



*Standards and  
Assessment Guide*  
**Industrial Control**

# Introduction

Welcome to the Standards and Assessment Guide (SAG), a comprehensive resource designed to support excellence in assessment practices for all skills competitions hosted at the WorldSkills Competition. A key component of the SAG is the commitment to continuous improvement through ongoing review, ensuring that these guides consistently reflect the latest industry innovations and high standards of assessment in an open and transparent manner.

## Purpose

The primary purpose of this guide is to provide a structured framework for the consistent and fair assessment of each skill competition. It aims to ensure that all assessments are conducted with a high degree of accuracy, reliability, validity, and reflect global industry standards. By adhering to these guidelines, assessors can maintain the integrity of the competition and uphold the high standards associated with WorldSkills.

**Note:** this guide is not a replacement for the Marking Scheme and should only be used as a reference when required during the assessment process. Competitors are not allowed to have a copy of this SAG in the workshop in either digital or paper form.

## Scope

This document covers general assessment practices applicable to a diverse range of industry sectors including:

- Manufacturing and Engineering Technology
- Information and Communication Technology
- Construction and Building Technology
- Transportation and Logistics
- Social and Personal Services
- Creative Arts and Fashion

Each skill competition has its unique requirements and benchmarks, which are detailed within sections of this guide. The consistency of assessment across each skill is the overarching principle, ensuring a unified

approach to evaluating Competitor performance to the highest standards.

## Key Components

The guide is structured into several key components, each addressing critical aspects of the assessment process:

### Assessment Principles and Objectives

- Emphasis on fairness, transparency, and objectivity in assessments.
- Alignment with global industry standards and best practices.

### Assessment Methods and Tools

- Description of various assessment methods in Measurement and Judgement.
- Guidance on the application of appropriate assessment tools and equipment (if applicable).

## Criteria and Benchmarks

- Examples of assessment criteria and aspects for each skill, outlining the expected competencies and performance standards.
- Benchmarks for different levels of proficiency i.e. Judgement award range 0, 1, 2, 3 or Yes/No criteria alongside clear measurable descriptors.

## Expert assessment requirements

- Completion of the Access Programme.
- Approved Curriculum Vitae (CV).
- Reaching **100%** Expert preparedness.
- Full participation of online and in-person Mandatory Assessment Training (MAT).
- Completion of practical assessment testing at the Competition.

## Quality Assurance and Improvement

- Monitoring and evaluation: Ensuring assessments are carried out correctly and produce reliable results.
- Continuous improvement: Using feedback from Experts and Skill Competition Managers to enhance future assessments.
- Periodic review: Regularly updating processes to reflect current industry and WorldSkills standards.

# Implementation

For effective implementation, this guide should be used for guidance purposes only and in parallel with the Technical Description for each skill. Experts are encouraged to familiarize themselves thoroughly with both the general guidelines and the particular requirements of their respective skill areas. Collaborative efforts between the Skill Management Team, Experts, and Competitors are vital for achieving the ultimate goal of global skills development.

# Conclusion

The Standards and Assessment Guide embodies the commitment of the WorldSkills movement to nurturing talent and promoting the highest standards of vocational education and training worldwide. By providing clear and comprehensive guidance, we aim to empower Experts to conduct marking and assessment practices that are not only rigorous and equitable but also inspiring and transformative for all participants.

Thank you for your dedication to upholding these standards and contributing to the success of the WorldSkills Competition. Together, we can continue to champion skills excellence and celebrate the achievements of talented individuals from around the globe.

## Measurement

Measurement is used to assess accuracy, precision, and other performance that can be measured objectively. It is used where ambiguity must be avoided.

The total marks allocated to measurement marking may vary from competition to competition depending on the Test Project.

## Judgement

Judgement is used to assess the quality of performance about which there may be small differences of view when applying the external benchmarks.

The Resources column in the table below may include all kinds/formats of resources such as: a link to a YouTube video, a website link, an illustration, a photo, a reference to a book, and so on. It needs to be as detailed as possible to show the differentiation between 0, 1, 2, 3.

### **Generic rules:**

The assessment group comprises three Experts plus one Expert who acts as the supervisor. The supervising Expert will replace an Expert in the marking group to prevent compatriot marking.

The difference of the three Experts' scores may not exceed 1. If this is the situation the Experts must re-score until there is a maximum difference of 1. As long as the three Experts judge within 1, the result can be entered into the CIS.

The total marks allocated to judgement marking may vary from competition to competition depending on the Test Project.

## Illustrative Examples

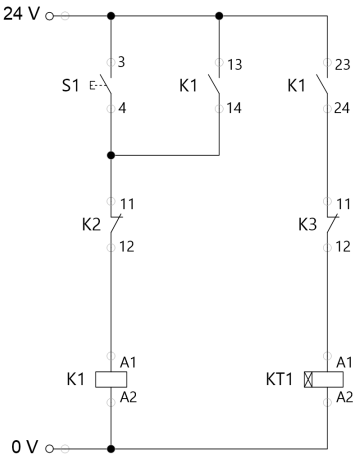
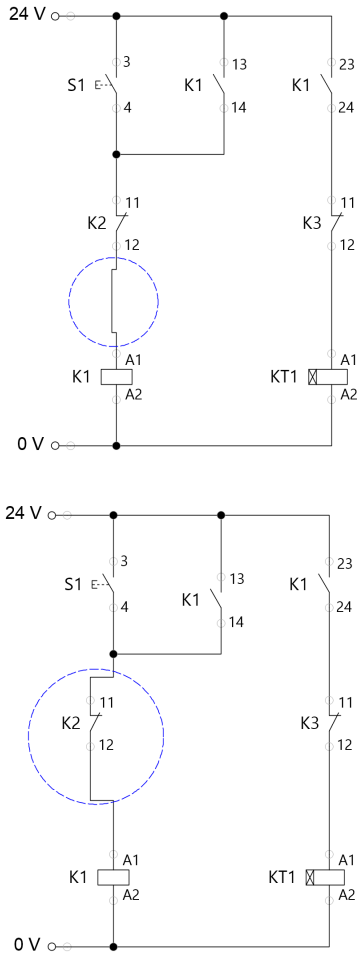
Real photos, physical samples, and short animations clearly show what each aspect looks like, helping all experts assess consistently and fairly based on hands-on, practical evidence.

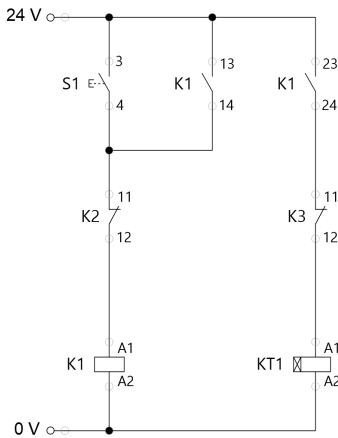
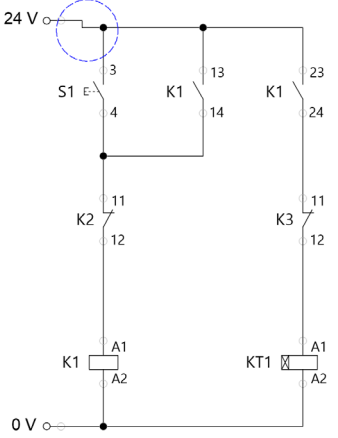
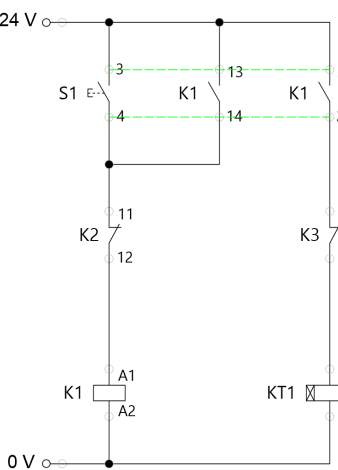
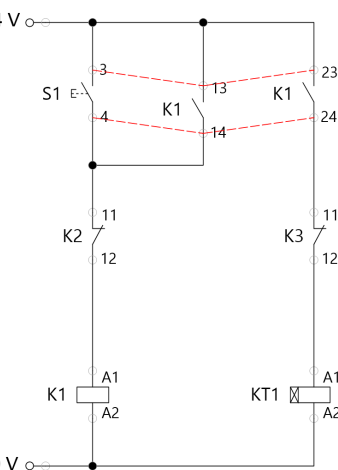


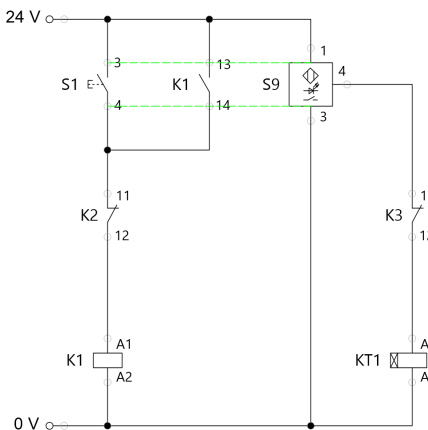
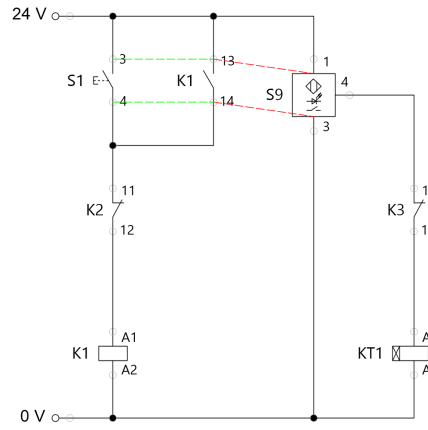
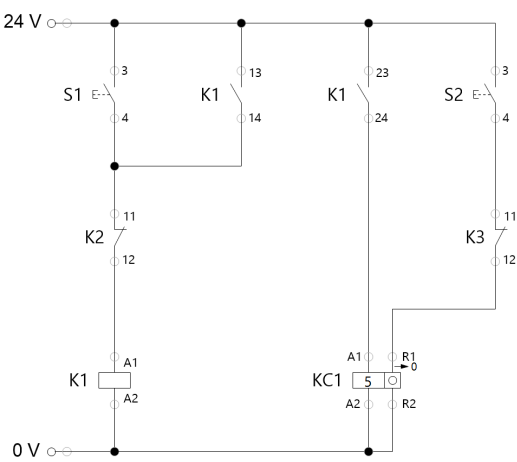
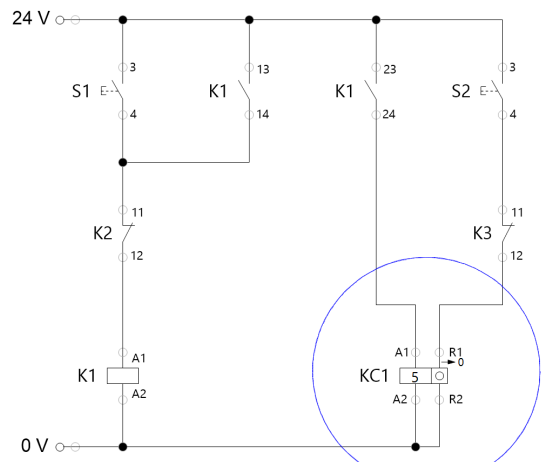


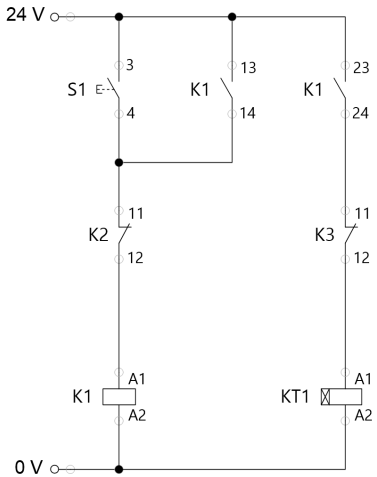
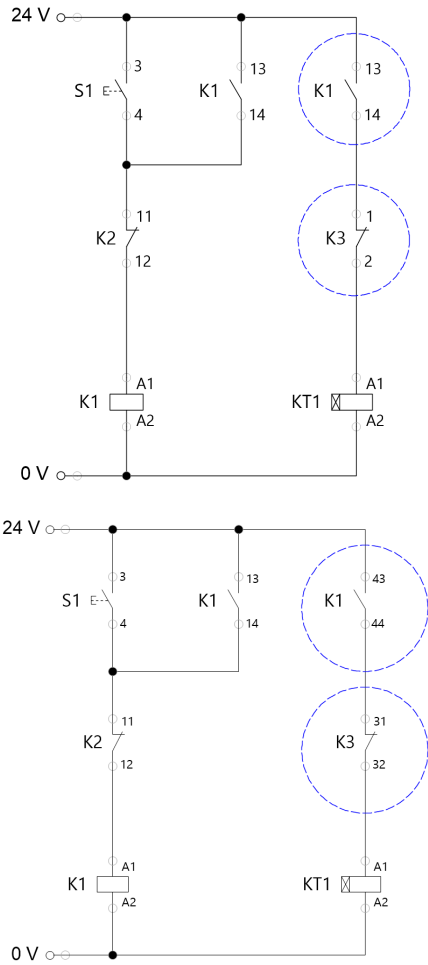
# *Measurement*

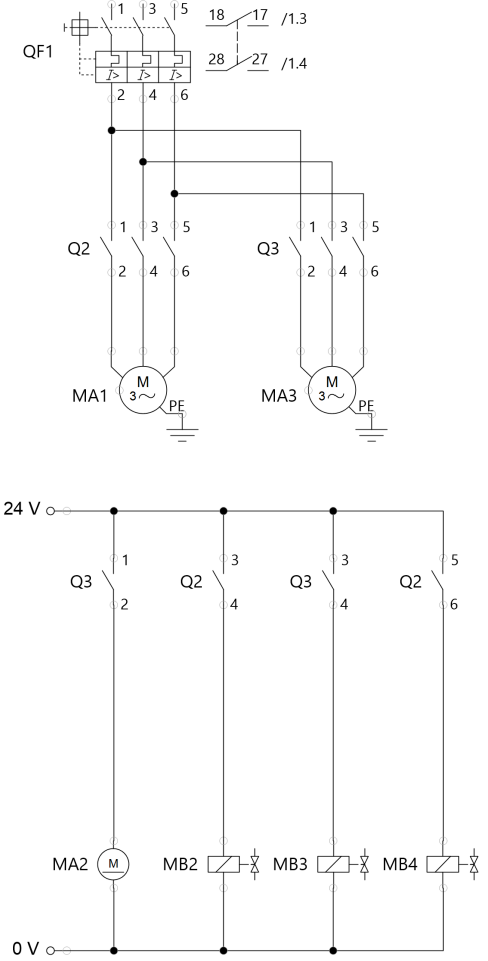
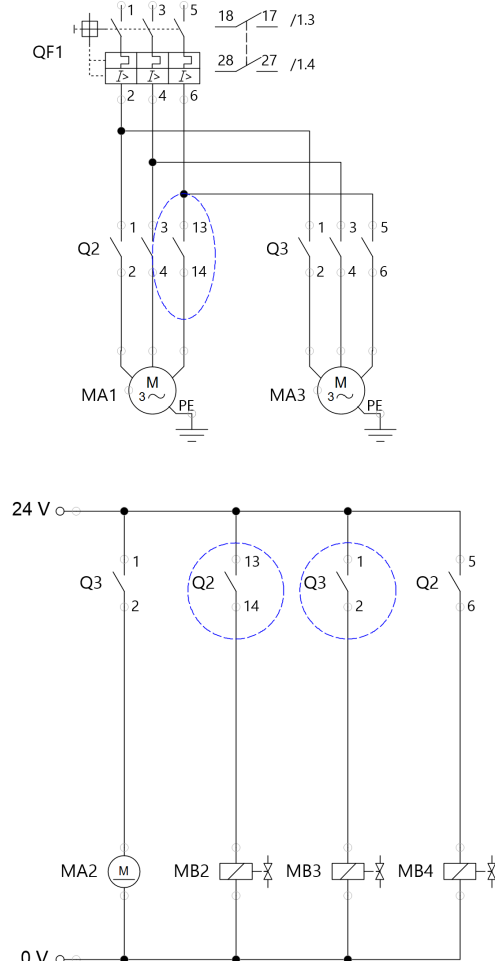
## **(WSOS 2) - Circuit design and modification**

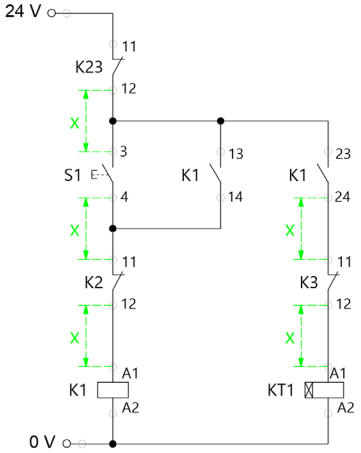
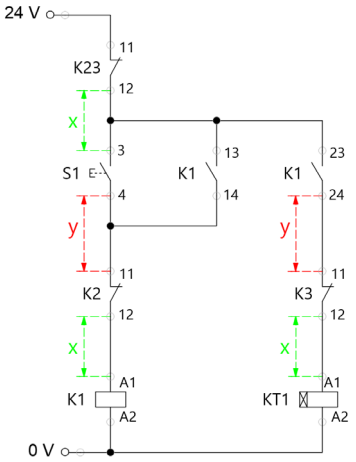
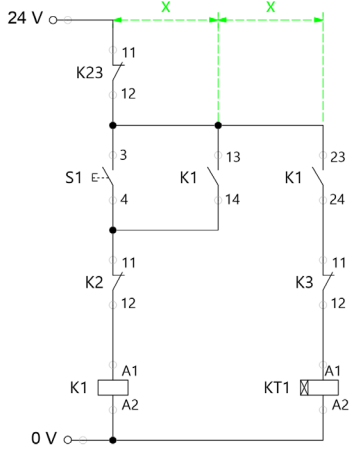
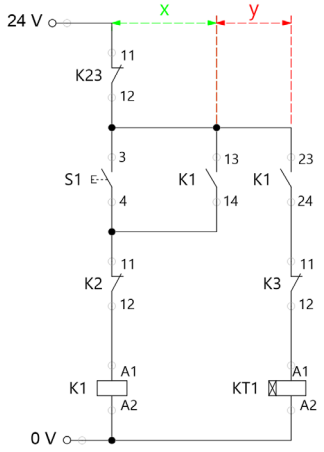
| WSOS | Aspect                                                                            | Description/Resource (OK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                | Illustrative Example                                                                |
|------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 2    | <b>SAG 01 -</b><br>Straight vertical<br>connecting lines<br>or device<br>drawings |  <p>A ladder logic diagram with two parallel branches connected to a 24V supply at the top and a 0V supply at the bottom. The left branch contains a normally open contact S1 (terminals 3, 4) in series with a coil K1 (terminals 11, 12). The right branch contains a normally open contact K1 (terminals 13, 14) in series with a coil K3 (terminals 11, 12). Both branches terminate at a common 0V rail. The coils are represented by rectangles with terminals A1 and A2.</p> |  <p>Two identical ladder logic diagrams as above, but with curved vertical lines connecting the top and bottom rails. In each diagram, the left vertical line is circled with a dashed blue line to indicate it is incorrect. The components and wiring are otherwise identical to the 'OK' example.</p> |  |

| WSOS | Aspect                                                        | Description/Resource (OK)                                                                                                                                                                                                                                                                                                                                                                                                                                | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                             | Illustrative Example                                                                 |
|------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2    | <b>SAG 02 -</b><br>Straight<br>horizontal<br>connecting lines |  <p>A wiring diagram showing a 24V supply at the top and 0V at the bottom. It includes a switch S1 with terminals 3 and 4, two relays K1 and K2, and two solenoid coils K1 and KT1. The connections are made using straight horizontal lines between terminals 3, 4, 13, 14, 23, and 24. The solenoid coils are represented by rectangles with terminals A1 and A2.</p> |  <p>The same wiring diagram as the OK example, but with a blue circle highlighting the 24V supply terminal, indicating an issue with the connection point.</p>                                                                         |   |
| 2    | <b>SAG 03 -</b><br>Straight<br>horizontal device<br>drawings  |  <p>The same wiring diagram as the OK example, but with green dashed lines highlighting the horizontal connections between terminals 3, 4, 13, 14, 23, and 24, indicating that these connections are not straight horizontal lines.</p>                                                                                                                                |  <p>The same wiring diagram as the OK example, but with red dashed lines highlighting the horizontal connections between terminals 3, 4, 13, 14, 23, and 24, indicating that these connections are not straight horizontal lines.</p> |  |

| WSOS | Aspect                                                                 | Description/Resource (OK)                                                           | Description/Resource (Not OK)                                                        | Illustrative Example                                                                 |
|------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2    | <b>SAG 04 -</b><br>Straight horizontal device drawings (e.g., sensors) |    |   |   |
| 2    | <b>SAG 05 -</b><br>Straight vertical device drawings (e.g., counters)  |  |  |  |

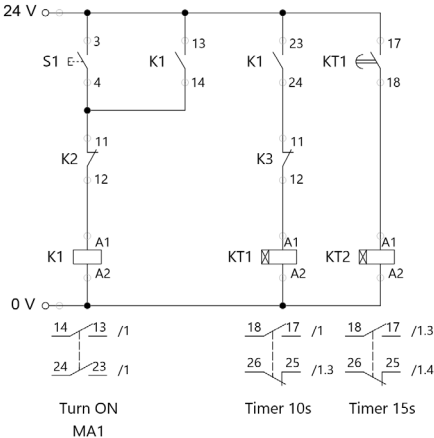
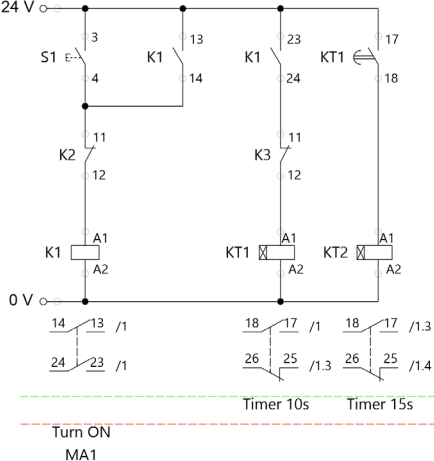
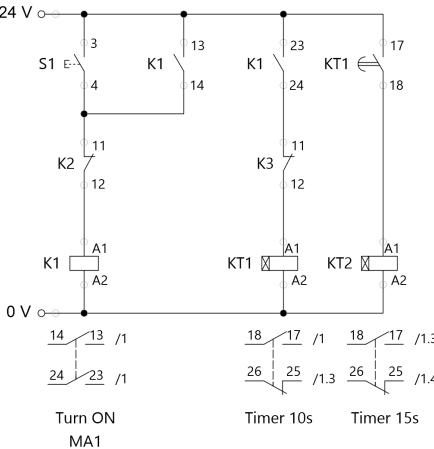
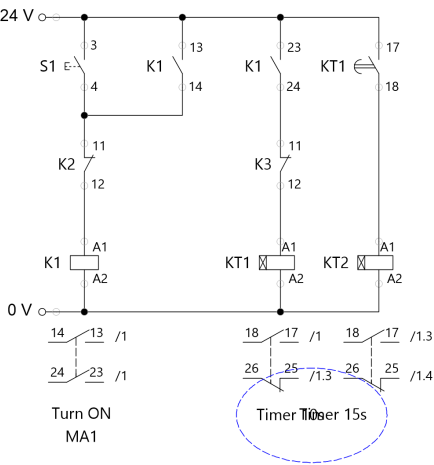
| WSOS | Aspect                                                                                                                                                               | Description/Resource (OK)                                                         | Description/Resource (Not OK)                                                        | Illustrative Example                                                                |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 2    | <b>SAG 06 -</b><br>Contact numbering (use 11/12, 23/24, etc. for the control circuit) – do not repeat numbering for the same device, and follow the correct sequence |  |  |  |

| WSOS | Aspect                                                                                                                               | Description/Resource (OK)                                                           | Description/Resource (Not OK)                                                        | Illustrative Example                                                                |
|------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 2    | <p><b>SAG 07 -</b><br/>Contact numbering (use 1/2, 3/4, 5/6 for the power circuit) – do not repeat numbering for the same device</p> |  |  |  |

| WSOS | Aspect                                                           | Description/Resource (OK)                                                                                                                                                                                                                                                                                                                    | Description/Resource (Not OK)                                                                                                                                                                                                                                                               | Illustrative Example                                                                 |
|------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2    | <b>SAG 08</b> - Vertical distances between contacts or devices   |  <p>A wiring diagram for a 24V to 0V system. It includes components K23, S1, K1, K2, K3, K1, and KT1. Vertical distances between contacts (11-12, 3-4, 11-12, 11-12, 13-14, 23-24) are marked with green dashed lines and 'X'.</p>                          |  <p>The same wiring diagram as the OK example, but with an additional red dashed line and 'Y' marking a vertical distance between contact 4 and contact 11 on the right side.</p>                        |   |
| 2    | <b>SAG 09</b> - Horizontal distances between contacts or devices |  <p>The same wiring diagram as the OK example for SAG 08, but with green dashed lines and 'X' marking horizontal distances between contact 11 on the left and contact 13 on the right, and between contact 12 on the left and contact 14 on the right.</p> |  <p>The same wiring diagram as the OK example for SAG 09, but with an additional red dashed line and 'Y' marking a horizontal distance between contact 13 on the right and contact 14 on the right.</p> |  |

| WSOS | Aspect                                                  | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|---------------------------------------------------------|---------------------------|-------------------------------|----------------------|
| 2    | <b>SAG 10</b> - Display the contact symbol              |                           |                               |                      |
| 2    | <b>SAG 11</b> - Horizontal alignment of contact symbols |                           |                               |                      |

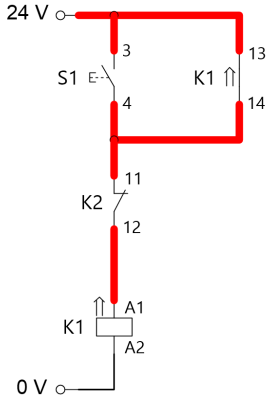
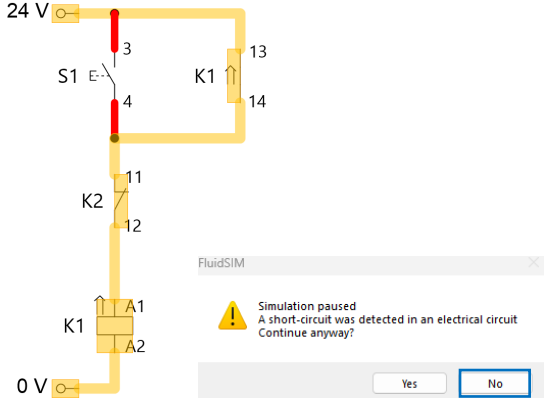
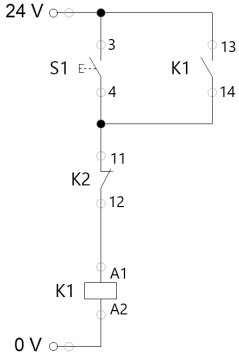
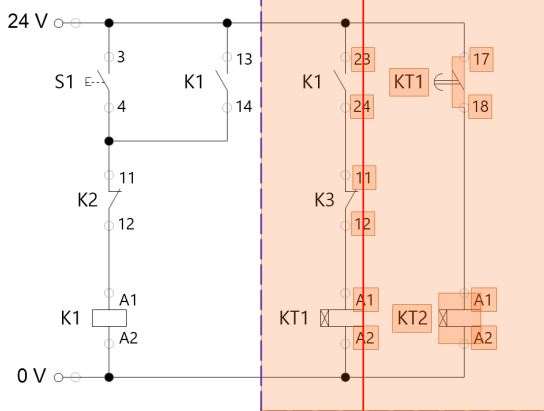
| WSOS | Aspect                                                | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|-------------------------------------------------------|---------------------------|-------------------------------|----------------------|
| 2    | <b>SAG 12</b> - Vertical alignment of contact symbols |                           |                               |                      |
| 2    | <b>SAG 13</b> - Labelling for the control circuit     |                           |                               |                      |

| WSOS | Aspect                                                            | Description/Resource (OK)                                                                                                               | Description/Resource (Not OK)                                                                                                             | Illustrative Example                                                                 |
|------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2    | <b>SAG 14 -</b><br>Horizontal alignment of control circuit labels |  <p>Turn ON MA1</p> <p>Timer 10s</p> <p>Timer 15s</p>  |  <p>Timer 10s</p> <p>Timer 15s</p> <p>Turn ON MA1</p>  |   |
| 2    | <b>SAG 15 -</b> Vertical alignment of control circuit labels      |  <p>Turn ON MA1</p> <p>Timer 10s</p> <p>Timer 15s</p> |  <p>Turn ON MA1</p> <p>Timer 10s</p> <p>Timer 15s</p> |  |

| WSOS | Aspect                                                      | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|-------------------------------------------------------------|---------------------------|-------------------------------|----------------------|
| 2    | <b>SAG 16 -</b><br>Labelling for the power circuit          |                           |                               |                      |
| 2    | <b>SAG 17 -</b><br>Control circuit branch on the right side |                           |                               |                      |

| WSOS | Aspect                                                                                  | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|-----------------------------------------------------------------------------------------|---------------------------|-------------------------------|----------------------|
| 2    | <b>SAG 18 -</b><br>Control circuit branch (indicator light in parallel with relay coil) |                           |                               |                      |
| 2    | <b>SAG 19 - Extra drawings</b><br>(devices, connection dots, lines)                     |                           |                               |                      |

| WSOS | Aspect                                                                                                                                               | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------|----------------------|
| 2    | <b>SAG 20 -</b><br>Drawing errors<br>(lines through<br>connectors,<br>superimposed<br>objects, etc.) –<br>No modifications<br>allowed for<br>testing |                           |                               |                      |

| WSOS | Aspect                                                                                  | Description/Resource (OK)                                                                                                                                                                                                                                                                                                                                                                       | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                   | Illustrative Example                                                                 |
|------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2    | <b>SAG 21</b> - Error simulation – short circuit - No modifications allowed for testing |  <p>A circuit diagram showing a 24V source connected to a switch S1 (terminals 3, 4) and a relay K1 (terminals 13, 14). The circuit continues through a relay K2 (terminals 11, 12) and ends at a 0V source connected to a relay K1 (terminals A1, A2). The connections are highlighted in red.</p>            |  <p>The same circuit diagram as in the OK column, but with yellow highlights. A FluidSIM dialog box is shown with the message: "Simulation paused. A short-circuit was detected in an electrical circuit. Continue anyway?" with "Yes" and "No" buttons.</p> |   |
| 2    | <b>SAG 22</b> - Objects outside the drawing area - No modifications allowed for testing |  <p>A circuit diagram showing a 24V source connected to a switch S1 (terminals 3, 4) and a relay K1 (terminals 13, 14). The circuit continues through a relay K2 (terminals 11, 12) and ends at a 0V source connected to a relay K1 (terminals A1, A2). The diagram is enclosed in a red rectangular box.</p> |  <p>The same circuit diagram as in the OK column, but with additional components (KT1, KT2, A1, A2, 17, 18) added outside the red rectangular box. The diagram is enclosed in a red rectangular box.</p>                                                    |  |

| WSOS | Aspect                                                                                   | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|------------------------------------------------------------------------------------------|---------------------------|-------------------------------|----------------------|
| 2    | <b>SAG 23</b> - Devices with incorrect orientation – control circuit                     |                           |                               |                      |
| 2    | <b>SAG 24</b> - Device labelling – control circuit (push button, switch, emergency stop) |                           |                               |                      |

| WSOS | Aspect                                                        | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|---------------------------------------------------------------|---------------------------|-------------------------------|----------------------|
| 2    | <b>SAG 25</b> - Device labelling – control circuit (sensors)  |                           |                               |                      |
| 2    | <b>SAG 26</b> - Device labelling – control circuit (contacts) |                           |                               |                      |

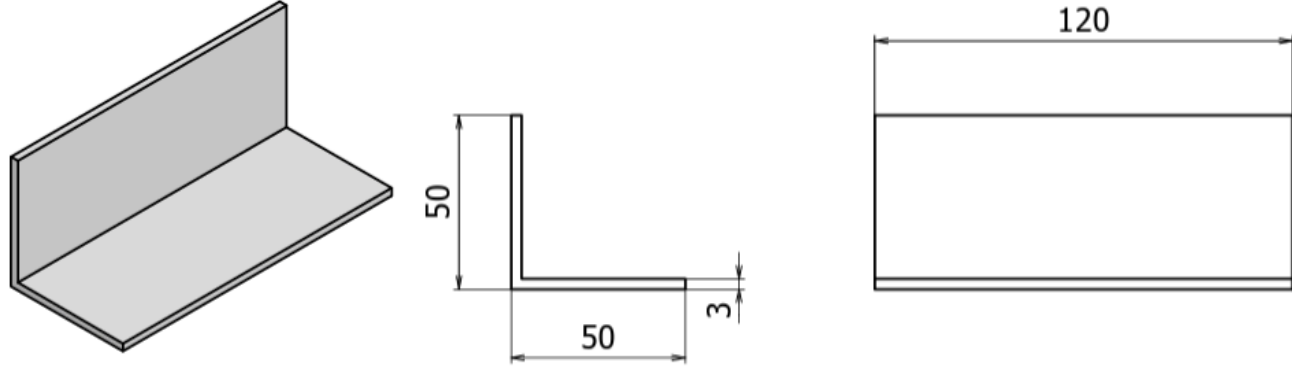
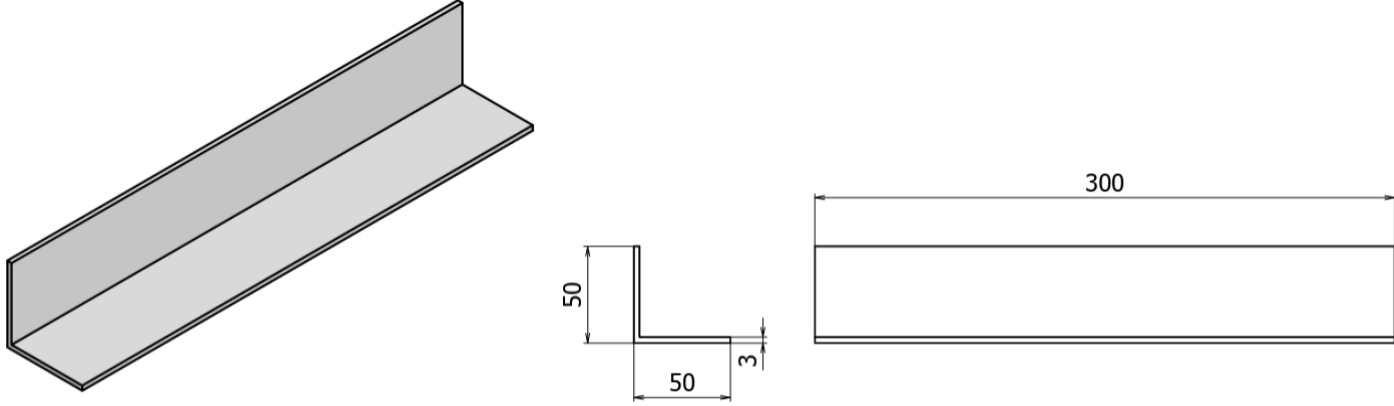
| WSOS | Aspect                                                                     | Description/Resource (OK) | Description/Resource (Not OK)                                                                                                                                                                                                                                                                       | Illustrative Example |
|------|----------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 2    | <b>SAG 27</b> - Device labelling – control circuit (relay, timer, counter) |                           | <p>Wrong Label (lower case)</p> <p>Wrong Label</p> <p>Missing Label</p> <p>Missing Contact Numbers</p> <p>Wrong Label (outside standard)</p> <p>Missing Label</p>                                                                                                                                   |                      |
| 2    | <b>SAG 28</b> - Device labelling – power circuit                           |                           | <p>Wrong Label</p> <p>Type Contact Numbers</p> <p>Missing Label</p> <p>Missing Contact Numbers</p> <p>Wrong Label</p> <p>Wrong Label (lower case)</p> <p>Missing Label</p> <p>Wrong Label and Ground</p> <p>Missing Label and Ground</p> <p>Wrong Label (outside standard)</p> <p>Missing Label</p> |                      |

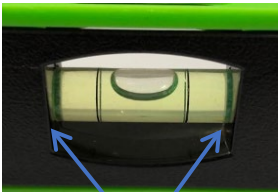
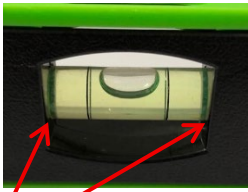
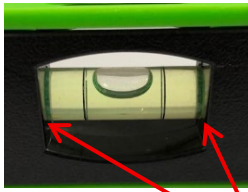
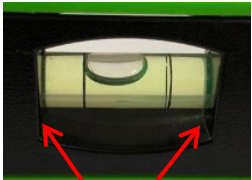
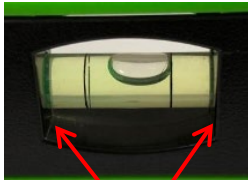
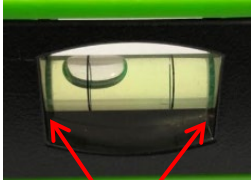
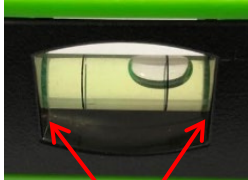


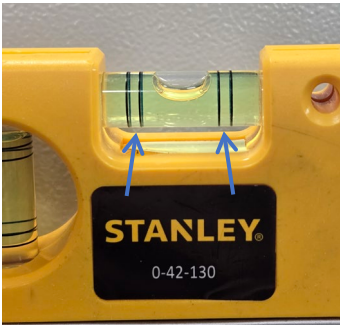
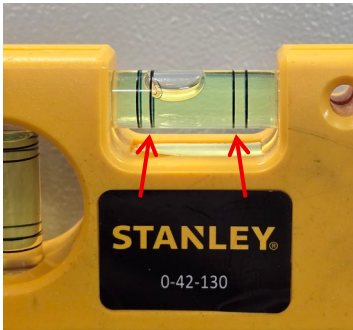
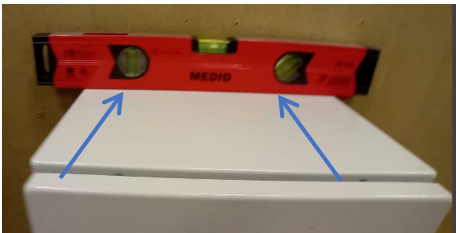
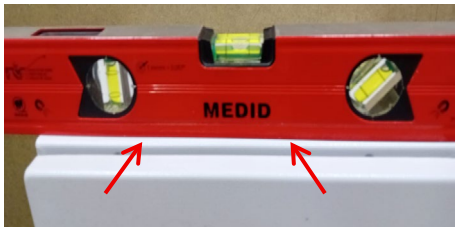
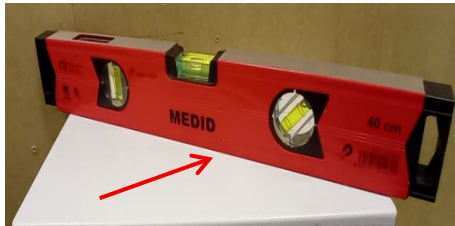
*Measurement*

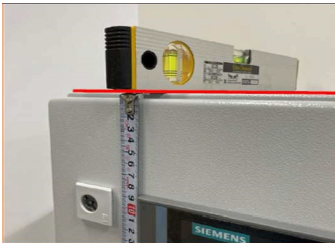
**(WSOS 3) - Making automation control panels/centres**

**(WSOS 4) - Field Installation (electrical and automation)**

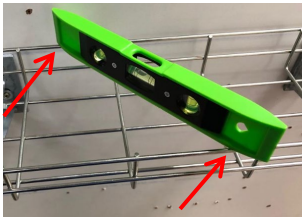
| WSOS  | Specific Tools                                                     | Photos                                                                              |
|-------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | Small Angle -<br>For devices installed at a distance from the wall |   |
|       | Large Angle -<br>For devices installed at a distance from the wall |  |

| WSOS  | Aspect                                | Description/Resource (OK)                                                                                                          | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Illustrative Example                                                                |
|-------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 29</b> - Level control bubbles |  <p>Front view / Air bubble between the lines</p> | <div>   <p>Diagonal view (parallax error)</p> </div> <div>   <p>Air bubble touches the lines</p> </div> <div>   <p>Air bubble goes beyond the lines</p> </div> |  |

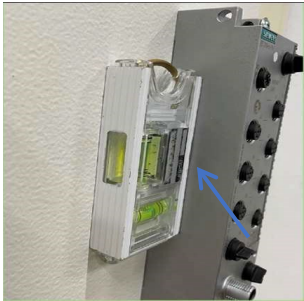
| WSOS  | Aspect                                               | Description/Resource (OK)                                                                                                 | Description/Resource (Not OK)                                                                                                                                                                                                     | Illustrative Example                                                                 |
|-------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 30</b> - Level control bubbles with two lines |  <p>Air bubble between the two lines</p> |  <p>Air bubble touches or goes beyond the first line</p>                                                                                       |   |
| 3     | <b>SAG 31</b> - Level control – control box          |  <p>Aligned to the wall (0°)</p>         |  <p>Aligned to the edge</p><br> <p>Angled to the wall</p> |  |

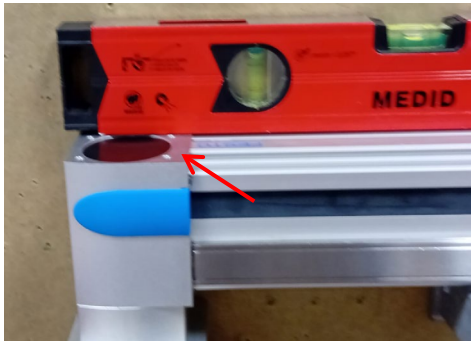
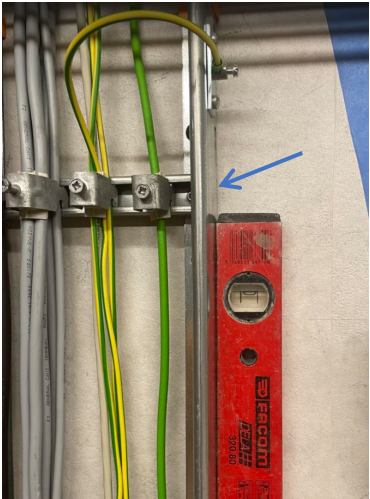
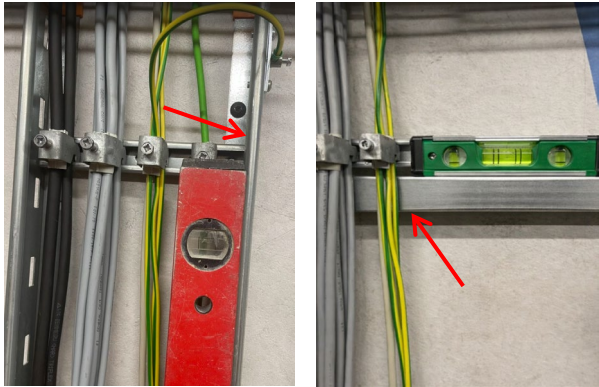
| WSOS | Aspect                                                                               | Description/Resource (OK)                                                                                                        | Description/Resource (Not OK)                                                                                                             | Illustrative Example                                                                 |
|------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 32</b> - Level control – control box installation at a distance from the wall |  <p>Measure using a square angle in the gap</p> |  <p>Do not measure using a square angle in the gap</p> |   |
| 3    | <b>SAG 33</b> - Door devices measurement                                             |  <p>At the top edge of the door</p>            |  <p>At the top of the control box</p>                 |  |

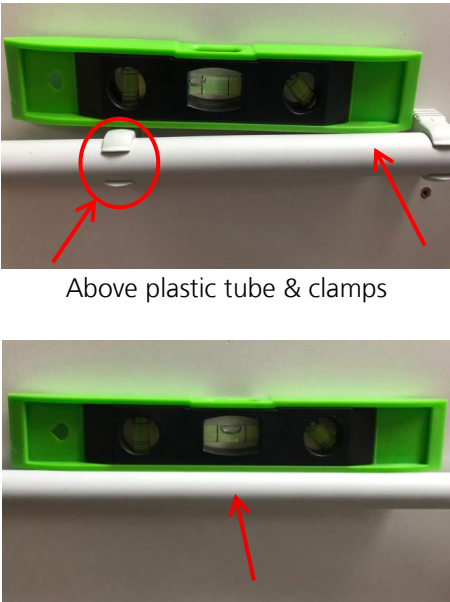
| WSOS | Aspect                                                                | Description/Resource (OK)                                                                                                                      | Description/Resource (Not OK)                                                                                                                   | Illustrative Example                                                                 |
|------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 34 -</b><br>Control box –<br>main switch<br>level control      |  <p>Main switch level measurements: left and right sides</p> |  <p>Main switch level measurements: top and bottom sides</p> |   |
| 3    | <b>SAG 35 -</b><br>Control box –<br>measurement<br>between<br>devices |  <p>Between the devices (metal ruler)</p>                   |  <p>Between the devices (measuring tape)</p>                |  |

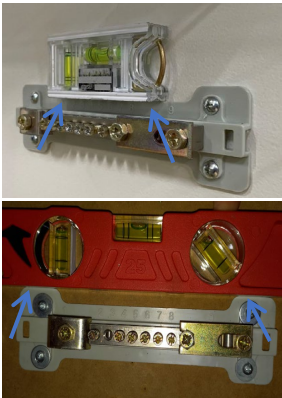
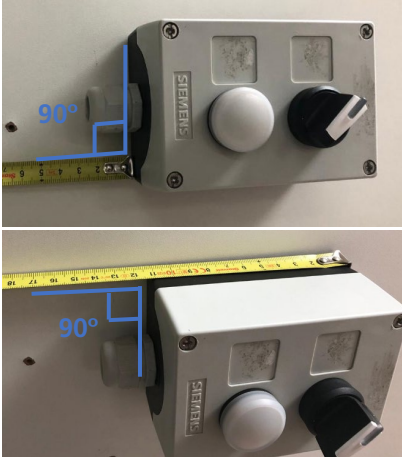
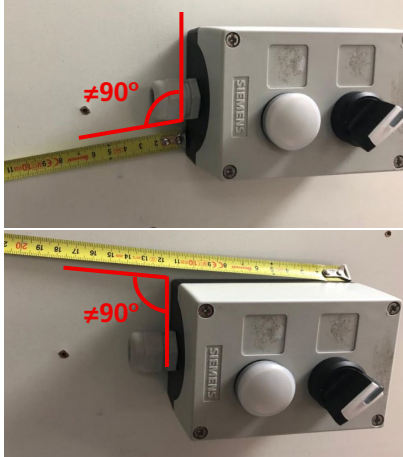
| WSOS | Aspect                                  | Description/Resource (OK)                                                                                                                                                                             | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Illustrative Example                                                                |
|------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 36</b> - Level control mesh tray |  <p>Use the level close to the wall, use an angle square, and use a level matching the size of the angle square</p> |  <p>Side of the mesh tray /</p>  <p>On the top of the cable</p>  <p>Internal of the mesh tray /</p>  <p>On the top of the screw</p>  <p>Between the sides of the mesh tray</p> |  |

| WSOS | Aspect                                     | Description/Resource (OK)                                                                                                                 | Description/Resource (Not OK)                                                                                                           | Illustrative Example                                                                |
|------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 37</b> - Level control housing box  |  <p>Aligned to the wall (0°) / On the smooth surface</p> |  <p>Angled to the wall / On a surface with holes</p> |  |
| 4    | <b>SAG 38</b> - Level control limit switch |  <p>Aligned to the wall (0°) / Small level</p>           |  <p>Angled to the wall / Large level</p>             |  |

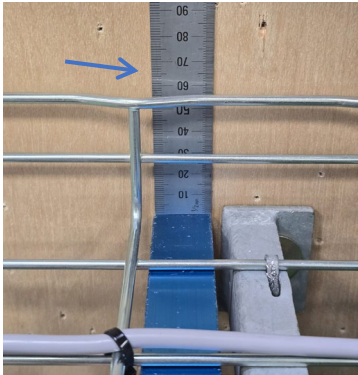
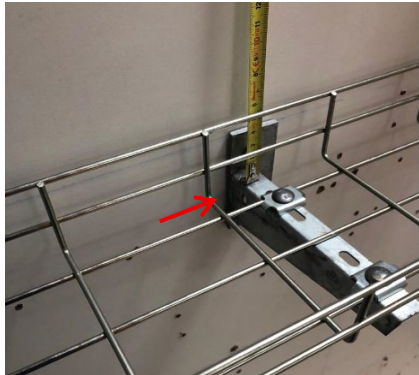
| WSOS | Aspect                                 | Description/Resource (OK)                                                                                       | Description/Resource (Not OK)                                                                                                                                                                                               | Illustrative Example                                                                 |
|------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 4    | <b>SAG 39</b> - Level control motors   |  <p>Motor base</p>             |  <p>Motor top / Motor cover</p>  <p>Motor housing</p> |   |
| 4    | <b>SAG 40</b> - Level control ET200eco |  <p>On the smooth surface</p> |  <p>On a surface with a screw</p>                                                                                                       |  |

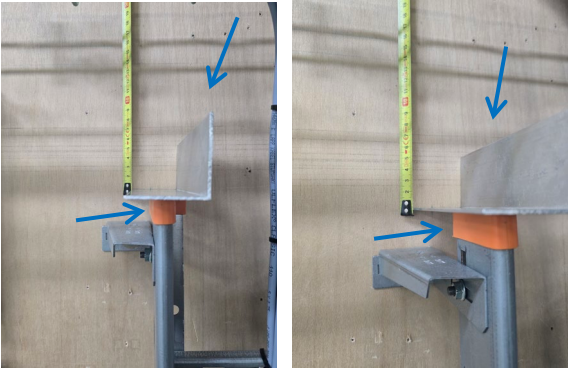
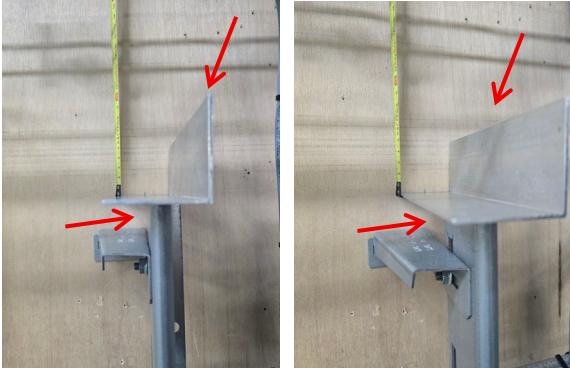
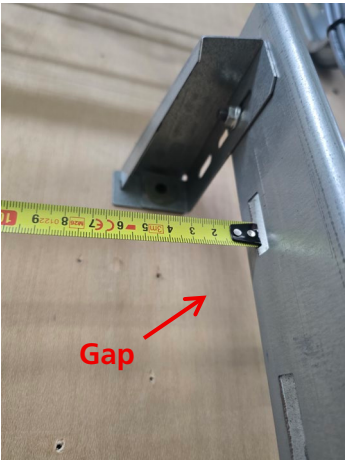
| WSOS | Aspect                                             | Description/Resource (OK)                                                                                                  | Description/Resource (Not OK)                                                                                                          | Illustrative Example                                                                 |
|------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 4    | <b>SAG 41</b> - Level control<br>Toothed belt axis |  <p>Flat surface (aluminium profile)</p> |  <p>Non-flat surface</p>                            |   |
| 4    | <b>SAG 42</b> - Level control<br>cable ladder      |  <p>External flat metal surface</p>      |  <p>Uneven Surfaces / Together with the cables</p> |  |

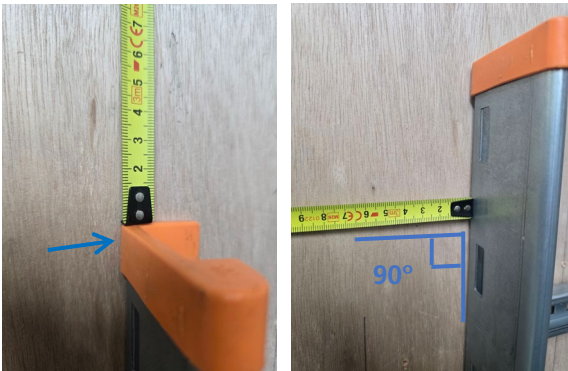
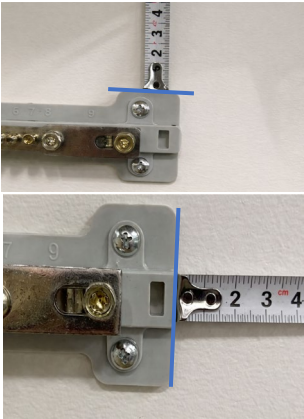
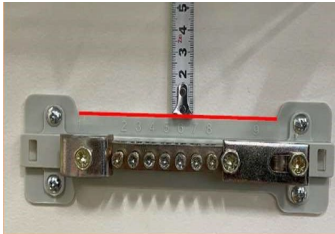
| WSOS | Aspect                                     | Description/Resource (OK)                                                                                              | Description/Resource (Not OK)                                                                                                                                                | Illustrative Example                                                                |
|------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 43</b> - Level control plastic tube |  <p>Above the plastic tube clamps</p> |  <p>Above plastic tube &amp; clamps</p> <p>Above the plastic tube without tube clamps</p> |  |

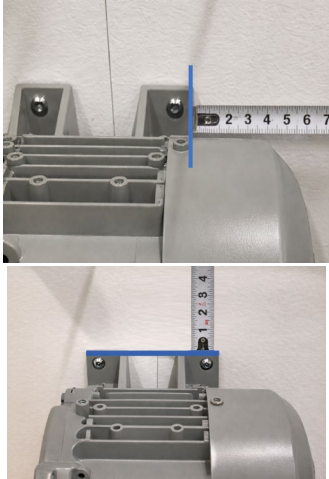
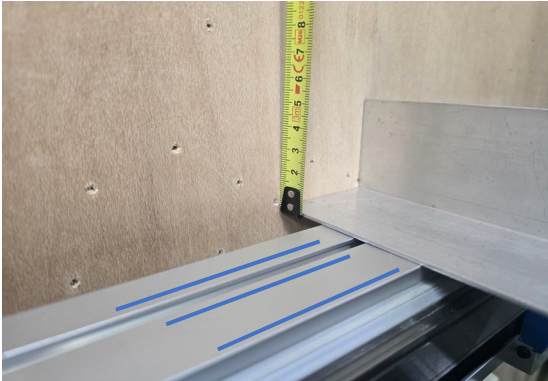
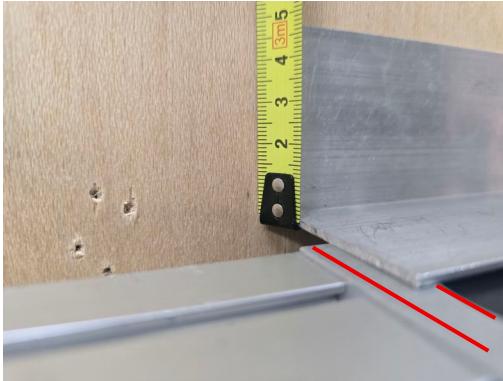
| WSOS  | Aspect                                          | Description/Resource (OK)                                                                                                                  | Description/Resource (Not OK)                                                                                   | Illustrative Example                                                                 |
|-------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 4     | <b>SAG 44</b> - Level control earth terminal    |  <p>Aligned with the wall (0°) and seated on the base</p> |  <p>Seated on the cover</p>  |   |
| 3 & 4 | <b>SAG 45</b> - Linear and angular measurements |  <p>90° to the device</p>                                |  <p>≠ 90° to the device</p> |  |

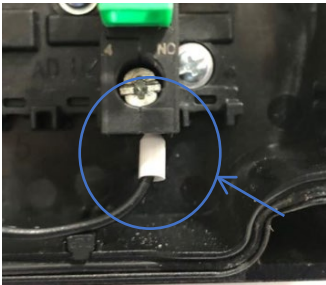
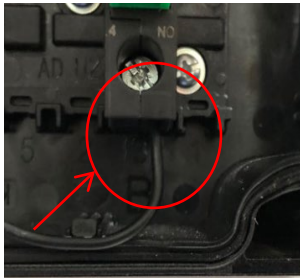
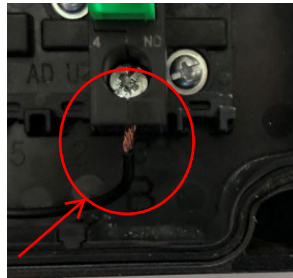
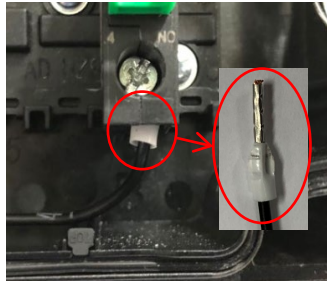
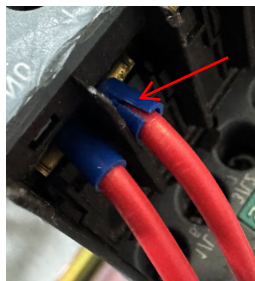
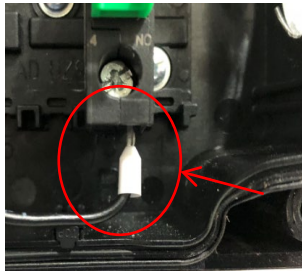
| WSOS  | Aspect                                                  | Description/Resource (OK)                                                                                                                                                                                                                     | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                       | Illustrative Example                                                                |
|-------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 46</b> -<br>Horizontal and vertical measurements |  <p>Use the end of the measuring tape</p>  <p>Use the end of the ruler</p> |   <p>Use the centre of the measuring device.</p>  <p>Use the end of the ruler on a surface with holes</p> |  |

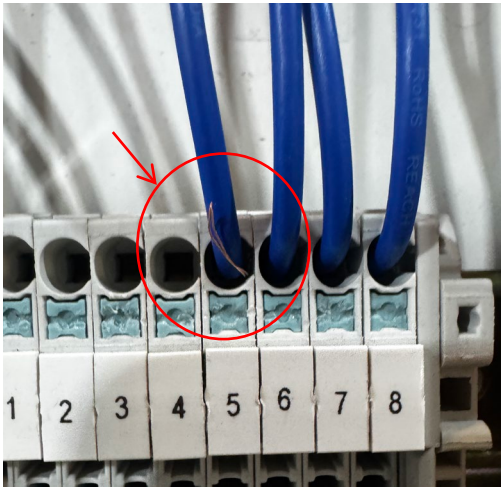
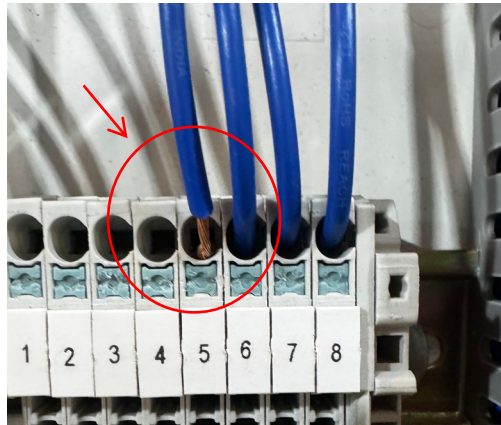
| WSOS | Aspect                                      | Description/Resource (OK)                                                                                                                                                                                                                                             | Description/Resource (Not OK)                                                                                                                                                                                                                     | Illustrative Example                                                                |
|------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 47</b> -<br>Mesh tray<br>measurement |  <p>90° to the wall (use angle square)</p>  <p>90° to the wall (use square angle) – metal ruler</p> |  <p>Measure inside the mesh tray</p>  <p>Use the bracket as a reference</p> |  |

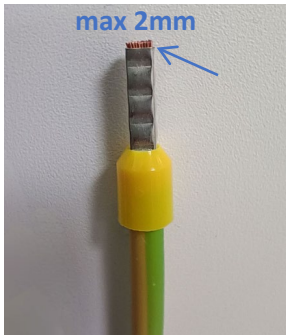
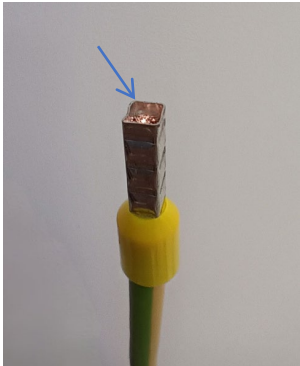
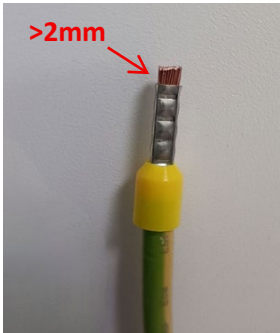
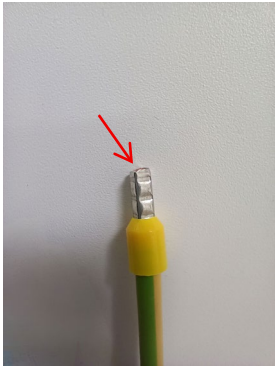
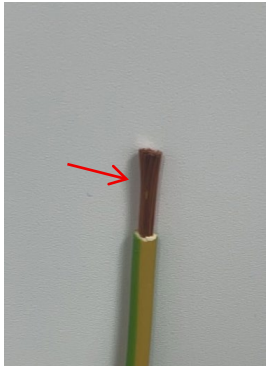
| WSOS | Aspect                                                                                             | Description/Resource (OK)                                                                                                                                                                                                                                                               | Description/Resource (Not OK)                                                                                                                                                                                                                                                           | Illustrative Example                                                                |
|------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 48 -</b><br>Ladder tray<br>measurements<br>– installation at<br>a distance<br>from the wall |  <p>Bottom and top with cover – use a square angle</p>  <p>Both sides – use a square angle at 90° to the device</p> |  <p>Bottom and top without cover or without square angle</p>  <p>≠ 90° to the device or without square angle</p> |  |

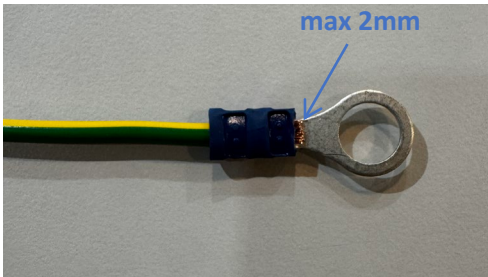
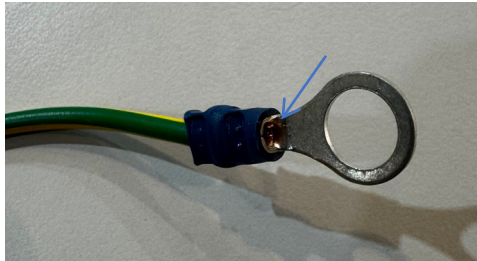
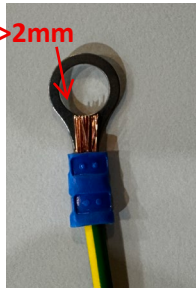
| WSOS | Aspect                                                                                      | Description/Resource (OK)                                                                                                  | Description/Resource (Not OK)                                                                                                   | Illustrative Example                                                                 |
|------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 4    | <b>SAG 49</b> -<br>Ladder tray<br>measurements<br>– installation<br>directly on the<br>wall |  <p>On the cover / 90° to the device</p> |  <p>≠ 90° to the device or without cover</p> |   |
| 4    | <b>SAG 50</b> - Earth<br>terminal<br>measurements                                           |  <p>Edges of the earth terminal base</p> |  <p>Centre of the earth terminal base</p>   |  |

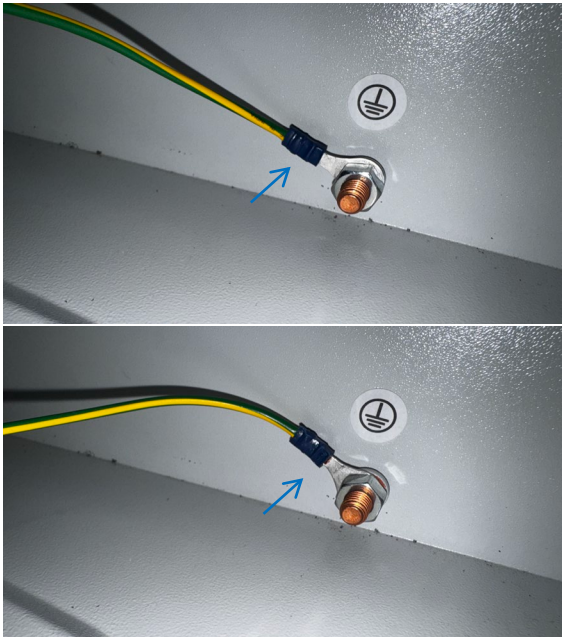
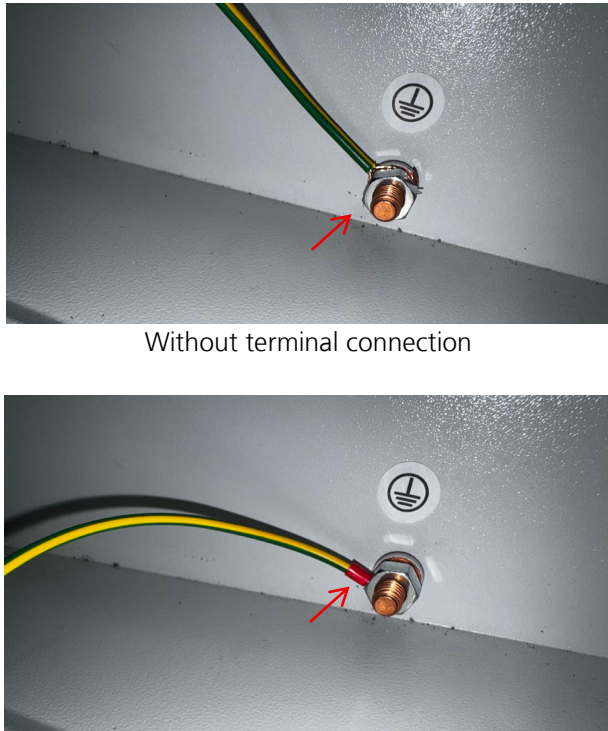
| WSOS | Aspect                                                    | Description/Resource (OK)                                                                                                                 | Description/Resource (Not OK)                                                                                                                                | Illustrative Example                                                                 |
|------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 4    | <b>SAG 51 -</b><br>Motor base<br>plate<br>measurements    |  <p>Motor base plate</p>                                 |  <p>Other parts of the motor</p>                                          |   |
| 4    | <b>SAG 52 -</b><br>Measurements<br>- Toothed belt<br>axis |  <p>Measure the flat surface. (Use a square angle)</p> |  <p>Not measure the motor connection surface or without square angle</p> |  |

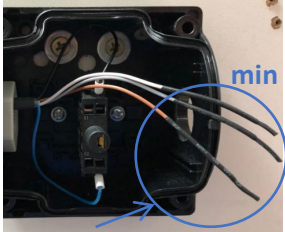
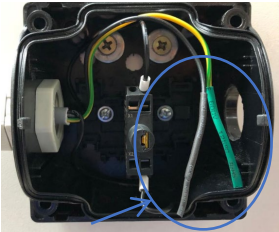
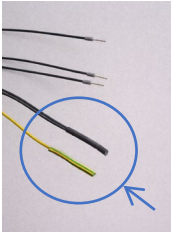
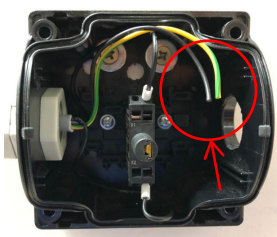
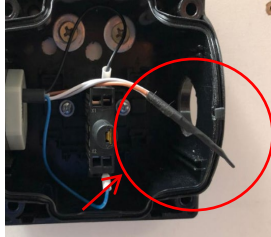
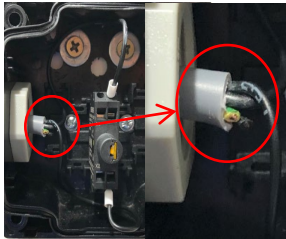
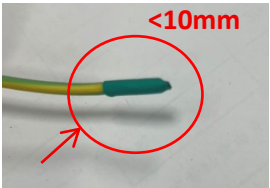
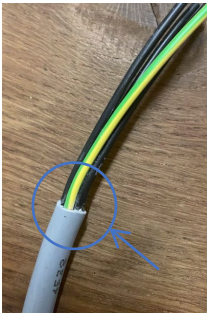
| WSOS  | Aspect                                           | Description/Resource (OK)                                                                                                                                     | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Illustrative Example                                                                |
|-------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 53</b> - Wire connecting – screw terminal |  <p>End sleeve fitted; copper not visible; wire and insulation undamaged</p> | <div>   <p>No End sleeve &amp; Visible copper</p> </div> <div>   <p>Damaged End sleeve</p> </div> <div>   <p>Ferrule not fully inserted / Visible copper</p> </div> |  |

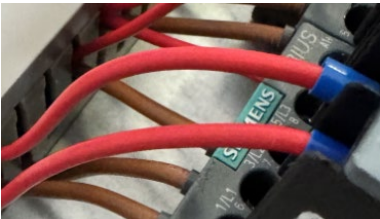
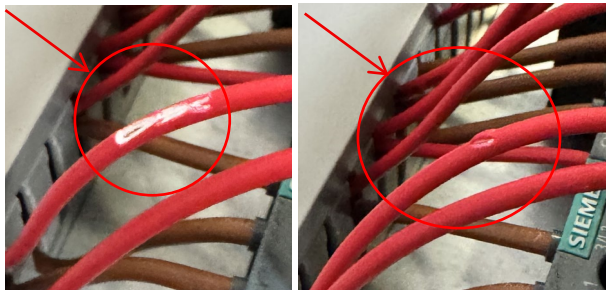
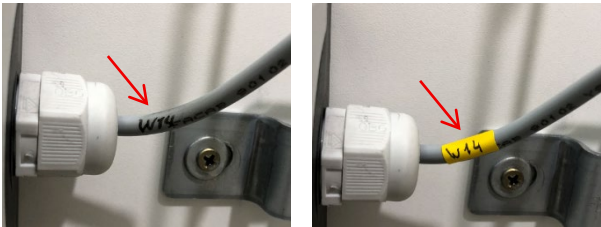
| WSOS  | Aspect                                               | Description/Resource (OK)                                                                                            | Description/Resource (Not OK)                                                                                                                                                                                                    | Illustrative Example                                                                |
|-------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 54</b> - Wire connecting – spring connections |  <p>Fitted; copper not visible</p> |  <p>Visible copper</p><br> <p>Excessive copper length</p> |  |

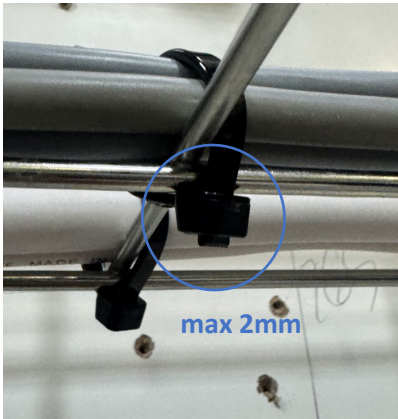
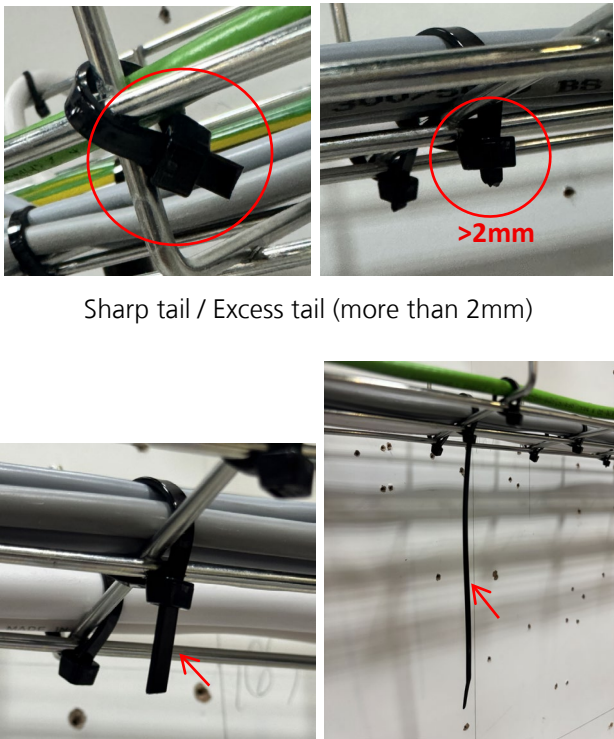
| WSOS  | Aspect                                       | Description/Resource (OK)                                                                                                                                                                                                                                                                                        | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                      | Illustrative Example                                                                |
|-------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 55</b> - Wire connecting - End sleeve |  <p>max 2mm</p> <p>Copper is visible beyond the End sleeve, max 2 mm</p>  <p>Copper is visible, but it does not extend beyond the ferrule</p> |  <p>&gt;2mm</p> <p>Copper is visible beyond the End sleeve more than 2 mm It's not possible to see the copper</p>  <p>Cut End sleeve</p> <p>/</p>  <p>No End sleeve</p> |  |

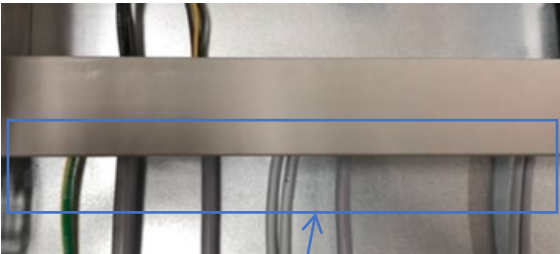
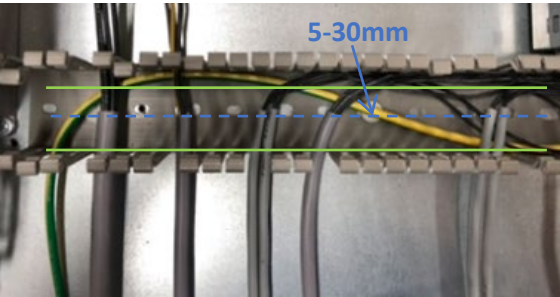
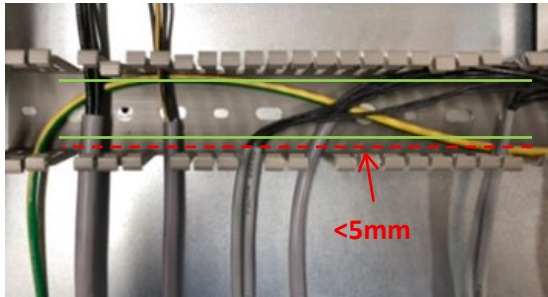
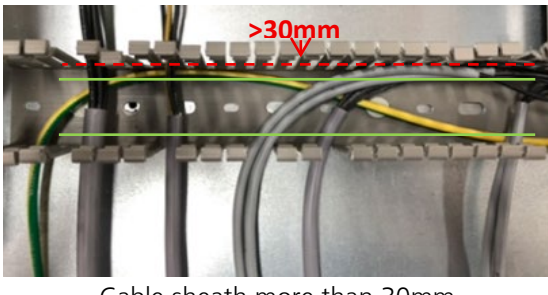
| WSOS  | Aspect                                            | Description/Resource (OK)                                                                                                                                                                                                                                                                | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Illustrative Example                                                                |
|-------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 56</b> - Wire connecting – Ring Connection |  <p>Copper is visible beyond the Ring, max 2 mm</p>  <p>Copper is visible, but it does not extend beyond the Ring</p> |   <p>Copper is visible beyond the ring more than 2 mm</p>    <p>Visible copper / Excessive copper length / Damage</p>  <p>It's not possible to see the copper</p> |  |

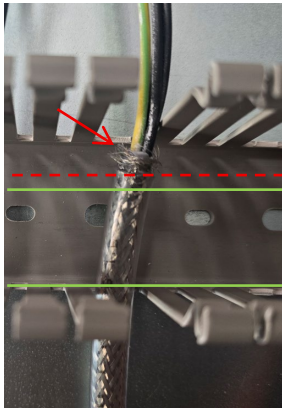
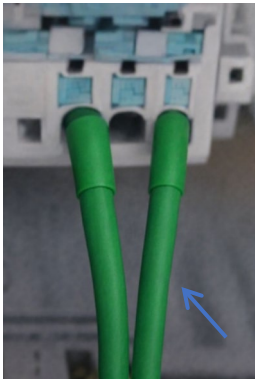
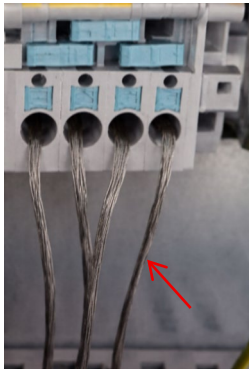
| WSOS  | Aspect                                                     | Description/Resource (OK)                                                                                          | Description/Resource (Not OK)                                                                                                                            | Illustrative Example                                                                |
|-------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 57</b> - Wire connecting – Ring Terminal Connection |  <p>Ring terminal connection</p> |  <p>Without terminal connection</p> <p>Wrong terminal connection</p> |  |

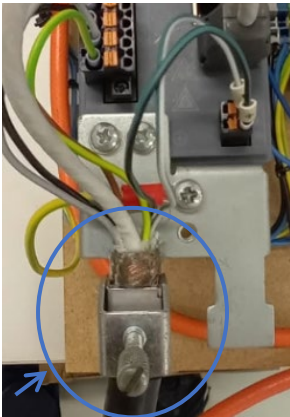
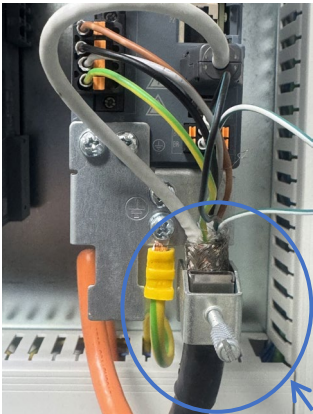
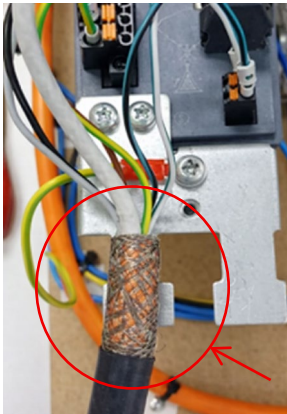
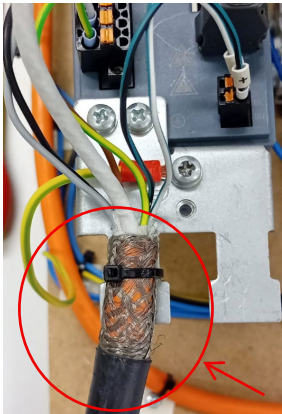
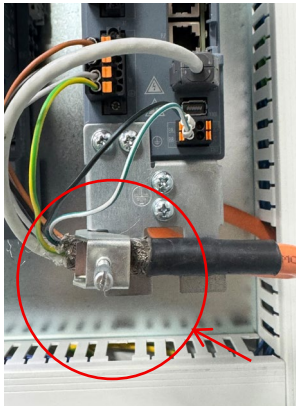
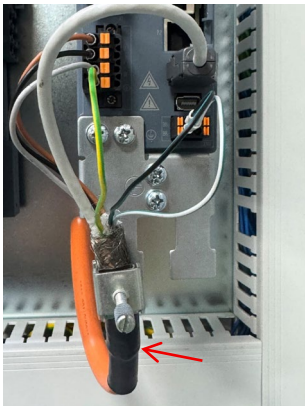
| WSOS  | Aspect                                                                               | Description/Resource (OK)                                                                                                                                                                                                                                                                                                                                                                                                                                 | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                                                              | Illustrative Example                                                                  |
|-------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 58</b> - Wire not used – (same rule applies to all devices and all locations) |  <p>min 10mm</p> <p>Isolate each wire individually using heat shrink tubing, min 10mm</p>   <p>Isolate the g/y wire with g/y heat shrink tubing and the other wires with black heat shrink tubing.</p> |  <p>Not insulated</p>  <p>/ Wires together</p>  <p>Cut wire</p> <p>Heat shrinks too short, less than 10mm</p>  <p>&lt;10mm</p> |    |
| 3 & 4 | <b>SAG 59</b> - Damaged wire on the cable                                            |  <p>No damaged</p>                                                                                                                                                                                                                                                                                                                                                     |  <p>Damaged wire</p>                                                                                                                                                                                                                                                                                                                                                                  |  |

| WSOS  | Aspect                             | Description/Resource (OK)                                                                                                                      | Description/Resource (Not OK)                                                                                                                                                                                                               | Illustrative Example                                                                 |
|-------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 60 -</b><br>Damaged wire    |  <p>No damaged</p>                                            |  <p>Damage the wire insulation (with visible copper or not visible copper)</p>                                                                           |   |
| 3 & 4 | <b>SAG 61 -</b><br>Labelling cable |  <p>Labelling provided applied with labeling plastic tie</p> |  <p>Not labelling plastic tie</p><br> <p>Not labelling provided</p> |  |

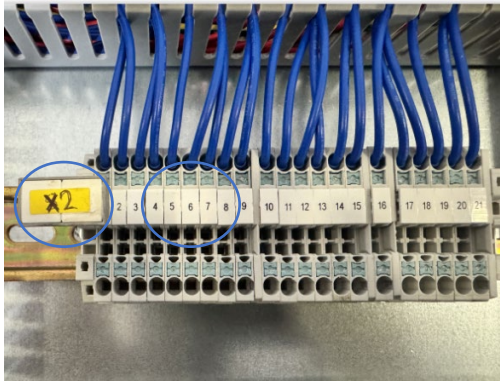
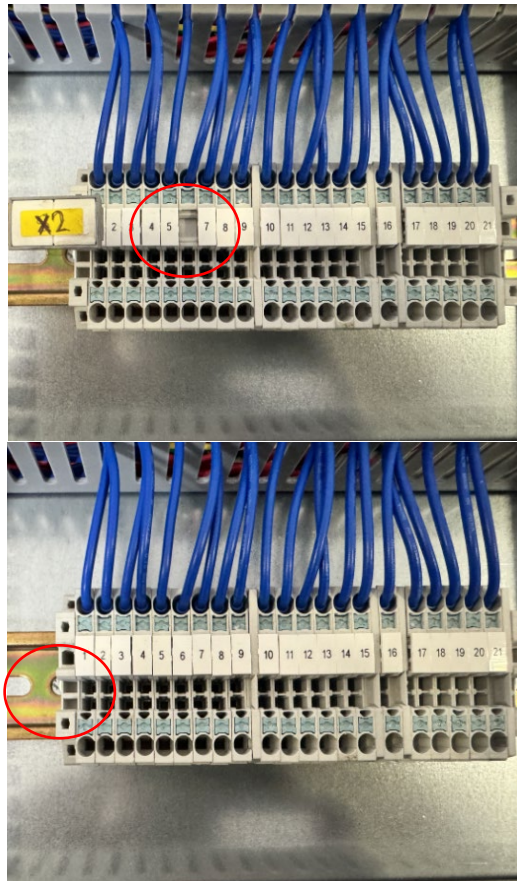
| WSOS  | Aspect                                                    | Description/Resource (OK)                                                                                   | Description/Resource (Not OK)                                                                                                                                   | Illustrative Example                                                                |
|-------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 & 4 | <b>SAG 62</b> - Tie cut quality (flush cut vs sharp tail) |  <p>Flush cut, max 2mm</p> |  <p>Sharp tail / Excess tail (more than 2mm)</p> <p>Uneven pointed edge</p> |  |

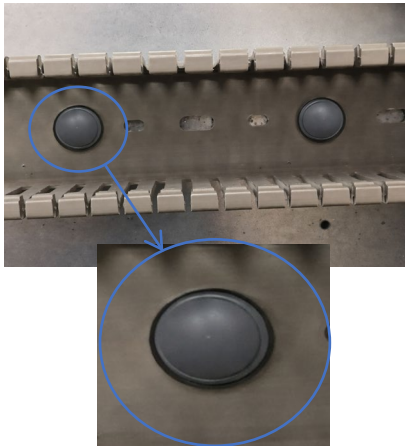
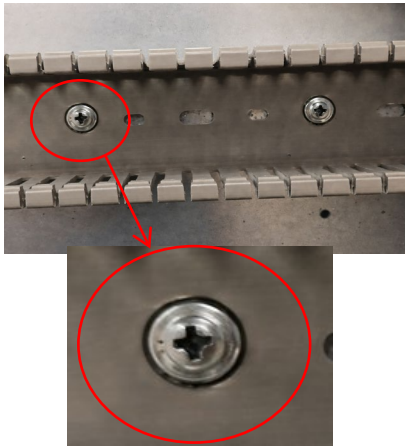
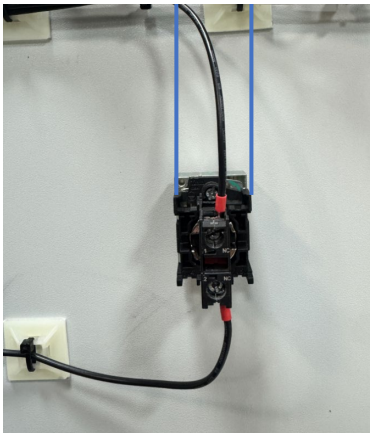
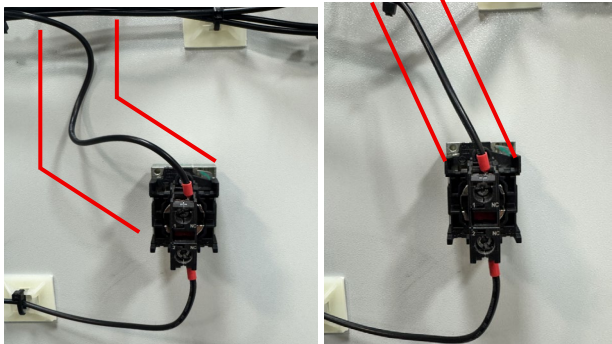
| WSOS | Aspect                                                                                                                           | Description/Resource (OK)                                                                                                                                                                                                                                                                                                                                                                             | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                         | Illustrative Example                                                                |
|------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3    | <b>SAG 63 -</b><br>Control box – cable sheath (except for specific cables: door light power, door limit switch, and servo cable) |  <p>The cable sheath is inside the PVC duct</p>  <p>Cable sheath between 5-30mm</p>  <p>Except for specific cables – no stripping required</p> |  <p>The cable sheath is not inside the PVC duct</p>  <p>Cable sheath less than 5mm</p>  <p>Cable sheath more than 30mm</p> |  |

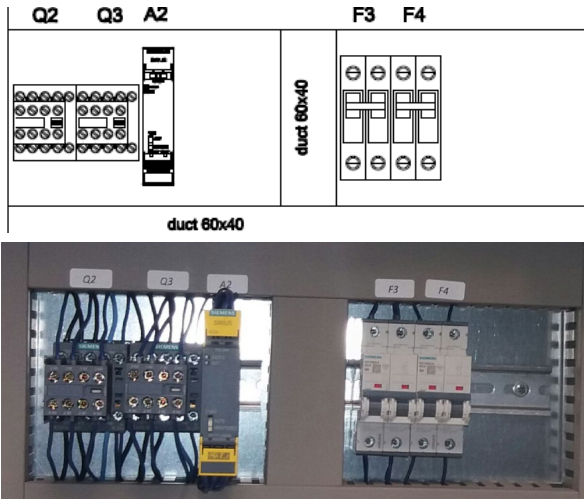
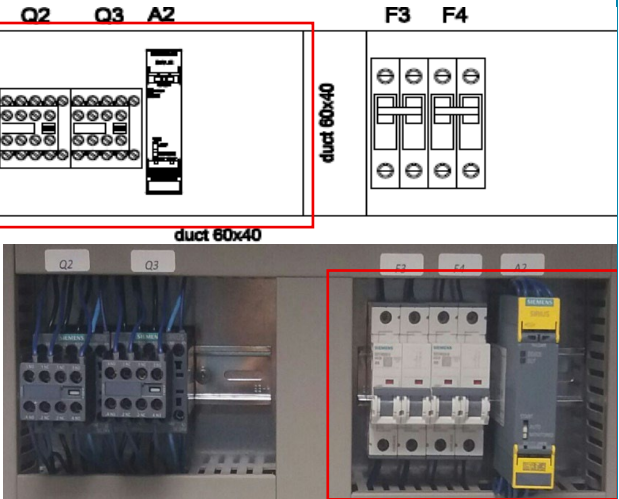
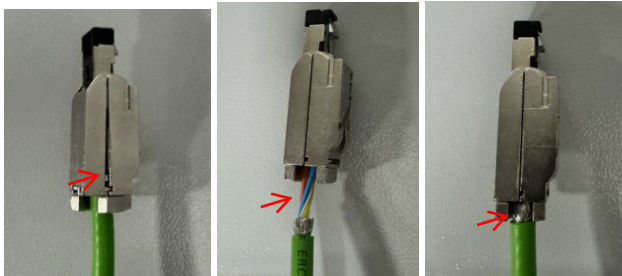
| WSOS | Aspect                                                                     | Description/Resource (OK)                                                                                                                             | Description/Resource (Not OK)                                                                                                                                  | Illustrative Example                                                                 |
|------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 64 -</b><br>Control box –<br>cable sheath<br>for shielded<br>cables |  <p>Apply heat-shrink tubing and cable sheath<br/>between 5-30mm</p> |  <p>Not apply heat-shrink tubing or cable sheath not<br/>between 5-30mm</p> |   |
| 3    | <b>SAG 65 -</b><br>Shield                                                  |  <p>Apply heat-shrink tubing</p>                                    |  <p>Not apply heat-shrink tubing</p>                                       |  |

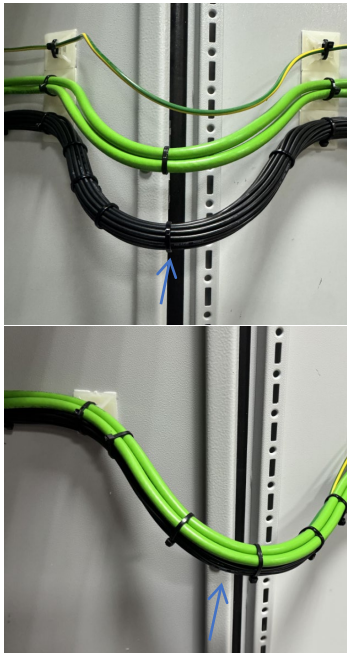
| WSOS | Aspect                                           | Description/Resource (OK)                                                                                                                                                                                                                                 | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Illustrative Example                                                                |
|------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3    | <b>SAG 66 -</b><br>Servo Drive -<br>Cable Shield |  <p>Fix with the metal clamp</p>  <p>Fix with the metal clamp (both sides allowed)</p> |  <p>Not fixed</p>  <p>/ Cable tie used for fixing</p>  <p>Metal clamp in the wrong direction</p>  <p>Metal clamp fixed on the insulation part (No shield)</p> |  |

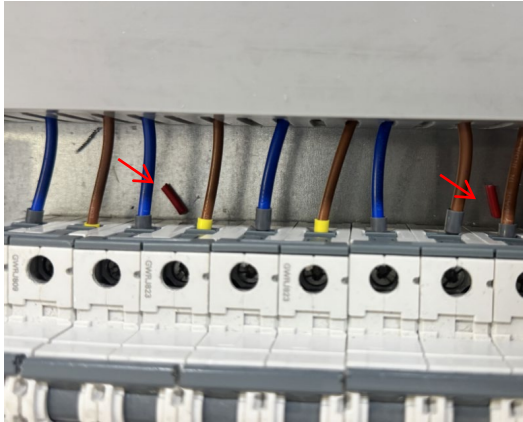
| WSOS | Aspect                                                   | Description/Resource (OK)                                                                                                                                                                                                                | Description/Resource (Not OK)                                                                                                                                                                                                                    | Illustrative Example                                                                |
|------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3    | <b>SAG 67</b> -<br>Labelling –<br>control box<br>devices |  <p>Labelling provided applied</p>  <p>Labelling provided applied</p> |  <p>Label applied in the wrong position</p>  <p>Labelling not applied</p> |  |

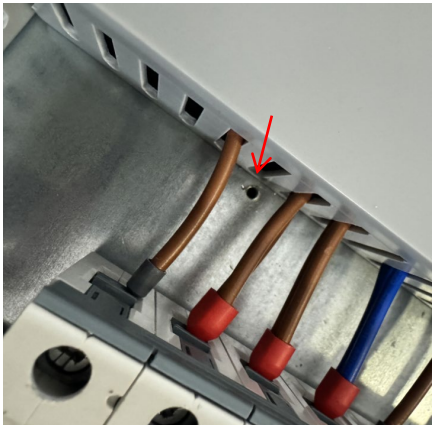
| WSOS | Aspect                                                   | Description/Resource (OK)                                                                                            | Description/Resource (Not OK)                                                                                     | Illustrative Example                                                                |
|------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3    | <b>SAG 68</b> -<br>Labelling –<br>Through<br>Connections |  <p>Labelling provided applied</p> |  <p>Labelling not applied</p> |  |

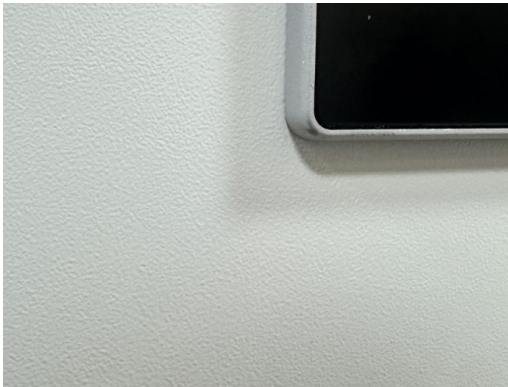
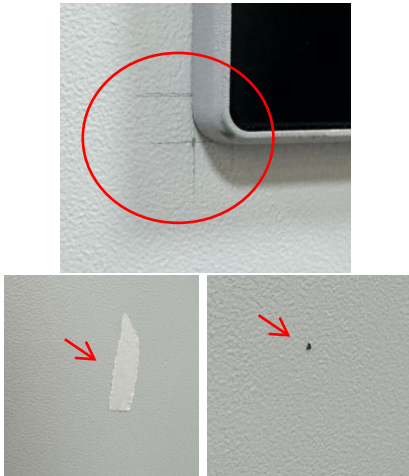
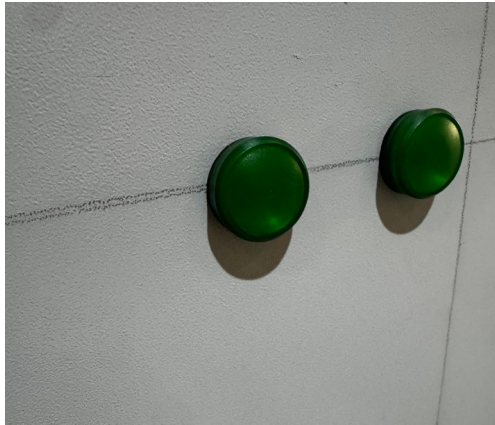
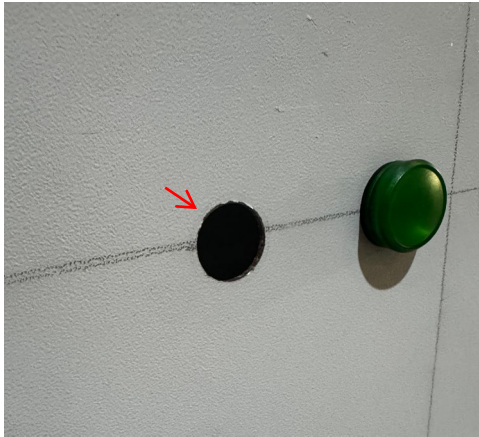
| WSOS | Aspect                                              | Description/Resource (OK)                                                                                     | Description/Resource (Not OK)                                                                                      | Illustrative Example                                                                 |
|------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 69</b> - Plastic Cover<br>PVC Duct<br>fixing |  <p>With a plastic cover</p> |  <p>Without a plastic cover</p> |   |
| 3    | <b>SAG 70</b> - Wire<br>alignment door              |  <p>Aligned wire</p>        |  <p>Not aligned exit</p>       |  |

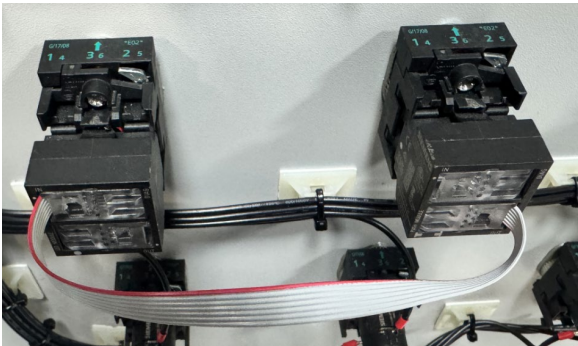
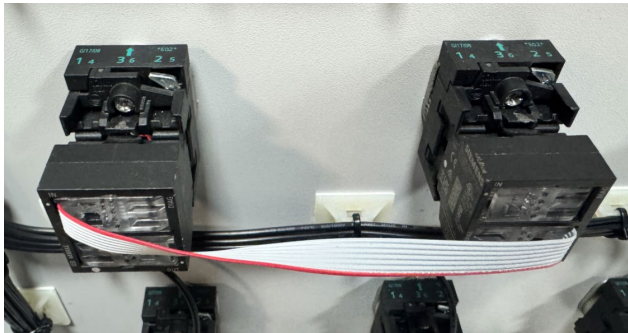
| WSOS | Aspect                      | Description/Resource (OK)                                                                                                                                                                         | Description/Resource (Not OK)                                                                                                                                                                   | Illustrative Example                                                                  |
|------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 3    | SAG 71 - Layout             |  <p>duct 60x40</p> <p>duct 60x40</p> <p>Devices in the correct position (Max. 15 mm vertical or horizontal)</p> |  <p>duct 60x40</p> <p>duct 60x40</p> <p>Devices in incorrect position (&gt;15 mm vertical or horizontal)</p> |    |
| 3    | SAG 72 - PROFINET Connector |  <p>Well done connector</p>                                                                                     |  <p>Not closed / wires outside / shield outside</p>                                                         |  |

| WSOS | Aspect                          | Description/Resource (OK)                                                                                                                                | Description/Resource (Not OK)                                                                                                                                                                                               | Illustrative Example                                                                |
|------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3    | <b>SAG 73</b> - Wire slack door |  <p>Correct slack at the hinge with no pulling during door movement</p> |  <p>No slack and pulling</p>  <p>Excessive slack</p> |  |

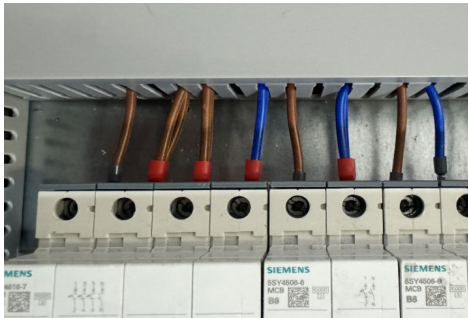
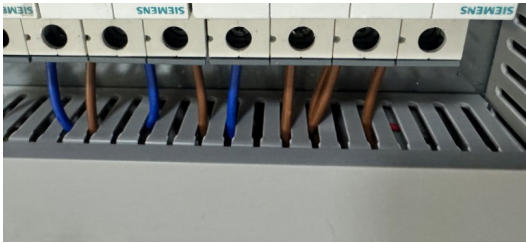
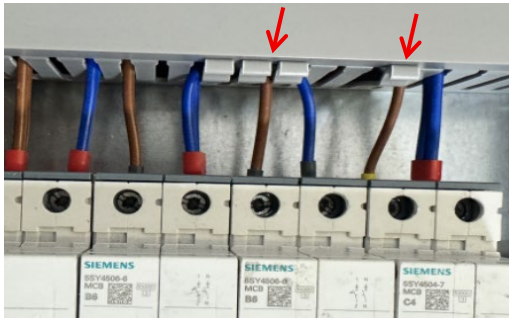
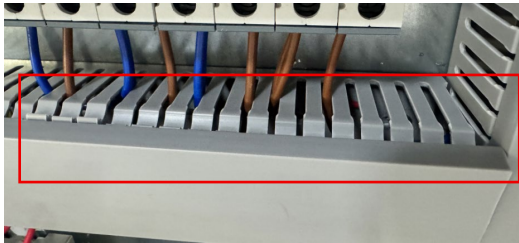
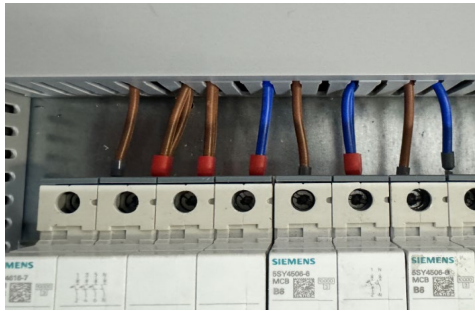
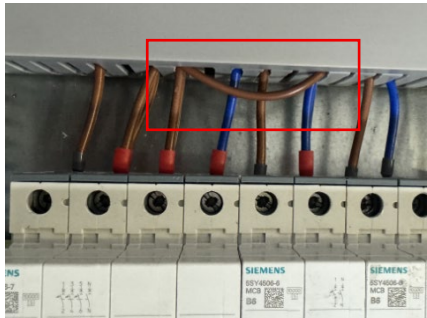
| WSOS | Aspect                                                            | Description/Resource (OK)                                                                                  | Description/Resource (Not OK)                                                                                                                                       | Illustrative Example                                                                  |
|------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 3    | <b>SAG 74 -</b><br>Cleaning inside the control box                |  <p>Without any dirt</p>  |  <p>With dust: rest of the materials (wiring, paper, dust, copper, plastic)</p>  |    |
| 3    | <b>SAG 75 -</b><br>Cleaning the mounting plate of the control box |  <p>Without any dirt</p> |  <p>With dust: rest of the materials (wiring, paper, dust, copper, plastic)</p> |  |

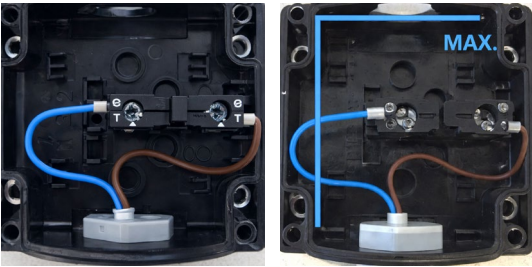
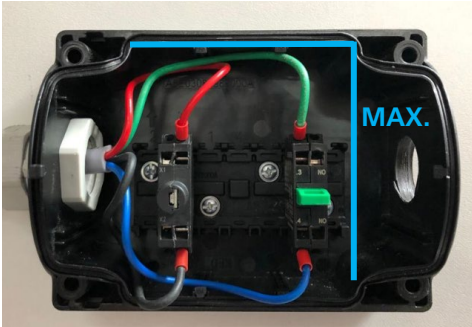
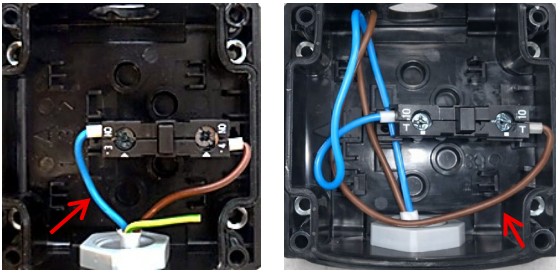
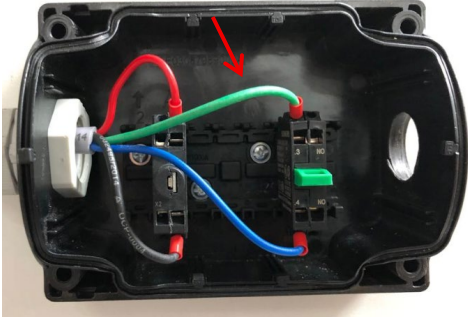
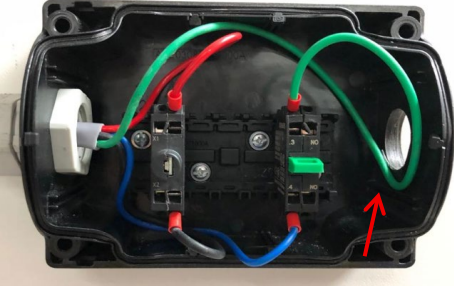
| WSOS | Aspect                                                               | Description/Resource (OK)                                                                                                          | Description/Resource (Not OK)                                                                                                     | Illustrative Example                                                                 |
|------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 76</b> - Extra holes in the mounting plate of the control box |  <p>Without extra holes in the mounting plate</p> |  <p>With extra holes in the mounting plate</p> |   |
| 3    | <b>SAG 77</b> - Scratch or damage the control box                    |  <p>Without a scratch or damage</p>              |  <p>Scratched or Damaged</p>                  |  |

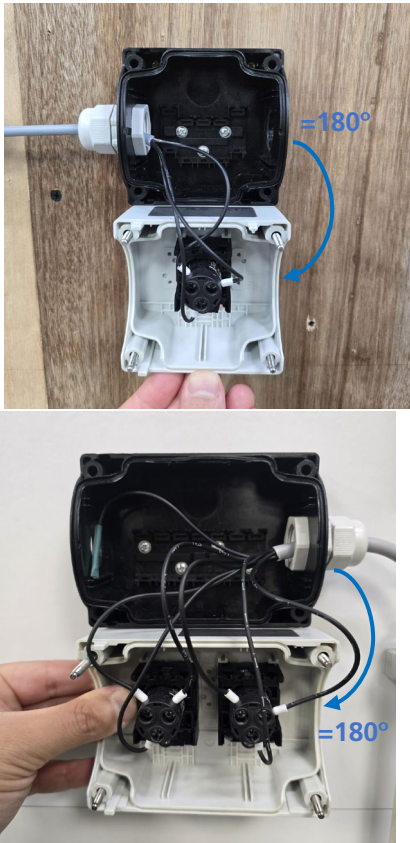
| WSOS | Aspect                                    | Description/Resource (OK)                                                                                      | Description/Resource (Not OK)                                                                                             | Illustrative Example                                                                 |
|------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 78</b> - Dirty control box         |  <p>Without dirty</p>        |  <p>Lines / tapes / metal shavings</p> |   |
| 3    | <b>SAG 79</b> - Extra Holes Control Boxes |  <p>Without extra holes</p> |  <p>With extra holes</p>              |  |

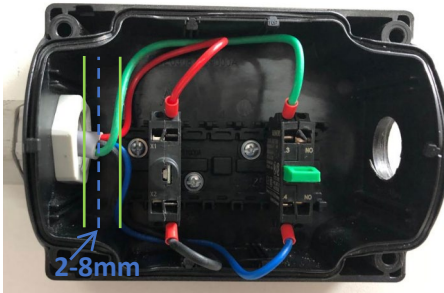
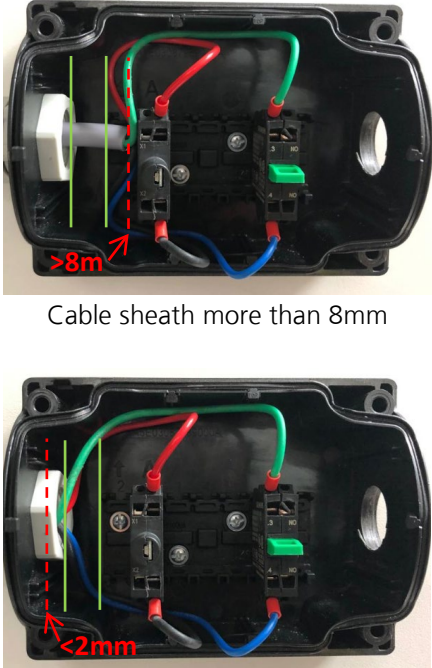
| WSOS | Aspect                    | Description/Resource (OK)                                                                                                            | Description/Resource (Not OK)                                                                                                                                                                                  | Illustrative Example                                                                |
|------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3    | <b>SAG 80</b> - ACT cable |  <p>Cable length no strain and no excess slack</p> |  <p>Strained</p>  <p>Too much slack</p> |  |

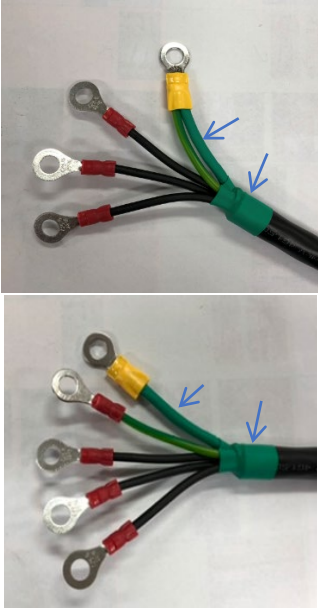
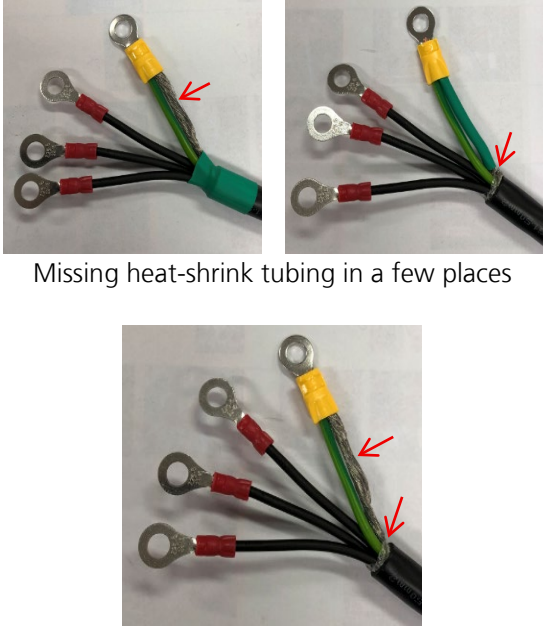
| WSOS | Aspect                       | Description/Resource (OK)                                                                                             | Description/Resource (Not OK)                                                                          | Illustrative Example                                                                |
|------|------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3    | <b>SAG 81</b> - Wire tension |  <p>Wire with sufficient slack</p> |  <p>Wire tight</p> |  |

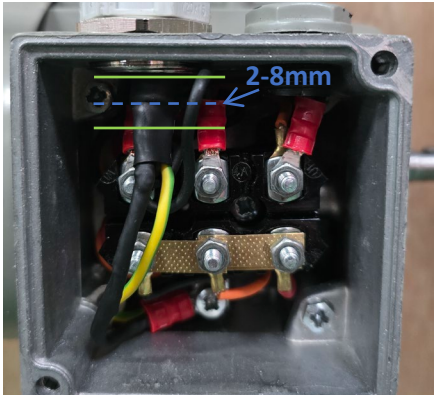
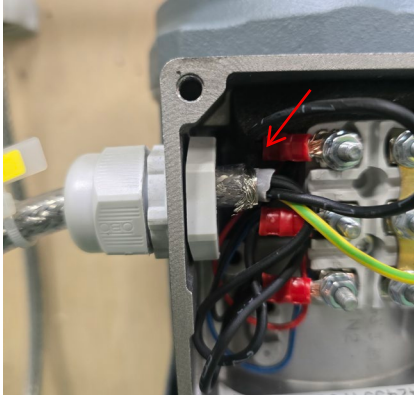
| WSOS | Aspect                             | Description/Resource (OK)                                                                                                                                                                                                                | Description/Resource (Not OK)                                                                                                                                                                                                               | Illustrative Example                                                                  |
|------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 3    | <b>SAG 82</b> - PVC trunking cover |  <p>PVC trunking edges not visible</p>  <p>It's completely closed</p> |  <p>PVC trunking edges visible</p>  <p>It's not completely closed</p> |    |
| 3    | <b>SAG 83</b> - PVC trunking wires |  <p>Inside the PVC trunking</p>                                                                                                                       |  <p>Outside the PVC trunking</p>                                                                                                                       |  |

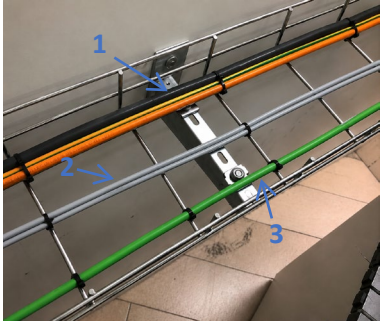
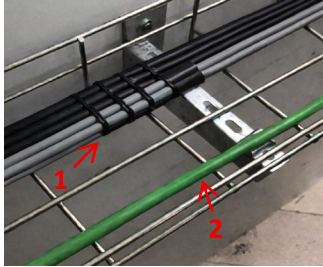
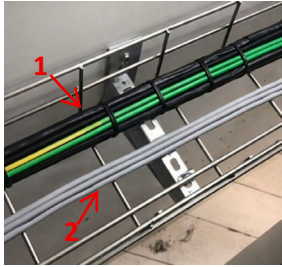
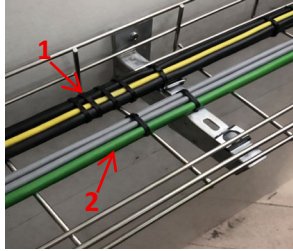
| WSOS | Aspect                                                            | Description/Resource (OK)                                                                                                                                                                                                                                                                                                                         | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                           | Illustrative Example                                                                |
|------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 84 -</b><br>Device wire length – housing box installations |  <p>Wire length no strain and no excess slack<br/>MAX. (width + length of the box)</p>  <p>Wire length no strain and no excess slack<br/>MAX. (width + length of the box)</p> |  <p>Strained &amp; Too much slack</p>   <p>Strained &amp; Too much slack</p> |  |

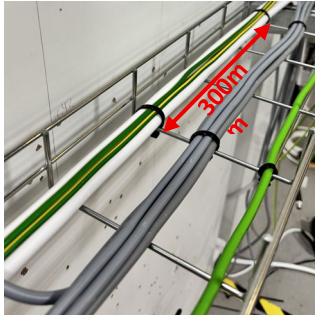
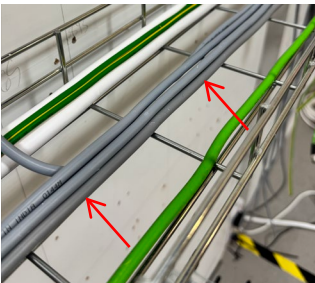
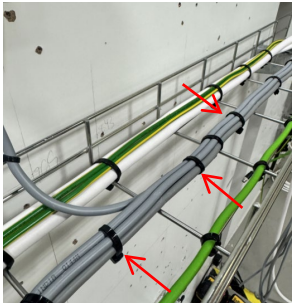
| WSOS | Aspect                                                        | Description/Resource (OK)                                                                                                                                        | Description/Resource (Not OK)                                                                                                                                                   | Illustrative Example                                                                |
|------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 85 -</b><br>Device wire length – cover for housing box |  <p>Wire length no strain and no excess slack<br/>(Cover can open to 180°)</p> |  <p>Strained (Cover cannot open to 180°)</p> <p>Too much slack (Cover can open to 270°)</p> |  |

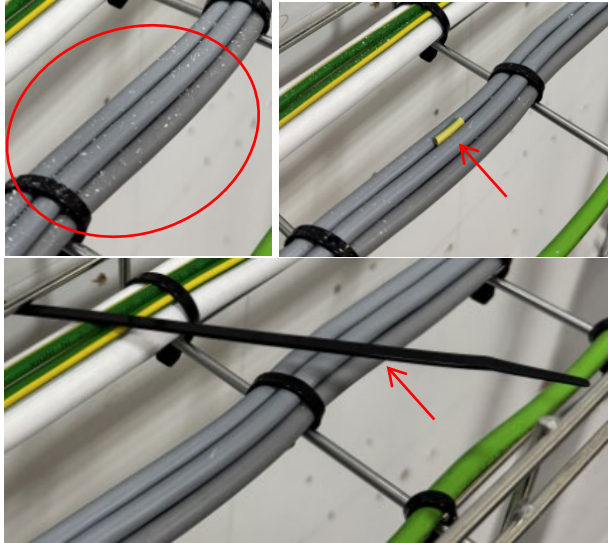
| WSOS | Aspect                                 | Description/Resource (OK)                                                                                           | Description/Resource (Not OK)                                                                                                                            | Illustrative Example                                                                |
|------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 86 -</b><br>Device cable sheath |  <p>Cable sheath between 2-8mm</p> |  <p>Cable sheath more than 8mm</p> <p>Cable sheath less than 2mm</p> |  |

| WSOS | Aspect                            | Description/Resource (OK)                                                                                         | Description/Resource (Not OK)                                                                                                                                             | Illustrative Example                                                                |
|------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 87 -</b><br>Wiring - Motor |  <p>Apply heat-shrink tubing</p> |  <p>Missing heat-shrink tubing in a few places</p> <p>Not apply heat-shrink tubing</p> |  |

| WSOS | Aspect                                                  | Description/Resource (OK)                                                                                                                        | Description/Resource (Not OK)                                                                                                                             | Illustrative Example                                                                 |
|------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 4    | <b>SAG 88</b> -<br>Motor Cable<br>Sheath                |  <p>Apply heat-shrink tubing and cable sheath between 2-8mm</p> |  <p>Not apply heat-shrink tubing or cable sheath not between 2-8mm</p> |   |
| 4    | <b>SAG 89</b> -<br>Cable damage<br>in the cable<br>tray |  <p>No damage</p>                                              |  <p>Insulation damage</p>                                             |  |

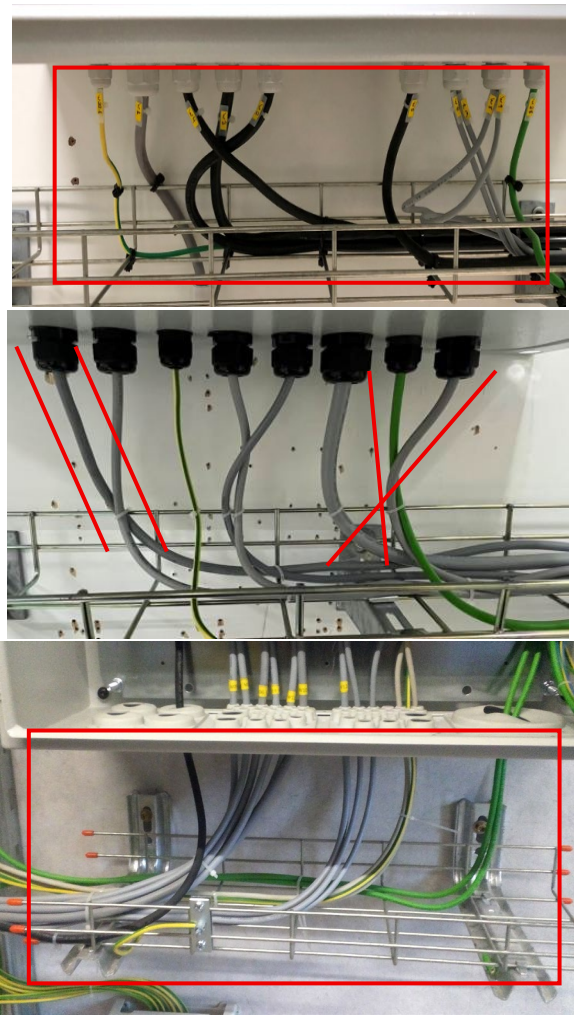
| WSOS | Aspect                                                               | Description/Resource (OK)                                                                                                                                                       | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Illustrative Example                                                                |
|------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 90</b> -<br>Mesh tray /<br>Ladder tray<br>cable<br>separation |  <p>1 - Power (AC +PE + Servo)<br/>2 - Control (24VDC + 10VDC + I/O link)<br/>3 - PROFINET</p> | <div>  <p>1 - Power + Control<br/>2 - PROFINET</p> </div> <div>  <p>1 - Power + PROFINET<br/>2 - Control</p> </div> <div>  <p>1 - Power<br/>2 - Control + PROFINET</p> </div> <div>  <p>1 - Power + Control<br/>+ PROFINET</p> </div> |  |

| WSOS | Aspect                                                         | Description/Resource (OK)                                                                                                                                                                        | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                                                                            | Illustrative Example                                                                |
|------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 91</b> - Cable ties spacing reference in the cable tray |  <p>100 mm</p>  <p>200 mm</p> |  <p>300 mm</p>  <p>&gt; 300 mm</p><br> <p>Without cable ties</p>  <p>Messy cables ties</p> |  |

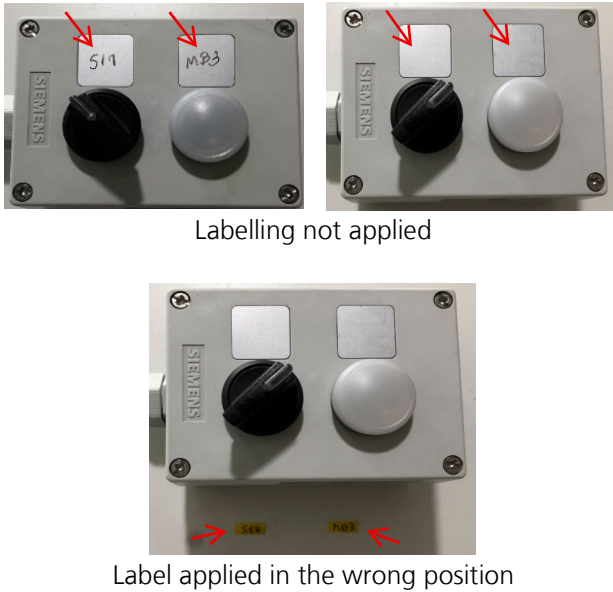
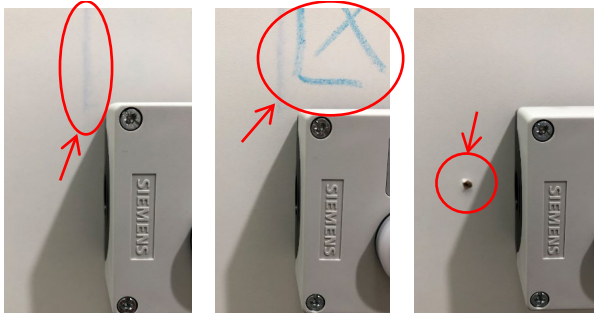
| WSOS | Aspect                                        | Description/Resource (OK)                                                                                 | Description/Resource (Not OK)                                                                                                     | Illustrative Example                                                                |
|------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 92</b> -<br>Cleaning the<br>cable tray |  <p>Without any dirt</p> |  <p>With dust/rest of wires and cable ties</p> |  |

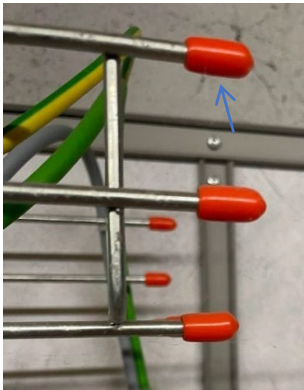
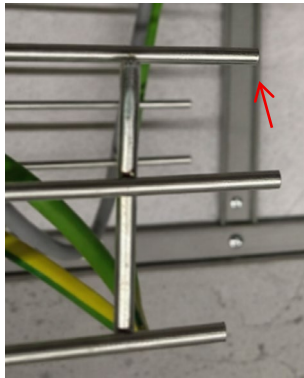
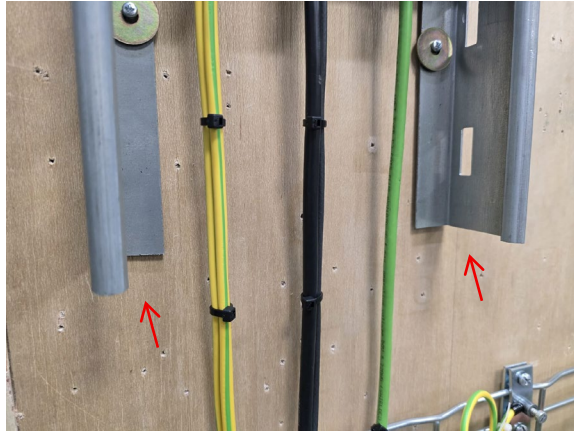
| WSOS | Aspect                                                      | Description/Resource (OK)                                                                                              | Description/Resource (Not OK)                                                                                   | Illustrative Example                                                                |
|------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 93</b> -<br>Control box<br>exit using a<br>cable tie |  <p>Cable tie is properly fixed</p> |  <p>Cable tie not fixed</p> |  |

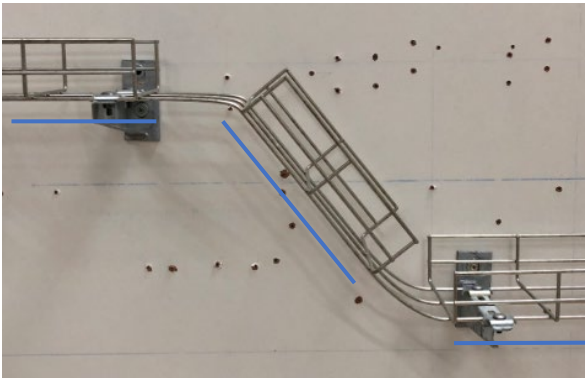
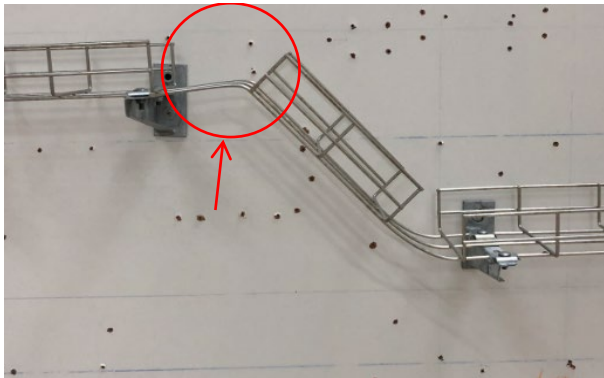
| WSOS | Aspect                                                                        | Description/Resource (OK)                                                                                                                                                                                                                                                       | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                                        | Illustrative Example                                                                |
|------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 94</b> -<br>Control box exit using a cable tie – cable from under tray |  <p>Cable in the different direction from CB to pipe</p>  <p>Cable in the same direction from CB to pipe</p> |  <p>Without cable tie and/or cable runs outside the tray</p>  <p>Without cable tie</p>  <p>/ Passing through the tray</p> |  |

| WSOS | Aspect                                                           | Description/Resource (OK)                                                                                                                   | Description/Resource (Not OK)                                                                                          | Illustrative Example                                                                |
|------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 95</b> - Front view CB exit without crossing and straight |  <p>Front view CB exit without crossing and straight</p> |  <p>Visible crossings or bends</p> |  |

| WSOS | Aspect                                                     | Description/Resource (OK)                                                                                         | Description/Resource (Not OK)                                                                                  | Illustrative Example                                                                 |
|------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 4    | <b>SAG 96 -</b><br>Cable tray exit<br>using a cable<br>tie |  <p>Cable tie properly fixed</p> |  <p>Cable tie not fixed</p> |   |
| 4    | <b>SAG 97 -</b><br>Cable tray exit<br>alignment            |  <p>Aligned exit</p>            |  <p>Not aligned exit</p>   |  |

| WSOS | Aspect                                                         | Description/Resource (OK)                                                                                               | Description/Resource (Not OK)                                                                                                                               | Illustrative Example                                                                  |
|------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 4    | <b>SAG 98</b> -<br>Labelling - wall<br>installation<br>devices |  <p>Labelling provided applied</p>     |  <p>Labelling not applied</p> <p>Label applied in the wrong position</p> |    |
| 4    | <b>SAG 99</b> - Wall<br>cleaning                               |  <p>Without marks and extra holes</p> |  <p>A few marks / A lots of marks / Extra holes</p>                     |  |

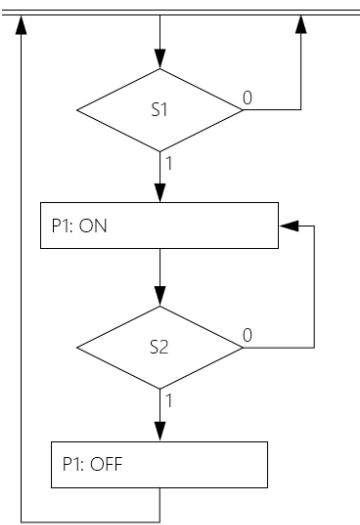
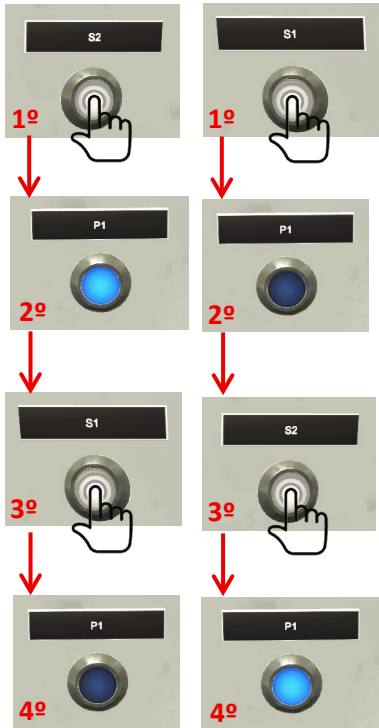
| WSOS | Aspect                           | Description/Resource (OK)                                                                                                      | Description/Resource (Not OK)                                                                                                       | Illustrative Example                                                                 |
|------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 4    | <b>SAG 100</b> - Cable tray end  |  <p>Install the cable tray accessories</p>    |  <p>Not install the cable tray accessories</p>   |   |
| 4    | <b>SAG 101</b> - Ladder tray end |  <p>Install the ladder tray accessories</p> |  <p>Not install the ladder tray accessories</p> |  |

| WSOS | Aspect                                  | Description/Resource (OK)                                                                                             | Description/Resource (Not OK)                                                                           | Illustrative Example                                                                |
|------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 102</b> -<br>Mesh tray<br>angles |  <p>Assemble in a straight line</p> |  <p>Not straight</p> |  |



# *Measurement*

## **(WSOS 5) – Programming**

| WSOS | Aspect                                                                                                                                   | Description/Resource (OK)                                                          | Description/Resource (Not OK)                                                        | Illustrative Example                                                                |
|------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 5    |  <p><b>SAG 103</b> - Turn ON and Turn OFF flowchart</p> |  |  |  |

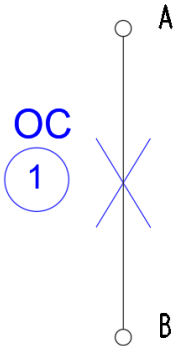
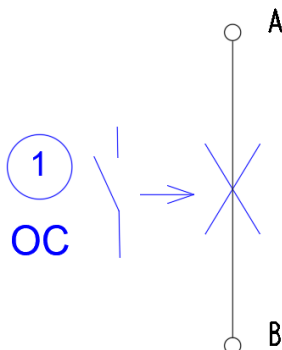
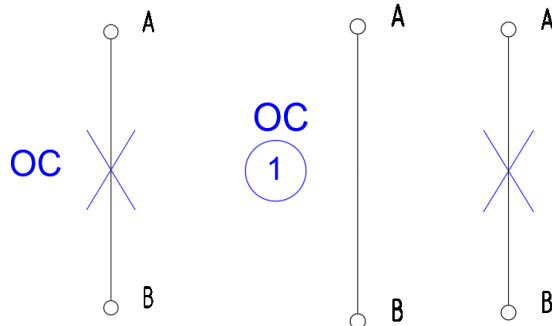
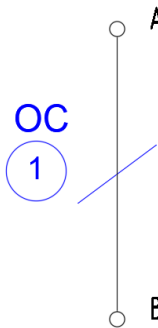
| WSOS | Aspect                                   | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|------------------------------------------|---------------------------|-------------------------------|----------------------|
| 5    | <p><b>SAG 104 - Serial flowchart</b></p> |                           |                               |                      |

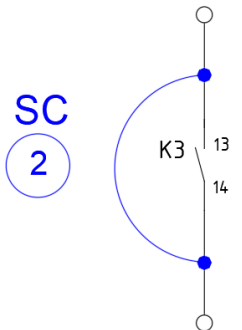
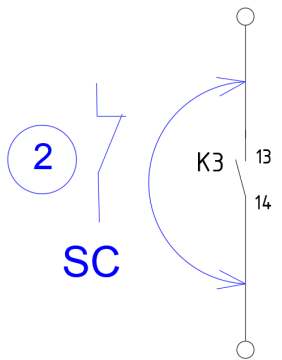
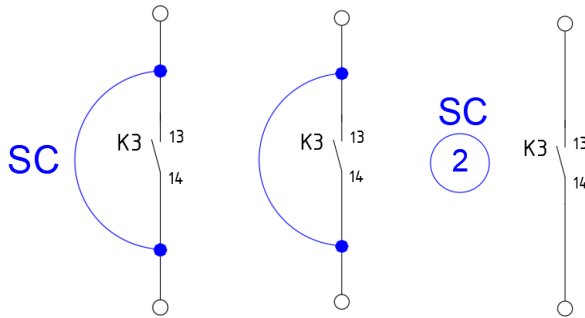
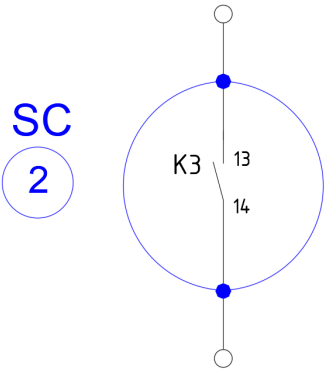
| WSOS | Aspect                                     | Description/Resource (OK) | Description/Resource (Not OK) | Illustrative Example |
|------|--------------------------------------------|---------------------------|-------------------------------|----------------------|
| 5    | <p><b>SAG 105 - Parallel flowchart</b></p> |                           |                               |                      |

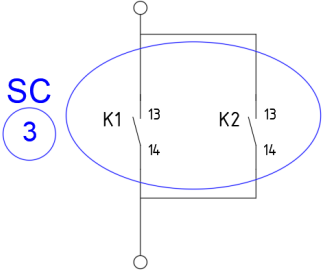
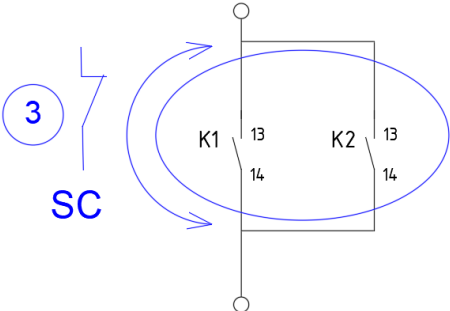
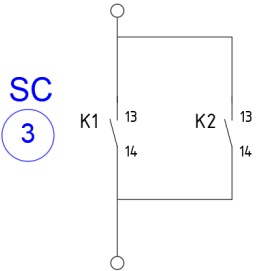
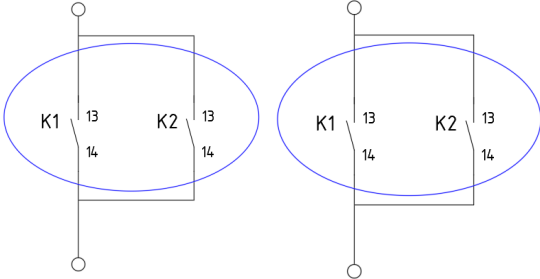
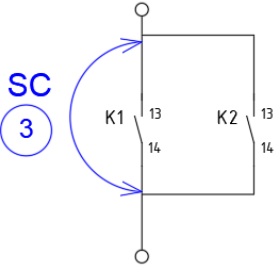


# *Measurement*

## **(WSOS 6) - Fault-finding**

| WSOS | Aspect                              | Description/Resource (OK)                                                                                                                                                                                                                                                        | Description/Resource (Not OK)                                                                                                                                                                                                                                           | Illustrative Example                                                                |
|------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 6    | <b>SAG 106 -</b><br>Open<br>Circuit |  <p>With all informations<br/>(drawing/fault number/type of fault)</p>  <p>With extra information related</p> |  <p>Missing informations<br/>(drawing/fault number/type of fault)</p>  <p>With wrong drawing</p> |  |

| WSOS | Aspect                            | Description/Resource (OK)                                                                                                                                                                                                                                                        | Description/Resource (Not OK)                                                                                                                                                                                                                                           | Illustrative Example                                                                |
|------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 6    | <b>SAG 107 -</b><br>Short Circuit |  <p>With all informations<br/>(drawing/fault number/type of fault)</p>  <p>With extra information related</p> |  <p>Missing informations<br/>(drawing/fault number/type of fault)</p>  <p>With wrong drawing</p> |  |

| WSOS | Aspect                                           | Description/Resource (OK)                                                                                                                                                                                                                                                        | Description/Resource (Not OK)                                                                                                                                                                                                                                                                                                                                | Illustrative Example                                                                |
|------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 6    | <b>SAG 108 -</b><br>Short<br>Circuit<br>parallel |  <p>With all informations<br/>(drawing/fault number/type of fault)</p>  <p>With extra information related</p> |   <p>Missing informations<br/>(drawing/fault number/type of fault)</p>  <p>With wrong drawing</p> |  |



*Judgement*

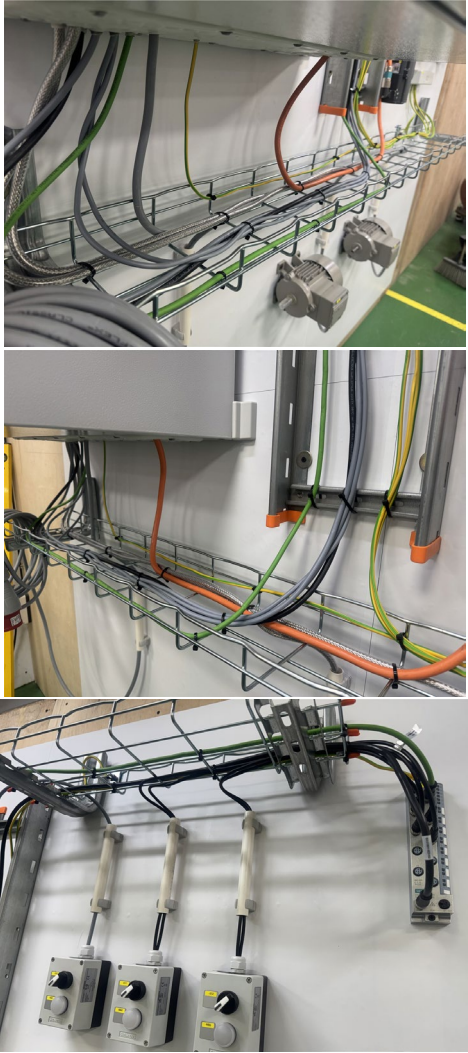
**(WSOS 3) - Making automation control  
panels/centres**

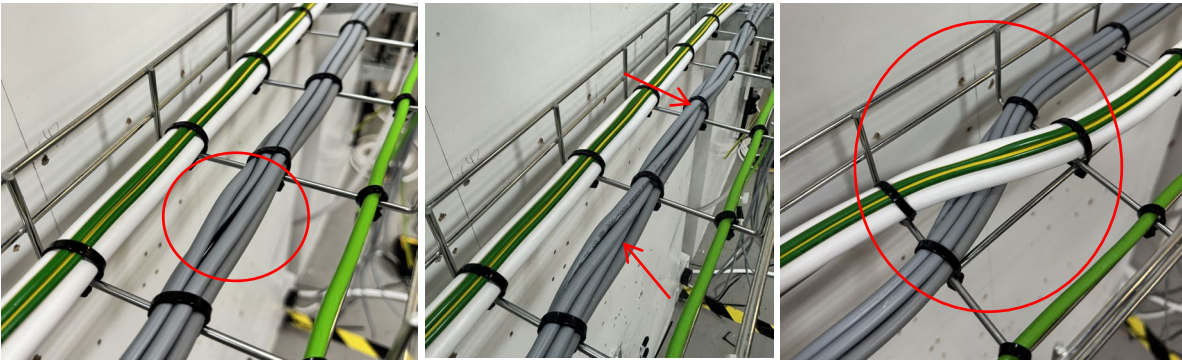
**(WSOS 4) - Field Installation (electrical and  
automation)**

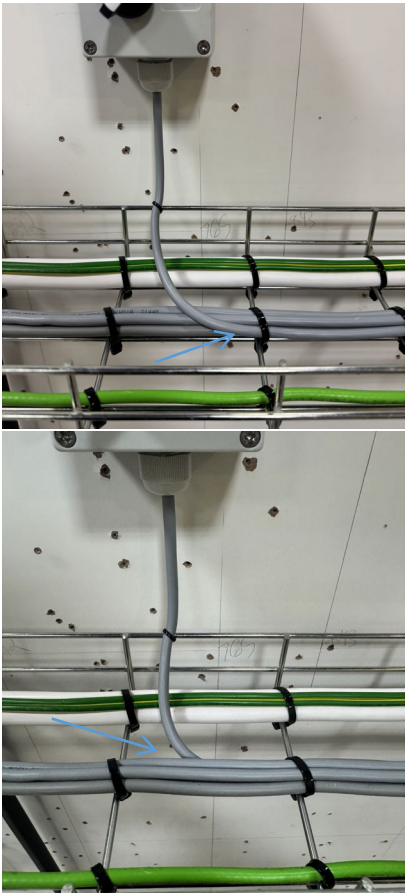
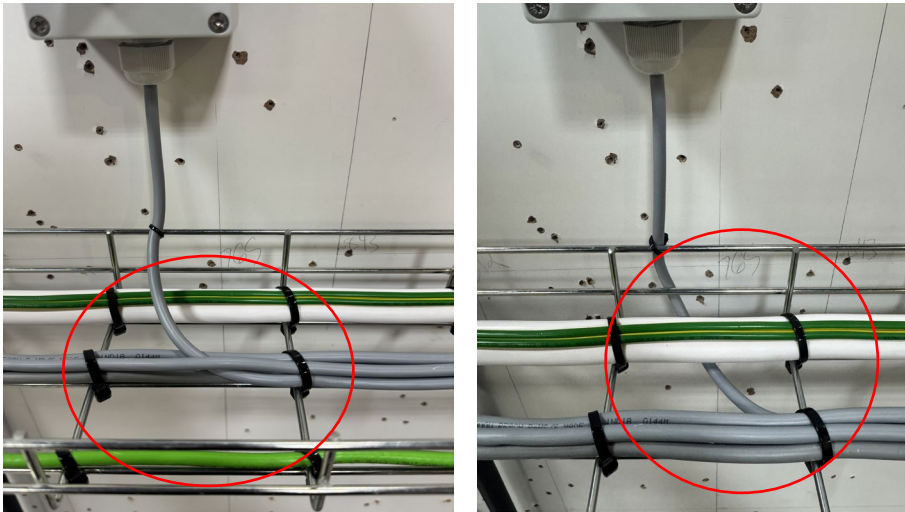
| WSOS | Aspect                                                | Score | Description                                                                                                                                                                                                                                                                | Resources                                                                            | Illustrative Example                                                                |
|------|-------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 109</b> -<br>Mesh tray<br>— cable<br>alignment | 3     | All cable exits and routing <b>neatly bundled</b> inside the tray. Cables run <b>straight and parallel</b> with <b>no visible crossings</b> . Exits <b>clean and controlled</b> at both ends. A client would immediately recognise this as professional, high-quality work |  |  |

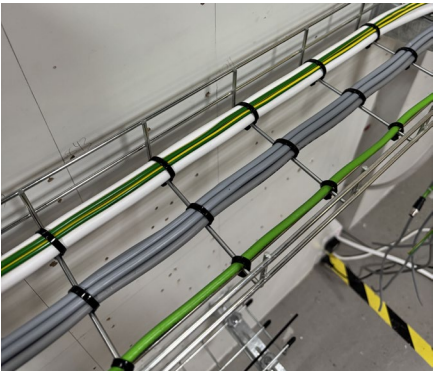
| WSOS | Aspect                                                | Score | Description                                                                                                                                                                                                                                                               | Resources                                                                            | Illustrative Example                                                                |
|------|-------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 109 -</b><br>Mesh tray<br>— cable<br>alignment | 2     | Cable exits and routing neat and well organised in <b>≥90% of the tray</b> . An <b>occasional minor crossing</b> visible but does not spoil the overall look. Good <b>(80–90% compliance)</b> cable organisation. A client would find the installation clearly acceptable |  |  |

| WSOS | Aspect                                                | Score | Description                                                                                                                                                                                                                                     | Resources                                                                            | Illustrative Example                                                                |
|------|-------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 109 -</b><br>Mesh tray<br>— cable<br>alignment | 1     | Cable exits and routing show <b>visible crossings in several spots</b> . Some cables <b>uneven or poorly bundled</b> . Basic <b>(50–70% compliance)</b> standard of cable organisation. A client would notice the untidiness throughout the run |  |  |

| WSOS | Aspect                                                | Score | Description                                                                                                                                                                                                                                               | Resources                                                                            | Illustrative Example                                                                |
|------|-------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 4    | <b>SAG 109 -</b><br>Mesh tray<br>— cable<br>alignment | 0     | <b>Frequent crossings</b> or cables <b>routed outside the tray boundaries</b> across most of the run, or <b>work not done</b> . Poor or no bundling. Exits untidy or <b>wires missing</b> . A client would immediately identify this as unacceptable work |  |  |

| Feature          | Good Practices                                                                                                                                       | Bad Practices                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Visible crossing |  <p data-bbox="416 788 766 820">Cables without visible crossing</p> | <div data-bbox="864 437 2042 798">  <p data-bbox="1120 815 1789 847">Cables with visible crossings / Routes cables visible crossing</p> </div> <div data-bbox="1028 876 1877 1222">  <p data-bbox="1366 1240 1543 1272">Cables disorder</p> </div> |

| Feature                                      | Good Practices                                                                                                                             | Bad Practices                                                                                                                          |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <p>Cable crossings at the mesh tray exit</p> |  <p>Cables are routed parallel inside the cable tray</p> |  <p>Cables crossing at the cable tray exit area</p> |

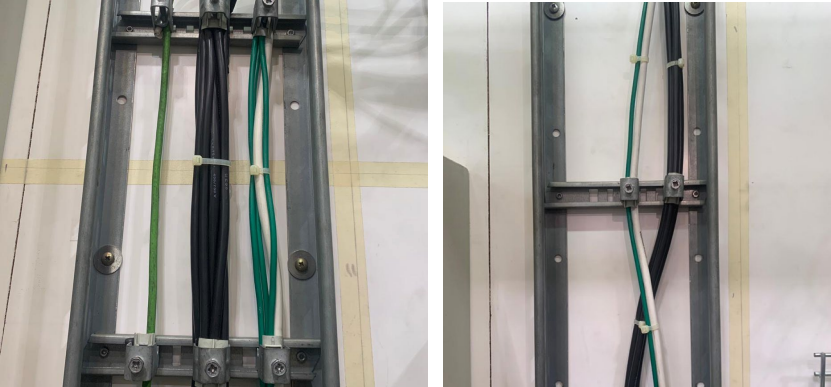
| Feature                  | Good Practices                                                                                                                                  | Bad Practices                                                                                                                                                                                      |                                                                                     |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Tray boundary compliance |  <p data-bbox="439 711 745 740">Cable inside tray boundary</p> |  <p data-bbox="1043 719 1861 748">Cables secured to the side of the tray / Cables outside the tray boundary</p> |  |

| WSOS | Aspect                                                  | Score | Description                                                                                                                                                                                                                                                                | Resources | Illustrative Example                                                                                                                                                     |
|------|---------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4    | <b>SAG 110 -</b><br>Ladder tray —<br>cable<br>alignment | 3     | All cable exits and routing <b>neatly bundled</b> inside the tray. Cables run <b>straight and parallel</b> with <b>no visible crossings</b> . Exits <b>clean and controlled</b> at both ends. A client would immediately recognise this as professional, high-quality work |           |   |

| WSOS | Aspect                                                  | Score | Description                                                                                                                                                                                                                                                               | Resources | Illustrative Example                                                                                                                                                     |
|------|---------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4    | <b>SAG 110 -</b><br>Ladder tray —<br>cable<br>alignment | 2     | Cable exits and routing neat and well organised in <b>≥90% of the tray</b> . An <b>occasional minor crossing</b> visible but does not spoil the overall look. Good <b>(80–90% compliance)</b> cable organisation. A client would find the installation clearly acceptable |           |   |

| WSOS | Aspect                                                     | Score | Description                                                                                                                                                                                                                                     | Resources | Illustrative Example                                                                                                                                                     |
|------|------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4    | <b>SAG 110 -</b><br>Ladder<br>tray —<br>cable<br>alignment | 1     | Cable exits and routing show <b>visible crossings in several spots</b> . Some cables <b>uneven or poorly bundled</b> . Basic <b>(50–70% compliance)</b> standard of cable organisation. A client would notice the untidiness throughout the run |           |   |

| WSOS | Aspect                                                     | Score | Description                                                                                                                                                                                                                                               | Resources | Illustrative Example                                                                                                                                                     |
|------|------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4    | <b>SAG 110 -</b><br>Ladder<br>tray —<br>cable<br>alignment | 0     | <b>Frequent crossings</b> or cables <b>routed outside the tray boundaries</b> across most of the run, or <b>work not done</b> . Poor or no bundling. Exits untidy or <b>wires missing</b> . A client would immediately identify this as unacceptable work |           |   |

| Feature          | Good Practices                                                                                                                                       | Bad Practices                                                                                                                                                                                                                                                                                                                       |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Visible crossing |  <p data-bbox="504 786 853 815">Cables without visible crossing</p> |  <p data-bbox="1198 786 1868 815">Cables with visible crossings / Routes cables visible crossing</p>  <p data-bbox="1447 1329 1621 1358">Cables disorder</p> |

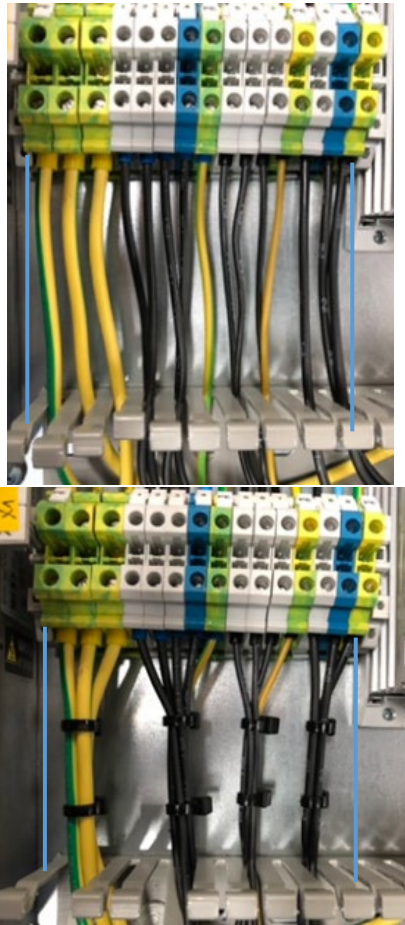
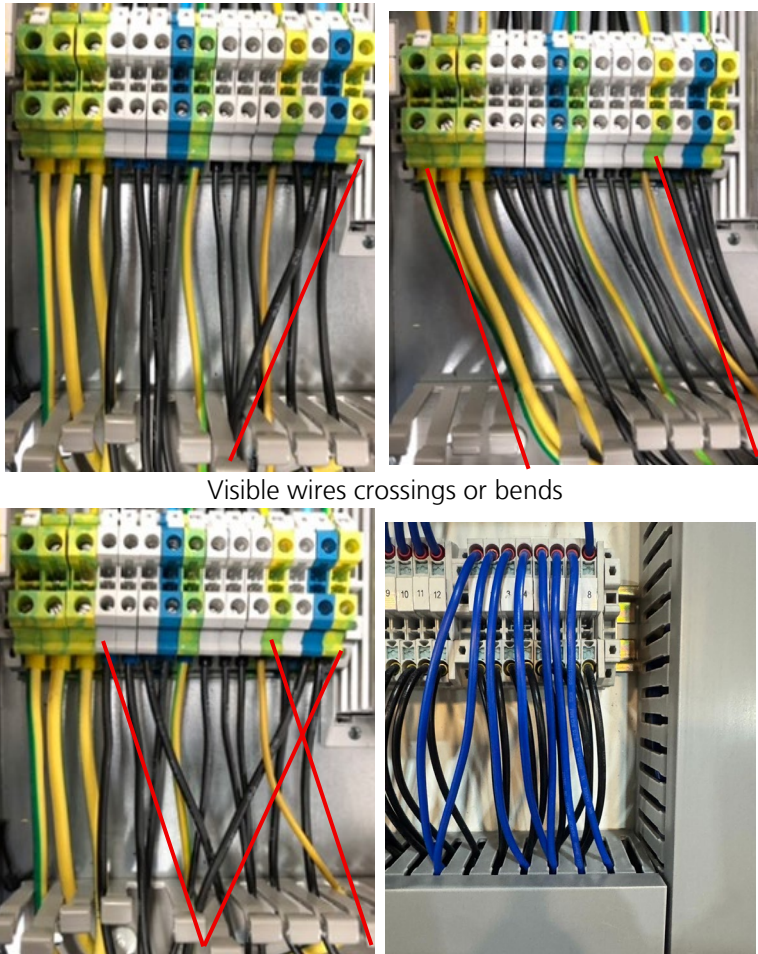
| Feature                                 | Good Practices                                                                                                                             | Bad Practices                                                                                                                           |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Cable crossings at the ladder tray exit |  <p>Cables are routed parallel inside the ladder tray</p> |  <p>Cables crossing at the ladder tray exit area</p> |

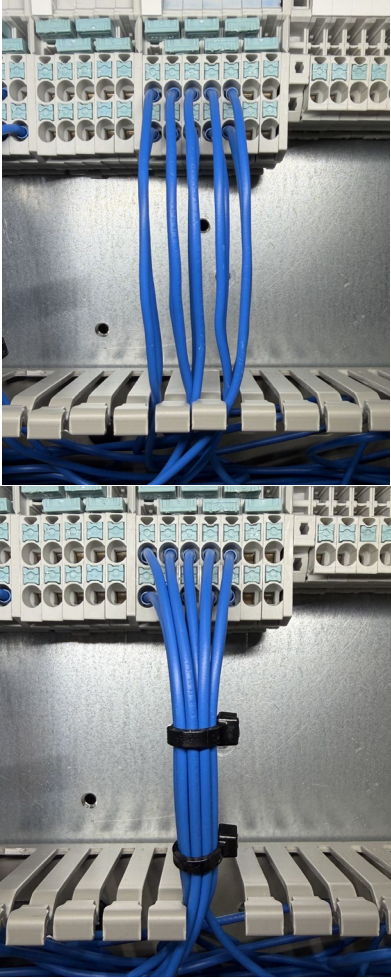
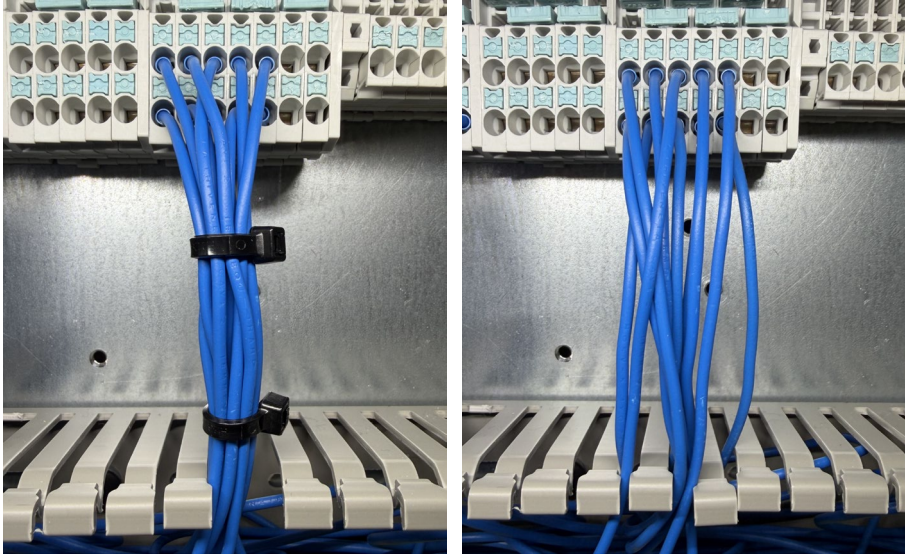
| WSOS | Aspect                                                                                             | Score | Description                                                                                                                                                                                                                                                                                                                                                | Resources | Illustrative Example                                                                                                                                                     |
|------|----------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3    | <b>SAG 111 -</b><br>Wiring control box mounting plate – wiring alignment at the PVC trunking entry | 3     | All wiring and cables on the <b>mounting plate</b> run <b>straight and parallel</b> along trunking and wiring paths with <b>no crossings</b> . Cable ties applied <b>uniformly throughout where necessary</b> . Connections between devices are <b>clearly recognizable</b> . A client would immediately recognise this as professional, high-quality work |           |   |

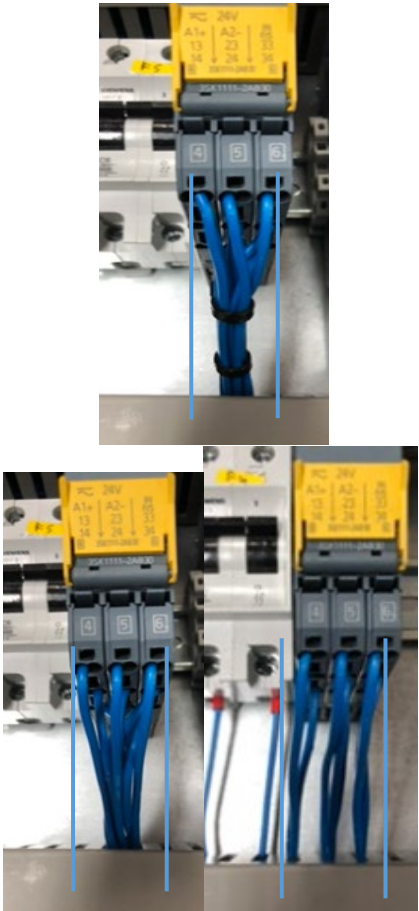
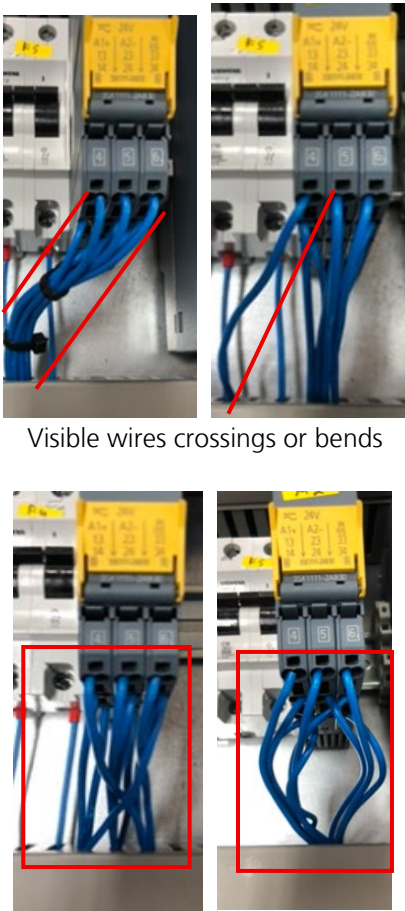
| WSOS | Aspect                                                                                         | Score | Description                                                                                                                                                                                                                                                                                                                          | Resources | Illustrative Example                                                                 |
|------|------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 111 -</b><br>Wiring control box mounting plate – wiring alignment at the PVC duct entry | 2     | Mounting plate wiring neat and following trunking in <b>≥90% of the assembly</b> . <b>One small crossing or minor misalignment</b> visible in a localised area. Tie fastening mostly consistent with minor variation. Good <b>(80–90% compliance)</b> mounting plate wiring. A client would find the installation clearly acceptable |           |  |

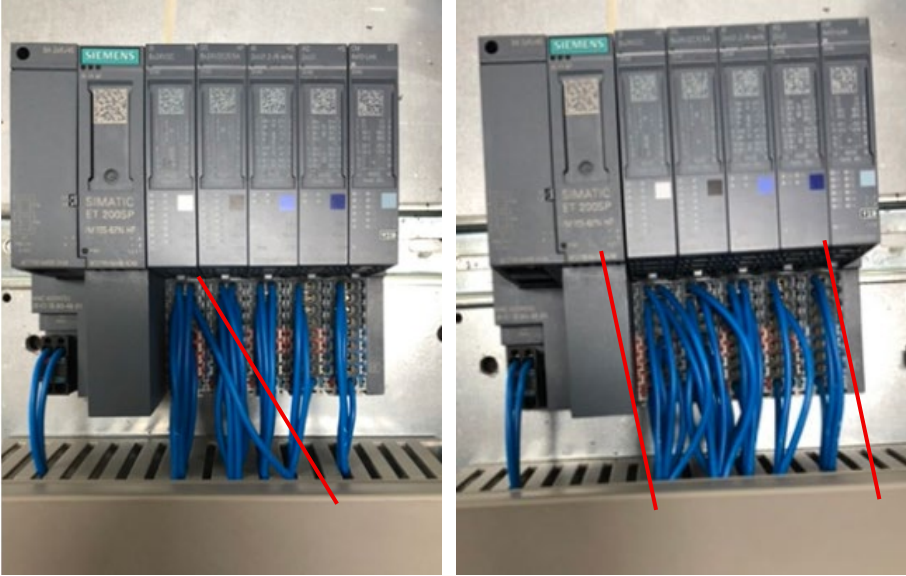
| WSOS | Aspect                                                                                         | Score | Description                                                                                                                                                                                                                                                                                                                                   | Resources | Illustrative Example                                                                                                                                                     |
|------|------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3    | <b>SAG 111 -</b><br>Wiring control box mounting plate – wiring alignment at the PVC duct entry | 1     | Wiring shows <b>crossings and unnecessary bends</b> across several sections. <b>Some cables not following the ducts</b> . Tie spacing <b>uneven or parts unsecured</b> . Identifying device connections is <b>somewhat difficult</b> . Basic <b>(50–70% compliance)</b> standard of mounting plate wiring. A client would notice the disorder |           |   |

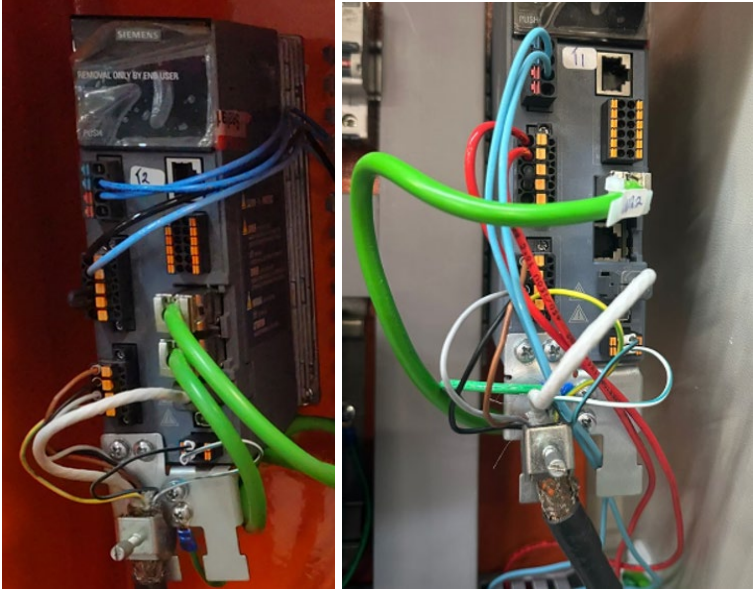
| WSOS | Aspect                                                                                         | Score | Description                                                                                                                                                                                                                                     | Resources | Illustrative Example                                                                                                                                                     |
|------|------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3    | <b>SAG 111 -</b><br>Wiring control box mounting plate – wiring alignment at the PVC duct entry | 0     | Wiring <b>disorganised</b> across most of the mounting plate, or <b>work not done</b> . Cables <b>severely crossed or not following ducts</b> . Fixing <b>minimal or absent</b> . A client would immediately identify this as unacceptable work |           |   |

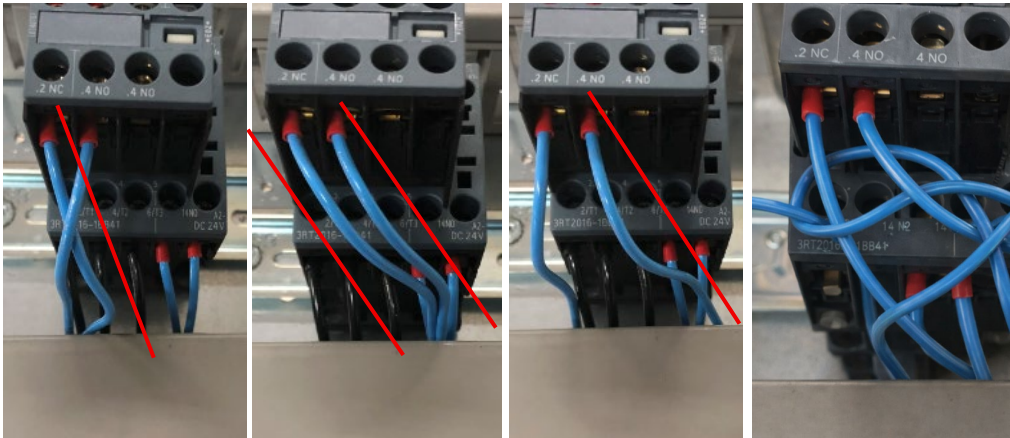
| Feature                            | Good Practices                                                                                                                                | Bad Practices                                                                                                                                                                         |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>E.g.: Through-type terminal</p> |  <p>Wires aligned without crossing (cable tie optional)</p> |  <p>Visible wires crossings or bends</p> <p>Uncontrolled crossings/disorder / Wrong direction</p> |

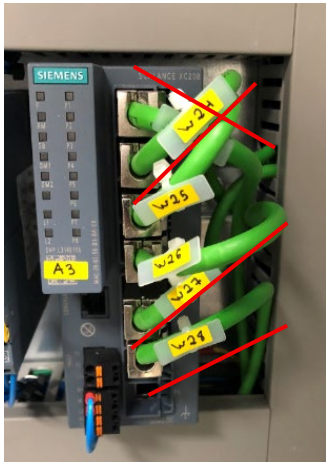
| Feature                                   | Good Practices                                                                                                                                | Bad Practices                                                                                                              |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <p>E.g.: Double through-type terminal</p> |  <p>Wires aligned without crossing (cable tie optional)</p> |  <p>Visible wires crossings or bends</p> |

| Feature            | Good Practices                                                                                                                                                              | Bad Practices                                                                                                                                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E.g.: Safety relay |  <p data-bbox="389 1235 806 1308">Wires aligned without crossing (cable tie optional)</p> |  <p data-bbox="1227 742 1630 774">Visible wires crossings or bends</p> <p data-bbox="1227 1235 1630 1267">Uncontrolled crossings/disorder</p> |

| Feature       | Good Practices                                                                                                                                                           | Bad Practices                                                                                                                                            |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| E.g.: ET200SP |  <p data-bbox="383 927 810 992">Wires aligned without crossing (cable tie optional)</p> |  <p data-bbox="1249 908 1615 938">Visible wires crossings or bends</p> |

| Feature                    | Good Practices                                                                                                                                                 | Bad Practices                                                                                                                                                       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E.g.: S210<br>Servo driver |  <p data-bbox="409 900 786 963">Wires and cables aligned without crossing</p> |  <p data-bbox="1198 922 1662 954">Visible wires or cables crossings or bends</p> |

| Feature                 | Good Practices                                                                                                                                                              | Bad Practices                                                                                                                                                                              |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E.g.: Relay (Contactor) |  <p data-bbox="383 1118 813 1182">Wires aligned without crossing (cable tie optional)</p> |  <p data-bbox="1061 767 1798 799">Visible wires crossings or bends / Uncontrolled crossings/disorder</p> |

| Feature               | Good Practices                                                                                                                                                                      | Bad Practices                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E.g.: PROFINET switch |  <p data-bbox="405 751 790 815">Wires and cables aligned without crossing (cable tie optional)</p> |  <p data-bbox="1196 791 1664 823">Visible wires or cables crossings or bends</p> |

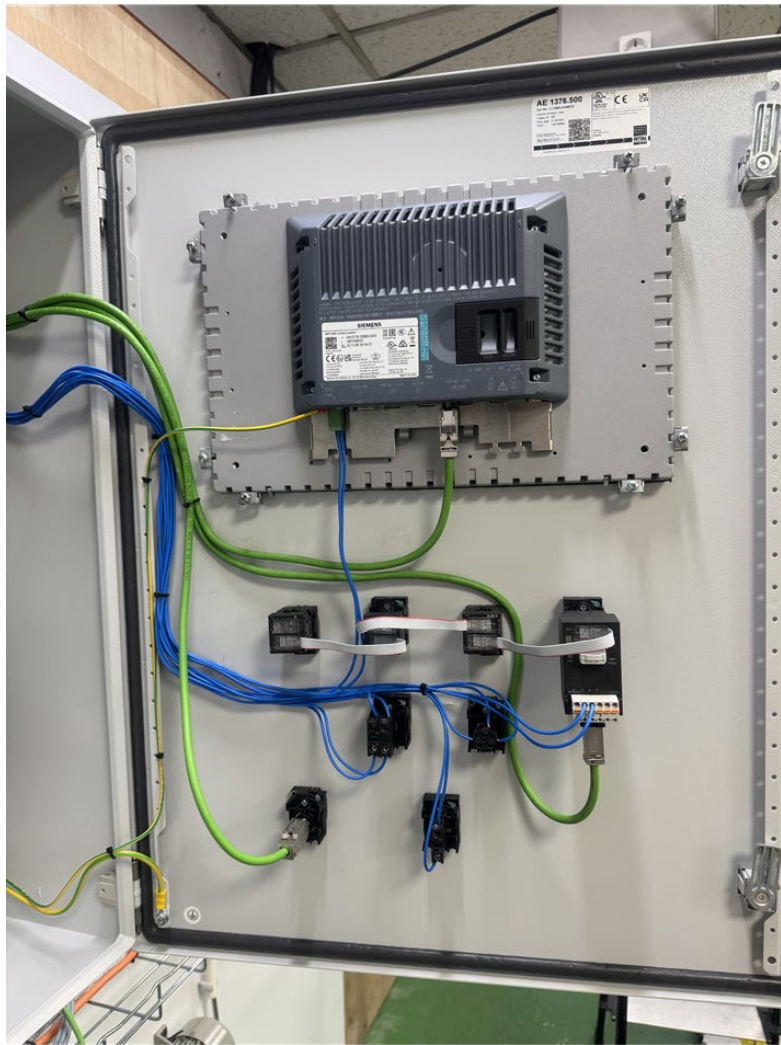
| WSOS | Aspect                                           | Score | Description                                                                                                                                                                                                                                                                                                                                                              | Resources | Illustrative Example                                                                 |
|------|--------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 112</b><br>- Door control box — well done | 3     | All wires and cables inside the door run <b>straight and parallel</b> with <b>no crossings</b> . Cable ties applied <b>uniformly throughout</b> . Adhesive mounts <b>consistently placed</b> with even spacing. <b>Adequate loop at hinges</b> with no tension during opening and closing. A client would immediately recognise this as professional, high-quality work. |           |  |

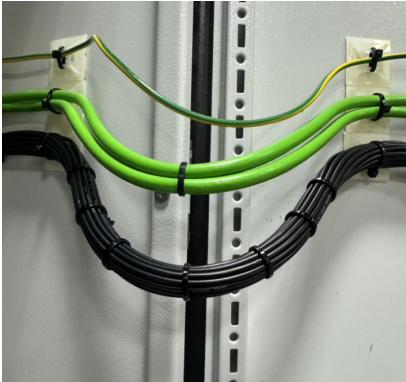
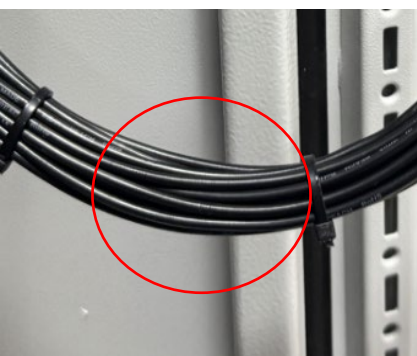
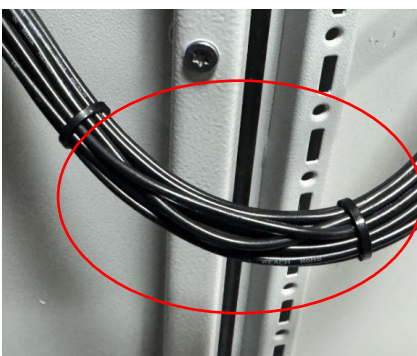


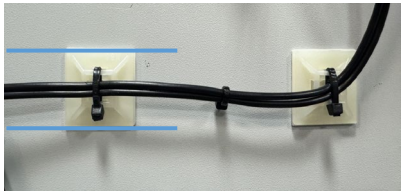
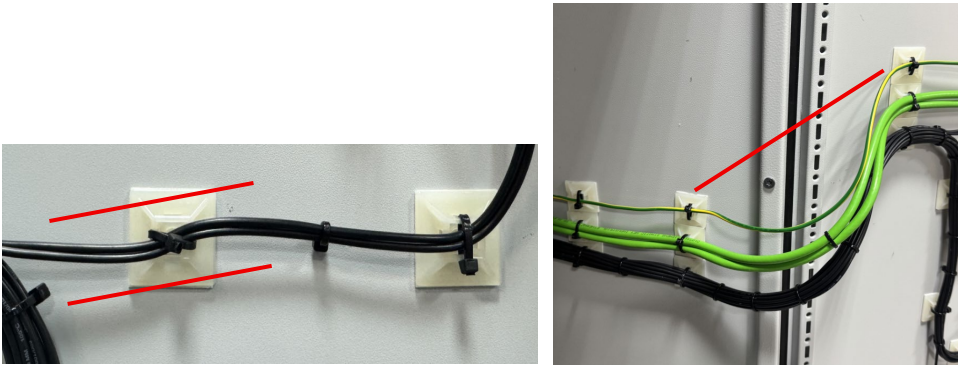
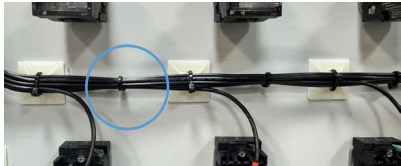
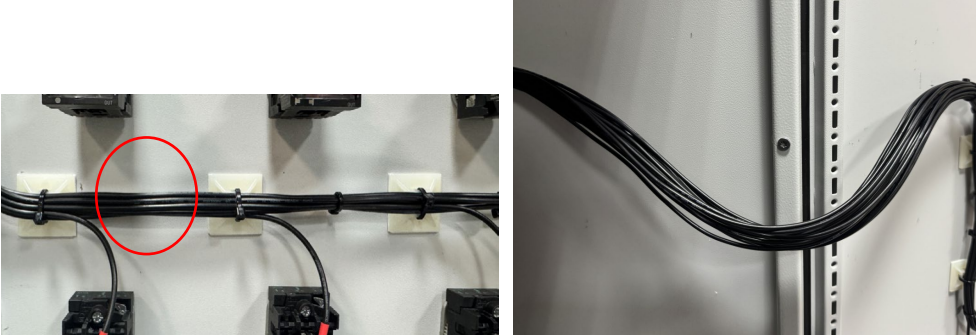
| WSOS | Aspect                                           | Score | Description                                                                                                                                                                                                                                                                                                                                                                  | Resources | Illustrative Example                                                                 |
|------|--------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 112</b><br>- Door control box — well done | 2     | Door wiring <b>neat and well organised</b> in $\geq 90\%$ of the assembly. A <b>minor crossing or misalignment</b> visible in a localised area. Adhesive mounts <b>mostly consistent</b> with a small variation. Loop at hinges mostly consistent with minor variation. Good <b>(80–90% compliance)</b> door wiring. A client would find the installation clearly acceptable |           |  |

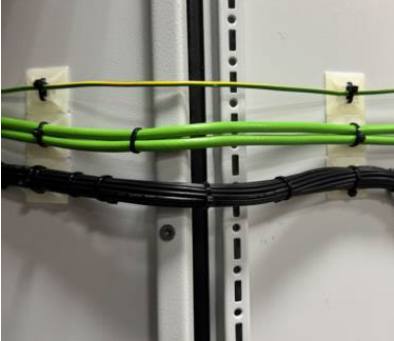
| WSOS | Aspect                                           | Score | Description                                                                                                                                                                                                                                                                                                                                                                               | Resources | Illustrative Example                                                                 |
|------|--------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 112</b><br>- Door control box — well done | 1     | Wiring shows <b>visible crossings and bends</b> across several sections. <b>Straightness and parallelism</b> lacking in parts. Tie spacing <b>uneven or loose</b> . Adhesive mounts <b>irregularly placed</b> across the door assembly. <b>Hinge loop inconsistent</b> across the door. Basic <b>(50–70% compliance)</b> standard of door wiring. A client would notice the inconsistency |           |  |



| WSOS | Aspect                                           | Score | Description                                                                                                                                                                                                                                                                                                                | Resources | Illustrative Example                                                                 |
|------|--------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------|
| 3    | <b>SAG 112</b><br>- Door control box — well done | 0     | Wiring <b>disorganised</b> across most of the door assembly, or <b>work not done</b> . Cables <b>severely crossed or poorly secured</b> . Adhesive mounts <b>absent or poorly fixed</b> . <b>Insufficient hinge loop</b> creating risk of tension or damage. A client would immediately identify this as unacceptable work |           |  |

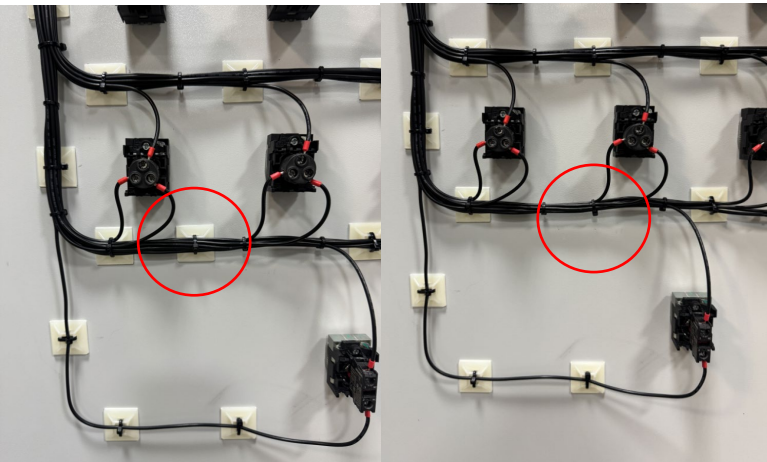
| Feature               | Good Practices                                                                     | Bad Practices                                                                                                                                                                                                                                              |  |  |
|-----------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Visible crossing rule |   |    |  |  |
|                       |  |                                                                                                                                                                        |  |  |
|                       | Door harness without crossing                                                      | Wires with visible crossings / Routes wires visible crossing                                                                                                                                                                                               |  |  |
|                       |                                                                                    | Uncontrolled crossings/disorder                                                                                                                                                                                                                            |  |  |

| Feature             | Good Practices                                                                                                                                           | Bad Practices                                                                                                                                                                                           |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wire alignment      |  <p data-bbox="483 517 645 544">Straight wires</p>                      |  <p data-bbox="1207 692 1648 719">Straight wires bend / Unstable routing</p>                                          |
| Cable ties fixation |  <p data-bbox="394 932 734 959">Cable ties <b>mostly consistent</b></p> |  <p data-bbox="1005 1139 1852 1166">Cable ties (Count - more than 2 inconsistency) / Poor or missing cables ties</p> |

| Feature         | Good Practices                                                                                                                                                                          | Bad Practices                                                                       |  |  |  |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
| Wire slack door |                                                                                                        |  |  |  |  |
|                 |  <p data-bbox="367 1074 759 1137">Correct slack at the hinge with no pulling during door movement</p> |  |  |  |  |
|                 |                                                                                                                                                                                         |                                                                                     |  |  |  |

No slack and pulling

Excessive slack

| Feature                  | Good Practices                                                                                                                                         | Bad Practices                                                                                                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adhesive mounts fixation |  <p data-bbox="421 791 707 855">Adhesive mounts mostly consistent</p> |  <p data-bbox="1021 791 1839 823">Adhesive mounts small inconsistency / Poor or missing adhesive mounts</p> |