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AUTOMOTIVE PARTS PRODUCTION MACHINE OPERATOR

CBT Curriculum

National Vocational Certificate Level 3

Version 1 - November, 2019

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Introduction

Description of the training program for Automotive Parts Production Machine Operator (Level-3)

The “Automotive Parts Production Machine Operator” level-3 qualification has been developed to meet the demand of automotive parts manufacturing industry for training the youth of Pakistan in line with the demand of the automotive sector regarding multi-task specialisation. By acquiring these qualification graduates are able to apply skills, knowledge and understanding competently in the work place, and provide the country’s youth with current and future-oriented career and/or self-employment opportunities. Automotive Parts Production Machine Operator (Level-3) are responsible for perform different types of operation like welding, thread rolling, vacuum forming and pressing beside periodic maintenance and generic competencies like apply Work Health and Safety Practices (WHS), identify and implement workplace policy and procedures,communicate at workplace, computer application skills, manage personal finances.

Purpose of the training program

The purpose of the “Automotive Parts Production Machine Operator” level-3 course is to engage youth of this country with high demand training of automotive parts manufacturing sector that provides them relevant skill, knowledge and understanding to start their career as “*Automotive Parts Production Machine Operator*” level-3 in automotive industry. The qualification address a variety of skills required for parts production operation of automotive parts manufacturing industry like pressing /stamping, welding, threading and vacuum forming manufacturing and periodic maintenance beside competencies of generic like work health and safety practices, work place policies and procedures, communication skills at workplace, computer application skills and manage personal finance with the aim to meet the skilled manpower requirement of the automotive parts manufacturing industry across the country and globe.

Overall objectives of training program

The overall objectives of the Automotive Parts Production Machine Operator (Level-3) training program are:

The Automotive Parts Production Machine Operator qualification level-3 consists of theoretical and practical knowledge required to operate machines used in automotive parts manufacturing industry. The main objectives of the qualification are to impart the training on following:

- Managing and supervising the automotive parts production section in automotive industry.
- Selecting tools, machinery and equipment used to prepare automotive production parts.

Performing operations on automotive parts production machines like

- welding
- thread rolling
- vacuum Forming
- pressing operation

Performing periodic operator maintenance

- Checking the quality of product, during and after operation.

Working hygienically, safely and identify & implement policies and procedures at work place.

Effctive communicating at work place.

Skills of computer application and manage personal finance.

Competencies to be gained after completion of course

At the end of the course, the trainee must have attained the following competencies:

- Expert in automotive parts production.
- Lead and supervise a team at workplace.

- Understand and apply the rules and regulation of automotive industry.

Apply Work Health and Safety Practices (WHS)

Identify and Implement Workplace Policy and Procedures

Communicate at Workplace

Perform Computer Application Skills

Manage Personal Finances

Perform welding.

Apply thread rolling operations.

Perform vacuum Forming operations.

Perform pressing operations.

Perform periodic operator maintenance.

.Possible available job opportunities available immediately and later in the future

Automotive Parts Production Machine Operator (Level-3) is employed in automotive industries locally and internationally. Experienced automotive parts production machine operator after declared competent in Level-3 may grow through promotions from existing position to senior position with the same employer or by moving in advanced positions with other employers. They can become:

- Machine operator
- Die/Mould Setter
- Junior Team Member
- Team member

Some experienced Automotive Parts Production Machine Operator achieves a highly respected level of salaries. There are good prospects for travel both within Pakistan and abroad. The employment outlook in this occupation will be influenced by a wide variety of factors including:

- Trends and events affecting overall employment.
- Location in Pakistan and abroad.
- Employment turnover (work opportunities generated by people leaving existing positions).
- Occupational growth (work opportunities resulting from the creation of new positions that never existed before).
- Size of the industry.
- Flexibility of the applicant (concerning location and schedule of work).

Trainee entry level

Entry into training institute for this qualification, is candidate having Middle and National Vocational Certificate level 2, in (Machinist or relevant)

Minimum qualification of trainer

B.E/ B.Tech (Mechanical) with one year relevant experience

OR

DAE (Mechanical/Auto/die & mould) with Three years relevant experience

Recommended trainer:trainee ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 20 trainees.

Medium of instruction i.e. language of instruction

Language of instructions should be Urdu, regional and English.

Duration of the course (Total time, Theory & Practical time)

This curriculum comprises 10 modules. The recommended delivery time is 1600 hours. Delivery of the course could therefore be full time, 5 days a week, for 12 months. Training providers are at liberty to develop other models of delivery, including part-time and evening delivery.

The full structure of the course is as follow:

Module	Theory[1] Days/hours	Workplace[2] Days/hours	Total hours
Module 1: Apply Work Health and Safety Practices (WHS)	06	24	30
Module 2: Identify and Implement Workplace Policy and Procedures	04	16	20
Module 3: Communicate at Workplace	06	24	30
Module 4: Perform Computer Application Skills	08	32	40
Module 5: Manage Personal Finances	06	24	30
Module 6: Perform welding	32	128	160
Module 7: Apply thread rolling operation	20	80	100
Module 8: Perform vacuum Forming operations	20	80	100
Module 9: Perform pressing operations	30	120	150

[1] Learning Module hours in training provider premises
[2] Training workshop, laboratory and on-the-job workplace

Module	Theory[1] Days/hours	Workplace[2] Days/hours	Total hours
Module 10: Perform periodic operator maintenance	18	72	90

Sequence of the modules

This qualification (Level-3) is made up of 10 modules. Four modules 6-9 relate to perform different operation like welding, thread rolling, vacuum forming and pressing use in automotive parts production industry and one module-10 for the periodic maintenance. This is not prescriptive and training providers may modify this if they wish.

There are four other modules 2-5 relating to generic skills that a automotive parts production machine operator must have knowledge and understanding, these includes identify and implement workplace policy and procedures, communication skills at work place, computer application and manage personal finance. This is illustrated in the distribution table.

One more module-1 relate to apply Work Health and Safety practices (WHS) skills in automotive parts production industry: The distribution table suggests that this should be delivered at the beginning of the every module.

Each module covers a range of learning components. These are intended to provide detailed guidance to teachers (for example the Learning Elements component) and give them additional support for preparing their lessons (for example the Materials Required component). The detail provided by each module will contribute to a standardized approach to teaching, ensuring that training providers in different parts of the country have clear information on what should be taught.

The distribution table is shown below:

Module 1: Apply Work Health and Safety Practices (WHS).	**Module 6:** Perform welding	**Module 2:** Identify and Implement Workplace Policy and Procedures. **Module 3:** Communicate at Workplace. **Module 4:** Perform Computer Application Skills. **Module 5:** Manage Personal Finances
	Module 7: Apply thread rolling operation	
	Module 8: Perform vacuum Forming operations	
	Module 9: Perform pressing operations	
	Module 10: Perform periodic operator maintenance	

Summary – overview of the curriculum

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 1: Apply Work Health and Safety Practices (WHS). **Aim:** The Aim of this module is to describe the skills to work with safety and participate in hazard assessment activities, follow emergency procedures and participate OHS practices in process.	**LU1:** Implement safe work practices at work place. **LU2:** Participate in hazard assessment activities at work place. **LU3:** Follow emergency procedures at workplace. **LU4:** Participate in OHS consultative processes.	06	24	30
Module 2: Identify and Implement Workplace Policy and Procedures. **Aim:** The Aim of this module is to describe the skills and knowledge required to develop and implement a workplace policy & procedures and to modify the policy to suit changed circumstances. It applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces and engage with a range of relevant stakeholders and specialists.	**LU1:** Identify workplace policy & procedures. **LU2:** Implement workplace policy & procedures. **LU3:** Communicate workplace policy & procedures. **LU4:** Review the implementation of workplace policy & procedures.	4	16	20

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 3: Communicate at Workplace **Aim:** The Aim of this module is to describe the performance outcomes, skills and knowledge required to develop communication skills in the workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct supervision.	**LU1:** Communicate within the organization. **LU2:** Communicate outside the organization. **LU3:** Communicate effectively in workgroup. **LU4:** Communicate in writing**.**	6	24	30

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 4: Perform Computer Application Skills **Aim:** The Aim of this module is to describe the skills and knowledge required to use spreadsheet applications, prepare in page documents, develops familiarity with Word, Excel, Access, PowerPoint, email, and computer graphics basics. It applies to individuals who perform a range of routine tasks in the workplace using a fundamental knowledge of spreadsheets, Microsoft office and computer graphics in under direct supervision or with limited responsibility.	**LU1:** Prepare In-page documents as per required information. **LU2:** Prepare Spreadsheets as per required information. **LU3:** Use MS Office as per required information. **LU4:** Perform computer graphics in basic applications. **LU5:** Create Email account for communications.	8	32	40
Module 5: Manage Personal Finances **Aim:** The Aim of this module is to describe the outcomes required to develop, implement and monitor a personal budget in order to plan regular savings and manage debt effectively.	**LU1:** Develop a personal budget. **LU2:** Develop long term personal budget. **LU3:** Identify ways to maximize future finances.	6	24	30

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 6: Perform welding **Aim:** The aim of this module is to cover the specific skills and knowledge related to Spot-, Seam-, MIG and TIG-welding operations in automotive parts manufacturing industries, material handling and maintains machine and workplace.	**LU1:** Prepare for welding. **LU2:** Prepare welding equipments and accessories. **LU3:** Perform spot welding operations. **LU4:** Perform seam welding operations. **LU5:** Perform MIG/TIG welding operations. **LU6:** Inspect final work. **LU7**: Perform work place cleaning and maintenance.	32	128	160
Module 7: Apply thread rolling operations **Aim:** The aim of this module is to cover the specific skills and knowledge related to perform for thread rolling operation, material handling, formulation/construction, defects & remedies and maintains machine and workplace. .	**LU1:** Prepare for thread rolling. **LU2:** Conduct pre-operational checks on machine. **LU3:** Prepare thread rolling die. **LU4:** Operate machine. **LU5:** Inspect final product. **LU6:** Perform workplace cleaning and maintenance.	20	80	100

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 8: Perform vacuum forming operations **Aim:** The aim of this module is to cover the specific skills and knowledge related to perform vacuum forming operation, material handling, formulation/construction, defects & remedies and maintains machine and workplace. .	**LU1:** Prepare for Vacuum forming. **LU2:** Conduct pre-operational checks on machine. **LU3:** Prepare vacuum mould. **LU4:** Operate machine. **LU5:** Inspect final product. **LU6:** Perform workplace cleaning and maintenance.	20	80	100
Module 9: Perform pressing operation **Aim:** The aim of this module is to cover the specific skills and knowledge related to perform Pressing/stamping operations, material handling, inspection techniques and maintain hydraulic, pneumatic and mechanical press machines and work place.	**LU1:** Prepare for pressing. **LU2:** Conduct pre-operational checks on machine. **LU3:** Prepare die. **LU4:** Operate mechanical press machine. **LU5:** Operate hydraulic press machine. **LU6:** Operate pneumatic press machine. **LU7:** Inspect final product. **LU8:** Perform workplace cleaning and maintenance.	30	120	150

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 10: Perform periodic operator maintenance **Aim:** The aim of this module is to cover the specific skills and knowledge related to work on periodic maintenance, making the workplace free from hazards and capable to report and record the maintenance activity performed on the machine and workplace.	**LU1:** Prepare for maintenance. **LU2:** Isolate and shut down equipment and machine. **LU3:** Inspect equipment and machine. **LU4:** Conduct preventive maintenance. **LU5:** Report faults. **LU6:** Record maintenance.	18	72	90

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Module-1

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Modules

Module 1: Apply Work Health and Safety Practices (WHS)

Objective of the module: This module describes the skills to work with safety and participate in hazard assessment activities, follow emergency procedures and participate OHS practices in process.

Duration: 30 hours **Theory:** 06 hours **Practical:** 24 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: **Implement safe work practices at work place**	**The trainee will be able to:** Implement relevant rules and procedures of WHS at work place. Comply with duty of care requirements. Use personal protective equipment according to safe work practices. Contribute to WHS consultative activities. Raise WHS issue with relevant personnel.	.	**Total** **Theory:** **Practical:**		Classroom Training workshop
LU2: **Participate in hazard assessment activities at work place**	**The trainee will be able to:** Identify hazards or WHS issues in the workplace to relevant personnel. Assess and control risks		**Total** **Theory:** **Practical:**		Classroom Training workshop

	according to own level of responsibility, in line with workplace procedures. Report hazards or WHS issues in the workplace to relevant personnel. Document risk control actions as required.				
LU3: **Follow emergency procedures at workplace**	**The trainee will be able to:** Report emergencies or incidents promptly to relevant personnel. Deal with emergencies in line with own level of responsibility. Implement evacuation procedures as required.		**Total** **Theory:** **Practical:**		Classroom Training workshop
LU4: **Participate in OHS consultative processes**	**The trainee will be able to:** Contribute to workplace meetings, inspections or other consultative activities. Raise OHS issues with designated persons in accordance with organizational procedures. Take actions to eliminate workplace hazards or to reduce risks.		**Total** **Theory:** **Practical:**		

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Module-2

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Module 2: Identify and Implement Workplace Policy and Procedures

Objective of the module: This module describes the skills and knowledge required to develop and implement a workplace policy & procedures and to modify the policy to suit changed circumstances. It applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces and engage with a range of relevant stakeholders and specialists.

.**Duration:** 20 hours **Theory:** 04 hours **Practical:** 16 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: **Identify workplace policy & procedures**	**The trainee will be able to:** Identify the workplace policy & procedures. Apply appropriate strategies that can be used to measure whether your workplace health and safety obligations are being met. Assure the policies are realistic and has the time, resources and personnel to implement. Implement the policy & procedures that reflects the organizations commitments. Ensure the appropriate methods of implementation, outcomes and	.	**Total** **Theory:** **Practical:**		Classroom Training workshop

	performance indicators.				
LU2: **Implement workplace policy & procedures**	**The trainee will be able to:** Apply and assign responsibility for recording systems to track continuous improvements in policy & procedures. Implement strategies for continuous improvement in effective and efficient information.		**Total** **Theory:** **Practical:**		Classroom Training workshop
LU3: **Communicate workplace policy & procedures**	**The trainee will be able to:** Communicate procedures to help implement workplace policy. Inform those involved in implementing the policy about expected outcomes, activities to be undertaken and assigned responsibilities.		**Total** **Theory:** **Practical:**		Classroom Training workshop
LU4: **Review the implementation of workplace policy & procedures**	**The trainee will be able to:** Identify the trends that may require remedial action. Record the trends that		**Total** **Theory:** **Practical:**		

	may require remedial action. Ensure policy and procedures are made for continuous improvement of performance.				

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Module-3

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Module 3: Communicate at Workplace

Objective of the module: This module describes the performance outcomes, skills and knowledge required to develop communication skills in the workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct supervision..

Duration: 30 hours **Theory:** 06 hours **Practical:** 24 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: **Communicate within the organization**	**The trainee will be able to:** Communicate within a department. Communication with other departments. Use various media to communicate effectively. Communicate orally and written.	.	**Total** **Theory:** **Practical:**		Classroom Training workshop
LU2: **Communicate outside the organization**	**The trainee will be able to:** Deal with vendors. Deal with clients/customers. Interact with other organisations. Use various media to communicate effectively. Work with people of different cultures / backgrounds.		**Total** **Theory:** **Practical:**		Classroom Training workshop
LU3:	**The trainee will be able to:**		**Total**		Classroom

Communicate effectively in workgroup	Assess the issues to provide relevant suggestion to group members. Resolve the issues/ problems /conflicts within the group. Arrange group working sessions to increase the level of participation in the group processes. Communicate messages to group members clearly to ensure interpretation is valid. Communicate style /manner to reflect professional standards/ awareness of appropriate cultural practices. Act upon constructive feedback.		**Theory:** **Practical:**		Training workshop
LU4: **Communicate in writing**	**The trainee will be able to:** Identify relevant procedures for written information. Use strategies to ensure correct communication in writing .i.e. • correct composition • clarity • comprehensiveness • accuracy • appropriateness Draft assigned written information for approval, ensuring it is written within designated timeframes. Ensure written information meets required standards of style, format and		**Total** **Theory:** **Practical:**		

	detail. Seek assistance / feedback to aid communication skills development.				

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Module-4
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Module 4: Perform Computer Application Skills

Objective of the module: This module describes the skills and knowledge required to use spreadsheet applications, prepare in page documents, develops familiarity with Word, Excel, Access, PowerPoint, email, and computer graphics basics.

It applies to individuals who perform a range of routine tasks in the workplace using a fundamental knowledge of spreadsheets, Microsoft office and computer graphics in under direct supervision or with limited responsibility.

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Duration: 40 hours **Theory:** 08 hours **Practical:** 32 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: **Prepare In-page documents as per required information**	**The trainee will be able to:** Set keyboard preferences according to information requirements. Layout Page according to information requirements. Toggle between Languages. Identify the usage of tool bar. Insert Columns as per requirement. Print the document.	.	**Total** **Theory:** **Practical:**		Classroom Training workshop

LU2: **Prepare Spreadsheets as per required information**	**The trainee will be able to:** Create workbook according to information requirements. Insert sheet according to information requirements. Enter basic formulae / functions using cell referencing when required. Correct formulas when error messages occur. Use a range of common tools during spreadsheet development. Edit columns and rows within the spreadsheet Filter data. Save the spreadsheet to a folder on a storage device. Format spreadsheet using formatting features as required. Incorporate object and chart in spreadsheet. Print spreadsheet.		**Total** **Theory:** **Practical:**		Classroom Training workshop

LU3: **Use MS Office as per required information**	**The trainee will be able to:** Use Microsoft Word for documentation. Use Microsoft Excel for documentation. Use Microsoft PowerPoint for presentation. Perform OneNote. Perform Outlook for emails. Perform Publisher applications.		**Total** **Theory:** **Practical:**		Classroom Training workshop
LU4: **Perform computer graphics in basic applications**	**The trainee will be able to:** Perform graphic fundamentals in basic applications. Draw points and lines to make images. Draw dots in space to make images. Draw lightening blot Shapes to make images. Enlarge circles and rectangles to block in forms.		**Total** **Theory:** **Practical:**		

LU5: **Create Email account for communications**	**The trainee will be able to:** Make email account for communications. Compose text of an email message according to organizational guidelines as required. Create an automatic signature for the user. Attach files to email message where required. Send email message. Reply to / forward a received message using available features. Save an attachment to the relevant folder. Save email message using available settings. Adjust email accounts to restrict and quarantine possible email security problems. Print email message as required.		**Total** **Theory:** **Practical:**		

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Module-5

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Module 5: Manage Personal Finances

Objective of the module: This module describes the outcomes required to develop, implement and monitor a personal budget in order to plan regular savings and manage debt effectively..

Duration: 30 hours **Theory:** 06 hours **Practical:** 24 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: **Develop a personal budget**	**The trainee will be able to:** Calculate current living expenses using available information to prepare a personal budget. Keep a record of all income and expenses for a short period of time to help estimate ongoing expenses. Subtract total expenses from total income to determine a surplus or deficit budget for the specified period. Find reasons for a deficit budget and ways to reduce expenditure identified. Identify ways to increase income.	.	**Total** **Theory:** **Practical:**		Classroom Training workshop
LU2:	**The trainee will be able**		**Total**	Pen/Pencils	Classroom

Develop long term personal budget	**to:** Analyze income and expenditure and set long term personal financial goals. Develop a long-term budget based on the outcomes of short-term budgeting. Identify obstacles that might affect the business. Formulate a regular savings plan based on budget.		**Theory:** **Practical:**		Training workshop
LU3: **Identify ways to maximize future finances**	**The trainee will be able to:** Determine sources to maximize personal income. Get further education or training to maintain or improve future income. Identify the need for debt to finance living and other expenses. Determine the appropriate levels of debt and repayment. Consolidate existing debt, where possible, to		**Total** **Theory:** **Practical:**		Classroom Training workshop

	minimize interest costs and fees. Seek professional money management services.				

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Module-6
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Module 6: 0716001041 Perform welding

Objective of the module: This module covers the specific skills and knowledge related to Spot-, Seam-, MIG and TIG-welding operations in automotive parts manufacturing industries, material handling and maintains machine and workplace.

Duration: 160 hours **Theory:** 32 hours **Practical:** 128 hrs

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1:Prepare for welding	**The trainee will be able to:** Arrange raw material as per part drawing or process sheet. Arrange consumable material. Arrange welding machine equipment as per specific job. Arrange welding jig and fixture according to the job.	Knowledge and importance of PPEs. (I.e. Protection sheet/ goggles, hand gloves, safety shoes, apron, ear plug/ muffler). Knowledge and explaining types of materials (carbon steel, stainless steel, aluminum, magnesium, copper, nickel, silicon bronze and other alloys). Explaining the function and purpose of welding accessories/ components[i.e. torch body (or handle), two separate gas tubes (through the handle connected to the hoses), separate control valves, mixer chamber, flame tube, welding tip]	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	Spot welding machine with accessories Seam welding machine with accessories TIG welding machine with accessories MIG welding machine with accessories PPEs Welding helmet Protective shield Gauntlet cuff gloves Welding apron Leather gloves	Class Room Training workshop.

				Chipping hammer Cross peen hammer Wire brush Wire cutter C-clamp Scriber Cooled chisel Channel lock pliers / Grip pliers Center punch CO2 Gas cylinder Argon Gas cylinder Gas cylinder regulator Sheet Gauges Bevel Protector Baby angle grinder Hand hacksaw Measuring tape Tri Square Set square Sprit level	

				Bench Vicewith bench Welding bench Welding gauge set First aid box	
LU2: **Prepare welding equipments and accessories**	**The trainee will be able to:** Select Electrodes for job, where applicable. Select specified welding machine. Select welding jig according to the job. Select require PPEs according to the specific job.	Knowledge about types of electrodes (i.e. Consumable Electrodes- Non-Consumable Electrodes). Calculation of electrical current with respect to sheet thickness. Setting of gas pressure as per provided material with respect to sheet thickness and its specification or parameters. Knowledge about types of welding machines (Spot Welders, Brazing/MIG Welders, Stud Welders etc.**)**	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	Spot welding machine with accessories Seam welding machine with accessories TIG welding machine with accessories MIG welding machine with accessories PPEs Welding helmet Protective shield Gauntlet cuff gloves Welding apron Leather gloves Chipping hammer Cross peen	Class Room Training workshop.

				hammer Wire brush Wire cutter C-clamp Scriber Cooled chisel Channel lock pliers / Grip pliers Center punch CO2 Gas cylinder Argon Gas cylinder Sheet Gauges Bevel Protector Baby angle grinder Hand hacksaw Measuring tape Tri Square Set square Sprit level Bench Vice with bench Welding bench Welding gauge	

				set First aid box	
LU3: **Perform spot welding operations**	**The trainee will be able to:** Set electrode tips. Set material on spot welding electrodes. Set ampere according to material. Set holding time. Proceed with operation.	Knowledge of interpreting drawing and welding symbols. Knowledge of explaining electrode tip calculation for spot welding with the help of general formula. Knowledge and explaining the relation between holding time with the technique of job and electrode space maintaining and current calculation for spot welding.	**Total** 30 hours **Theory:** 06 hours **Practical:** 24 hours	Spot welding machine with accessories PPEs Welding helmet Protective shield Gauntlet cuff gloves Welding apron Leather gloves Chipping hammer Cross peen hammer Wire brush Wire cutter C-clamp Scriber Cooled chisel Channel lock pliers / Grip pliers Center punch Sheet Gauges	Training workshop Relevant industry

				Bevel Protector Transformer Baby angle grinder Hand hacksaw Measuring tape Tri Square Set square Sprit level Bench Vicewith bench Welding bench Welding gauge set First aid box	
LU4: **Perform seam welding operations**	**The trainee will be able to:** Set roller electrode. Set job on seam welding rollers. Set ampere according to material. Set pressure and speed. Proceed with operation.	Knowledge of interpreting drawing and welding symbols. Knowledge of explaining roller electrode with adjustment of RPM and pressure for seam welding. Knowledge and explaining the relation between holding time with the technique of job and electrode space maintaining and current calculation for seam welding.	**Total** 30 hours **Theory:** 06 hours **Practical:** 24 hours	Seam welding machine with accessories PPEs Helmet Protective shield Gauntlet cuff gloves Welding apron Leather gloves	Training workshop Relevant industry

				Chipping hammer Cross peen hammer Wire brush Wire cutter C-clamp Scriber Cooled chisel Channel lock pliers / Grip pliers Center punch Sheet Gauges Bevel Protector Baby angle grinder Hand hacksaw Measuring tape Tri Square Set square Sprit level Bench Vicewith bench Welding bench Welding gauge set	

				First aid box	
LU5: **Perform MIG/TIG welding operations**	Select wire according to the job for MIG welding. Set welding machine as per job requirement. Adjust wire spool, speed and ampere. Adjust CO2 gas pressure as per requirement. Attach ground clamp with work piece. Proceed with operation. Select the electrode for TIG welding. Insert electrode into the cullet. Set welding machine as per job requirement. Set argon gas pressure. Proceed with operation.	Knowledge about types of gases to be used in TIG/MIG welding.(i.e. Argon, CO_2). Knowledge and understanding of electrode selection as per the job requirement. Knowledge and explaining the relation between holding time with the technique of job and electrode space maintaining and current calculation for MIG/TIG welding.	**Total** 50 hours **Theory:** 10 hours **Practical:** 40 hours	TIG welding machine with accessories MIG welding machine with accessories PPEs Welding helmet Protective shield Gauntlet cuff gloves Welding apron Leather gloves Chipping hammer Cross peen hammer Wire brush Wire cutter C-clamp Scriber Cooled chisel Channel lock pliers / Grip pliers Center punch	Training workshop Relevant industry

				CO2 Gas cylinder Argon Gas cylinder Sheet Gauges Bevel Protector Baby angle grinder Hand hacksaw Measuring tape Tri Square Set square Sprit level Bench Vicewith bench Welding bench Welding gauge set First aid box	
LU6: **Inspect final work**	**The trainee will be able to:** Perform visual inspection of defects. Perform destructive testing as per job requirement. Measure dimensions for	Knowledge and explaining welding inspection procedures with the help of provided drawing. Knowledge and understanding of welding symbols. Knowledge to make inspection report.	**Total** 10 hours **Theory:** 02 hours **Practical:**	PPEs Welding helmet Protective shield Gauntlet cuff gloves Welding apron Leather gloves	Training workshop Relevant industry

	compliance as per job requirements. Complete inspection report.		08 hours	Chipping hammer Cross peen hammer Wire brush Wire cutter C-clamp Scriber Cooled chisel Channel lock pliers / Grip pliers Center punch Sheet Gauges Bevel Protector Hand hacksaw Measuring tape Tri Square Set square Sprit level Bench Vice with bench Welding bench Welding gauge set First aid box	

LU7: **Perform work place cleaning and maintenance**	**The trainee will be able to:** Disconnect electric connection after completion of work. Disconnect gas connections. Clean machines, work station and floor. Apply anti-rust spray/cleaning agent. Maintain tools and equipment. Keep tools and equipment at appropriate place. Transfer wastage material into the wastage area Return excess material to store.	Knowledge and Understanding of maintain the tools and equipment. Knowledge and Understanding Keep tools and equipment at appropriate place. Knowledge and Understanding Apply anti-rust spray/cleaning agent. Knowledge and Understanding handling waste/excess material.	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Welding helmet Protective shield Gauntlet cuff gloves Welding apron Leather gloves Chipping hammer Cross peen hammer Wire brush Wire cutter C-clamp Scriber Cooled chisel Channel lock pliers / Grip pliers Center punch CO2 Gas cylinder Argon Gas cylinder Sheet Gauges Bevel Protector Baby angle grinder	Class Room Training workshop Relevant industry .

				Hand hacksaw Measuring tape Tri Square Set square Sprit level Bench Vicewith bench Welding bench Welding gauge set First aid box	

AUTOMOTIVE PARTS PRODUCTION MACHINE OPERATOR

Module-7

CBT Curriculum

National Vocational Certificate Level 3

Version 1 - November, 2019

Module 7: 0716001042 Apply thread rolling operation

Objective of the module: This module covers the specific skills and knowledge related to perform for thread rolling operation, material handling, formulation/construction, defects & remedies and maintains machine and workplace.

Duration: 100 hours **Theory:** 20 hours **Practical:** 80 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Prepare for thread rolling**	**The trainee will be able to:** Arrange material as per drawing or process sheet. Select tools and equipment. Set the machine as per job specification.	Knowledge of interpreting drawing or process sheet. Knowledge about types of material (i.e. Alloy Steel, Stainless Steel, Carbon Steel, Aluminum, Titanium, Copper Beryllium Copper, Brass etc.) Knowledge and Understanding how to select the tools and equipment. Knowledge and Understanding how to set machine as per job specification.	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Thread rolling machine Thread gauges different standards (ISO & BSI) Different types and size of dies Wrenches Allen-Keys Set Socket Set with handle Combination spanner set Brass Hammer Profile Projector Vernier caliper Micro meter Thread pitch gauge set (ISO & BSI	Classroom Training workshop.

				standard) Thread ring gauge set (ISO & BSI standard) First aid box	
LU2. **Conduct pre-operational checks on machine**	**The trainee will be able to:** Inspect all electrical connection. Check all mechanical fitting and joints. Check operation of emergency switches. Check and maintain correct coolant level. Check and maintain correct air pressure. Check and maintain proper lubrication. Change thread roller as per requirement. Insert material in vibrating bowl. Set the distance of tools according to the job. Check material easily shifting from vibrating bowl to slide.	Knowledge and Understanding how to check electrical connections Knowledge and Understanding how to check mechanical fitting and joints. Knowledge and Understanding how to check emergency switches. Knowledge and Understanding how to check machine lubricant, temperature, pressures and coolant. Knowledge and Understanding types of thread roller (i.e. In feed rolling (plunge, thru feed rolling). Knowledge and Understanding operation of machine. Knowledge and Understanding of tool setting.	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Thread rolling machine Thread gauges different standards (ISO & BSI) Different types and size of dies Wrenches Allen-Keys Set Socket Set with handle Combination spanner set Brass Hammer Profile Projector Vernier caliper Micro meter Thread pitch gauge set (ISO & BSI standard) Thread ring	Classroom Workshop. Relevant industries

				gauge set (ISO & BSI standard) First aid box	
LU3. **Prepare thread rolling die**	**The trainee will be able to:** Replace the thread roller. Check the die holder Hold the thread roller. Fasten the die by using appropriate tools and/or equipment. Set die alignment.	Understanding of how to lift roller. Understanding the method of roller clamping. Understanding of roller alignment. Understanding and importance of parameters setting. Knowledge and Understanding of trial of roller to verify the operation.	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Thread rolling machine Thread gauges different standards (ISO & BSI) Different types and size of dies Wrenches Allen-Keys Set Socket Set with handle Combination spanner set Brass Hammer Profile Projector Vernier caliper Micro meter Thread pitch gauge set (ISO & BSI standard) Thread ring gauge set (ISO & BSI standard)	Training workshop Relevant industry

				First aid box	
LU4. **Operate machine**	**The trainee will be able to:** Set all parameters. Proceed with operation. Monitor operation to ensure compliance with job requirements.	Knowledge and Understanding of speed and feed. Knowledge and Understanding thread rolling defects. Knowledge and Understanding machine selection. Understanding and importance of parameters setting. Knowledge and Understanding of thread rolling operation Knowledge of monitoring operation. Knowledge and Understanding of different parts of machine Knowledge and Understanding of types of threads. Knowledge and Understanding of fits and limits system. Knowledge and Understanding of thread standards. Knowledge and Understanding of material types. Knowledge and Understanding of types of threading (i.e. die/ roller) Knowledge and Understanding of threading techniques.	**Total** 35 hours **Theory:** 07 hours **Practical:** 28 hours	PPEs Thread rolling machine Thread gauges different standards (ISO & BSI) Different types and size of dies Wrenches Allen-Keys Set Socket Set with handle Combination spanner set Brass Hammer Profile Projector Vernier caliper Micro meter Thread pitch gauge set (ISO & BSI standard) Thread ring gauge set (ISO & BSI standard) First aid box	Training workshop Relevant industry

LU5. **Inspect final product**	**The trainee will be able to:** Perform visual inspection of defects. Check blank dia before cutting. Check the thread profile. Inspect with the thread gauge. Complete inspection report.	Knowledge and Understanding of visual inspection. Understanding how to Check final product dimensionally. Knowledge and Understanding how to check with the gauges. Knowledge and Understanding how to make inspection report.	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	Thread gauges different standards (ISO & BSI) Brass Hammer Profile Projector Vernier caliper Micro meter Thread pitch gauge set (ISO & BSI standard) Thread ring gauge set (ISO & BSI standard) First aid box	Training workshop Relevant industry
LU. 6 **Perform workplace cleaning and maintenance**	**The trainee will be able to:** Maintain all check sheets and work instruction on machine. Perform cleaning of die, machine and floor. Apply anti-rust spray/cleaning agent. Perform lubrication on slides and die. Maintain tools and	Knowledge and Understanding how to maintain all check sheets and work instructions of the machine. Knowledge and Understanding how to maintain tools and equipment. Knowledge and Understanding how to keep tools and equipment at their appropriate place. Knowledge and Understanding about lubricants and lubrication. Knowledge and Understanding how to	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Thread rolling machine Different types and size of dies Wrenches Allen-Keys Set Socket Set with handle Combination	Class Room Training workshop Relevant industry

	equipment. Keep tools and equipment at appropriate place. Transfer wastage material in to the wastage area. Return excess material to store.	perform cleaning of machine, mould/die and floor. Knowledge and Understanding how to apply anti-rust spray/cleaning agent. Knowledge and Understanding about handling waste/excess material.		spanner set Brass Hammer Profile Projector Vernier caliper Micro meter Thread pitch gauge set (ISO & BSI standard) Thread ring gauge set (ISO & BSI standard) First aid box	

AUTOMOTIVE PARTS PRODUCTION MACHINE OPERATOR

Module-8
CBT Curriculum
National Vocational Certificate Level 3

Version 1 - November, 2019

Module 8: 0716001043 Perform vacuum forming operation

Objective of the module: This module covers the specific skills and knowledge related to perform vacuum forming operation, material handling, formulation/construction, defects & remedies and maintains machine and workplace.

Duration: 100 hours **Theory:** 20 hours **Practical:** 80 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Prepare for vacuum forming**	**The trainee will be able to:** Arrange material as per drawing or process sheet. Select the tools and equipment. Set machine as per job specification.	Knowledge and Understanding how to arrange material as per drawing or process sheet. Knowledge and Understanding types of material (i.e. ABS, PP, PS, PC, AS etc.) Knowledge and Understanding of selecting of tools and equipment. Understanding of machine setting as per job specification.	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Vacuum forming machine Vacuum mould Checking fixture Eye bolts chains Shackles Fork lifter Hoist Wrenches Allen-Keys Socket set with handle Pliers set Screw driver set Brass hammer Digital clamp meter	Class Room Training workshop

				Testing table Measuring equipment Heater (For Vacuum forming Sheet) Raw material Knife Checking Fixture Measurement tape Vernier caliper First Aid box	
LU2. **Conduct pre-operational checks on machine**	**The trainee will be able to:** Inspect all electrical connection. Check all mechanical fitting and joints. Check operation of emergency switches. Check the pneumatic connections. Check pneumatic filters. Check vacuum pump pressure. Check and maintain	Knowledge and Understanding how to check electrical connections Knowledge and Understanding how to check mechanical fitting and joints. Knowledge and Understanding how to check emergency switches. Knowledge and Understanding how to check machine lubricant, temperature, pressures and coolant. Knowledge and Understanding of pneumatic system, connections and fittings. Knowledge and Understanding of Vacuum pump. Knowledge and Understanding of machine	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Vacuum forming machine Vacuum mould Checking fixture Wrenches Allen-Keys Socket set with handle Pliers set Screw driver set Brass hammer	Class Room Training workshop Relevant industry

	vacuum pump oil level. Check heater condition. Check shifting of bed gear system. Check and maintain correct hydraulic and lubrication oil levels.	operation. Knowledge and Understanding how to check heaters.		Digital clamp meter Testing table Measuring equipment Heater (For Vacuum forming Sheet) Knife Checking Fixture Measurement tape Vernier caliper First Aid box	
LU3. **Prepare vacuum mould**	**The trainee will be able to:** Lift mould with lifting equipment. Place the mould on the mould platen. Set mould alignment. Clamp mould with the help of bolts/ hydraulic clamps.	Knowledge and Understanding how to lift Mould. Knowledge and Understanding how to clamp Mould. Knowledge and Understanding how to check alignment of mould. Knowledge and Understanding trial of mold to verify the operation.	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Vacuum forming machine Vacuum mould Checking fixture Eye bolts chains Shackles Fork lifter Hoist Wrenches	Class Room Training workshop Relevant industry

				Allen-Keys Socket set with handle Pliers set Screw driver set Brass hammer Digital clamp meter Testing table Measuring equipment Heater (For Vacuum forming Sheet) Knife Checking Fixture Measurement tape Vernier caliper First Aid box	
LU4. **Operate machine**	**The trainee will be able to:** Set all parameters. Pull the sheet on mould. Set heater on defined temperature.	Knowledge and Understanding selection of machine as per job Knowledge and Understanding of machine setting and parameters setting Knowledge and Understanding of vacuum forming operation Knowledge and Understanding of	**Total** 35 hours **Theory:** 07 hours	PPEs Vacuum forming machine Vacuum mould Checking fixture	Class Room Training workshop Relevant industry

	Perform pre-heat the sheet on defined time. Proceed with operation. Monitor operation to ensure compliance with job requirements.	monitoring of operation. Knowledge and Understanding of vacuum moulding parts defects. Knowledge and Understanding of different parts of moulding machine. Knowledge of fits, limits, Hole and Shaft system.	**Practical:** 28 hours	Wrenches Allen-Keys Socket set with handle Pliers set Screw driver set Brass hammer Digital clamp meter Testing table Measuring equipment Heater (For Vacuum forming Sheet) Knife Checking Fixture Measurement tape Vernier caliper First Aid box	
LU5. **Inspect final product**	**The trainee will be able to:** Perform visual inspection of defects. Check dimensionally.	Knowledge and Understanding about visual inspection. Knowledge and Understanding how to Check dimensionally. Knowledge and Understanding how to check with the help of gauges / Checking	**Total** 10 hours **Theory:** 02 hours	PPEs Vacuum forming machine Vacuum mould	Class Room Training workshop Relevant industry

	Check part on checking fixture. Complete inspection report.	fixture.. Knowledge and Understanding how to make inspection report.	**Practical:** 08 hours	Checking fixture Testing table Measuring equipment Heater (For Vacuum forming Sheet) Knife Measurement tape Vernier caliper First Aid box	
LU6. **Perform workplace cleaning and maintenance**	**The trainee will be able to:** Maintain all check sheets and work instruction on machine. Maintain compressor lines. Maintain heaters connections. Perform cleaning of die, machine and floor. Perform lubrication on gears, slides and die. Apply anti rust spray/cleaning agent. Maintain tools and	Knowledge and Understanding how to Maintain all check sheets and work instructions of the machine. Knowledge and Understanding how to maintain the tools and equipment. Knowledge and Understanding how to maintain compressor lines. Knowledge and Understanding of heaters. Knowledge and Understanding how to keep tools and equipment at appropriate place. Knowledge and Understanding about lubricants and lubrication. Knowledge and Understanding how to Perform cleaning of machine, mould/die and floor. Knowledge and Understanding how to	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Vacuum forming machine Vacuum mould Checking fixture Eye bolts chains Shackles Fork lifter Hoist Wrenches Allen-Keys Socket set with	Class Room Training workshop Relevant industry

	equipment. Keep tools and equipment at appropriate place. Transfer wastage material in to the wastage area. Return excess material to store.	Apply anti-rust spray/cleaning agent Knowledge and Understanding how to handle waste/excess material.		handle Pliers set Screw driver set Brass hammer Digital clamp meter Testing table Measuring equipment Heater (For Vacuum forming Sheet) Knife Checking Fixture Measurement tape Vernier caliper First Aid box	

AUTOMOTIVE PARTS PRODUCTION MACHINE OPERATOR

Module-9
CBT Curriculum
National Vocational Certificate Level 3

Version 1 - November, 2019

Module 9: 0716001044 Perform pressing operation

Objective of the module: This module covers the specific skills and knowledge related to perform Pressing/stamping operations, material handling, and inspection techniques and maintain hydraulic, pneumatic and mechanical press machines and work place.

Duration: 150 hours **Theory:** 30 hours **Practical:** 120 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Prepare for pressing**	**The trainee will be able to:** Arrange material as per drawing or process sheet. Select tools and equipment. Select die. Set machine as per job specification.	Knowledge of interpreting drawing and symbols with its material specification. Knowledge types of stamping machines and tools. Knowledge to define uses and application of stamping machine with tools. Knowledge to explain stamping machine maintenance Knowledge to explain tools repair procedure Knowledge to explain lifting machines and its applications.	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Tool trolley Lifter Hoist Shackle Chain Mechanical press Hydraulic press (with Hydraulic Pump) Pneumatic press Press brake Repair manual Socket set with handle Socket Wrench Allen Key Set Screwdriver set	Class Room Training workshop

				Shop towel Needle nose pliers Impact screw driver Inspection lamp Hydraulic Jack Adjustable barrier guard Sheet metal dies (i.e Blanking, Bending, Piercing, Draw etc.) Checking fixture Combination spanner set Vernier caliper Micro meter Sheet gauge set Air Compressor First aid box	
LU2. Conduct pre-operational checks on machine	**The trainee will be able to:** Inspect all electrical connections. Check all mechanical fitting and joint. Check operation of	Knowledge and understanding of Inspection procedures for braking system (Mechanical, Hydraulic & Pneumatic) with its main components. Knowledge and Understanding how to check electrical connections. Knowledge and Understanding how to	**Total** 15 hours **Theory:** 03 hours	PPEs Tool trolley Lifter Hoist Shackle Chain	Class Room Training workshop Relevant industry

	emergency switches. Check friction brakes on mechanical press. Inspect master cylinder for external leaks and proper operation in hydraulic or pneumatic press. Inspect brake lines, hose pipes and fittings for dents, leaks, rust, crack and loose fittings. Ensure working of two hand operational button. Check and maintain correct brake fluid and hydraulic fluid level. Check all limit switches.	check mechanical fitting and joints. Knowledge and Understanding cylinder leakages. Knowledge and Understanding to inspect brake lines, hose pipes and loose fittings. Knowledge and Understanding how to check emergency switches. Knowledge and Understanding how to check machine lubricant, temperature, pressures and coolant. Knowledge and Understanding of pneumatic system, connections and fittings.	**Practical:** 12 hours	Mechanical press Hydraulic press (with Hydraulic Pump) Pneumatic press Press brake Repair manual Socket set with handle Socket Wrench Allen Key Set Screwdriver set Shop towel Needle nose pliers Impact screw driver Inspection lamp Hydraulic Jack Adjustable barrier guard Sheet metal dies (i.e Blanking, Bending, Piercing, Draw etc.) Checking fixture Combination spanner set	

				Vernier caliper Micro meter Sheet gauge set Air Compressor First aid box	
LU3. Prepare die	**The trainee will be able to:** Lift the die with lifting equipment. Set die alignment. Clamp the die on press with bolts/ hydraulic clamps.	Knowledge and Understanding about how to lift die. Knowledge and Understanding about alignment of die. Knowledge and Understanding about die clamping. .	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Tool trolley Lifter Hoist Shackle Chain Mechanical press Hydraulic press (with Hydraulic Pump) Pneumatic press Press brake Repair manual Socket setwith handle Socket Wrench Allen Key Set Screwdriver set Shop towel	Class Room Training workshop Relevant industry

				Needle nose pliers Impact screw driver Inspection lamp Hydraulic Jack Adjustable barrier guard Sheet metal dies (i.e Blanking, Bending, Piercing, Draw etc.) Checking fixture Combination spanner set Vernier caliper Micro meter Sheet gauge set Air Compressor First aid box	
LU4. **Operate mechanical press machine**	**The trainee will be able to:** Load die-set. Set all parameters. Fasten the bolts of ram. Proceed with operation. Monitor operation to	Knowledge and understanding of main components of mechanical press machine. Knowledge and understanding how to set parameters Knowledge and understanding how to clamp die Understanding function of each	**Total** 30 hours **Theory:** 06 hours **Practical:**	PPEs Tool trolley Lifter Hoist Shackle Chain Mechanical press	Training workshop Relevant industry

	ensure compliance with job requirements.	component. Knowledge and understanding about how to monitor operation.	24 hours	Hydraulic press (with Hydraulic Pump) Pneumatic press Press brake Repair manual Socket setwith handle Socket Wrench Allen Key Set Screwdriver set Shop towel Needle nose pliers Impact screw driver Inspection lamp Hydraulic Jack Adjustable barrier guard Sheet metal dies (i.e Blanking, Bending, Piercing, Draw etc.) Checking fixture Combination spanner set Vernier caliper	

				Micro meter Sheet gauge set Air Compressor First aid box	
LU5. Operate hydraulic press machine	Load die-set. Set all parameters. Fasten the bolts of ram. Proceed with operation. Monitor operation to ensure compliance with job requirements.	Knowledge and understanding of main components of hydraulic press machine. Knowledge and understanding how to set parameters. Knowledge and understanding how to clamp die. Understanding function of each component. Knowledge and understanding about how to monitor operation.	**Total** 30 hours **Theory:** 06 hours **Practical:** 24 hours	PPEs Tool trolley Lifter Hoist Shackle Chain Mechanical press Hydraulic press (with Hydraulic Pump) Pneumatic press Press brake Repair manual Socket set with handle Socket Wrench Allen Key Set Screwdriver set Shop towel Needle nose pliers	Training workshop Relevant industry

				Impact screw driver Inspection lamp Hydraulic Jack Adjustable barrier guard Sheet metal dies (i.e Blanking, Bending, Piercing, Draw etc.) Checking fixture Combination spanner set Vernier caliper Micro meter Sheet gauge set Air Compressor First aid box	
LU6. **Operate pneumatic press machine**	**The trainee will be able to:** Load die-set. Set all parameters. Fasten the bolts of ram. Proceed with operation. Monitor operation to	Knowledge and understanding of main components of pneumatic press machine. Understanding of function of each component Knowledge and understanding how to set parameters. Knowledge and understanding how to clamp die. Knowledge and understanding about how	**Total** 25 hours **Theory:** 05 hours **Practical:** 20 hours	PPEs Tool trolley Lifter Hoist Shackle Chain Mechanical press Hydraulic press	Training workshop Relevant industry

	ensure compliance with job requirements.	to monitor operation.		(with Hydraulic Pump) Pneumatic press Press brake Repair manual Socket setwith handle Socket Wrench Allen Key Set Screwdriver set Shop towel Needle nose pliers Impact screw driver Inspection lamp Hydraulic Jack Adjustable barrier guard Sheet metal dies (i.e Blanking, Bending, Piercing, Draw etc.) Checking fixture Combination spanner set Vernier caliper	

				Micro meter Sheet gauge set Air Compressor First aid box	
LU7. **Inspect final product**	**The trainee will be able to:** Perform visual inspection of defects. Check dimensionally. Check fitment on checking fixture. Complete inspection report.	Knowledge and understanding of visual inspection. Understanding how to use measuring equipments (i.e. Vernier caliper, micro meter, sheet gauge, measuring tape etc.) Understanding about limits and fit System (Hole & shaft system). Knowledge and understanding how to make inspection report.	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Repair manual Inspection lamp Checking fixture Vernier caliper Micro meter Sheet gauge set First aid box	Training workshop Relevant industry
LU8. **Perform workplace cleaning and maintenance**	**The trainee will be able to:** Maintain all check sheets and work instruction on machine. Perform cleaning of die, machine and floor. Apply Anti-rust spray/Cleaning agent. Perform lubrication on slides and die	Knowledge and understanding about work instructions and check sheet. Knowledge and understanding about how to maintain tools and equipment. Knowledge and Understanding how to keep tools and equipment at appropriate place. Knowledge and Understanding about lubricant and lubrication. Knowledge and Understanding how to Perform cleaning of machine, mould/die	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Tool trolley Lifter Hoist Shackle Chain Mechanical press Hydraulic press (with Hydraulic Pump)	Class Room Training workshop Relevant industry

				Micro meter Sheet gauge set Air Compressor First aid box	
LU7. **Inspect final product**	**The trainee will be able to:** Perform visual inspection of defects. Check dimensionally. Check fitment on checking fixture. Complete inspection report.	Knowledge and understanding of visual inspection. Understanding how to use measuring equipments (i.e. Vernier caliper, micro meter, sheet gauge, measuring tape etc.) Understanding about limits and fit System (Hole & shaft system). Knowledge and understanding how to make inspection report.	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Repair manual Inspection lamp Checking fixture Vernier caliper Micro meter Sheet gauge set First aid box	Training workshop Relevant industry
LU8. **Perform workplace cleaning and maintenance**	**The trainee will be able to:** Maintain all check sheets and work instruction on machine. Perform cleaning of die, machine and floor. Apply Anti-rust spray/Cleaning agent. Perform lubrication on slides and die Maintain tools and	Knowledge and understanding about work instructions and check sheet. Knowledge and understanding about how to maintain tools and equipment. Knowledge and Understanding how to keep tools and equipment at appropriate place. Knowledge and Understanding about lubricant and lubrication. Knowledge and Understanding how to Perform cleaning of machine, mould/die and floor. Knowledge and Understanding how to	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Tool trolley Lifter Hoist Shackle Chain Mechanical press Hydraulic press (with Hydraulic Pump) Pneumatic press Press brake Repair manual Socket set with	Class Room Training workshop Relevant industry

	equipment. Keep tools and equipment at appropriate place. Transfer wastage material in to the wastage area. Return excess material to store.	Apply anti-rust spray/cleaning agent. Knowledge and Understanding how to handle waste/excess material.		handle Socket Wrench Allen Key Set Screwdriver set Shop towel Needle nose pliers Impact screw driver Inspection lamp Hydraulic Jack Adjustable barrier guard Sheet metal dies (i.e Blanking, Bending, Piercing, Draw etc.) Checking fixture Combination spanner set Vernier caliper Micro meter Sheet gauge set Air Compressor First aid box	

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AUTOMOTIVE PARTS PRODUCTION MACHINE OPERATOR

Module-10
CBT Curriculum
National Vocational Certificate Level 3

Version 1 - November, 2019

Module 10: 0716001045 Perform periodic operator maintenance

Objective of the module: This module covers the specific skills and knowledge related to work on periodic maintenance, making the workplace free from hazards and capable to report and record the maintenance activity performed on the machine and workplace.

Duration: 90 hours **Theory:** 18 hours **Practical:** 72 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Prepare for maintenance**	**The trainee will be able to:** Arrange the recommended machine oil and oil filter. Arrange the recommended hydraulic seals and fluid. Arrange the recommended hydraulic hose and clamps. Arrange recommended bearings. Arrange the recommended pneumatic hose and couplers. Arrange the	Understanding the types and importance of machine oil grades, and oil filter defined as per standard. Ensure that Compatibility of seal is decided upon the particular operating medium or restraints due to pressure, fluid type, temperature Understanding and ensure that properly fastening of hydraulic pipe, tube and hose clamp in a place as per standard define. Understanding and ensure that inner and outer size of bearing would specify (i.e. ball bearing, roll bearing, tapper or plane bearing etc.) Understanding and ensure that coupling and fitting for pneumatic hose size as per gauge requirement and standard define. Understanding and ensure that	**Total:** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Machine oil (Different grades) Grease Machine service manual Fusses Relays Switches Pneumatic hoses Hydraulic hoses Couplers Hydraulic joints Adjustable Spanner Pipe Wrench Combination Spanner Set Socket Set with handle Torque Wrench Screw Driver Set	Class Room Training workshop

	recommended relays, fuses, Sensors, switches and circuit breakers. Arrange the machine cleaning agents and cotton rag. Select the repairing tools and equipment. Arrange the recommended floor marking and machine colours.	switches, relays, sensor and Circuit breaker use as per voltage and current define by manufacturer. Understanding how to obtain cleaning agents WD-40, degreaser, rough cotton etc. Understanding how to actively repair machine with the help of appropriate tools and equipment. Understanding and ensure red and white color use to mark the floor in front of electrical panels and hazardous areas.		Allen Key Set Tool Box/trolley Circuit breakers Ladder Manual Lifter Safety Harness Belt Measurement Tape Sprit Level Vernier Caliper Plier Set Digital clamp meter Wire Stripper Wire crimper Blower Tongue & groove plier Hand hacksaw Hammer Mallet (Soft Hammer) Flash light Anti-rust spray (WD40) Bench wise with bench Hand grinder Hand drill	

				Drill bits Impact screw driver Utility knife Marking tape Retractable safety barrier with post First aid box Bearing puller	
LU2. **Isolate and shut down equipment and machine**	**The trainee will be able to:** Clean the workplace and identify the faulty components. Identify and eliminate hazards at workplace . Change the oil and oil filter under specified procedure. Replace the hydraulic oil, seals and hoses. Replace the pneumatic hoses and coupler. Replace the recommended relay, sensors, fuses and circuit breakers. Paint the recommended floor	Understanding and Identify the faulty part and components and do work within the 5S standard procedure. Knowledge and understanding of hazards on workplace and remove it. Knowledge and understanding of changing machine oil that would be specified by its manufacturer, as well as oil filter. Knowledge and understanding of changing hydraulic pipe, tube and hose clamp in a place as per standard define. Knowledge and understanding how to change Pneumatic hose and coupler. Knowledge and understanding how to change the fuses, relays, circuit breaker. Knowledge and understanding of floor paint marking near machine with different color.	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Machine oil (Different grades) Grease Machine service manual Fusses Relays Switches Pneumatic hoses Hydraulic hoses Couplers Hydraulic joints Adjustable Spanner Pipe Wrench Combination Spanner Set	Class Room Training workshop Relevant industry

	marking and machine floor area.			Socket Set with handle Torque Wrench Screw Driver Set Allen Key Set Tool Box/trolley Circuit breakers Ladder Manual Lifter Safety Harness Belt Measurement Tape Sprit Level Vernier Caliper Plier Set Digital clamp meter Wire Stripper Wire crimper Blower Tongue & groove plier Hand hacksaw Hammer Mallet (Soft Hammer) Flash light Anti-rust spray (WD40)	

				Bench wise with bench Hand grinder Hand drill Drill bits Impact screw driver Utility knife Marking tape Retractable safety barrier with post First aid box Bearing puller	
LU3. **Inspect equipment and machine**	**The trainee will be able to:** Operate the machine and verify all functions. Inspect the leakage in hydraulic system. Inspect the leakage in pneumatic hoses with soap water. Inspect and verify the correct installation, working of electronics parts. Check the dryness of paint on floor.	Knowledge and understanding how to actively operate machine and confirm all its function working properly. Knowledge and understanding how to keep ensure that there are no leakages of oil in hydraulic machine. Knowledge and understanding how to keep and ensure that no air leakage in pneumatic system with help of soap bubbles. Knowledge and understanding how to keep and ensure that supply voltage of all electronics components would be working correctly. Knowledge and understanding how to keep and ensure that no one would move on floor marking paint until its dry.	**Total** 15 hours **Theory:** 03 hours **Practical:** 12 hours	PPEs Machine oil (Different grades) Grease Machine service manual Fusses Relays Switches Pneumatic hoses Hydraulic hoses Couplers Hydraulic joints	Class Room Training workshop Relevant industry

				Adjustable Spanner Pipe Wrench Combination Spanner Set Socket Set with handle Torque Wrench Screw Driver Set Allen Key Set Tool Box/trolley Circuit breakers Ladder Manual Lifter Safety Harness Belt Measurement Tape Sprit Level Vernier Caliper Plier Set Digital clamp meter Wire Stripper Wire crimper Blower Tongue & groove plier Hand hacksaw Hammer	

				Mallet (Soft Hammer) Flash light Anti-rust spray (WD40) Bench wise with bench Hand grinder Hand drill Drill bits Impact screw driver Utility knife Marking tape Retractable safety barrier with post First aid box Bearing puller	
LU4. **Conduct preventive maintenance**	**The trainee will be able to:** Follow preventive maintenance chart and update according time period. Identify and eliminate the minor hazards.	Knowledge and understanding how to obtain information from preventive maintenance chart of working equipment regularly in order to minimize disaster. Knowledge and understanding of small hazards and reduce by following working standard define.	**Total** 30 hours **Theory:** 06 hours **Practical:** 24 hours	PPEs Machine oil (Different grades) Grease Machine service manual Fusses Relays Switches Pneumatic hoses	Class Room Training workshop Relevant industry

				Hydraulic hoses Couplers Hydraulic joints Adjustable Spanner Pipe Wrench Combination Spanner Set Socket Set with handle Torque Wrench Screw Driver Set Allen Key Set Tool Box/trolley Circuit breakers Ladder Manual Lifter Safety Harness Belt Measurement Tape Sprit Level Vernier Caliper Plier Set Digital clamp meter Wire Stripper Wire crimper Blower	

				Tongue & groove plier Hand hacksaw Hammer Mallet (Soft Hammer) Flash light Anti-rust spray (WD40) Bench wise with bench Hand grinder Hand drill Drill bits Impact screw driver Utility knife Marking tape Retractable safety barrier with post First aid box Bearing puller	
LU5. **Report faults**	**The trainee will be able to:** Create job card as per the machine faults. Coordinate with maintenance/service department for further necessary action.	Knowledge and understanding, detailed description of work that are going to performed for work order. Knowledge and understanding of service and maintenance section for advance action. Knowledge and understanding of further examination in order to perform	**Total** 10 hours **Theory:** 02 hours **Practical:** 08 hours	PPEs Machine oil (Different grades) Grease Machine service manual Fusses	Class Room Training workshop

	Follow up for the repair/maintenance performed.	maintenance.		Relays Switches Pneumatic hoses Hydraulic hoses Couplers Hydraulic joints Adjustable Spanner Pipe Wrench Combination Spanner Set Socket Set with handle Torque Wrench Screw Driver Set Allen Key Set Tool Box/trolley Circuit breakers Ladder Manual Lifter Safety Harness Belt Measurement Tape Sprit Level Vernier Caliper Plier Set Digital clamp meter	

				Wire Stripper Wire crimper Blower Tongue & groove plier Hand hacksaw Hammer Mallet (Soft Hammer) Flash light Anti-rust spray (WD40) Bench wise with bench Hand grinder Hand drill Drill bits Impact screw driver Utility knife Marking tape Retractable safety barrier with post First aid box Bearing puller	
LU6. **Record Maintenance**	**The trainee will be able to:** Maintain log book. Record the	Knowledge and understanding how to keep your record organize for help in future. Knowledge and understanding how to maintaining record for consumable	**Total** 10 hours **Theory:**	PPEs Machine oil (Different grades)	Class Room

	consumable and spare parts used. Prepare comprehensive report.	items and spare parts Knowledge and understanding how to keep maintaining complete maintenance expenses records.	02 hours **Practical:** 08 hours	Grease Machine service manual Fusses Relays Switches Pneumatic hoses Hydraulic hoses Couplers Hydraulic joints Adjustable Spanner Pipe Wrench Combination Spanner Set Socket Set with handle Torque Wrench Screw Driver Set Allen Key Set Tool Box/trolley Circuit breakers Ladder Manual Lifter Safety Harness Belt Measurement Tape Sprit Level	

				Vernier Caliper Plier Set Digital clamp meter Wire Stripper Wire crimper Blower Tongue & groove plier Hand hacksaw Hammer Mallet (Soft Hammer) Flash light Anti-rust spray (WD40) Bench wise with bench Hand grinder Hand drill Drill bits Impact screw driver Utility knife Marking tape Retractable safety barrier with post First aid box Bearing puller	

General assessment guidance for “Automotive Parts Production Machine Operator” Level-3

Good practice in Pakistan makes use of sessional and final assessments, the basis of which is described below. Good practice by vocational training providers in Pakistan is to use a combination of these sessional and final assessments, combined to produce the final qualification result.

Sessional assessment is going on all the time. Its purpose is to provide feedback on what students are learning:

- To the student: to identify achievement and areas for further work
- To the teacher: to evaluate the effectiveness of teaching to date, and to focus future plans.

Assessors need to devise sessional assessments for both theoretical and practical work. Guidance is provided in the assessment strategy

Final assessment is the assessment, usually on completion of a course or module, which says whether or not the student has "passed". It is – or should be – undertaken with reference to all the objectives or outcomes of the course, and is usually fairly formal. Considerations of security – ensuring that the student who gets the credit is the person who did the work – assume considerable importance in final assessment and declared after performance based assessment at the each module as “Competent” or “Not Yet Competent”

Methods of assessment

For lessons with a high quantity of theory, written or oral tests related to learning outcomes and/ or learning content can be conducted. For workplace lessons, assessment can focus on the quality of planning the related process, the quality of executing the process, the quality of the product and/or evaluation of the process.

Methods include direct assessment, which is the most desirable form of assessment. For this method, evidence is obtained by direct observation of the student’s performance.

Examples for direct assessment of Automotive Parts Production Machine Operator Level-3 include:

- Work performances, for example perform welding, thread rolling operations, vacuum forming operations, pressing operations, periodic operator maintenance on required parameters, or preparing workstation for performing the job.
- Demonstrations, for example demonstrating the tools and equipment requires for welding, thread rolling operations, vacuum forming operations, pressing operations and periodic operator maintenance, according to the given spec sheet.
- Direct questioning, where the assessor would ask the student why he is finishing in a certain way, or how the student will find out about the current and future requirements for the automotive product and at sales outlets.

- Paper-based tests, such as multiple choice or short answer questions on process of production required to produce automotive parts on specific machines, preparing the work station for developing productive working relationships with associates.

Indirect assessment is the method used where the performance could not be watched and evidence is gained indirectly.

Examples for indirect assessment of an automotive parts production machine operator Level-3 include:

- Work products, such as a photo or sample of automotive product made by trainee are present at portfolio.
- Workplace documents, such as a diary of daily working that has been ready for finishing or packing.

Indirect assessment should only be a second choice. (In some cases, it may not even be guaranteed that the work products were produced by the person being assessed.)

Principles of assessment

All assessments should be valid, reliable, fair and flexible:

Fairness means that there should be no advantages or disadvantages for any assessed person. For example, it should not happen that one student gets prior information about the type of work performance that will be assessed, while another candidate does not get any prior information.

Validity means that a valid assessment assesses what it claims to assess. For example, if welding, thread rolling skills are to be assessed and certificated, the assessment should involve performance criteria that are directly related to that welding, thread rolling activities. An interview about the types of the welding, thread rolling processes on different welding and thread rolling machine would not meet the performance criteria.

Reliability means that the assessment is consistent and reproducible. For example, if the work performance of welding and final inspection has been assessed, another assessor (e.g. the future employer) should be able to see the same work performance and witness the same level of achievement.

Flexibility means that the assessor has to be flexible concerning the assessment approach. For example, if there is a power failure during the assessment, the assessor should modify the arrangements to accommodate the students' needs.

Assessment strategy for the “Automotive Parts Production Machine Operator” Level-3 Curriculum

This curriculum consists of 10 modules:

Module 1: Apply Work Health and Safety Practices (WHS)

Module 2: Identify and Implement Workplace Policy and Procedures

Module 3: Communicate at Workplace

Module 4: Perform Computer Application Skills

Module 5: Manage Personal Finances

Module 6: Perform welding

Module 7: Apply thread rolling operation

Module 8: Perform vacuum Forming operations

Module 9: Perform pressing operations

Module 10: Perform periodic operator maintenance

Sessional assessment

The sessional assessment for all modules shall be in two parts: theoretical assessment and practical assessment. The sessional marks shall contribute to the final qualification.

Theoretical assessment for all learning modules must consist of a written paper lasting at least one hour per module. This can be a combination of multiple choice and short answer questions.

For practical assessment, all procedures and methods for the modules must be assessed on a sessional basis. Guidance is provided below under Planning for assessment.

Final assessment

Final assessment shall be in two parts: theoretical assessment and practical assessment. The final assessment marks shall contribute to the final qualification.

The final theoretical assessment shall consist of one 3-hour paper. The paper shall consist of half multiple choice and half short-answer questions. This part shall cover the following modules:

Module 6: Perform welding

Module 7: Apply thread rolling operation

Module 8: Perform vacuum Forming operations

Module 9: Perform pressing operations

Module 10: Perform periodic operator maintenance

For the final practical assessment, each student shall be assessed over a period of two days, with two 3-hour sessions on each day. This represents a total of four sessions totaling 12 hours of practical assessment for each student. During this period, each student must be assessed on his/her ability to complete task as per given in assessment package as trained in different modules (Module 6 to Module 10) of the course.

Module 1-5: Apply Work Health and Safety Practices (WHS), Identify and Implement Workplace Policy and Procedures, Communicate at Workplace, Perform Computer Application Skills, Manage Personal Finances not be assessed separately, but must be assessed during each of the practical sessions.

The assessment team

The number of assessors must meet the needs of the students and the training provider. For example, where two assessors are conducting the assessment, there must be a maximum of five students per assessor. In this example, a group of 20 students shall therefore require assessments to be carried out over a four-day period. For a group of only 10 students, assessments would be carried out over a two-day period only.

Planning for assessment

Sessional assessment: assessors need to plan in advance how they will conduct sessional assessments for each module. The tables on the following pages are for assessors to use to insert how many hours of theoretical and practical assessment will be conducted and what the scheduled dates are.

Final assessment: Training providers need to decide ways to combine modules into a cohesive two-day final assessment program for each group of five students. Training providers must agree the tasks for practical assessments in advance.

Complete list of machines. (20 trainees for whole course)

Sr#	Description	Quantity
01.	Spot welding machine	5
02.	Seam welding machine	5
03.	MIG/TIG welding machine	5
04.	Thread Rolling machine	5
05.	Sheet shearing machine	2
06.	Different types and size of dies	5
07.	Mechanical press machine	5
08.	Hydraulic press machine	5
09.	Pneumatic press machine	5
10.	Air compressor	2
11.	Water chiller	2
12.	Cooling tower	2
13.	Vacuum forming machine	5

Complete list of tools and equipment. (20 trainees for whole course)

Sr#	Description	Quantity
01.	Helmet, Goggles, Gloves, Dungaree, Protective Shoes, face masks	20
02.	Fire safety equipments	5
03.	Fire extinguisher, sand buckets, blankets	5 each
04.	First aid box	3
5.	Protective guards (walk way barriers, welding apron,) gauges, leather gloves	20
06.	Tool kit (Ring spanner, open end spanner, retched handle, hammer, socket set, chisel, mallet, torque wrench, clamp)	20
07.	Measuring tools/inspection gauges (Vernier caliper , micrometer mm, Thread gauge, radius gauge, ring gauge, plug gauge, height gauge, bevel protector, measuring tape, ruler, dial indicator with stand, Profile projector)	20
08.	Repair manual.	3
09.	Small socket set	20
10.	Screwdriver set	20
11.	Shop towel	20
12.	Needle nose pliers	20
13.	Impact screw driver	20
14.	Inspection lamp.	5
15.	Hydraulic jack	3
16.	Adjustable barrier guard	5
17.	Sheet metal dies	5
18.	Vacuum mold	5
19.	Thread rolling dies	2 Each of every standard
20.	Lubrication Spray Gun	5
21.	Allen Bolts 4mm-24mm	2 set each
22.	Temperature Gun	5
23.	Manifolds	5

24.	Tee bolt	20 according to machine
25.	Chipping hammer	20
26.	Cross pein hammer	20
27.	Wire brush	20
28.	Wire cutter	20
29.	C-clamp	20
30.	Scriber	20
31.	Cooled chisel	20
32.	Channel lock pliers / Grip pliers	20
33.	Center punch	20
34.	Bevel protector	20
35.	Hand hacksaw	20
36.	Measuring tape	20
37.	Tri Square	20
38.	Set square	20
39.	Sprit level	20
40.	Bench Vice	20
41.	Chipping hammer	20
42.	Lifting equipments (Manual lifter, tool trolley, overhead crane, shackle, I bolt, sling wire, chain, Hoist, Hoist stand)	5 according to machine
43.	Digital clamp meter	5
44.	Machine oil (Different grades)	3 drums
45.	Grease	100 kg
46.	Rib peeling cutting blades	20
47.	Upsetting chaser	20
48.	Parallel chaser	20
49.	Coupler	20
50.	Metal band saw machine	2
51.	Adjustable coupler	5
52.	Standard coupler	5

53.	Row Material (Aluminum, Mild Steel , Stainless Steel Shafts)	500 kg
54.	Lubrication oil	3 drums
55.	Clamp frame Handle	20 as per machine requirement
56.	Toggle clamps	20 as per machine requirement
57.	White/Black board	2
58.	Flap chart board (Different size)	2
59.	Geometrical tools	5
60.	PC, Multimedia (Latest)/ LCD(Smart TV), Internet.	2 each
61.	Telephone and cell phones	2
62.	Organization SOPs	-
63.	Equipment Maintenance Manuals	-
64.	High temperature grease	100 kg
65.	Welding holder	20

Complete list of Consumables. (20 trainees for whole course)

Sr#	Description	Quantity
01.	Log Book	-
02.	Handbooks	-
03.	Design Books/ Sheets	-
04.	Pencils	-
05.	Erasers	-
06.	Pencil Sharpeners	-
07.	Paper Cutter	-
08.	Nylon thread	20
09.	Circuit breakers	20
10.	Fusses	20
11.	Relays	20
12.	Switches	20
13.	Pneumatic hoses	20
14.	Hydraulic hoses	20
15.	Couplers	20
16.	Hydraulic joints	20
17.	Machine oil (Different grades)	2 drum
18.	Hydraulic oil	2 drum
19.	Gear oil	2 drum
20.	Grease	100 kg
21.	Roller bearings	5 each
22.	Shutter pulley	5
23.	Bins	30 p-3
24.	Gas kits	2 sets of each machine
25.	Jubilee clip	20 each sizes
26.	Hydraulic seals	2 sets of each

		machine
27.	Damar tape	20
28.	Insulating tape	20
29.	Teflon tape	20
30.	Plastic resin (PP, HIPS , PE, ABS, pinseal ABS, ABS Carbon effect, PETG,PC,NOYL Etc)	5 rolls of each
31.	Contact cleaner	20
32.	Pipe pneumatic different sizes	2 of each set
33.	Pneumatic nozzle and connector	10 of each size
34.	Anti-rust spray	20
35.	Round bar raw material (MS, low carbon steel, High carbon steel, aluminium)	500 Kg
36.	Copper (for Spot welding electrode tip)	50 Kg
37.	Mild Steel and Aluminum Shaft in different dia meters	5 Bags of each
38.	Aluminum blocks of different grades	500 Kg
39.	Cleaning beads	200 Kg
40.	Pressure Gauges	10 Kg
41.	Hydraulic Gauge	10 according to machine
42.	Hot rolled and Cold rolled Sheets	50 sheets of different sizes
43.	Co2 Welding Coil	10 (dia according to tip and machine
44.	Argon Welding Torch	10
45.	Argon Welding Filler rod (SKD 61 and SKD 11)	100 of each
46.	CO2 Welding torch	20 of each
47.	Grinding Disks	100 of each
48.	Cutting Disks	100 of each
49.	Welding rods different grades according to the job	100 of each
50.	Heater guard	20
51.	Steel band strips	20
52.	Wire mash filters	5 of each

		(according to machine)
53.	Slap Stick Lubricants	
54.	Thermocouples with guard	10 of each (According to machine)
55.	High temp oil	1 drum
56.	Copper spray	10
57.	Control buttons	40 according to machine
58.	Vacuum gauge	10 according to machine
59.	Heater handle	10 according to heaters
60.	Heater transit lock	40 according
61.	Heaters (I Type , U Type, Ceramic) according to the machine	20 each according to machine
62.	Thermocouples	40 according to machine
63.	Temperature controllers	40 according to machine
64.	Compressor oil	1 drum
65.	Clamp set	20 as per machine
66.	Vacuum oil	3 drum
67.	Gas kits	2 of each (according to machine)
68.	Hydraulic seals	2 of each (according to machine)

69.	Pneumatic seals	2 of each (according to machine)
70.	O Ring set	2 of each (according to machine)
71.	Hydraulic Clamps	20 as per machine
72.	Depoxy	10
73.	Pattern paste	10 kg
74.	Connectors (PVC, Ceramic, Jacks) according to the machine	40 (according to the machine)
75.	Trimming knife	20
76.	Bulbs (For Pin Hole Inspection)	5
77.	Thermocouples	20 as per machine
78.	Temperature controllers	20 as per machine
79.	Heater Insulation coil	10 as per machine

Credit values

The credit value of the National Certificate Level 3 in Automotive Parts Production Machine Operator is defined by estimating the amount of time/ instruction hours required to complete each competency unit and competency standard. The NVQF uses a standard credit value of 1 credit = 10 hours of learning (Following Higher Education Commission (HEC) guidelines.

The credit values are as follows:

Competency Standard	Estimate of hours	Credit
Module 1: Apply Work Health and Safety Practices (WHS)	30	03
Module 2: Identify and Implement Workplace Policy and Procedures	20	02
Module 3: Communicate at Workplace	30	03
Module 4: Perform Computer Application Skills	40	04
Module 5: Manage Personal Finances	30	03
Module 6: Perform welding	160	16
Module 7: Apply thread rolling operation	100	10
Module 8: Perform vacuum Forming operations	100	10
Module 9: Perform pressing operations	150	15
Module 10: Perform periodic operator maintenance	90	09

National Vocational and Technical Training Commission (NAVTTC)

Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan
+92 51 9044 322
+92 51 9044 322
info@navttc.org
www.navttc.org