Title	Assist machine operator for screen printing		
Level	3	Credits	15

Purpose	People credited with this unit standard are able to: follow safety requirements for the equipment being used; check documentation and confirm requirements for the job are available; prepare substrates for screen printing; check film positives for faults; demonstrate knowledge of screens and stencils; assist with make ready and printing tasks for single colour printing; and undertake post-press tasks.

Classification	Printing > Printing - Screen

Available grade	Achieved

Prerequisites	Unit 340, *Demonstrate knowledge of safe working practices in the print industry,* or demonstrate equivalent knowledge and skills*.*

Guidance Information

1   Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:
- Hazardous Substances and New Organisms Act 1996;
- Health and Safety at Work Act 2015;
- Privacy Act 2020;
- Resource Management Act 1991.

Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

2   Definitions
PMS refers to Pantone Matching System.
Workplace procedures refer to organisation policies and procedures that are documented in memo, electronic, or manual format and available in the workplace. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, manufacturer's requirements, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the print sector.

3 It is recommended that people hold credits for one of Unit 5129, *Reclaim screens using a pressure gun for screen printing*; or Unit 5130, *Reclaim screens using an automatic machine, and maintain cleaning equipment for screen printing*; or Unit 5131, *Wash up for screen printing,* before being assessed against this unit standard.

4 Assessment information
All production tasks in this unit standard are to be carried out under the direction of the machine operator.

Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, workplace procedures and legislative requirements.

Outcomes and performance criteria

Outcome 1

Follow safety requirements for the equipment being used.

Range   machine operating manual, workplace procedures.

Performance criteria

1.1   Explain equipment start up, shut down, and emergency procedures in the workplace.

1.2   Describe and follow hazard control measures in the workplace.

1.3   Identify and report hazards or potential hazards in the workplace.

Outcome 2

Check documentation and confirm requirements for the job are available.

Performance criteria

2.1   Check job documentation to ensure that all specifications for the process being undertaken are complete and report any discrepancies.

        Range   quantity, press, special instructions.

2.2   Check required job components against the job documentation and confirm their availability with the machine operator.

        Range   may include but is not limited to – job samples or layouts, screens, stencils, film positives, ink, substrates.

2.3   Confirm equipment is available, as advised by the machine operator.

Outcome 3

Prepare substrates for screen printing.

Performance criteria

3.1   Identify substrates commonly used for screen printing and describe substrates used in the workplace.

      Range   may include but is not limited to – paper, board, plastic, metal, rubber, glass, ceramics, textiles.

3.2   Describe substrates in terms of their characteristics.

      Range   may include but is not limited to – grammage, calliper, bulk value, smoothness, opacity, transparency, coatings, absorbency, strength, colour, flexibility, size, dimensional stability, job suitability, grain direction, texture, surface finish, dye migration, post print migration.

3.3   Handle and store substrates in accordance with machine operator's instructions.

      Range   handling may include – clean working environment, clean hands, carrying methods, stacking, working side, avoidance of damage to substrate, avoidance of personal injury, static electricity, wavy edges;
               storage may include – light, temperature, air flow control, relative humidity, age (stock rotation), ease of access.

3.4   Confirm substrates quantity issued against job documentation.

Outcome 4

Check film positives for faults.

Performance criteria

4.1   Explain reasons for checking film positives.

      Range   density, emulsion side, image resolution definition, trap.

4.2   Check film positives for any imperfections and errors in accordance with the machine operator's instructions.

Outcome 5

Demonstrate knowledge of screens and stencils.

Performance criteria

5.1 Describe the different characteristics and uses of different kinds of screen frames.

　　Range　　frames – wooden, steel, aluminium, self-stretching;
　　　　　　　characteristics – cost, weight, strength, solvent resistance,
　　　　　　　corrosion resistance.

5.2 Describe the characteristics and uses of mesh.

　　Range　　mesh – nylon, polyester, metal, carbon fibre, combinations of
　　　　　　　these;
　　　　　　　characteristics – film deposit, substrate, static control, warp, weft,
　　　　　　　mesh count, tension stability, flexibility, durability, chemical
　　　　　　　resistance.

5.3 Describe the methods of stretching mesh to achieve the required tension.

　　Range　　manual, mechanical, pneumatic.

5.4 Explain factors affecting the way mesh is stretched.

　　Range　　mesh material, mesh count, tension control, angle.

5.5 Describe stencil systems, and explain the work each system is most suited to.

　　Range　　capillary, indirect, direct.

5.6 Explain the reasons for 'spotting' and 'blocking out' the stencil, and taping the inside edges.

　　Range　　water based inks, solvent based inks.

Outcome 6

Assist with make ready and printing tasks for single colour printing.

Performance criteria

6.1 Prepare and set screens for single colour printing in accordance with machine operator's instructions and job requirements.

　　Range　　may include but is not limited to – screen size, mesh tension,
　　　　　　　mesh count, pre-treatment, touching up, position, masking out
　　　　　　　table area.

6.2 Prepare ink in accordance with machine operator's instructions.

　　Range　　ink system, correct PMS colour, correct volume mixed or available
　　　　　　　for the job, any required ink solvents and/or additives mixed or
　　　　　　　available for the job.

6.3   Prepare squeegee and place in the press in accordance with machine operator's instructions.

6.4   Follow machine start up and shut down procedures during the print run in accordance with the machine operator's instructions.

6.5   Select and set the drying system most appropriate for the job in accordance with machine operator's instructions.

       Range   may include – rack, wicket, jet air, drying tunnel, ultra-violet (UV), infra-red (IR).

6.6   Take first prints in accordance with machine operator's instructions.

       Range   ink up;
confirm against – job sample, layout;
check against – job specifications, film positives, customer copy.

6.7   Pass first prints for production run, and obtain approval to run, in accordance with machine operator's instructions.

       Range   check against – job specifications, film positive, customer copy;
check for – position, colour, stencil, pressures, angles, quality of print, off contact distance, snap off, length of stroke, speed, adhesion, cure.

6.8   Set counter ready for commencement of run.

6.9   Monitor and adjust ink throughout the print run in accordance with the machine operator's instructions.

       Range   supply, viscosity, colour.

6.10   Maintain position throughout the print run to meet the job requirements.

6.11   Dry prints, undertake checks during the print run, and report any faults to the machine operator.

       Range   faults caused by incorrect drying time, temperature and speed include – set off, block, ink adhesion failure, curling, substrate distortion, colour change.

6.12   Rectify or report any problems and faults encountered during the print run to the machine operator.

       Range   problems and faults include but are not limited to – smudging, colour variation, position, loss of detail, drying of ink in the screen, dust, set-off, change of viscosity, legibility, clarity, static, ink reticulation, orange peel, humidity, stencil breakdown, pin holes, substrate movement.

Outcome 7

Undertake post-press tasks.

Performance criteria

7.1   Check quantity printed against job documentation and confirm with the machine operator before commencing wash up.

7.2   Follow correct shut down sequence in accordance with the machine operator's instructions.

7.3   Complete job documentation.

7.4   Carry out post-press tasks as required by the job.

7.5   Follow waste control procedures to meet legislative and product requirements.

            Range   recyclable waste, non-recyclable waste, security waste.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 July 1999	31 December 2025
Review	2	21 February 2005	31 December 2027
Review	3	30 March 2023	N/A
Revision	4	27 February 2025	N/A

Consent and Moderation Requirements (CMR) reference	0013

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact the Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.