

**Robotics and Manufacturing Automation Laboratory (Mechanical Eng'g Dept.)
STANDARD OPERATING PROCEDURE (SOP)**

Name of SOP	CRS F3 Robot Arm
Effective Date	June 1, 2004
Author	Dr. G. Bone
Reason for SOP	Risk of injury from contact with moving robot arm
Approved by (supervisor)	Dr. G. Bone
Date reviewed by JHSC	May 12, 2010

Definitions

Terms	none
acronyms	RMM – Risk Management Manual JHSC - Joint Health and Safety Committee EOHSS - Environmental Occupational Health & Safety Service

Requirements

<p>Applicable OSHA regulations and / or codes of practice.</p> <ol style="list-style-type: none"> 1. OSHA code. 2. ANSI/RIA R15.06-1999 Standard for Industrial Robots and Robot Systems - Safety Requirements 3. McMaster University Risk Management Policies: <ol style="list-style-type: none"> a) RMM #301 Standard Operating Procedure b) RMM #300 Safety Orientation and Training Program c) RMM #309 Laboratory safety manual
<p>Training and competency.</p> <ol style="list-style-type: none"> 1. Training provided by the laboratory supervisor, Dr. G. Bone in the Mechanical Engineering Department. 2. Competency to be demonstrated by the individual after training

Description of the Task

Location and time of work	JHE A104 during normal working hours
Individuals and skills required	Graduate Students & Research Staff, none
Equipment and supplies required	CRS F3 Robot Arm controlled by either the teach pendent or a computer
Personal protective equipment required	none

Sequential steps to complete the work safely.

General safety instructions

1. All users must obey the safety instructions listed in the CRS F3 Robot System User Guide.
2. The operator should only access the robot arm's working space when the robot arm power is turned off.
3. When operating the robot arm always have an emergency stop button close at hand. This can be either the emergency stop button on the teach pendent or the emergency stop button on the front of the control unit.
4. Never place yourself in a location that confines you between the robot arm and another object.
5. If another person is inside or approaches the robot arm's working space and the arm power is on then press an emergency stop button immediately.

Specific instructions for the operation of the CRS F3 robot arm:

1. Place yourself in a location safely outside the robot arm's operating zone.
2. Turn on the robot control unit and the computer.
3. If operating with the teach pendent then refer to the CRS Robotics Teach Pendent Guide for detailed operating instructions.
4. If operating the robot from the computer then refer to the CRS F3 Robot Users Guide and the CRS RAPL-3 Language Reference Guide for detailed operating instructions.
5. Set the motion speed to be less than 250 mm/s.

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| <ol style="list-style-type: none">6. When it is required to move the robot arm then turn on the arm power.7. When done working with the robot arm move it to a retracted position.8. Turn off the arm power by pressing one of the emergency stop buttons. |
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Contingency Plan and Reporting

Accident / Injury Response

Minor Cuts and Bruises:

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| <ol style="list-style-type: none">1. Go to nearest first aid station for treatment.2. Write and submit a safety incident report. |
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Critical Injuries:

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| <ol style="list-style-type: none">1. Shutdown equipment, secure area to prevent further injury2. Immediately arrange for medical and emergency assistance by calling Security at "88". Phone in JHE A1043. Apply first aid as required4. Notify laboratory supervisor (Dr. G. Bone) immediately5. For all injuries complete a "Injury/Incident Report" and provide a copy to the Chair and EOHSS6. In case of critical injury notify EOHSS immediately, ext 24352 |
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Spill response

N/A

Equipment shutdowns

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| <ol style="list-style-type: none">1. Push one of the emergency stop buttons (either the emergency stop button on the teach pendant or the emergency stop button on the front of the control unit). |
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Environmental Responsibility

Waste disposal procedures

Procedure does not require disposal

Building air quality

Procedure does not effect air quality

References (OHSA/ regulations, EPA and Municipal environmental regulations, McMaster University Program/ Policy, Material Data Sheets (MSDS).

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| <ol style="list-style-type: none">1. RMM #301 Standard Operating Procedure2. RMM #300 Safety Orientation and Training Program3. RMM #309 Laboratory safety manual |
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Distribution

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| <ol style="list-style-type: none">1. Dr. G. Bone who is the lab supervisor2. Technical Staff of Mechanical Engineering3. Mechanical Engineering Chair4. Faculty of Engineering JHSC |
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