



TYPE: Operating Procedure  
SUBJECT: Quality  
CODIFICATION: SOP-002

**DISCLAIMER:**

This document is only provided to aid in the development of similar protocols for other organisations to use for the manufacture of Prusa face shields during the COVID-19 pandemic. This document has been authored for use only in the Cisco Reading face shield production process. Please use this as an overview to develop your own protocol.

This document has been developed with voluntary guidance from manufacturing professionals, it has however been developed in an extraordinarily short period of time and is not complete to a level that meets professional manufacturing standards. This document is supplied without warranty, no liability can therefore be accepted.

**PROCEDURE FOR FLOW OF PERSONNEL IN THE  
MANUFACTURING UNIT**

	Name/Function	Date	Signature
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Approver	NAME OF NHS STAFF MEMBER NAME OF NHS ORGANISATION		

Date of Approved	Date of application	Date of document review

**Versions history**

Document version	Date	Type of modification
1.0	2020	First Version
2.0	2020	Updates to enable external document release.

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## 1 **AIM (objective or purpose)**

The purpose of this document is to describe the procedure that must be followed by all personnel to access the manufacturing area.

## 2 **SCOPE**

This procedure applies to the movement of personnel that will conduct tasks related to the Face shield 3D printing process within the manufacturing unit. Here we outline the expected standards to be used within a clean non classified environment

This SOP is authored to be used during the COVID-19 pandemic to provide critical supplies to individuals working without professionally manufactured PPE.

## 3 **OUT of SCOPE**

This SOP is not suitable for use outside of the COVID-19 pandemic. This SOP is provided without warranty and is provided on an as-is basis as a 'best we can do given the circumstances' compromise.

## 4 **RESPONSIBILITIES**

It is the responsibility of all volunteers that may perform cleaning of materials within the clean room of the production unit to have read and understood this document. It is the responsibility of the project leadership to ensure that all volunteers that perform cleaning of materials within the clean room of the production unit have read and understood this document.

## 5 **RELATED DOCUMENTATION**

<RISK ASSESSMENT>

<TRAINING SESSION PPT>

SOP-001 Cleaning of materials in the production unit

SOP-003 Procedure for flow of material through manufacturing unit

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## 6 ABBREVIATIONS

<b>CNC:</b>	Clean Non Classified
<b>IPA:</b>	IsoPropyl Alcohol
<b>HPW:</b>	High Purity Water (can be substituted with fresh, clean drinking water)
<b>PPE:</b>	Personal Protective Equipment

## 7 MATERIALS AND REAGENTS

IPA 70%  
HPW  
Antiviral Hand sanitiser/gel

## 8 OPERATING PROCEDURE

*(See Appendix 1 for example Floor Plan)*

### Process Overview

1. Describes the movement of personnel when performing tasks within the manufacturing Unit and during the process. Examples of personnel includes operators, maintenance staff, cleaners, etc.
2. Describes the direction of movement of personnel both inwards and outwards through the Outside Lobby area up to the CNC room of the production unit area.
3. Ensures personnel follow the relevant risk assessments when working within the CNC room and working with the required materials.

### Inward flow of personnel between Outside - Lobby area – CNC corridor

1. Volunteers must obey the following instructions;
  - 1.1. *No Food is allowed in the manufacturing area. A designated break/drinking area will be provided outside (it is good practice to give every volunteer a specific labelled place to keep their drink/cup to avoid cross-contamination)*
  - 1.2. *A maximum of 2 people are allowed in the lobby area at any one time, one person on the clean side and the other person on the dirty side*
  - 1.3. *Personnel entering the lobby area should move into the dirty side of the lobby area in their external clothes and shoes*
  - 1.4. *Personal items (phone, wallet, etc,) must be placed in the designated locker/space for personal items (see appendix 1)*
  - 1.5. *External shoes must be removed and placed in the designated space (see appendix 1)*

- 1.6. *Whilst wearing your socks proceed into the dedicated changing cubicles (not shared between volunteers working on the same shift)*
- 1.7. *Remove your external clothes and hang them on the door*
- 1.8. *Don the internal CNC area dedicated clothes*
- 1.9. *Wash your hands (see appendix 2 for best practice hand washing)*
- 1.10. *Whilst wearing your socks move into the clean side of the lobby area – marked on the floor*
- 1.11. *Don a suitable size poly-cotton overall*
- 1.12. *Don clogs or shoe protectors over a socks or clean shoes*
- 1.13. *Assess the state of your gowning in a mirror, check to ensure your outside clothing is covered by the gown*
- 1.14. *Open door and proceed into the CNC manufacturing unit*

#### Inward flow of personnel between CNC corridor and CNC

2. Personnel must be obeying the following rules;
  - 2.1. *No food or drink is allowed in the CNC manufacturing room.*
  - 2.2. *No music shall be played in the area (since this could stop volunteers from hearing problems with the production process).*
  - 2.3. *Running is prohibited in **all** areas.*
  - 2.4. *A maximum of 1 person is allowed in the Inbound PPE area*
  - 2.5. *Move into the Inbound PPE area whilst wearing your coverall and clogs*
  - 2.6. *Sanitise your hands with handgel and leave it to dry for 15 seconds (follow appendix 3 – hand rub)*
  - 2.7. *Don PPE as detailed in appendix 4*
    - 2.7.1. *Don facemask*
    - 2.7.2. *Don protective eyewear*
    - 2.7.3. *Don gloves*
    - 2.7.4. *Apply 70% IPA to your gloves (follow appendix 3 – hand rub)*
  - 2.8. *Assess your gowning and ensure your outside clothes are covered*
  - 2.9. *Open door and enter the CNC manufacturing unit*

Outward flow of personnel between CNC manufacturing area and CNC corridor

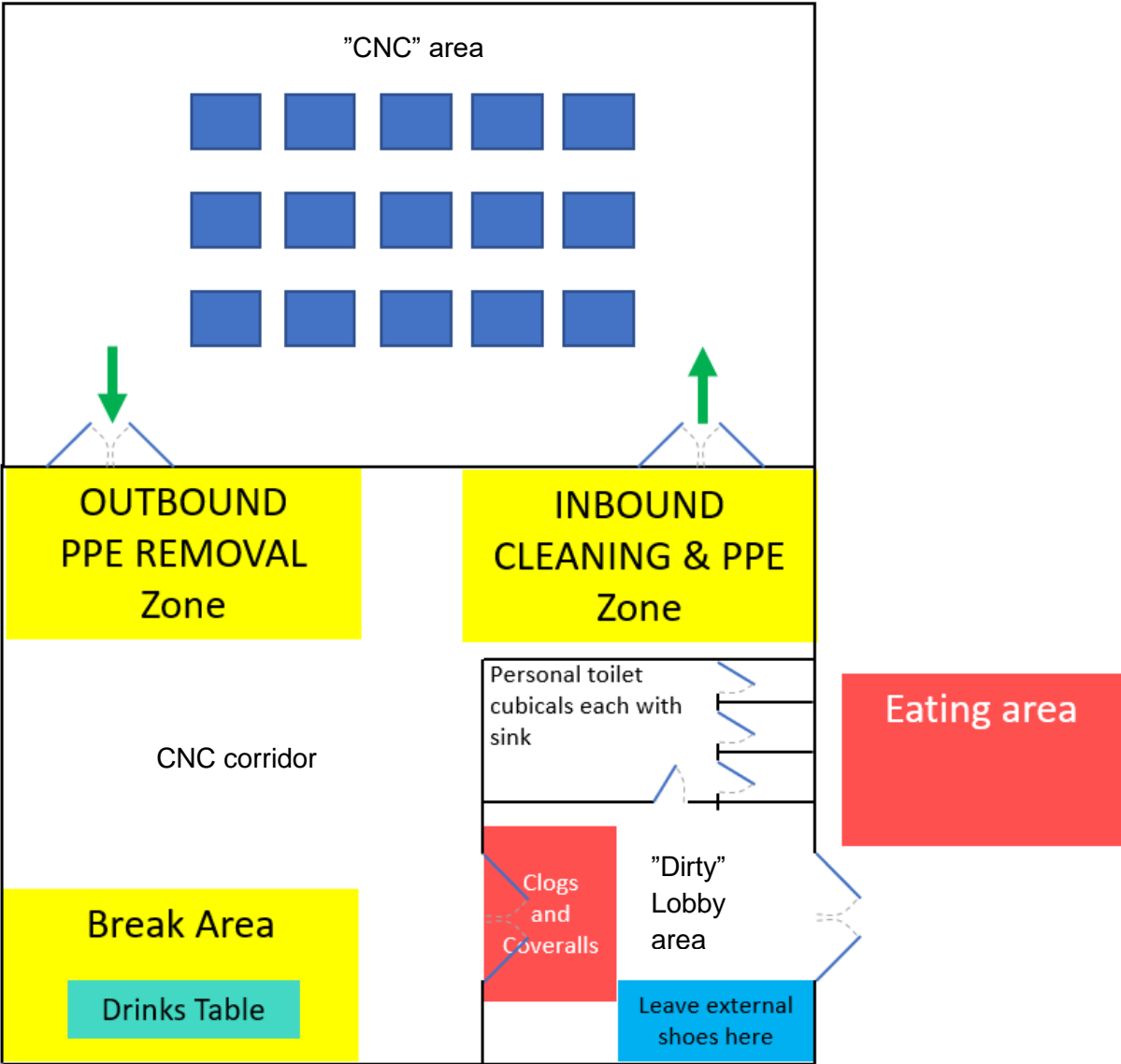
3. Personnel must carry out the following;
  - 3.1. *Exit the CNC manufacturing area*
  - 3.2. *Move into the Outbound PPE area wearing your PPE*
  - 3.3. *Remove and bin gloves*
  - 3.4. *Place mask and goggles in overall pocket*
  - 3.5. *Sanitise your hands with handgel and leave it to dry for 15 seconds (appendix 3 – best practice – how to hand rub)*

Outward flow of personnel between CNC corridor and Lobby area and Outside

4. Personnel must carry out the following;
  - 4.1. *A maximum of 2 people are allowed in the lobby, one on the clean side and one on the dirty side*
  - 4.2. *Remove clogs or shoes with shoe protection*
    - 4.2.1. *If the clogs or shoes are to be used again on same shift leave them in the clean side of the lobby area*
    - 4.2.2. *At the end of shift place the clogs in the designated area for cleaning and disinfection*
  - 4.3. *Remove your overall*
    - 4.3.1. *If the overall is to be used again during that shift hang it in clean side of the lobby area*
    - 4.3.2. *At the end of shift place the overall in the designated area laundry basket*
  - 4.4. *Whilst in your socks and internal clothes go into the dedicate changing cubicles*
  - 4.5. *Wash your hands (see appendix 2 – for best practice how to hand wash)*
    - 4.5.1. *Toilet break – after using toilet follow steps 1.9 to 1.14*
  - 4.6. *Remove your internal CNC area dedicated clothes and hang then on the door*
  - 4.7. *Put on your external clothes*
  - 4.8. *In your socks move into the dirty side of the lobby area in your external clothes*
  - 4.9. *Don external shoes*
    - 4.9.1. *If needed fetch your belongings in the locker*
  - 4.10. *Exit to the Outside area*

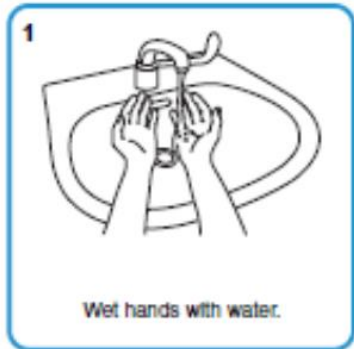


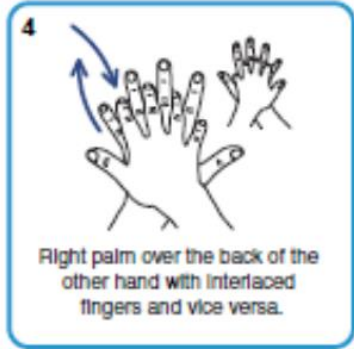
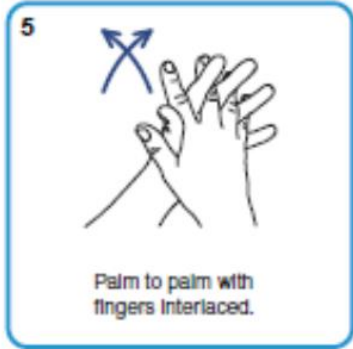
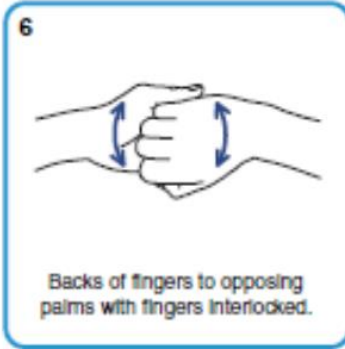
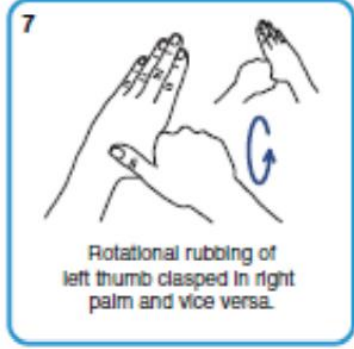

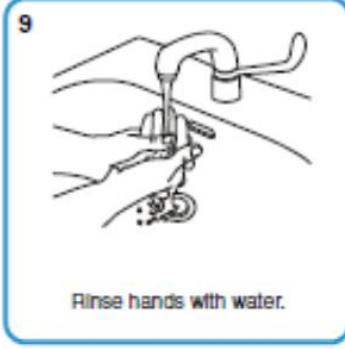


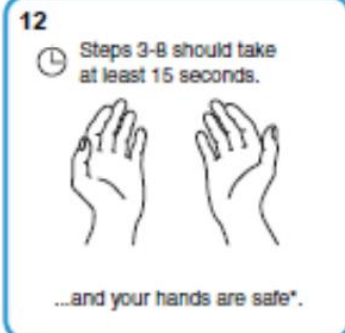
**9 APPENDIX**

1. Manufacturing Unit Floor plan (example to aid in the design of suitable manufacturing areas).



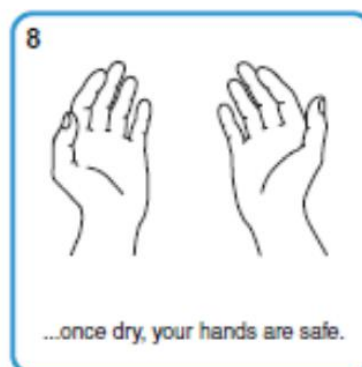
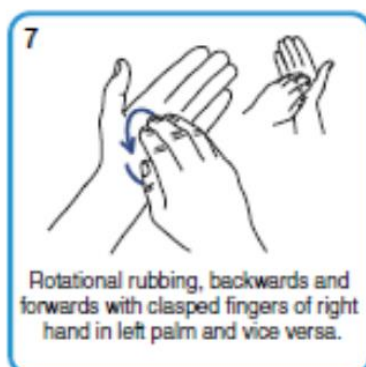
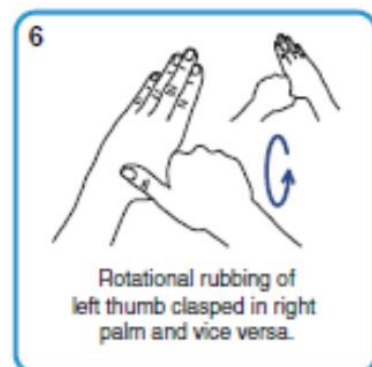
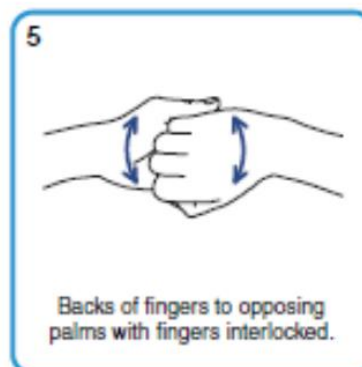
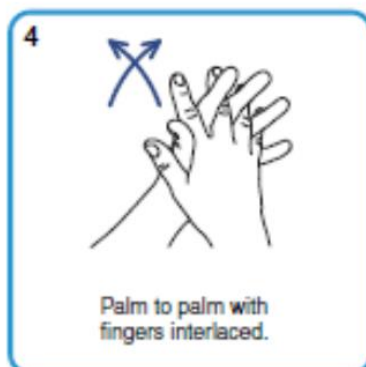
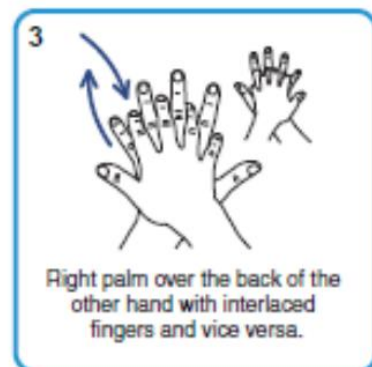
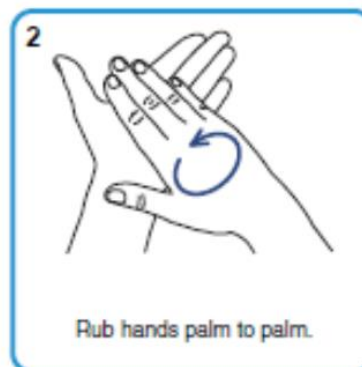
2. Best practice how to hand wash

Steps 3-8 should take at least 15 seconds.

 <p>1 Wet hands with water.</p>	 <p>2 Apply enough soap to cover all hand surfaces.</p>	 <p>3 Rub hands palm to palm.</p>
 <p>4 Right palm over the back of the other hand with interlaced fingers and vice versa.</p>	 <p>5 Palm to palm with fingers interlaced.</p>	 <p>6 Backs of fingers to opposing palms with fingers interlocked.</p>
 <p>7 Rotational rubbing of left thumb clasped in right palm and vice versa.</p>	 <p>8 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.</p>	 <p>9 Rinse hands with water.</p>
 <p>10 Dry thoroughly with towel.</p>	 <p>11 Use elbow to turn off tap.</p>	 <p>12 ⌚ Steps 3-8 should take at least 15 seconds. ...and your hands are safe*.</p>

3. Best practice how to hand rub

Duration of the process: 20-30 seconds.





#### 4. Best Practice – Putting on and taking off PPE

Use safe work practices to protect yourself and limit the spread of infection

- Keep hands away from face and PPE being worn.
- Change gloves when torn or heavily contaminated.
- Limit surfaces touched in the patient environment.
- Regularly perform hand hygiene.
- Always clean hands after removing gloves.

NB Masks and goggles are not routinely recommended for contact precautions. Consider the use of these under standard infection control precautions or if there are other routes of transmission.

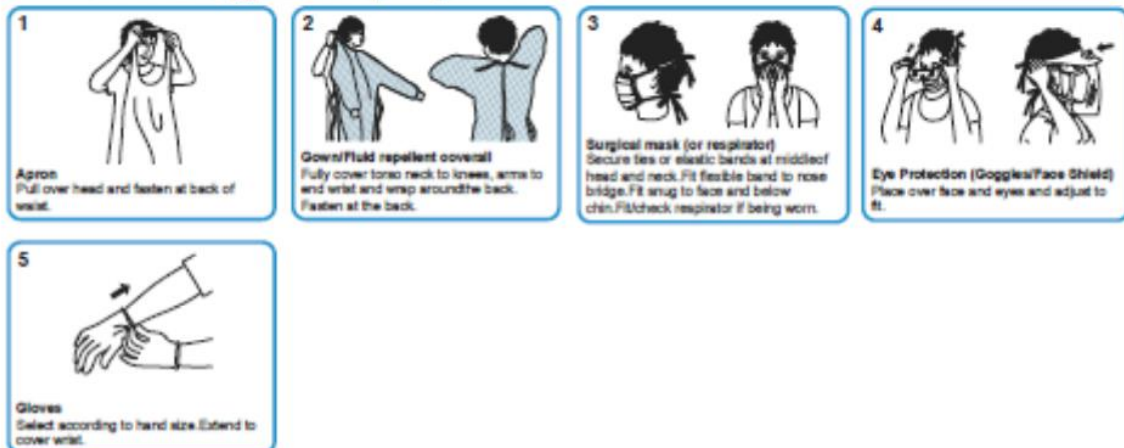
The type of PPE used will vary based on the type of exposure anticipated, and not all items of PPE will be required.

The order for putting on PPE is Apron or Gown, Surgical Mask, Eye Protection (where required) and Gloves.

The order for removing PPE is Gloves, Apron or Gown, Eye Protection, Surgical Mask.

##### 1. Putting on Personal Protective Equipment (PPE).

- Perform hand hygiene before putting on PPE



##### 2. Removing Personal Protective Equipment (PPE)



- Perform hand hygiene immediately on removal.
- All PPE should be removed before leaving the area and disposed of as healthcare waste.