



Australian Government

Department of Education, Employment and Workplace Relations

ICPPR431C Set up for complex lithographic printing

Revision Number: 1

ICPPR431C Set up for complex lithographic printing

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to set up for complex lithographic printing.
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Application of the Unit

Application of the unit	This unit requires the individual to evaluate set up options and then set up either wide or narrow reel or sheet-fed lithographic printing machines for non-routine print jobs. The individual will conduct proof run and adjust settings to ensure production speeds are attained in minimum time with minimum wastage.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm complex job specifications	1.1. Job requirements are read and interpreted from job documentation or production control system 1.2. Non-routine set up is planned and carried out correctly in minimum time with minimum wastage 1.3. Availability of all job related components is checked
2. Set up reel system (OR Element 3)	2.1. Unwind and rewind reels set up options are analysed and set up is completed and adjusted according to job specifications 2.2. Webbing procedures are carried out to meet non-routine job specifications 2.3. Web-control system is set up options are analysed and set up is completed and adjusted according to job specifications 2.4. Reels are spliced/joined according to job specifications 2.5. Printed web viewing devices are set up and adjusted according to job specifications 2.6. The folder and sheeter are set up and adjusted according to job specifications 2.7. Set off/marketing prevention devices are set up and adjusted according to job specifications
3. Set up sheet system (OR Element 2)	3.1. Feeder and delivery sections are set up options are analysed and set up is completed and adjusted to non-routine suit job specifications 3.2. Sheet pick-up, transportation, control and transfer systems are set up and adjusted according to job specifications 3.3. Substrate is removed from process according to job instructions 3.4. Set off/marketing prevention devices are set up and adjusted according to job specifications
4. Select and prepare inks and additives	4.1. Colour sequence for the job is considered and confirmed 4.2. Inks , dyes or additives are selected according to non-routine job specifications and end-user requirements 4.3. Quality and suitability of inks, dyes or additives are checked and appropriate action is taken 4.4. Inks, dyes and additives are prepared according to OHS requirements, and manufacturer's/supplier's

ELEMENT	PERFORMANCE CRITERIA
	instructions with suitable precautions to minimise waste 4.5. Correct colour and weight/volume of ink is mixed and prepared to match the requirements of the job specification and the non-routine printing process 4.6. Formulation of the ink, colour match and the approved colour are appropriately recorded 4.7. Inks, dyes and additives are appropriately labelled, handled and stored according to manufacturer's/ supplier's instructions to prevent damage and hazards to personnel and prolong shelf life
5. Set up machine for complex lithographic printing	5.1. Plate cylinder is set up and adjusted according to job specifications 5.2. Plate cylinder is set up and adjusted according to job specifications 5.3. Plates are correctly mounted according to specification and in a safe manner 5.4. Blanket and blanket cylinder are set up and adjusted according to job specifications 5.5. Impression cylinder is set up and adjusted according to job specifications 5.6. Inking system is set up and adjusted according to the lithographic process and job specifications 5.7. Dampening system is set up and adjusted according to job specifications 5.8. Drying system is set up and adjusted according to job specifications
6. Conduct proof run	6.1. Material to be used for proof is organised correctly 6.2. Machine is operated according to manufacturer's and enterprise procedures to produce a specified proof 6.3. Production does not commence without client OK or authority where appropriate 6.4. Results are interpreted and adjustments are carried out according to product and machine specifications

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- OHS in relation to operating machinery such as safely switching off machinery before cleaning is started
- communication of ideas and information by interpreting the job brief and providing advice to internal or external clients about options and limitations
- collecting, analysing and organising information by collecting and analysing data about printing process, machine specifications and performance to calculate appropriate adjustments for the job
- planning and organising activities by providing information about time and materials requirements for production scheduling
- teamwork when cooperating with other workers and coordinating the production unit to ensure efficient operation
- mathematical ideas and techniques by calculating substrate requirements, plate position and pressures
- problem-solving skills by recognising proofing faults and calculating adjustments necessary to meet job specifications
- use of technology by using monitoring equipment and computerised production records

Required knowledge

- need to ensure that the job specifications are read and properly understood
- production problems that could eventuate by not reading and understanding the job specifications
- with whom would you discuss any production problems?
- problem that can result from the plate cylinder not being cleaned prior to plate fitting
- effect or over tensioning of the plate during fitting
- faults that could result from a plate being under tensioned
- need for accurate plate bending necessary on a web-fed machine
- considerations that would have to be made when deciding the colour sequence
- visual aid on the plate that identifies the colour of ink to be used
- OHS precaution that must be observed when webbing up the machine
- determining the position of the reel
- effect if the brake tension is not set correctly
- function of the "Dancer" roller on a web machine
- determining the position of the bustle wheels
- effect if the web is not spliced correctly
- operation of the particular web viewing device

REQUIRED SKILLS AND KNOWLEDGE

- OHS factors that need to be considered when setting up the sheet transportation and delivery systems
- cause of more than one sheet to be picked up in the feeder
- need for accurate feeder set up
- determining the position of the sheet prior to being transferred to the printing unit
- determining which front lays to use
- type of substrate that would require additional front lays to be engaged
- need for additional front lays when printing this type of substrate
- OHS precaution that must be observed when setting up the delivery
- controlling the web in the rewind unit
- function of a slitter on a web machine
- cause of the web to jam up in the folder
- need to disengage the folder if sheeting
- problems that could be attributed to a blunt knife when sheeting
- a safety feature that is in the delivery system if the web jams up
- fold that is always made with the grain of the web
- type of folder that folds the web in half in the direction of the web grain
- remedial steps that can be taken if there is a possibility of the ink marking in the folder
- main reason for having a silicone applicator on a web machine
- OHS precaution that must be observed when removing sheets from the delivery
- cause of sheets being delivered incorrectly
- adjustments that would be necessary if changing from lightweight to heavyweight stocks
- sheet release into the delivery
- problems that result from the excessive use of anti set off spray powder
- cause of printed sheets to set off in the delivery
- possibility of reducing set off in the delivery
- a fault that may be created if there is excess vacuum on the slow-down wheels
- OHS concerns that are related to the preparation of inks and additives
- details that are necessary to check an ink's suitability for the printing process
- special end-use requirements that may be necessary
- need to mix an additive into the ink
- using a spectrophotometer to assess the colour of an ink
- formula for calculating the correct quantity of lithographic ink
- a print fault that will occur if excessive driers are mixed into the ink
- precautions that you observe to minimise waste when preparing the ink
- shelf life of most inks
- conditions that are relevant to the storage of inks and additives
- conventions that should be adhered to when labelling mixed inks
- OHS factors that need to be considered when setting up the machine

REQUIRED SKILLS AND KNOWLEDGE

- checks that should be made on the plate prior to fitting
- required plate packing
- normal printing pressure that is required between plate and blanket
- determining the correct printing pressure between blanket and stock
- ideal blanket surface condition
- achieving the correct blanket tension when fitting a new blanket
- print faults that can occur if the impression cylinder is not maintained
- ordereccentric or concentric roller adjustments should be made
- width of the contact stripe between two rollers when setting the rollers
- determining the ink duct setting
- ideal ink duct sweep setting
- recommended degrees shore hardness for bare back and conventional dampeners
- conductivity of the fountain solution
- need to constantly check the conductivity of the fountain solution
- changing the amount of fountain solution across the plate surface
- need to adjust the fountain solution laterally
- effect of engaging the perfecting unit on the run
- main reason for blistering on a heatset machine
- substance that the oven evaporate from the ink
- function of chill rollers on a web machine
- OHS precaution that must be observed when slitting on the machine
- operations that can be performed with in-line units
- machine position that you should engage in-line processing units
- precautions that are necessary when setting up in-line processing units
- reasons for a printed product to be punched
- considerations when setting hole punching in relation to repeat length
- result of excessive pressure on the slitters
- operation of the true inch function fitted to some machines
- problems that may cause the machine to keep stopping
- checks that are necessary prior to engaging the impression
- checks that are performed when running the machine
- effect that the position of certain guards have on the operation of the machine
- communication of the steps involved in operating the machine to other team members
- aids that are available for the testing of the machine proof
- taking tests that are necessary for this job
- function of a polarisation filter in a densitometer
- ideal conditions for inspecting the proof
- need to use visual aids on the printed sheets
- acceptable wet trap value range for lithographic inks

REQUIRED SKILLS AND KNOWLEDGE

- an indicator of optimum solid ink density in the absence of a proof
- result of low solid ink density and excessive dot gain
- methods that are available to check and adjust ink colour and consistency
- adjustments that may have caused mis-register
- adjustments that are made to position the image laterally
- adjustments that are made to position the image circumferentially
- adjustments that are made to position the image diagonally
- effect of changing the colour sequence on the wet trap value
- procedure to lengthen the print length on this type of press
- procedure to shorten the print length on this type of press
- difference between mechanical and optical dot gain
- cause excessive mechanical dot gain
- responsibility for the final say in the "OK" of the job
- machine manuals, safety and other documentation that are relevant to this task and where they are kept and information that is included in these documents

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the ability to:

- set up either wide or narrow reel or sheet-fed lithographic printing machines for non-routine print jobs. The individual will conduct a proof run and adjust settings to ensure production speeds are attained in minimum time with minimum wastage
- demonstrate use of computerised control, monitoring and data entry systems if available and appropriate
- demonstrate an ability to find and use information relevant to the task from a variety of information sources
- set up a lithographic printing machine for a complex job on TWO occasions (if possible using different substrates and sheet sizes if sheet-fed and if possible including at least TWO in-line processes) according to job and manufacturer's specifications, enterprise procedures and the Performance Criteria
- evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity.

Context of and specific resources for assessment

Assessment must ensure:

- assessment may take place on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment
- lithographic printing machine with in-line units.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

EVIDENCE GUIDE

for example:

- ICPPR332C Produce complex lithographic printed product.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
<i>Substrate handling</i> may include:	• wide and narrow reel, and large and small sheet handling systems.
<i>Inks/coatings</i> may include:	• wide range of inks commonly used in printing, including standard and special colours, if required.
<i>Colour matching systems</i> may include:	• use of viscosity controls, densitometers and spectrophotometry.
<i>Machines</i> may include:	• range of single sheet, stream-fed or reel-fed printing machines with manual, semi-automated, fully automated or computerised process control. Includes machines with digitally imaged plates.
<i>Design</i> may include:	• complex graphics and text. Critical "tight" registration, fit and position, registration for quality print requirements.
<i>Substrate types</i> may include:	• range of substrates within the major categories of paper, pressure sensitive material, board, plastics and related films, or metal.
<i>Specialised</i> may include:	• non-routine within this context relates to the set up and production of print runs. The set up of equipment and production involves a significant amount of deviation from using standard equipment settings. It also involves significant problem solving and the development of new criteria and procedures for performing current practices. It does not refer to a job that an individual does only occasionally.

Unit Sector(s)

Unit sector	
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Competency field

Competency field	Printing
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Co-requisite units

Co-requisite units		