



Australian Government

ICPPRN413 Set up for complex flexographic printing

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICP Printing and Graphic Arts Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to set up machines for non-routine flexographic printing. It includes the ability to conduct a proof run and adjust settings to ensure production speeds are attained.

It applies to individuals working as print machinists in the printing and graphic arts industry. They prepare material, set up, monitor and operate equipment and machinery, apply solutions to a defined range of problems associated with the print medium, and analyse and evaluate information from a variety of sources. They may also provide leadership and guidance to others with some limited responsibility for the output of others.

Mounting and demounting plates is covered in ICPPRN411 Mount and demount flexographic plates for complex printing.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Printing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Confirm non-routine job specifications	1.1 Job requirements are read and interpreted from job documentation or production control system 1.2 Set up is planned and carried out correctly in minimum time with minimum wastage 1.3 Availability of all job related components is checked 1.4 Proofed job is checked for conformance with job specifications

ELEMENT	PERFORMANCE CRITERIA
2. Set up reel transportation and delivery system on web-fed machine	2.1 Reels are checked for treatment levels, coatings and printing side, and age of product 2.2 Unwind reels are secured on reel shaft 2.3 Reels are correctly positioned on unwind stand 2.4 Press is webbed for surface or reverse or perfecting printing according to non-routine job specifications 2.5 Edge guide is centred and set to non-routine job specifications 2.6 Unwind tension is set to suit substrate 2.7 Rewind tension is set to suit substrate 2.8 Positively Infinitely Variable (PIV) drive is set for appropriate tensioning of substrate
3. Select and prepare inks and solvents	3.1 Inks and solvents are selected according to job specifications and end-user requirements 3.2 Quality and suitability of inks and solvents are checked and appropriate action is taken 3.3 Inks and solvents are prepared according to work health and safety (WHS) requirements, and manufacturer's/supplier's instructions with suitable precautions to minimise waste 3.4 Correct colour and weight/volume of ink are mixed and viscosities checked and modified according to press requirements and non-routine job specifications 3.5 Ink formula and approved colour draw-downs are appropriately recorded 3.6 Inks and solvents are appropriately labelled, handled and stored according to manufacturer's/supplier's instructions and relevant hazardous liquids storage regulations
4. Set up machine for complex flexographic printing	4.1 Flexographic plate cylinders are installed, and register adjustments centred OR 4.2 Sleeves are installed in press and register adjustments made OR 4.3 Plate mounting sheets are mounted on cylinders in press and register adjustments made 4.4 Plate cylinders are gauged up or pre-set to impression 4.5 Anilox rollers are selected to suit individual colour and plate reproduction requirements for each unit

ELEMENT	PERFORMANCE CRITERIA
	4.6 Appropriate ink metering system is selected for each unit 4.7 Inking system is set up and roller nips/blades are set correctly 4.8 Ink circulation is maintained at correct level and flow for machine 4.9 Viscosities are adjusted according to job specifications 4.10 Air volume and drier temperatures curing units are selected to suit inks, substrate, solvents and, according to job specifications 4.11 Air volume is adjusted between colours to maximise drying and minimise air overspill
5. Set up in-line units for basic process/es	5.1 Minor in-line printing/converting/binding units are set up for basic process/es and adjusted according to machine requirements and job specifications 5.2 Assistance is given in set-up of major in-line printing/converting/binding units
6. Conduct proof run	6.1 Material to be used for proof is organised correctly 6.2 Press is set up and operated according to WHS guidelines 6.3 Print impressions are set to minimum kiss impression 6.4 Web tensions are correctly set at unwind, between stations and rewind 6.5 Drying is checked as sufficient to key ink to the substrate 6.6 Viscosities are adjusted to obtain correct colour at proof speed and checked against colour matching system 6.7 Substrate is checked against job specifications
7. Organise proof inspection and/or testing	7.1 Proof is visually inspected and/or tested or laboratory testing is organised according to enterprise procedures 7.2 Production does not commence without client approval or authority where appropriate
8. Readjust settings to production speed	8.1 Production speed print results are interpreted and appropriate adjustments are made to press, ink and substrate settings 8.2 Adjustments are made according to product specifications and press performance 8.3 Web is spliced at production speed and further samples are obtained for quality inspections at appropriate intervals 8.4 Press settings are documented and samples are retained

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.4, 2.5, 3.1, 3.3, 3.4, 3.6, 4.9, 4.10, 5.1, 6.7, 8.1, 8.2	Recognises and interprets text to establish job requirements from information contained within relevant instructions, procedures and specifications
Writing	3.5, 3.6, 7.2, 8.4	Completes records accurately and according to workplace requirements
Oral Communication	7.2	Participates effectively in spoken interactions using appropriate vocabulary, and employing questioning and listening techniques to gain approvals
Numeracy	3.4, 8.1	Interprets and analyses a range of mathematical information used in familiar and routine tasks
Navigate the world of work	6.2, 7.1, 7.2	- Complies with legislative requirements and follows organisational policies and procedures relevant to own role - Recognises boundaries of own role responsibilities
Interact with others	5.2, 7.2	- Collaborates with others to complete tasks according to requirements - Follows accepted communication practices and protocols when seeking approval
Get the work done	1.1-1.4, 2.1-2.9, 3.1, 3.2, 3.4, 4.1-4.11, 5.1, 5.2, 6.1-6.7, 7.1, 8.1-8.4	- Takes responsibility for planning and organising own workload using analytical processes to decide on a course of action, and assembles resources required - Implements actions as per instructions, making adjustments if necessary - Recognises and takes responsibility for addressing predictable, and some less predictable, problems in familiar work contexts - Reads data from electronic monitoring and control systems

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICPPRN413 Set up for complex flexographic printing	ICPPR413C Set up for complex flexographic printing	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a74b7a0f-a253-47e3-8be0-5d426e24131d>

Assessment Requirements for ICPPRN413 Set up for complex flexographic printing

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Performance Evidence

Evidence of the ability to:

- set up flexographic printing machines for non-routine print jobs, conduct a proof run and adjust settings to ensure production speeds are attained
- demonstrate use of computerised control, monitoring and data entry systems if available and appropriate
- set up a flexographic printing machine for a complex job on TWO occasions (if possible using different substrates and if possible including at least two in-line processes) according to manufacturer's and job specifications, and enterprise procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe production problems that could be created by not reading or understanding the job specifications
- list work health and safety (WHS) factors to consider when mounting and proofing flexographic plates
- describe the most common cause of photopolymer plates crazing on the image side
- explain the importance of printing plate resiliency
- list main advantages of using thin photopolymer plates in process printing
- outline faults that may be detected on new plates
- identify types of solvents used on photopolymer plates
- describe benefits of optical mounting
- explain the purpose of binding plates after mounting
- outline possible print faults that could be eliminated by using a cushion mount
- list WHS factors to consider when installing printing cylinders or sleeves

- describe precautions to ensure the plates and cylinders or sleeves are not damaged during installation
- explain what to check to ensure plates and cylinders or sleeves have been installed correctly
- list WHS precautions to be observed when webbing up the machine
- explain how to determine position of the reel
- demonstrate how the substrate is pulled into the machine
- outline consequences of insufficient unwind tension
- describe consequences of excessive unwind tens
- outline the function of the 'Dancer' roller on a web machine
- explain the function of the PIV unit
- demonstrate knowledge of how to make adjustments to the PIV
- describe the function of the lay-on roller
- outline effects of excessive lay-on roller pressure
- describe what can happen if the web is not spliced correctly
- explain how the particular web viewing device works
- list WHS precautions for setting up the delivery
- explain how the web is controlled in the rewind unit
- describe the result of incorrect rewind tension
- outline remedial steps if there is a possibility of ink marking in the rewind
- explain the function the air blast plays in the delivery of sheets
- list WHS precautions for preparing inks and additives
- identify details to check an ink's suitability for the printing process
- outline special end-use requirements that may be necessary
- describe the main functions of a pigmented extender used in flexographic printing
- explain the purpose of adding plasticisers to flexographic inks
- list additives used in flexographic inks
- outline the range, in seconds, for Zahn cup measurements
- describe the effect foaming has in a Zahn cup when measuring ink viscosity
- identify recommended pH range when printing with aqueous inks
- list precautions to observe to minimise waste when preparing ink
- describe how to determine shelf life of most inks
- outline conditions relevant to storing inks and additives
- list conventions for labelling mixed ink
- list WHS factors to consider when setting up the machine
- identify advantages of centring all machine controls
- describe checks to be made on cylinders and gears
- outline checks to do prior to cylinder or sleeve installation
- identify the angle chamber blades should be set at
- outline the main advantage of gauging up and dry register prior to printing a job
- describe the cell count of the anilox roller used when printing solids
- explain why water treatment additives should be used in a central impression drum and chill roller coolant system

- list advantages of laser engraved ceramic anilox rollers
- demonstrate knowledge of the anilox roller and what it measures
- list possible reasons for anilox wear
- describe the type of job printed using a hexagonal cell configuration
- identify the recommended web temperature when printing polypropylene film
- explain the method of drying used when printing on polythene by the flexographic process
- list factors affecting drying rate of liquid inks
- list factors affecting drying of aqueous inks
- identify the operating range of UV lamps
- list WHS precautions to be observed when slitting on the machine
- explain how a cold seal is formed
- outline reasons for a printed product to be punched
- describe what to consider when setting hole punching in relation to repeat length
- outline consequences of excessive pressure on the slitters
- describe why is it necessary to graduate drying speeds of each progressive colour, so first-down colours dry faster the subsequent colours
- explain why, in flexographic printing, that as press speed increases so does colour strength
- list causes of a decrease in web tension
- outline consequences of increasing rewind tension after the roll has been partially rewound
- identify the major cause of a telescopic roll
- describe print characteristics related to excessive printing pressure
- list causes of picking when printing multicoloured work
- identify print faults from using an over-reduced ink
- outline problems that can cause lateral streaks in uneven printing
- describe causes of moire patterns when printing by the flexographic process
- outline consequences of air being trapped under mounted plates
- name the instrument used to identify retained solvent trapped in the print
- explain the purpose of taking Dyne readings
- explain the purpose of the crinkle test when testing an ink
- outline consequences if an excessive final drying temperature was used when printing polypropylene film
- identify the ink property that can be adjusted to reduce dot gain
- demonstrate understanding of correctly checking ink viscosity while using ink pumps
- identify problems resulting from excessive use of slow solvents
- explain why laminating inks, once printed, appear dull and become easy to scratch
- outline the result of excessive print area tension
- list some of the problems the printer may associate with cold seals
- locate machine manuals, safety and other documentation relevant to this task, and outline information included in these documents.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the printing field of work and include access to special purpose tools, equipment and materials, including a narrow flexographic press.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a74b7a0f-a253-47e3-8be0-5d426e24131d>