MIDDLESEX UNIVERSITY LONDON - ADVANCED MECHATRONICS

RISK ASSESSMENT -15 OCT 2018

REQUIRED TASK

To measure the forces needed to move the various joints in the exoskeleton.

MEASUREMENT METHOD

The forces required by the joints would be measured individually, by measuring the strain on the connecting muscle. To achieve this, two brackets have been designed. The first provides an attachment point to the newton-metre and the second extends the aluminium bar currently holding each of the muscles.

Image showing the two brackets and the newton-metre

RISK ASSESSMENT

Activity	Potential Hazards	Possible Victims	Control Measures
Extending the aluminium bar and attaching the newton-metre	Injuries due to pinch points and sharp edges	Repair Technician, Student, and or Engineer	Take note of all possible pinch points and sharp edges before proceeding
			Take extra care when attaching the extension bracket
Connecting muscles to the air compressor	Injuries due to exploding muscles and loose air pipes	Repair Technician, Student, and or Engineer	Ensure that the air compressor is switched off during this procedure
		Anyone around the device	Ensure that all loose pipes are disconnected, or fastened safely
			Ensure that everyone around the exoskeleton is wearing the appropriate eye protection
Measuring forces	Injuries due to pinch points and sharp edges	The person wearing the exoskeleton during the test	Take note of all possible pinch points and sharp edges before proceeding
			Ensure that the exoskeleton can be quickly switched off

			in case of an emergency
			Ensure that the expected movements of the joints are clearly stated and the wearer is made aware of what to expect during each stage of the measurement test
	Injuries due to exploding muscles and loose air pipes	The person wearing the exoskeleton during the test	Ensure that the muscles are in a good working condition before the test
		Anyone around the device	Ensure that everyone around the exoskeleton is wearing the appropriate eye protection
			Ensure that all loose pipes are disconnected, or fastened safely