Astute Machinery Consultants

# Provision and Use of Work Equipment Regulations Assessment Report

for the

## Rayovac Site Wide PUWER

**Line 10 675 CA**

on behalf of

**Ross Bradley | Rayovac Energizer | Washington**

**Proposal Number: 26067**

**Date: 03 Jun 2026**

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## Client:

**Rayovac Energizer**
2 Stephenson Road
Washington
NE37 3HW

## AMC Consultant:

Alastair Laurenson

## Date of Assessment:

07 Sept 2026

## Revision History:

| | | | |
|---|---|---|---|
| **Initial Draft:** | Alastair Laurenson | **Date:** | 08 Sept 2026 |
| **Reviewed By:** | Jim Davis | **Date:** | 01 Oct 2026 |
| **Issued to Customer:** | Alastair Laurenson | **Date:** | 03 Oct 2026 |

## Project Details:

| | |
|---|---|
| **Project Name:** | Rayovac Site Wide PUWER |

## Machine Details:

| | |
|---|---|
| **Machine Name:** | Line 10 675 CA |
| **Equipment Type:** | Battery Assembly Machine |
| **Manufacturer:** | Not found |
| **Year of Manufacture:** | Not found |
| **Asset ID:** | Not found |
| **Serial Number:** | Not found |
| **Area:** | Cell Assembly |
| **Location:** | Line 10 |
| **Supply Voltage:** | 415v AC |
| **Control Voltage:** | 24v DC |
| **Pneumatic Pressure:** | 6 Bar |

## Machine Basic Description:

The equipment is used in the production of batteries for use in hearing aids.

**Machine Certification:**

The machine has no manufactures identification plate and there for, no CE mark was displayed. AMC have been informed the original machine chassis dates back to the 1970's and various refurbishments and modifications have taken place during the lifecycle.

## Scope of the Regulations:

The Provision and Use of Work Equipment Regulations 1998 came into force on 5th December 1998.

In these regulations, the term the '1974 act' refers to the UK Health and Safety at Work Act 1974.

The regulations apply to employers, persons having control of work equipment, persons who supervise and manage work equipment, and the self-employed in respect of the equipment they use at work.

All work equipment used by employees at work falls within the scope of "work equipment". For the purposes of this assessment "work equipment" is generally taken to mean machinery or combinations of machinery (complex assemblies / production lines).

## Definitions:

**New Work Equipment:** Items of work equipment first provided for use from 5th December 1998 will need to meet the requirements of PUWER 98.

**Second Hand Work Equipment:** When existing work equipment is sold by one company to another, and it is brought into use by the purchasing company from 5th December 1998 it becomes new work equipment and must also meet the requirements of PUWER 98.

**Work Equipment:** Any machine, apparatus, tool, or installation used at work.

**Use of Work Equipment:** Any activity involving work equipment such as starting or stopping the equipment, its use, transport, repair, modification, maintenance, and servicing, and cleaning.

**Danger Zone:** Any zone within and/or around work equipment in which an exposed worker is subject to a risk to his health or safety.

**Exposed Worker:** Any worker wholly or partially in a danger zone.

**Operator:** The worker or workers given the task of using work equipment.

## General:

### Regulations 3 – 9

Place defined responsibilities on management to complement the requirements which are covered under the Health and Safety at Work Act 1974 and The Management of Health and Safety at Work Regulations 1999.

These regulations require site policies and procedures to be formulated and implemented to ensure that work equipment is safe for use and adequate measures are in place to ascertain the health and safety of employees whilst at work to the requirements of PUWER 98.

**Regulation 4 requires employers to ensure that:**

- The work equipment is suitable for the intended use.
- They assess the risk to the health and safety of the persons using the work equipment.
- Consider the working conditions in the premises and any additional risk posed using that equipment.

**Regulation 5 requires employers to ensure that:**

- That the work equipment is maintained in an efficient state, in efficient working order, and in good repair.
- Where the machinery has a maintenance log, they must ensure that it is kept up to date.

**Regulation 6 requires the employer:**

To ensure that where the safety of work equipment depends on the installation conditions, to ensure that it has been installed correctly and is safe to operate the work equipment is inspected:

- After installation and before being put into service for the first time.
- After assembly at a new site or in a new location.

The employer must also ensure that work equipment exposed to conditions causing deterioration which is liable to result in dangerous situations, and to ensure that the health and safety conditions are maintained, and that any deterioration can be detected and remedied in good time is inspected at:

- Suitable intervals and:
- Each time that exceptional circumstances which are liable to jeopardise the safety of the work equipment have occurred.
- Any such inspection must be carried out before any equipment leaves the premises or undertaking.
- If the equipment is obtained from another source or supplier, it must not be used unless accompanied by physical evidence from the source or supplier that the last inspection required has been carried out.

**Regulation 7 requires that the employer:**

Must ensure that where the use of work equipment is likely to involve a specific risk to health and safety that:

- The use of the equipment is restricted to those persons suitably trained to use the equipment and specifically given the task of using it.
- Repairs, modifications maintenance or servicing is restricted to persons specifically designated to perform these tasks, and that they have received adequate training to carry out the tasks.

**Regulation 8 requires that the employer and his supervisors and managers of work equipment:**

Must ensure that all persons who use work equipment have available to them adequate health and safety information and where appropriate, written instructions to the work equipment that are comprehensible to all those concerned. The information where appropriate shall include:

- The conditions in which and the methods by which the work equipment may be used.
- Foreseeable abnormal situations and the action to be taken if such a situation were to occur.
- Information from any conclusions to be drawn from experience of using the work equipment.

**Regulation 9 requires that the employer:**

Shall ensure that his supervisors and managers of work equipment, and all persons who use the work equipment have received:

- Adequate training for purposes of health and safety, including methods to be adopted when using the work equipment.
- Any information as to the risks which the use of the equipment may entail.
- All precautions to be taken when using the equipment.

**Regulations 10 – 24.**

**Regulation 10 covers the initial integrity of machines (in most cases), and requires that the employer:**

- Must ensure that an item of work equipment conforms at all times with any 'essential safety requirements', other than requirements which at the time of it being first supplied or put into service in any place which these regulations do not apply.

Regulations 11 – 24 cover the specific essential compliance requirements of machinery in the workplace.

**Summation:**

**The regulations 3 to 24 can be summarised as follows:**

**Management Implemented Health and Safety Policies and Defined Procedures:**

| | |
|---|---|
| Regulation 3 | Application |
| Regulation 4 | Suitability of Work Equipment |
| Regulation 5 | Maintenance |
| Regulation 6 | Inspection |
| Regulation 7 | Specific Risks |
| Regulation 8 | Information and Instructions |
| Regulation 9 | Training |

**Essential Safety Requirements of Machinery:**

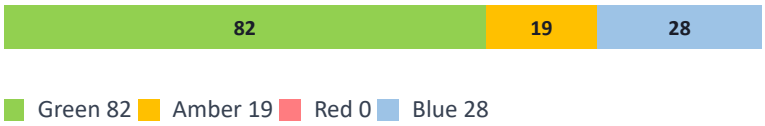
| | |
|---|---|
| Regulation 10 | Conformity with Community Requirements |
| Regulation 11 | Dangerous Parts of Machinery |
| Regulation 12 | Protection against Specific Hazards |
| Regulation 13 | High or Very Low Temperature |
| Regulation 14 | Controls for Starting or Making a Significant Change in Operating Conditions |
| Regulation 15 | Stop Controls |
| Regulation 16 | Emergency Stop Controls |
| Regulation 17 | Controls |
| Regulation 18 | Control Systems |
| Regulation 19 | Isolation from Sources of Energy |
| Regulation 20 | Stability |
| Regulation 21 | Lighting |
| Regulation 22 | Maintenance Operations |
| Regulation 23 | Markings |
| Regulation 24 | Warnings |

*The following checklist assesses the compliance of the work equipment under inspection to the requirements of Regulations 1–24 in accordance with the inspection requirements of Regulation 6.*

| SUPPLY VOLTAGE | CONTROL VOLTAGE | PNEUMATIC PRESSURE |
|---|---|---|
| 415v AC | 24v DC | 6 Bar |
| **MANUFACTURER** | **YEAR OF MANUFACTURE** | |
| Not found | Not found | |

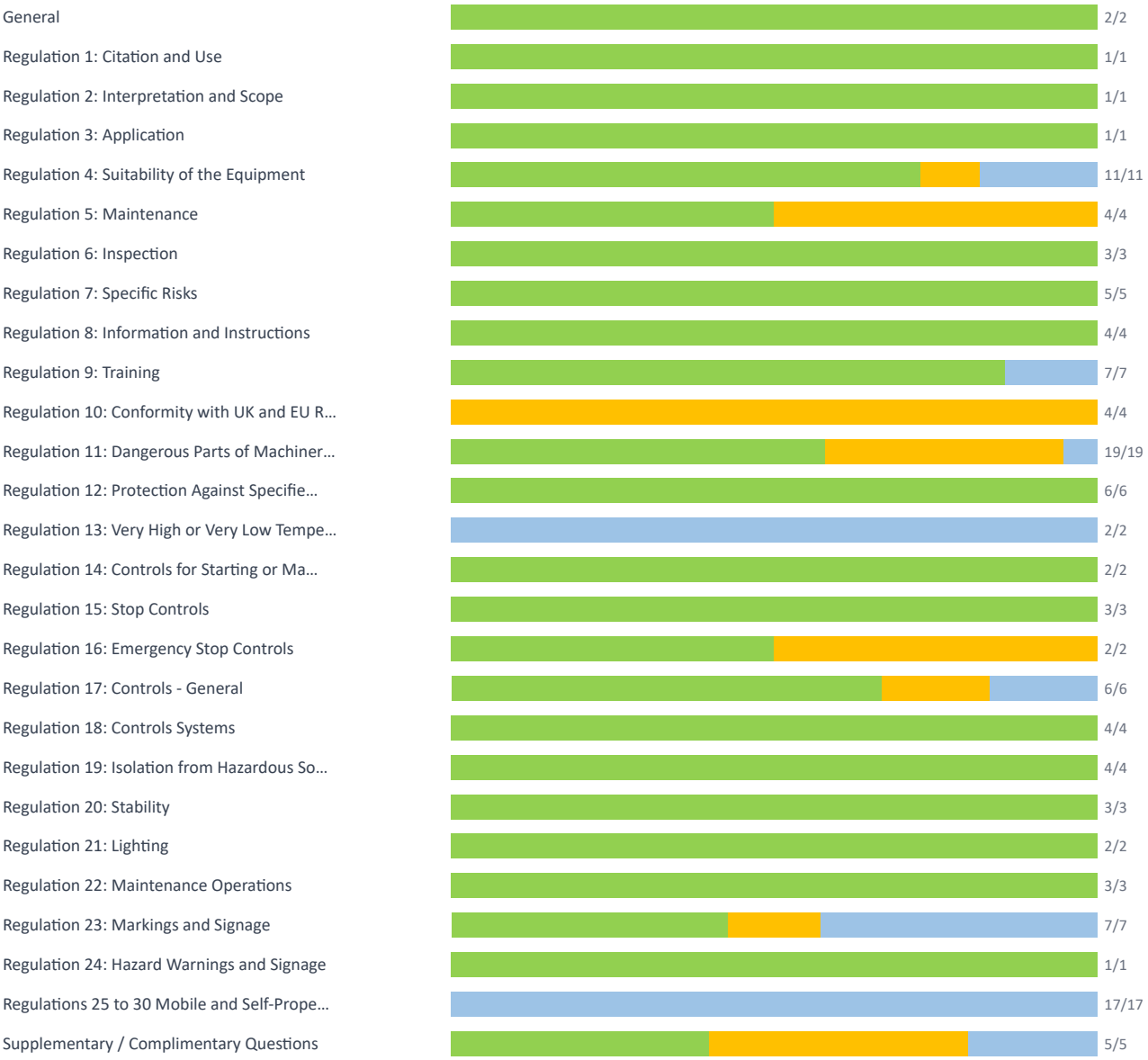
| In Compliance (Green) | Non-Compliant (Red) | Action Required (Amber) | For Consideration (Blue) | Overall Compliance % |
|---|---|---|---|---|
| **82** | **0** | **19** | **28** | **81.2%** |

## STATUS BREAKDOWN




Green 82 Amber 19 Red 0 Blue 28

## PER-REGULATION BREAKDOWN




| General | Yes | No | N/A |
|---|---|---|---|
| 1. Is there a current health and safety policy for the site? | ✓ | | |
| *Comments:* | | | |

| General | Yes | No | N/A |
|---|---|---|---|
| 2. Is there a responsible person for the health and safety policy? | ✓ | | |
| *Comments:*<br>***Green:*** *The site responsible person is Myles Atkins.* | | | |

| Regulation 1: Citation and Use | Yes | No | N/A |
|---|---|---|---|
| 3. Has the work equipment been brought into use by the company or owner / operator after 5th December 1998? | ✓ | | |
| *Comments:* | | | |

| Regulation 2: Interpretation and Scope | Yes | No | N/A |
|---|---|---|---|
| 4. Does the equipment come under the interpretation of work equipment as defined by PUWER 98? | ✓ | | |
| *Comments:* | | | |

| Regulation 3: Application | Yes | No | N/A |
|---|---|---|---|
| 5. Is the equipment specified in the PUWER 98 Regulations Section 3? | ✓ | | |
| *Comments:* | | | |

| Regulation 4: Suitability of the Equipment | Yes | No | N/A |
|---|---|---|---|
| 6. Is the equipment suitable by design, construction, or adaptation for the work it is provided to do in accordance with the manufacturer's specifications and instructions? | ✓ | | |
| *Comments:* | | | |
| 7. Have risk assessments been carried out on all work equipment? | ✓ | | |
| *Comments:*<br>***Amber:*** *This was noted as work in progress* | | | |
| 8. Is the equipment ergonomically well designed, positioned and located to reduce risks to the end user or operator of the equipment? | ✓ | | |
| *Comments:* | | | |
| 9. Have all ventilation requirements been considered and appropriate measures taken? | ✓ | | |
| *Comments:* | | | |
| 10. Have and are noise surveys assessments carried out? | ✓ | | |
| *Comments:* | | | |
| 11. Have and are lighting surveys / assessments carried out? | ✓ | | |
| *Comments:* | | | |

| Regulation 4: Suitability of the Equipment | Yes | No | N/A |
|---|---|---|---|
| 12. Are the confined space regulations applicable, and if so, have they been addressed, and the working procedures adequately documented? | | | ✓ |
| *Comments:* | | | |
| 13. Are there any risks to personnel due to lone working, and if so, have they been addressed and working procedures adequately documented? | | | ✓ |
| *Comments:* | | | |
| 14. Has the control of substances hazardous to health regulations (COSHH) been addressed correctly and are all necessary controls in place? | ✓ | | |
| *Comments:* | | | |
| 15. Are the COSHH assessments readily available to all persons concerned? | ✓ | | |
| *Comments:* | | | |
| 16. Where required under the COSHH assessments, is personal protective equipment (PPE) issued to the relevant personnel and is this adequately controlled? | ✓ | | |
| *Comments:* | | | |

| Regulation 5: Maintenance | Yes | No | N/A |
|---|---|---|---|
| 17. Has a formal maintenance system been implemented, either planned preventative or condition based for safety critical parts of work equipment? | ✓ | | |
| *Comments:* | | | |
| 18. Is the work equipment maintained in efficient working order and good repair? | ✓ | | |
| *Comments:* | | | |
| 19. Is there an authorised persons list stating who is competent to perform maintenance operations? | ✓ | | |
| *Comments:*<br>***Amber:*** *This was noted as work in progress* | | | |
| 20. Have all maintenance personnel received adequate training on health and safety and the safe use of work equipment? | ✓ | | |
| *Comments:*<br>***Amber:*** *This was noted as work in progress* | | | |

| Regulation 6: Inspection | Yes | No | N/A |
|---|---|---|---|
| 21. Are safety critical parts frequently checked and inspected for correct function? | ✓ | | |
| *Comments:* | | | |

| Regulation 6: Inspection | Yes | No | N/A |
|---|---|---|---|
| 22. Are work equipment safety inspection documents available, or is this the first inspection of the equipment? | ✓ | | |
| *Comments:* | | | |
| 23. Is the preventative maintenance log up to date? | ✓ | | |
| *Comments:* | | | |

| Regulation 7: Specific Risks | Yes | No | N/A |
|---|---|---|---|
| 24. Is use of the equipment restricted to those given the task of using it and trained to use it? | ✓ | | |
| *Comments:* | | | |
| 25. Are there safe working procedures in place for maintenance operations? | ✓ | | |
| *Comments:* | | | |
| 26. Is there adequate control over maintenance personnel moving from different departments or areas to ensure they are trained to maintain the work equipment in the other departments or areas? | ✓ | | |
| *Comments:* | | | |
| 27. Is there a permit to work system in place and are the working procedures adequately documented? | ✓ | | |
| *Comments:* | | | |
| 28. Is there a lock out / tag out policy and procedure and matrix in place for the safe isolation of work equipment from all hazardous energy sources? | ✓ | | |
| *Comments:* | | | |

| Regulation 8: Information and Instructions | Yes | No | N/A |
|---|---|---|---|
| 29. Are instruction manuals available for all work equipment where required? | ✓ | | |
| *Comments:* | | | |
| 30. Are there safe working procedures in place for use of the equipment where required? | ✓ | | |
| *Comments:* | | | |
| 31. Are written instructions on the safe use of work equipment available and are they understandable to the persons concerned? | ✓ | | |
| *Comments:* | | | |

| Regulation 8: Information and Instructions | Yes | No | N/A |
|---|---|---|---|
| 32. Are regular meetings held with employee's and / or employee representatives about any matters regarding Health and Safety? | ✓ | | |
| *Comments:* | | | |

| Regulation 9: Training | Yes | No | N/A |
|---|---|---|---|
| 33. Have operators received adequate training on health and safety and the safe use of work equipment? | ✓ | | |
| *Comments:* | | | |
| 34. Have supervisors received adequate training on health and safety and the safe use of work equipment? | ✓ | | |
| *Comments:* | | | |
| 35. Is there an authorised persons list as to who is competent to use the work equipment? | ✓ | | |
| *Comments:* | | | |
| 36. Is there adequate control over operators / personnel moving from different departments or areas to ensure they are trained to operate the work equipment in the other departments or areas? | ✓ | | |
| *Comments:* | | | |
| 37. Are there adequate controls in place for the prevention of young people (under the age of 18) being exposed to unnecessary risks? | | | ✓ |
| *Comments:* | | | |
| 38. Are training records kept, and do they show the requirements for update and review and the person(s) responsible for training? | ✓ | | |
| *Comments:* | | | |
| 39. Is there adequate inductions and / or training for all employees including contractors, temporary employees / casual or agency workers, and visitors? | ✓ | | |
| *Comments:* | | | |

| Regulation 10: Conformity with UK and EU Requirements | Yes | No | N/A |
|---|---|---|---|
| 40. Was the machine first put into service after December 31st 1992? | | ✓ | |
| *Comments:*<br>***Amber:*** *Unable to determine the age of the machine.* | | | |
| 41. Was the machine, regardless of age, placed for use in the EC after December 31st 1992? | | ✓ | |
| *Comments:*<br>***Amber:*** *Unable to determine the age of the machine.* | | | |

| Regulation 10: Conformity with UK and EU Requirements | Yes | No | N/A |
|---|---|---|---|
| 42. Is the equipment UKCA or CE marked?<br>*UKCA not applicable before 1st January 2022 and is optional from the 1st of August 2023. CE not applicable before 1st January 1993, mandatory after 1st January 1995; and mandatory for equipment first provided in the workplace after 5th December 1998 for PUWER 98.* | | ✓ | |
| *Comments:*<br>***Amber:*** *No CE or UKCA mark was displayed on the machine.*<br>***Amber:*** *AMC have been informed the the original machine chassis dates back to the 1970's and various refurbishments and modifications have taken place during the lifecycle.* | | | |
| 43. Is there a UKCA or CE Declaration of Conformity?<br>*UKCA not applicable before 1st January 2022, and mandatory for equipment first provided in the workplace after 1st January 2023. CE not applicable before 1st January 1993, mandatory after 1st January 1995; and mandatory for equipment first provided in the workplace after 5th December 1998 for PUWER 98.* | | ✓ | |
| *Comments:*<br>***Amber:*** *No CE or UKCA mark was displayed on the machine.*<br>***Amber:*** *AMC have been informed the the original machine chassis dates back to the 1970's and various refurbishments and modifications have taken place during the lifecycle.* | | | |

| Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks | Yes | No | N/A |
|---|---|---|---|
| 44. Are measures taken to prevent access to danger zones? | | ✓ | |
| *Comments:*<br>***Amber:*** *There are areas which required improvement in the fixed guarding.*<br>***Amber:*** *A crush/nip hazard is present on the pneumatic cylinder.*<br>***Amber:*** *General Guarding* | | | |
| 45. Can the machine be stopped before a danger zone can be accessed? | ✓ | | |
| *Comments:* | | | |
| 46. Are fixed guards used? | ✓ | | |
| *Comments:* | | | |
| 47. Are other guards or physical safety related control system protection devices used? | | ✓ | |
| *Comments:* | | | |
| 48. If fixed guards or other guards and protection devices are not used, are “push sticks”, jigs, holders or other devices used to reduce risk? | | ✓ | |
| *Comments:* | | | |
| 49. Are the guards, protection devices and other devices provided suitable for the purpose intended? | | ✓ | |
| *Comments:*<br>***Amber:*** *Guards are missing fixings, have signs of damage and are also flexible.* | | | |

| Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks | Yes | No | N/A |
|---|---|---|---|
| 50. Are the guards of good construction, sound material, and adequate strength? | | ✓ | |
| *Comments:*<br>***Amber:*** *Guards are missing fixings, have signs of damage and are also flexible.* | | | |
| 51. Are the guards maintained in an efficient state, efficient working order, and in good repair? | | ✓ | |
| *Comments:*<br>***Amber:*** *Guards are missing fixings, have signs of damage and are also flexible.* | | | |
| 52. Do the guards themselves create any additional risk to health and safety? | | ✓ | |
| *Comments:* | | | |
| 53. Is it possible to easily bypass or disable the guards? | ✓ | | |
| *Comments:*<br>***Amber:*** *Guards are missing fixings, have signs of damage and are also flexible.*<br>***Amber:*** *Interlocks are secured with hex style fixings. A number of Hex tools used for machine setting were located in and around the area.* | | | |
| 54. Are the guards secured with appropriate fixings in accordance with the requirements of the Machinery Directive 2006/42/EC and EN 14120? | | ✓ | |
| *Comments:*<br>***Amber:*** *Hinged guards have same locks as electrical cabinets.*<br>***Amber:*** *Guards are missing fixings.* | | | |
| 55. Are the guards situated at a sufficient distance from the danger zone? | ✓ | | |
| *Comments:* | | | |
| 56. Is it possible to view of the operating cycle of the machinery where guards are in place where such a view is necessary? | ✓ | | |
| *Comments:* | | | |
| 57. Do the guards allow operations necessary to fit and replace parts and for maintenance work, and in doing so do they restrict access so that it only allows access to the work area where possible without dismantling the guard or protective device? | ✓ | | |
| *Comments:* | | | |
| 58. Are appropriate measures adopted to stop people being trapped in the machine? | | | ✓ |
| *Comments:* | | | |
| 59. Where fitted are interlocks positive acting? | ✓ | | |
| *Comments:* | | | |

| Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks | Yes | No | N/A |
|---|---|---|---|
| 60. Where fitted are interlocks correctly positioned for use, and both secured and located in such a way to actively prevent defeat? | | ✓ | |
| *Comments:*<br>***Amber:*** *Interlocks are secured with hex style fixings. A number of Hex tools used for machine setting were located in and around the area.* | | | |
| 61. Where fitted do the interlocks function correctly? | ✓ | | |
| *Comments:* | | | |
| 62. Where fitted are all safety related control system actuators, input devices or electronic sensitive devices adequate for their purpose, and are they of the correct type? | ✓ | | |
| *Comments:* | | | |

| Regulation 12: Protection Against Specified Hazards | Yes | No | N/A |
|---|---|---|---|
| 63. Is there protection provided against any article or substance falling or being ejected from work equipment? | ✓ | | |
| *Comments:* | | | |
| 64. Is there protection provided against rupture or disintegration of parts of the work equipment? | ✓ | | |
| *Comments:* | | | |
| 65. Is there protection provided against work equipment catching fire or overheating? | ✓ | | |
| *Comments:* | | | |
| 66. Is there protection provided against the unintended or premature explosion of the work equipment or any article or substance produced, used, or stored in it? | ✓ | | |
| *Comments:* | | | |
| 67. Is there protection provided against the unintended or premature discharge of any article, gas, dust, liquid, vapour, radiation, or other substance which is produced, used, or stored in the work equipment that is hazardous to health? | ✓ | | |
| *Comments:* | | | |
| 68. Where the protection provided does not fully protect the operator, is personal protective equipment (PPE) issued to the relevant personnel and is this adequately controlled? | ✓ | | |
| *Comments:* | | | |

| Regulation 13: Very High or Very Low Temperatures | Yes | No | N/A |
|---|---|---|---|
| 69. Are all touchable hot or cold surfaces adequately guarded? | | | ✓ |
| *Comments:* | | | |

| Regulation 13: Very High or Very Low Temperatures | Yes | No | N/A |
|---|---|---|---|
| 70. Where there is the possibility of hot or cold materials or substances being ejected, have adequate measures been applied to minimise the risk? | | | ✓ |
| *Comments:* | | | |

| Regulation 14: Controls for Starting or Making a Change in Operation | Yes | No | N/A |
|---|---|---|---|
| 71. Is there a start control provided to start the work equipment (including restarting after a stoppage for any reason)? | ✓ | | |
| *Comments:* | | | |
| 72. Are controls provided to make a significant change in the operating conditions (speed, pressure, etc.) where after the change it results in a greater risk to health and safety? | ✓ | | |
| *Comments:* | | | |

| Regulation 15: Stop Controls | Yes | No | N/A |
|---|---|---|---|
| 73. Is the work equipment fitted with one or more readily accessible stop controls to bring it to a stop in a safe condition and in a safe manner? | ✓ | | |
| *Comments:* | | | |
| 74. When the hazardous parts of the work equipment have stopped, is the energy supply to the actuators concerned switched off where necessary? | ✓ | | |
| *Comments:* | | | |
| 75. Does the stop control have priority over the start control or any control that changes the operating conditions of the work equipment? | ✓ | | |
| *Comments:* | | | |

| Regulation 16: Emergency Stop Controls | Yes | No | N/A |
|---|---|---|---|
| 76. Is the work equipment fitted with one or more emergency stop controls where required? | ✓ | | |
| *Comments:* | | | |
| 77. Does the emergency stop control have priority over any other all other controls including the normal stop control? | | ✓ | |
| *Comments:*<br>***Amber:*** *AMC were unable to test this during the inspection.* | | | |

| Regulation 17: Controls - General | Yes | No | N/A |
|---|---|---|---|
| 78. Are all control devices clearly visible, identifiable, and appropriately marked by durable means for the environment in which they are located? | | ✓ | |
| *Comments:*<br>***Amber:*** *Controls are missing/temporary identifications.* | | | |
| 79. Are all control devices located outside danger zones excepting certain controls that are required within the danger zones i.e., robot teach pendants? | ✓ | | |
| *Comments:* | | | |
| 80. Where controls are required in danger zones are they only reduced speed, hold to run, or enabling devices, or are other safeguards in place? | | | ✓ |
| *Comments:* | | | |
| 81. From the main control position, is the operator able to ensure that no person is present in the danger zone? | ✓ | | |
| *Comments:* | | | |
| 82. If it is possible that a person could be in a danger zone, is an audible, visible, or suitable warning given in accordance with regulation 24 whenever the machinery is about to start? | ✓ | | |
| *Comments:* | | | |
| 83. Where a person can be in the danger zone is there a means to prevent starting of the work equipment and / or a means of warning the operator of their presence? | ✓ | | |
| *Comments:* | | | |

| Regulation 18: Controls Systems | Yes | No | N/A |
|---|---|---|---|
| 84. Are the control systems safe? | ✓ | | |
| *Comments:* | | | |
| 85. Are control systems chosen making due allowance for failures, faults and constraints that can be expected to occur in the planned use of the work equipment? | ✓ | | |
| *Comments:* | | | |
| 86. Does the control systems operation minimise any risk to health and safety? | ✓ | | |
| *Comments:* | | | |
| 87. Does the control system ensure that when faults or damage to any part of the control system, or a loss of supply of any form of energy does not lead to an increased risk to health and safety - as far as reasonably practicable, are they fail safe? | ✓ | | |
| *Comments:* | | | |

| Regulation 19: Isolation from Hazardous Sources of Energy | Yes | No | N/A |
|---|---|---|---|
| 88. Is it possible to isolate the work equipment from all its energy sources? | ✓ | | |
| *Comments:* | | | |
| 89. Are the means to isolate energy sources clearly identified by durable means and readily accessible (i.e., located between 0.6 and 1.9m above the service / floor level)? | ✓ | | |
| *Comments:* | | | |
| 90. Are all energy isolation devices lockable and are they capable of being locked off and tagged off? | ✓ | | |
| *Comments:* | | | |
| 91. When energy sources are reconnected, are risks to health and safety prevented? | ✓ | | |
| *Comments:* | | | |

| Regulation 20: Stability | Yes | No | N/A |
|---|---|---|---|
| 92. Is the work equipment stable or is it provided with facilities to make it stable? | ✓ | | |
| *Comments:* | | | |
| 93. Are removable /moveable parts of the work equipment stable, or can they be made stable by clamping or otherwise? | ✓ | | |
| *Comments:* | | | |
| 94. If the work equipment is fitted with lifting equipment is it marked with its WLL (SWL), is it secure and stable, and is it inspected under LOLER? | ✓ | | |
| *Comments:* | | | |

| Regulation 21: Lighting | Yes | No | N/A |
|---|---|---|---|
| 95. Is the lighting provided suitable for normal operation of the equipment? | ✓ | | |
| *Comments:* | | | |
| 96. Is the lighting provided suitable for setting and adjustment of the equipment? | ✓ | | |
| *Comments:* | | | |

| Regulation 22: Maintenance Operations | Yes | No | N/A |
|---|---|---|---|
| 97. Is it possible to shut down the work equipment completely to carry out maintenance operations? | ✓ | | |
| *Comments:* | | | |

| Regulation 22: Maintenance Operations | Yes | No | N/A |
|---|---|---|---|
| 98. If this is not possible, is it possible for such operations to be carried out, outside of the danger zones? | ✓ | | |
| *Comments:* | | | |
| 99. If this is not possible, is it possible to take appropriate protection measures? | ✓ | | |
| *Comments:* | | | |

| Regulation 23: Markings and Signage | Yes | No | N/A |
|---|---|---|---|
| 100. Does the work equipment bear the essential warnings and markings where appropriate for stop / start and all other controls and isolators? | | ✓ | |
| *Comments:*<br>***Amber:*** *Controls are missing/temporary identifications.* | | | |
| 101. Very high and / or very low temperatures and surfaces? | | | ✓ |
| *Comments:* | | | |
| 102. Maximum speed? | | | ✓ |
| *Comments:* | | | |
| 103. Direction of Rotation? | | | ✓ |
| *Comments:* | | | |
| 104. Correct gas, fluid, or substances and direction of flow identification? | ✓ | | |
| *Comments:* | | | |
| 105. Any other relevant markings to prevent mechanical injury such as crushing, entanglement or cutting and severing hazards etc? | ✓ | | |
| *Comments:* | | | |
| 106. Any other relevant markings to ensure health and safety such as pressure, radiation, explosive atmospheres or substances or strong magnetic fields etc? | ✓ | | |
| *Comments:* | | | |

| Regulation 24: Hazard Warnings and Signage | Yes | No | N/A |
|---|---|---|---|
| 107. Are all appropriate warning signs and warning devices installed or fitted to the equipment where necessary? | ✓ | | |
| *Comments:* | | | |

| Regulations 25 to 30 Mobile and Self-Propelled Work Equipment | Yes | No | N/A |
|---|---|---|---|
| 108. Is the equipment designed to only carry the driver or person operating the equipment? | | | ✓ |
| *Comments:* | | | |
| 109. Are any other persons expected to be carried? | | | ✓ |
| *Comments:* | | | |
| 110. Are there signs on the mobile equipment stating the maximum capacity for carrying people? | | | ✓ |
| *Comments:* | | | |
| 111. Are all unauthorised persons prevented from operating the equipment? | | | ✓ |
| *Comments:* | | | |
| 112. Are adequate collision prevention devices fitted? | | | ✓ |
| *Comments:* | | | |
| 113. Are suitable stop devices fitted to the equipment? | | | ✓ |
| *Comments:* | | | |
| 114. For self-propelled equipment are there independent back up braking systems available in the event of failure? | | | ✓ |
| *Comments:* | | | |
| 115. For remote controlled equipment are there automatic braking systems fitted to stop the equipment if it goes out of range of the transmitter or in case of the failure of the remote connection or general failure of the equipment? | | | ✓ |
| *Comments:* | | | |
| 116. Does the equipment have adequate and active speed restriction devices? | | | ✓ |
| *Comments:* | | | |
| 117. Is driver or operator visibility in front and behind the vehicle adequate at all times and are mirrors or sensors fitted to minimise blind spots? | | | ✓ |
| *Comments:* | | | |
| 118. For remote controlled mobile equipment is used is there sufficient audible and visual warning devices in place for others close by the machine? | | | ✓ |
| *Comments:* | | | |

| Regulations 25 to 30 Mobile and Self-Propelled Work Equipment | Yes | No | N/A |
|---|---|---|---|
| 119. Is the equipment stable under normal use conditions i.e., whilst moving, or when stationary for task completion purposes when used in accordance with the manufacturers operating instructions? | | | ✓ |
| *Comments:* | | | |
| 120. Is the driver, operator or any passenger protected from falling off the moving equipment, are restraining systems fitted, and are policies and procedures such as SOP's and SSOW's in place to ensure that restraining devices are used? | | | ✓ |
| *Comments:* | | | |
| 121. Are there adequate Roll Over Protection Structures (ROPS) Falling Object Protection Structures (FOPS) and Tip Over Protection Structures (TOPS) fitted to the equipment to prevent injury to the driver, operator, or any passenger? | | | ✓ |
| *Comments:* | | | |
| 122. Does the driver, operator or any passenger have suitable protection from the moving or rotating parts, or drive shafts fitted to the equipment? | | | ✓ |
| *Comments:* | | | |
| 123. Are drive shafts prevented from contacting the floor in both normal operation and failure scenarios? | | | ✓ |
| *Comments:* | | | |
| 124. Is suitable firefighting equipment carried if required? | | | ✓ |
| *Comments:* | | | |

| Supplementary / Complimentary Questions | Yes | No | N/A |
|---|---|---|---|
| 125. Are there any electrical safety or compliance issues with the equipment with respect to IEC EN 60204-1? | ✓ | | |
| *Comments:*<br>***Amber:*** *I/O Box lids were not secure.*<br>***Amber:*** *IP2x Issues on trunking and electrical enclosures.*<br>***Amber:*** *General electrical field installation.*<br>***Amber:*** *Control panels have a number of issues.* | | | |
| 126. Are there any pneumatic safety or compliance issues with the equipment with respect to ISO EN 4414? | ✓ | | |
| *Comments:*<br>***Amber:*** *The general pneumatics installation requires improvement.* | | | |
| 127. Are there any hydraulic safety or compliance issues with the equipment with respect to ISO EN 4413? | | | ✓ |
| *Comments:* | | | |

| Supplementary / Complimentary Questions | Yes | No | N/A |
|---|---|---|---|
| 128. Are there any safety or compliance issues with the equipment's safety related control system(s) with respect to ISO EN 13849? | | ✓ | |
| *Comments:* | | | |
| 129. Are there any other notable issues that are not covered within the scope of PUWER? | | ✓ | |
| *Comments:* | | | |

## Conclusion & Findings

**28** issues flagged — **0 Red** · **28 Amber** · documented in **12** hazards

### Hazards Identified — Findings & Recommendations

## HAZARD 1 · NO UKCA OR CE MARK AND ASSOCIATED DOCUMNETATION. · ACTION REQUIRED (AMBER)

### LINKED ISSUES

- **Q42** — Regulation 10: Conformity with UK and EU Requirements
  *AMC have been informed the the original machine chassis dates back to the 1970's and various refurbi*
- **Q42** — Regulation 10: Conformity with UK and EU Requirements
  *No CE or UKCA mark was displayed on the machine.*
- **Q43** — Regulation 10: Conformity with UK and EU Requirements
  *AMC have been informed the the original machine chassis dates back to the 1970's and various refurbi*
- **Q43** — Regulation 10: Conformity with UK and EU Requirements
  *No CE or UKCA mark was displayed on the machine.*

**Hazard / Finding:**

Hazard

The machine carries no CE or UKCA conformity mark and has no associated conformity documentation. Originally manufactured in the 1970s, it has undergone various modifications throughout its service life, including a safety-related control system upgrade carried out approximately eight years ago. In the absence of documentation, it cannot be established whether these modifications constitute a substantial modification placing new conformity obligations on the equipment, nor that the machine in its current configuration has been assessed as safe.

**Recommended Remedial Action:**

The machine pre-dates the introduction of CE/UKCA conformity marking and was not subject to marking requirements when first placed into service; the absence of a mark is therefore not, in itself, a non-conformity for equipment of this age. A formal review must be undertaken to determine whether the modifications carried out — individually or cumulatively, and in particular the safety-related control upgrade — constitute a substantial modification that introduces new or increased hazards beyond the machine's original design intent. Where a substantial modification is identified, the party responsible for that work assumes the obligations of a manufacturer and must complete the appropriate conformity assessment, technical documentation and marking for the equipment in its current configuration. A current technical file should be compiled and retained on site, comprising a suitable and sufficient risk assessment of the machine as configured, records of the safety-related control upgrade (specification, validation evidence and any associated declaration), and documentation demonstrating that the equipment remains safe for continued use. This file should be made available for inspection on request.

| **Standards Referenced** | |
|---|---|
| **EN ISO 12100** | Safety of machinery — General principles for design — Risk assessment and risk reduction |

## HAZARD 2 · GUARDS AND GUARD FIXINGS · ACTION REQUIRED (AMBER)

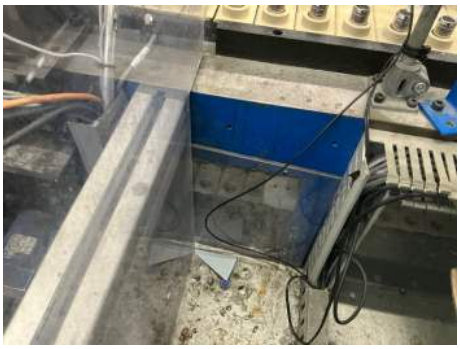
### LINKED ISSUES

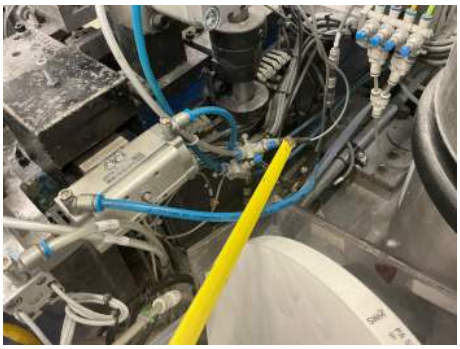
- **Q44** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *There are areas which required improvement in the fixed guarding.*
- **Q49** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *Guards are missing fixings, have signs of damage and are also flexible.*
- **Q50** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *Guards are missing fixings, have signs of damage and are also flexible.*
- **Q51** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *Guards are missing fixings, have signs of damage and are also flexible.*
- **Q53** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *Guards are missing fixings, have signs of damage and are also flexible.*
- **Q54** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *Guards are missing fixings.*

**Hazard / Finding:**

Guarding on the machine was found with loose and/or missing fixings, and several areas showed evidence of previous repair and physical damage. In some locations the guarding was flexible rather than rigid. In this condition the guarding could be readily displaced or bypassed, and may be insufficient to retain ejected parts or contain a component failure originating within the machine, exposing operators and passers-by to moving parts, ejected material or debris.

## HAZARD 2 · GUARDS AND GUARD FIXINGS · ACTION REQUIRED (AMBER)





**Recommended Remedial Action:**

All fixed guarding must be restored to a sound, secure condition. Loose fixings should be tightened and any missing fixings replaced with the correct type, so that each guard is retained by its full complement of fasteners and cannot be displaced through normal operation or vibration. Fixed guards should be secured by a method that requires a tool to remove, discouraging routine removal and defeat. Damaged or previously repaired guarding must be inspected by a competent person and either reinstated to its original specification or replaced; ad-hoc or temporary repairs are not acceptable where the guard's integrity is in question. Guarding found to be flexible must be assessed and, where necessary, reinforced, re-supported or replaced with material of adequate strength and rigidity so that it remains in position under load and is capable of withstanding and containing a reasonably foreseeable internal failure or ejection. Guard condition and security should thereafter be included as a defined item within the machine's routine inspection and maintenance regime.

| **Standards Referenced** | |
|---|---|
| **EN ISO 14120** | Guards — General requirements for the design and construction of fixed and movable guards |

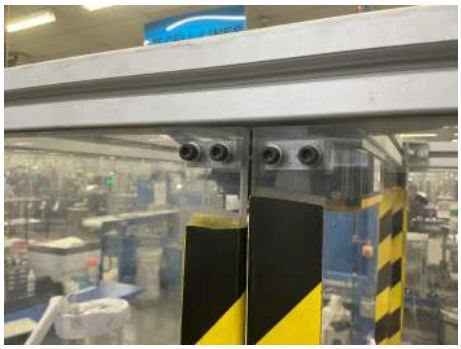
## HAZARD 3 · INTERLOCK FIXINGS · ACTION REQUIRED (AMBER)

### LINKED ISSUES

- **Q53** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *Interlocks are secured with hex style fixings. A number of Hex tools used for machine setting were l*
- **Q60** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *Interlocks are secured with hex style fixings. A number of Hex tools used for machine setting were l*

**Hazard / Finding:**

The guard interlocks are secured with hex-type fixings, and a number of hex tools used for machine setting were found in the immediate vicinity of the machine. As the same style of tool required to release the interlock fixings is readily available at the machine, the interlocks could be defeated in a reasonably foreseeable manner, allowing the machine to be operated with guards open or removed and exposing personnel to hazardous moving parts.



**Recommended Remedial Action:**

The interlocking arrangement must be assessed for its susceptibility to defeat and upgraded so that it cannot be defeated in a reasonably foreseeable manner using readily available objects, spare actuators or the setting tools present at the machine. Preference should be given to interlock devices with a high level of actuator coding, whose actuator is uniquely paired to its device and cannot be substituted, bypassed or held in the closed position. Where a lower-coded or mechanical device is retained, additional measures against defeat must be applied, including mounting the device out of reach or obscured from view, physically shrouding the actuator and switch, and fixing the device and actuator by non-detachable means such as one-way screws, riveting or pinning; the fixings must be changed from the current hex type to a form that cannot be released by the tools available at the machine, and the actuator positioned so it cannot be operated while the guard is open. The incentive to defeat the interlock should also be reduced by providing a safe, reduced-risk operating mode for setting and adjustment, loose setting tools should not be stored at the machine, and the integrity and coding of the interlocking system, together with any evidence of tampering, should be confirmed by a competent person and included within the machine's routine inspection regime.

| Standards Referenced | |
|---|---|
| **EN ISO 14119** | Interlocking devices associated with guards — Principles for design and selection |

## HAZARD 4 · ELECTRICAL AND MECHANICAL DOORS · ACTION REQUIRED (AMBER)

### LINKED ISSUES

- **Q54** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *Hinged guards have same locks as electrical cabinets.*

**Hazard / Finding:**

The electrical control panels and the hinged mechanical guards are secured with the same style of Rittal lock, operated by a common key. As a result, personnel issued with a key to access the mechanical guards for maintenance or setting would also be able to open the electrical control panels. This removes the intended separation between mechanical and electrical access and could allow persons who are not authorised or competent in electrical work to gain access to live electrical equipment, with a risk of electric shock, arc flash and inadvertent interference with electrical controls.

**Recommended Remedial Action:**

Access to the electrical control panels must be separated from access to the mechanical guarding by means of differential keying, so that a key issued for mechanical guard access cannot open any electrical enclosure. The electrical panels should be fitted with a distinct lock and key suited to a restricted level of access, with keys issued and controlled solely for persons who are authorised and electrically competent to work on or in the vicinity of the enclosures. The mechanical guards should retain their own separate keying appropriate to those authorised to carry out mechanical setting and maintenance.

| Standards Referenced | |
|---|---|
| **EN 60204-1** | Electrical equipment of machines — Part 1: General requirements |
| **EN ISO 14120** | Guards — General requirements for the design and construction of fixed and movable guards |

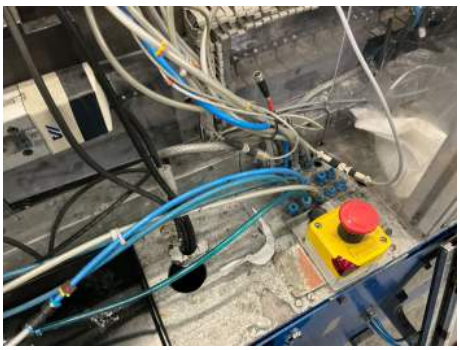
## HAZARD 5 · EMERGENCY STOP AND INTERLOCK FUNCTIONALITY. · ACTION REQUIRED (AMBER)

### LINKED ISSUES

- **Q77** — Regulation 16: Emergency Stop Controls
  *AMC were unable to test this during the inspection.*

**Hazard / Finding:**

During the inspection AMC were unable to functionally test the emergency stop and the guard interlocks fitted to the machine. As a result, the correct operation of these safety functions could not be verified at the time of assessment, and it cannot be confirmed that they will perform as intended on demand. A latent fault in the emergency stop or interlocking arrangement could therefore remain undetected, leaving personnel exposed to hazardous machine functions during normal operation, setting or maintenance.



**Recommended Remedial Action:**

All parts of the safety-related control system, including the emergency stop and guard interlock functions, must be functionally tested to confirm correct operation. Testing should verify that operating an emergency stop or opening an interlocked guard reliably brings the relevant hazardous functions to a safe state and prevents their restart until the device is reset and a deliberate start action is taken. Such testing should be carried out and recorded following installation or modification and repeated on a routine basis thereafter, at a frequency determined by the manufacturer's instructions or the machine's risk assessment, and always by a competent person. The outcome of each test should be documented, any device found not to operate correctly should be taken out of service or the machine prohibited from use until rectified, and functional testing of the safety functions should be established as a defined item within the machine's planned maintenance regime.

| **Standards Referenced** | |
|---|---|
| **EN ISO 13850** | Emergency stop function — Principles for design |

## HAZARD 6 · CONTROL IDENTIFICATION · ACTION REQUIRED (AMBER)

### LINKED ISSUES

- **Q78** — Regulation 17: Controls - General
  *Controls are missing/temporary identifications.*
- **Q100** — Regulation 23: Markings and Signage
  *Controls are missing/temporary identifications.*

**Hazard / Finding:**

The machine's controls were not suitably identified. Some controls carried no identification at all, some existing identification was worn or contaminated to the point of being illegible, and others had been marked using handwritten marker pen. In this condition an operator cannot reliably determine the function of each control, increasing the likelihood of selecting the wrong control or misjudging its action, which could lead to unintended machine movement, incorrect operation and injury.

**Recommended Remedial Action:**

All operator controls must be clearly, durably and unambiguously identified so that their function is immediately apparent. Each actuator should be marked with a legible and permanent means of identification, using recognised symbols where appropriate and consistent, plain-language wording where text is used, so that the intended function and, where relevant, the direction or effect of operation is clear. Identification must be of a material and construction able to withstand the machine's operating environment, including any contamination, cleaning or wear to which it is exposed, and should be positioned on or immediately adjacent to the control it refers to. Handwritten or temporary marking is not acceptable as a permanent means of identification and must be replaced with proper labelling. Worn, damaged, contaminated or missing identification should be reinstated, and the condition and legibility of control markings should be included as a defined item within the machine's routine inspection and maintenance regime.

| **Standards Referenced** | |
|---|---|
| **EN 60204-1** | Electrical equipment of machines — Part 1: General requirements |

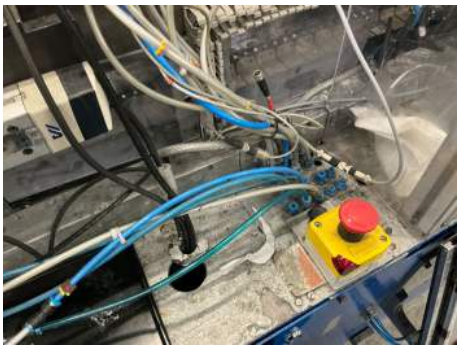
## HAZARD 7 · MACHINE PNUEMATICS · ACTION REQUIRED (AMBER)

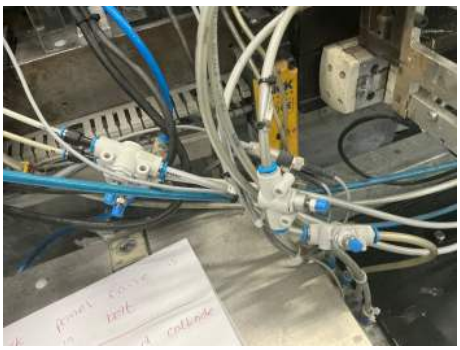
**LINKED ISSUES**

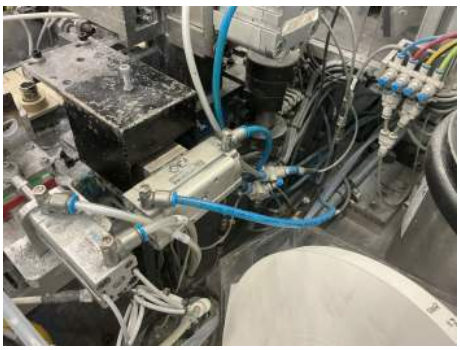
- **Q126** — Supplementary / Complimentary Questions
  *The general pneumatics installation requires improvement.*

**Hazard / Finding:**

The machine's pneumatic system was found to be generally untidy and poorly installed. Pipework was unsupported along its runs, joints and couplings were present within pipe lengths, the pipework was generally unmarked, and components such as flow restrictors were left hanging unsupported in free air. In this condition the pipework and components are vulnerable to mechanical damage, snagging and fatigue, joints are more likely to work loose or leak, and an unsupported line or fitting that fails could whip or release stored pneumatic energy. The absence of identification also makes it difficult to trace, isolate and maintain the system safely.







**Recommended Remedial Action:**

The pneumatic installation must be reworked to a tidy, secure and maintainable standard. Pipework should be adequately supported and routed along its full length so that it is protected from mechanical damage and is not subject to strain, snagging or fatigue, with runs clipped or clamped at suitable intervals. In-line joints and couplings should be kept to the minimum necessary; unnecessary joints within pipe runs should be removed and continuous lengths used wherever practicable, with any retained connections being of the correct type, properly made off and secured against loosening. Components such as flow restrictors, valves and fittings must be properly mounted and supported rather than left hanging in free air, so that their weight is not carried by the pipework or connections.

### HAZARD 7 · MACHINE PNUEMATICS · ACTION REQUIRED (AMBER)

The pipework and key components should be clearly and durably identified to allow the system to be traced, isolated and maintained safely, and provision should be made for the controlled release of stored pneumatic pressure prior to any intervention. The condition and security of the pneumatic system should thereafter be included within the machine's routine inspection and maintenance regime.

| **Standards Referenced** | |
|---|---|
| **EN ISO 4414** | Pneumatic fluid power — General rules and safety requirements for systems and their components |

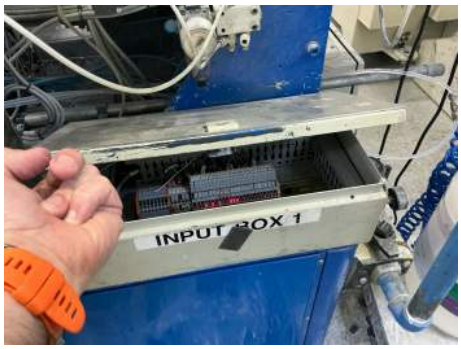
## HAZARD 8 · FIELD I/O BOXES · ACTION REQUIRED (AMBER)

### LINKED ISSUES

- **Q125** — Supplementary / Complimentary Questions
  *I/O Box lids were not secure.*

**Hazard / Finding:**

The machine was fitted with remote boxes housing the field I/O, and the lids of these boxes were found to be loose. In addition, there was no labelling to indicate the maximum voltage present within the enclosures. Loose lids compromise the integrity of the enclosures, allowing the ingress of dust, moisture or contaminants and potentially exposing live parts. The absence of voltage labelling means that anyone opening a box has no forewarning of the level of voltage present, which may be higher than expected, increasing the risk of electric shock and of work being undertaken without suitable precautions.




**Recommended Remedial Action:**

The remote I/O enclosures must be restored to a secure and sound condition. All lids should be correctly refitted and fastened so that the enclosure maintains its intended degree of protection against the ingress of contaminants and against contact with live parts, with fixings complete and secure. Each enclosure should be durably labelled to warn of the presence of electricity and to indicate the maximum voltage present within, so that anyone approaching or opening the box is forewarned of the hazard and can apply the appropriate precautions and safe system of work. Where the voltage present exceeds extra-low voltage, this should be clearly conveyed. Access to the enclosures should be limited to authorised and competent persons, and the integrity, fastening and labelling of the enclosures should be included as a defined item within the machine's routine inspection and maintenance regime.

| Standards Referenced | |
|---|---|
| **EN 60204-1** | Electrical equipment of machines — Part 1: General requirements |

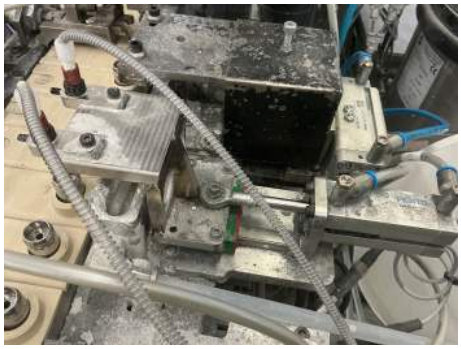
## HAZARD 9 · CRUSH/NIP HAZARD ON PNEUMATIC CYLINDER · ACTION REQUIRED (AMBER)

### LINKED ISSUES

- **Q44** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *A crush/nip hazard is present on the pneumatic cylinder.*

**Hazard / Finding:**

A pneumatic cylinder on the machine presents a crush and nip hazard when it actuates. Personnel with access to the moving cylinder and its associated trap points during operation, setting or maintenance could have a hand, finger or other body part drawn into or crushed at the point of actuation, resulting in serious injury.



**Recommended Remedial Action:**

Access to the crush and nip point created by the pneumatic cylinder must be prevented while the hazard is present. The preferred approach is to eliminate or minimise the trap by design — for example by reducing the gap so that a body part cannot enter, or by relocating or shrouding the moving element. Where the trap cannot be designed out, a fixed guard should be provided to prevent access to the danger point; where access is required for the process, an interlocked movable guard or other suitable protective device should be fitted so that the cylinder cannot actuate while access to the trap point is possible, and so that its movement is stopped if the guard is opened. Any residual movement or stored pneumatic energy should be accounted for so that the hazardous motion cannot occur unexpectedly once access is gained. Where a foreseeable trap point necessarily remains, it should be clearly identified with suitable warning markings, and safe systems of work established for any task requiring proximity to the cylinder. The adequacy and condition of the chosen safeguards should be included within the machine's routine inspection and maintenance regime.

| **Standards Referenced** | |
|---|---|
| **EN ISO 13857** | Safety distances to prevent hazard zones being reached by upper and lower limbs |

## HAZARD 10 · FIELD ELECTRICAL EQUIPMENT. · ACTION REQUIRED (AMBER)

### LINKED ISSUES

- **Q125** — Supplementary / Complimentary Questions
  *General electrical field installation.*
- **Q125** — Supplementary / Complimentary Questions
  *I/O Box lids were not secure.*

**Hazard / Finding:**

The field electrical equipment was found to have a number of issues, including inadequate mechanical protection of wiring and exposed conductor cores, particularly where Harting-type and similar multi-pole connectors were used. Wiring that lacks mechanical protection is liable to damage from impact, abrasion or snagging, and exposed cores present a direct risk of electric shock, short circuit and arcing. These conditions are made more likely at connector interfaces where cores have not been correctly terminated, enclosed or strain-relieved.

**Recommended Remedial Action:**

The field wiring and connections must be reinstated to a safe and mechanically sound condition. All wiring should be provided with suitable mechanical protection appropriate to its location and routed so that it is not subject to impact, abrasion, tension or snagging, using correctly sized and secured containment or protective sleeving where required. Conductor cores must not be left exposed; all conductors should be fully enclosed within their equipment, terminations or connector housings, with no live parts accessible to touch. Where Harting-type and similar connectors are used, the conductors must be correctly terminated within the connector, the housing fully assembled and closed, and the cable properly glanded and strain-relieved so that the cores are retained and protected at the point of entry. A competent person should inspect the field electrical equipment, rectify the identified defects, and confirm that no exposed live parts remain, with the condition of field wiring, protection and connectors included as a defined item within the machine's routine inspection and maintenance regime.

| **Standards Referenced** | |
|---|---|
| **EN 60204-1** | Electrical equipment of machines — Part 1: General requirements |

## HAZARD 11 · ELECTRICAL CONTROL PANELS · ACTION REQUIRED (AMBER)

LINKED ISSUES

- **Q125** — Supplementary / Complimentary Questions
  *Control panels have a number of issues.*
- **Q125** — Supplementary / Complimentary Questions
  *IP2x Issues on trunking and electrical enclosures.*

**Hazard / Finding:**

Assessment of the electrical control panels identified a number of defects. Redundant cabling was present that had not been isolated back to a safe point and was not protected against inadvertently becoming live. The panel doors were not bonded to earth, so a fault to a door could leave it live with no path to operate the protective device. The panels were secured only with toggle clamps, allowing them to be opened without a key or tool and giving ready access to live parts. In addition, IP2X finger-protection was not achieved at some terminals, and exposed copper was present at the MCBs. Together these conditions present a risk of electric shock, short circuit and arcing to anyone opening or working near the panels.

**Recommended Remedial Action:**

The control panels must be brought to a safe and sound electrical condition by a competent person. Redundant cabling should be removed in full, or where retained, positively isolated and terminated back to a safe point so that it cannot become live inadvertently. All panel doors and hinged metalwork must be bonded to earth by a suitably rated protective conductor so that any fault to the door is cleared by the protective device. The panels must be secured by a means that requires a deliberate action using a key or tool to gain access, so that entry is restricted to authorised and competent persons rather than being openable by hand. Finger-protection to at least the IP2X standard must be reinstated at all terminals so that live parts cannot be touched, and the exposed copper at the MCBs must be shrouded or guarded to prevent contact. Once rectified, the panels should be confirmed as

free of accessible live parts, and their condition, protective bonding and security included as a defined item within the machine's routine inspection and maintenance regime.

| Standards Referenced | |
|---|---|
| **EN 60204-1** | Electrical equipment of machines — Part 1: General requirements |

### HAZARD 12 · GENERAL GUARDING · ACTION REQUIRED (AMBER)

**LINKED ISSUES**

- **Q44** — Regulation 11: Dangerous Parts of Machinery - Guards and Interlocks
  *General Guarding*

**Hazard / Finding:**

The machine was not witnessed during production; however, AMC noted that there are a large number of moving components within the machine. Some of these have individual guards fitted and some do not, and, as identified elsewhere in this report, there are issues with the condition and adequacy of the existing guarding. As a result, there is no consistent assurance that all hazardous moving parts are effectively safeguarded, and personnel could gain access to unguarded or inadequately guarded moving components during operation, cleaning or maintenance, with a risk of entanglement, drawing-in, crushing and impact injury.

**Recommended Remedial Action:**

The machine should be safeguarded to a complete and consistent standard so that access to all hazardous moving parts is prevented during operation. Given the number of moving components and the condition and piecemeal nature of the existing individual guards, the suggested approach is to replace the individual guards with a perimeter guard fitted with interlocks, constructed from a suitable material such as polycarbonate that provides adequate strength and impact resistance for the application while allowing the moving parts to be observed. The perimeter guard should enclose the machine so that no hazardous part can be reached, with any access point required for operation, cleaning or maintenance interlocked so that the hazardous functions are brought to a safe state before access is gained and cannot restart while access remains possible. Openings and gaps should be sized and positioned so that a person cannot reach a hazardous part, and the arrangement should ensure that a person cannot become trapped within the guarded area on start-up. A full assessment of the moving components should be carried out to confirm all hazards are captured by the new arrangement, and once installed the guarding and its interlocking should be validated as effective and included as a defined item within the machine's routine inspection and maintenance regime.

| Standards Referenced | |
|---|---|
| **EN ISO 14120** | Guards — General requirements for the design and construction of fixed and movable guards |
| **EN ISO 13857** | Safety distances to prevent hazard zones being reached by upper and lower limbs |

## Inspector's Overall Conclusion

*(No overall conclusion recorded)*

| Key: | ✓ Yes — Green | ✓ No — Red | ✓ Amber (Yes or No) | ✓ N/A — Blue | ✓ N/A — Plain |
|---|---|---|---|---|---|

# REPORT SIGN-OFF

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