

<b>Competency G: Sets/adjusts counter balance</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Removes and sets aside safety blocks		Core
2. Verifies safety curtains and other safeguarding devices reset for function		Core
3. Powers up and starts presses without incident		Core

<b>Competency H: Monitors and adjusts controls and, if necessary, transfers them</b>		<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>		
1. Locates counterbalance tag		Core
2. Identifies air pressure gauge		Core
3. Places slide at 90° position in the stroke, releases the brake, and adjusts the air pressure until slide dwelled at 90°		Core
4. Places press in the continuous mode with amp meter attached to one of the main motor leads		Core
5. Ensures air pressure (psi) matches the weight of the punch-half/upper-die weight		Core

## Job Function 7: Troubleshoots operations

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> <li>Equipment troubleshooting</li> <li>Safety equipment functionality</li> </ul>	<ul style="list-style-type: none"> <li>Selecting proper tools and procedures</li> <li>Using proper procedures when working</li> <li>Maintaining situational awareness</li> <li>Clear thinking</li> <li>Identifying problems and correcting them</li> </ul>	<ul style="list-style-type: none"> <li>Stamping press</li> <li>Sensors</li> </ul>

Competency A: Determines cause of double hits	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Recognizes the problem, condition, or situation in a timely manner	Core
2. Observes operations and interviews appropriate personnel to obtain information	Core
3. Works with a team to troubleshoot the cause of the problem	Core
4. Uses visual/instrument indicators to identify the trouble (gauges, meters, dials, alarms, control lights and messages, etc.)	Core
5. Uses physical indicators to identify the trouble (sounds, smells, sight, temperatures, part/material defects, etc.)	Core
6. Checks electromechanical or hydraulic/pneumatic devices to identify the problem	Core
7. Checks sensor malfunctions	Core
8. Checks material to identify the problem (dimensions, stress, corrosion, coil set, buckling, slippage, wobble, etc.)	Core
9. Obtains necessary archives, records, studies, documents, prints, data, and manuals	Core

Competency B: Finds out why material has buckled	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Checks material to understand why it is buckling	Core
2. Obtains necessary archives, records, studies, documents, prints, data, and manuals	Core

<b>Competency C: Diagnoses the cause of a short/overfeed condition</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Analyzes the symptoms, using cause-and-effect relationships	Core
2. Forms deductive theories using models, technical ability, teamwork, and knowledge of tooling, equipment, and program	Core
3. Prioritizes possible theories using a systematic approach to locate the trouble spot	Core
4. Tests theories in a logical and sequential order	Core
5. Shows persistence to dig for root cause and generate an effective solution	Core
6. Uses information/data from diverse/multiple sources and suggests possible courses of action	Core

<b>Competency D: Finds out why press will not start</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Defines the troubleshooting path (as electrical/mechanical, sensor defect, material defect, tooling/die defect, etc.) and locates where the trouble is occurring	Core
2. Considers alternatives and associated risks before deciding to take action	Core
3. Provides advice, constructive feedback, practical instruction, and "how-to" directions with rationale	Core
4. Locates the general cause of the problem; then isolates the root cause(s) of the problem	Core
5. Evaluates possible solutions	Core
6. Prepares appropriate action plans	Core
7. Documents the troubleshooting process, path, and findings/results	Core

<b>Competency E: Responds to sensor faults</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Tests sensors for functionality	Core
2. Ensures all sensors are receiving power within range	Core
3. Resets sensor/die controller as needed	Core

Competency F: Determines why parts have visual defects	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Uses cause-and-effect relationships to analyze the symptoms	Core
2. Forms deductive theories using models, technical ability, teamwork, and knowledge of tooling, equipment, and program	Core
3. Prioritizes possible theories using systematic approach to locate the trouble spot	Core

## Job Function 8: Conducts end-of-run requirements

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> <li>• OSHA safety standards</li> <li>• Safety equipment functionality</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting proper tools and procedures</li> <li>• Using proper procedures when working</li> <li>• Maintaining situational awareness</li> <li>• Clear thinking</li> <li>• Identifying problems and correcting them</li> </ul>	<ul style="list-style-type: none"> <li>• Stamping press</li> <li>• Sensors</li> </ul>

Competency A: Submits final parts for inspection and receives approval	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Runs the required number of parts according to process plan	Core
2. Recognizes EOR; stops process	Core
3. Prepares press for last-part safe removal	Core
4. Ensures last part(s) safely removed from press/die	Core
5. Checks if part or die was damaged during removal	Core
6. Follows all safety procedures during removal	Core
7. Ensures part(s) clean—no surface oils, dust, dirt, or debris present	Core
8. Checks parts for damage or flaws	Core

Competency B: Completes end-of-run documentation	Core or Optional
<b>PERFORMANCE CRITERIA</b>	
1. Informs tool room (by work order, radio, or in person) of end-of-run (EOR); identifies press and die and any issues, and initiates die-removal protocol	Core
2. Completes all EOR documentation and paperwork (or data/EOR computer entries)	Core
3. Ensures paperwork/input accurate, correct, completed in a timely manner, and submitted to quality department or responsible party	Core

4. Gathers and submits all applicable quality control inspection reports and/or variance/statistical process control (SPC) charts to quality department	Core
5. Ensures EOR sample part(s) and/or last strip submitted to quality department or readied for pickup (by or on die)	Core
6. Demonstrates accuracy, attention to detail, good communication skills, and timeliness during EOR responsibilities	Core

<b>Competency C: Removes die from press, stages for storage, and organizes die clamping devices for next setup</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Ensures the last strip or strip of parts was safely removed from press/die	Core
2. Follows all safety procedures during strip removal	Core
3. Cleans strip, ensuring no surface oils, dust, dirt, or debris present	Core
4. Visually checks strips for damage or flaws	Core
5. Ensures last strip clearly marked or tagged as EOR	Core

<b>Competency D: Empties scrap bins/containers, cleans conveyors and/or chutes, and stages completed parts for pickup</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Closes and unclamps dies for removal	Core
2. Requests die cart, towmotor, and/or crane/hoist	Core
3. Removes all scrap chutes and applicable axillaries for next die	Core

<b>Competency E: Returns or prepares unused material (pickup or inventory)</b>	<b>Core or Optional</b>
<b>PERFORMANCE CRITERIA</b>	
1. Cleans the workstation	Core
2. Removes old parts, documents, and scraps from work site and readies them for pickup	Core

## STATEMENT OF INDEPENDENCE

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