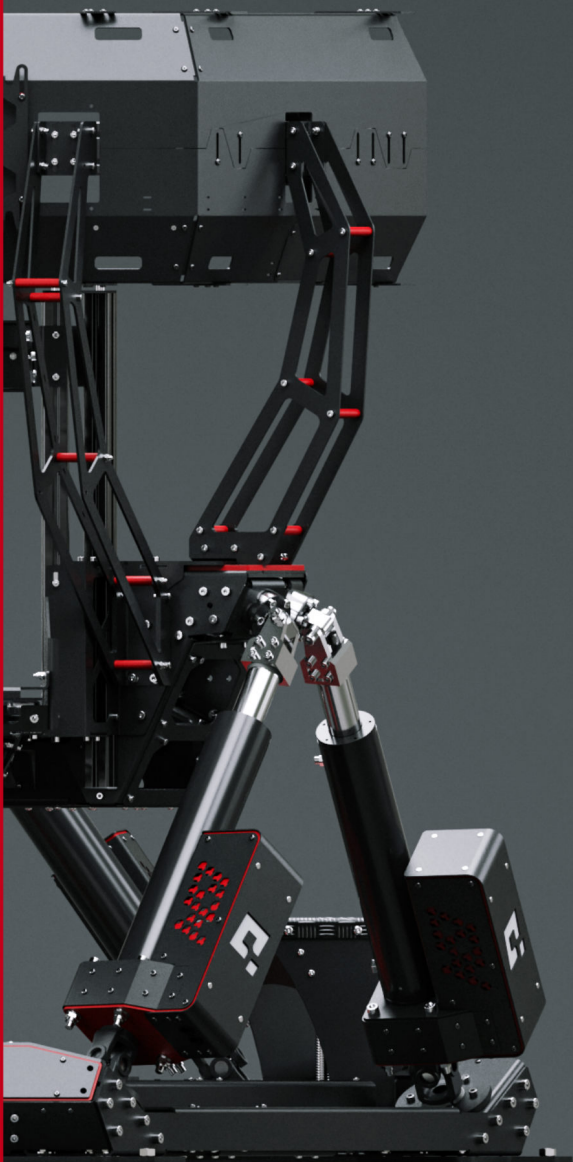


EN

USER MANUAL



IMMERSION WITHOUT LIMITS

QS S35

The Motion Systems, manufacturer of Qubic System, would like to thank you for choosing the QS-S35, an innovative product that helps you develop highly reliable training and entertainment solutions that reproduce key immersive elements, such as surface textures, acceleration, engine vibrations and vehicle dynamics for multiple types of land, air or sea vehicles. Our motion system has been designed to deliver the most realistic simulation experience. We hope you enjoy your new Qubic System!

Our experts are ready to assist you:
QubicSystem.com/contact



ASK SUPPORT

Our experts are ready to assist you:
MotionSystems.eu/Support



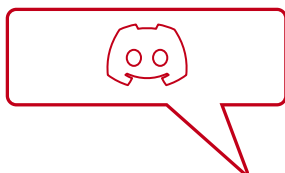
SEARCH OUR TUTORIALS

Everything you wish to know is here:
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DISCORD YOU ASK, WE ANSWER

Join our discord server to ask questions:
Discord.com/Discord

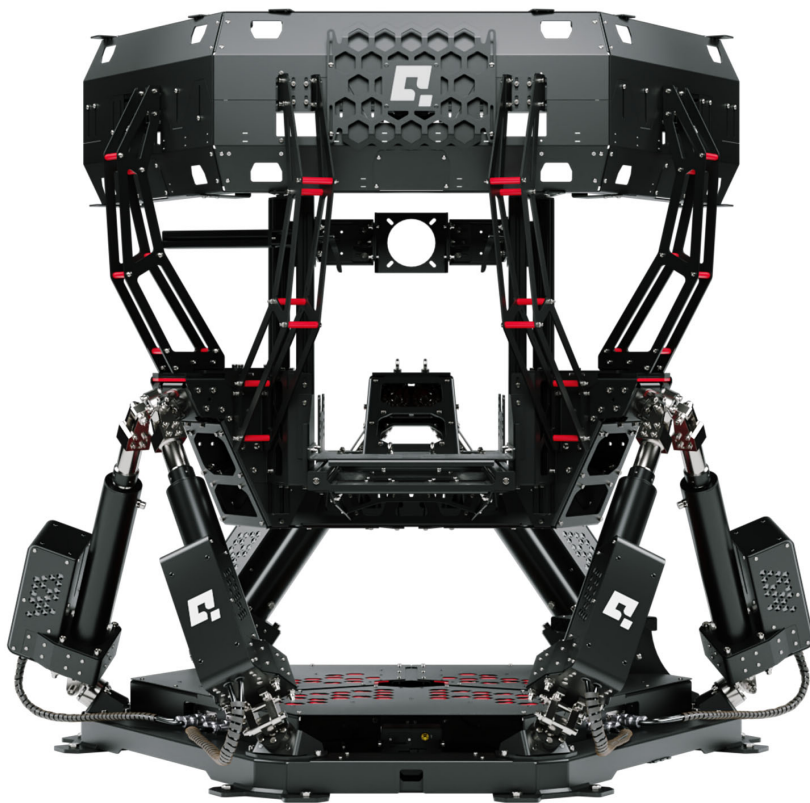
Contents

1	Introduction	7
2	Safety precautions	8
2.1	General safety	8
2.2	Health and Safety Instruction	10
3	Product description	14
3.1	Complete overview	14
3.2	Basic information	15
3.3	QS-S35 dimensions	16
3.4	Components list	17
3.5	Monitor holder specification	18
3.6	Environmental conditions	19
3.7	Power requirements	19
3.8	Power consumption	20
3.9	Noise emission	21
3.10	Cold start procedure	22
4	Installation	24
4.1	Transportation	24
4.1.1	Attaching wheel modules	25
4.1.2	Lifting the platform	27
4.2	Anchoring	28
4.3	Steering wheel bracket installation	29
4.4	Installing the monitors	30
4.5	Cable connections	33
4.5.1	Connecting grounding wires	36
4.6	Turning the power ON	36
4.7	Software Installation	37
5	Maintenance	43
5.1	Cleaning the platform	43
5.2	Checking Motion Lock button	44
5.3	Elements serviced by the user	45
5.4	Service access to Power Cabinets	46
5.5	Interconnections	47
5.5.1	Creating Motion Lock circuit with other QS devices	48
5.6	Actuator connection with a Power Cabinet	49
6	Troubleshooting	51
6.1	QubicManager device statuses	52
6.2	Common problems with solutions	53
6.3	Creating a snapshot	54
6.4	Discord channel	56
7	Advanced applications	57
7.1	Adding additional devices to the motion lock circuit	57
7.2	Implementing the working zone protection	59
7.3	Increasing safety level	60

7.3.1	Assembling Motion Lock jumper	60
7.3.2	Adding power-cut circuit with E-STOP button	61
7.3.3	Implementing the working zone protection with power-cut circuit	63
7.4	Implementing non-factory Motion lock switch	64
8	Conformity information	65
9	Environmental Impact and Disposal	65
10	Liability Disclaimer	65
11	Warranty	66
12	Copyright	67
13	Manufacturer information	67

1. INTRODUCTION

QS-S35 is a motion platform that uses six degrees of freedom (surge, sway, heave, roll, pitch, and yaw) to provide precise motion action that accurately reflects the feeling of movement in games and simulations. The machine provides realistic experience thanks to high travel actuators and fast responses. Three monitor setup further increases the immersion. Platform can be used to simulate driving, flying, rollercoaster rides, using military machines and on/under water motion.



2. SAFETY PRECAUTIONS

Read all safety instructions before installing and using this product. Save this document for future reference. If ownership of this product is transferred, be sure to include this manual.

Following coloured frames are used in this manual to draw attention to important information or warnings:

INFO

The instructions included in this frame indicate information that is considered important, but not injury- or damage-related.

WARNING

The instructions included in this frame indicate a dangerous situation that, if not avoided, could result in a user injury or device damage.

2.1. GENERAL SAFETY

WARNING



Keep hands and feet away from the moving parts when device is in motion.

WARNING



Always ensure that cockpit attachment points can withstand forces generated by the QS-S35 (approved construction or tested for expected load). Check the cockpit for loose mounting points.

WARNING



To reduce the risk of burns, fire, electrical shock, injury or mechanical damage always **TURN OFF THE POWER SUPPLY** before plugging and unplugging the QS-S35. Dangerous voltages level can be present in Power Cabinet for a few minutes after turning off the machine.

WARNING



The device is intended solely for individuals **OVER THE AGE OF 16**. In case of use by individuals with limited physical, sensory, or mental capabilities, strict supervision is required. Read safety instructions before using the device.

WARNING

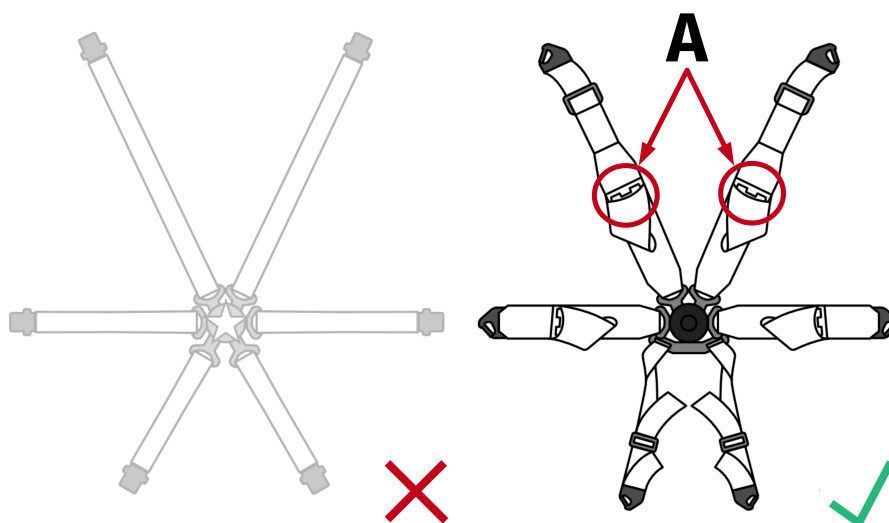
The device is **NOT** allowed to be used by a pregnant woman.

WARNING

DO NOT use the device around pets.

- Use the QS-S35 only for its intended purpose, according to instructions.
- Unplug the QS-S35 from the power supply if it is not used for an extended period of time or when there is a need to perform hardware installation, maintenance, service or repair.
- Turn off the QS-S35 when it is not in use.
- The QS-S35 was designed for indoor use only - **DO NOT** store or use the product outdoors.
- Keep the QS-S35 away from heat sources, high humidity, water, and other liquids. **DO NOT** store in places where water vapor condensation may occur due to low temperatures.
- **DO NOT** disassemble the product. Any tampering with or altering the product will void the warranty, pose a serious risk of electric shock, and may irreparably damage the product.
- If the device starts emitting unusual noises, smoke, or indicating that the device is not working properly, **STOP** using the QS-S35 immediately and contact technical support.
- **DO NOT** cover the ventilation holes in the device.
- Keep the power cord plug and the socket dry, clean and dust-free.
- Protect the power cord from being damaged by being stepped on, rubbed against, or pinched.
- **DO NOT** use the QS-S35 if the ambient temperature is below 5°C (41°F) or above 40°C (104°F).
- **DO NOT** use the QS-S35 if it has been damaged, or any component is broken or missing. Please contact technical support.
- **DO NOT** use attachments or replacement parts not recommended or approved by the manufacturer. If you must replace a damaged power cord, use only certified products with the same rating as the one being replaced.

- Connect the QS-S35 to a correctly grounded outlet only. See grounding connections in section 4.5.1 on page 36.
- If you want to increase safety level of the system, you can add external safety devices. For detailed information check section 7 on page 57.
- Use only certified components (seat, seat belts, fasteners) when installing them to QS-S35.
- Use 4, 5 or 6-point racing harness, with adjusters (look at point A in the drawing below), preferably with FIA certification.

**WARNING**

Stop using the QS-S35 immediately and contact technical support when the machine starts to emit unusual noise, smoke or any other suspicious behaviour indicating the machine is not working properly.

2.2. HEALTH AND SAFETY INSTRUCTION

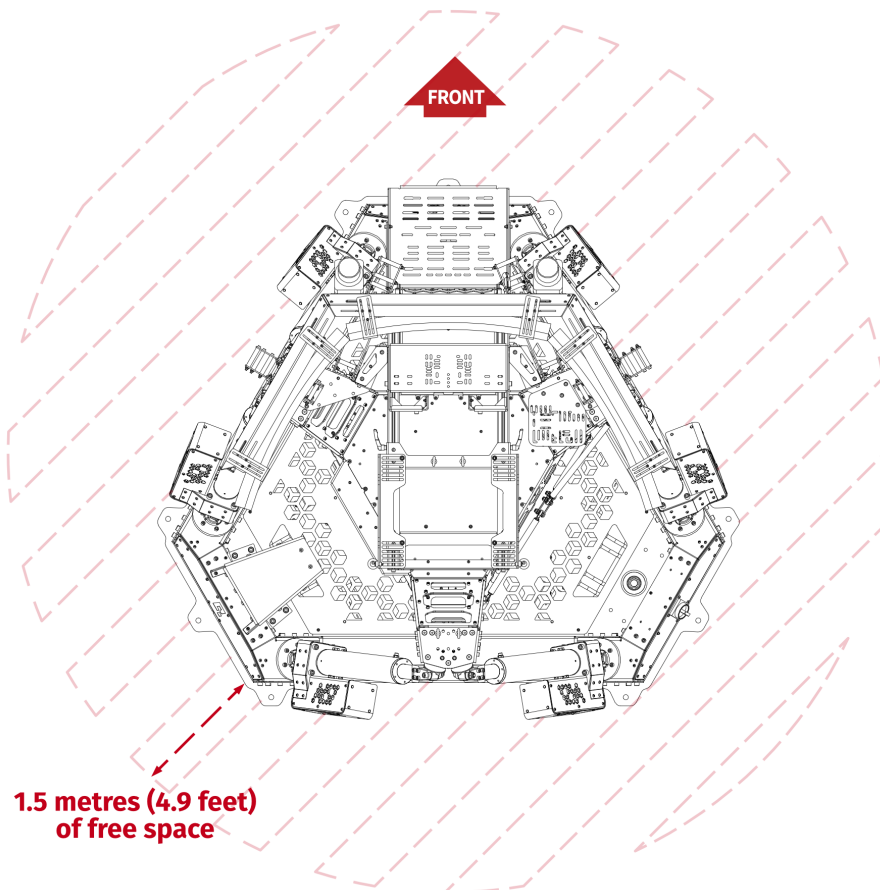
The safety of Qubic System users is top priority. To protect users and bystanders against injuries caused by mechanical parts movement and electrical connectivity, the following instructions must be strictly performed.

WARNING

As with any mechanical device, the user is responsible for inspecting the condition of the machine prior to use and adhering to safe operating procedures.

What must be checked before turning on the machine:

- Ensure that nothing is blocking machine movement and nobody is at direct distance to the machine. Maximum dimensions of the QS-S35 may differ depending on installed peripheral equipment such as monitors or pedal set. Minimum safe distance from running machine's edges are shown below:



INFO

Check if the safe distances are kept to avoid damages by QS-S35 hitting for example wall or TV screen. |par Keep in mind that QS-S35 might move during simulation. To ensure that safe distance is always preserved - anchor the machine to the ground. For more details go to section **Anchoring** on page 28.

- Ensure that cables are plugged in correctly - they are not stretched or loosely connected to the socket and placed out of the moving range of the system components.
- Ensure that all accessories are properly fixed.
- Ensure that there are no sharp edges nearby.
- Instruct any bystanders of the motion range to keep them in a safe distance during operation.

WARNING

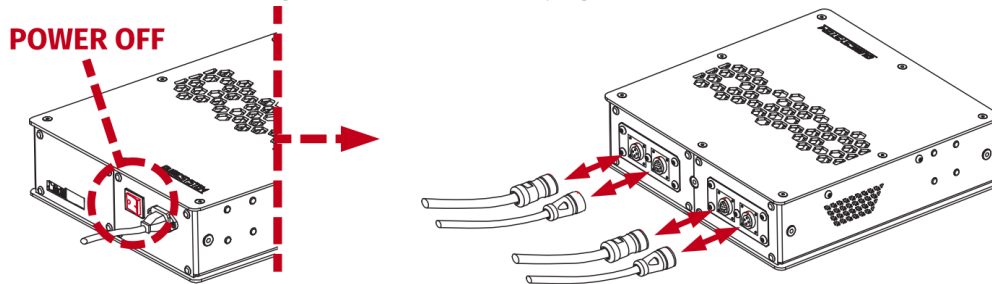


Dangerous voltage level are present in the Power Cabinet and cables during the operation and for up to a few minutes after turning off the machine.

WARNING

Plugging and unplugging the actuator must **ALWAYS** be performed with Power Cabinet's power switched OFF.

For more information go to section **5.6** on page **49**.



Always make sure that all PUSH-PULL connectors are plugged **all the way in** - ring lock **MUST** click into place. Loose connections may result in serious actuator damage.

How to turn ON and use the QS-S35:

- Make sure that no one stands in the range of motion (minimum 1.5 m).
- Kids should be kept away from the machine.
- Pets should be kept away from the machine.
- When the QS-S35 is turned on, it performs a start-up calibration.

WARNING



In order to perform a start-up calibration QS-S35 will move automatically after turning it on. Be aware of that movement and do not try to interrupt it.

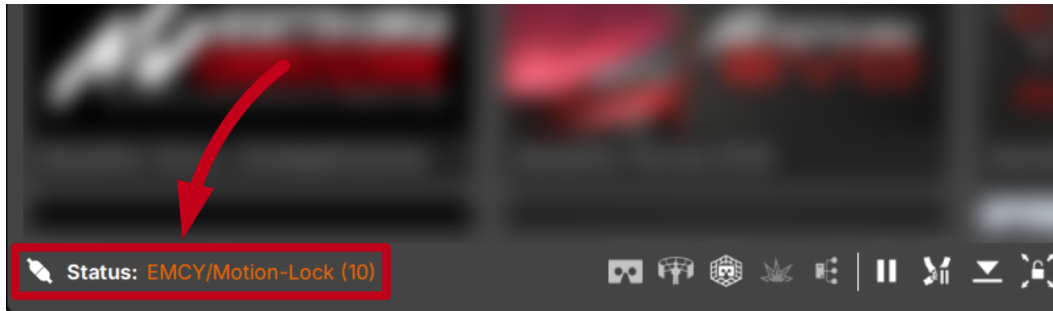
Keep hands and feet away from the moving parts when device is in motion.

- **DO NOT** interrupt or change the weight of payload mounted to the QS-S35 during start-up calibration.
- Motion Lock button should be mounted close to the operator of the machine – it has to be easily reachable in every situation.
- Check if the Motion Lock button is working correctly **AT LEAST** once a month to reduce the possibility of unknown failure – more information available in chapter **Maintenance** on page **43**.
- Before getting on or off the machine, ensure that it is in its lowest position (quit the game or simulation) and after that - activate Motion Lock button.

- In case of game crash or freeze - Motion Lock button must be activated before getting off the machine.

INFO

To check if the QS-S35 is in the Motion Lock mode - go to QubicManager application main window. Platform status is displayed in the lower left corner of the main application window:



WARNING

Motion Lock and Park Mode option **DOES NOT** guarantee safety. For more details see section 7.

- For VR Headset users:
 - Remove the VR goggles before entering or exiting the rig.
 - Check very carefully if cables from VR Headset are not limiting the operation range of QS-S35.
 - Check if the whole VR setup is not in range of motion of the machine.
 - Check if cables are protected from being crushed by the QS-S35 – **DO NOT** place them loosely under the motion rig.

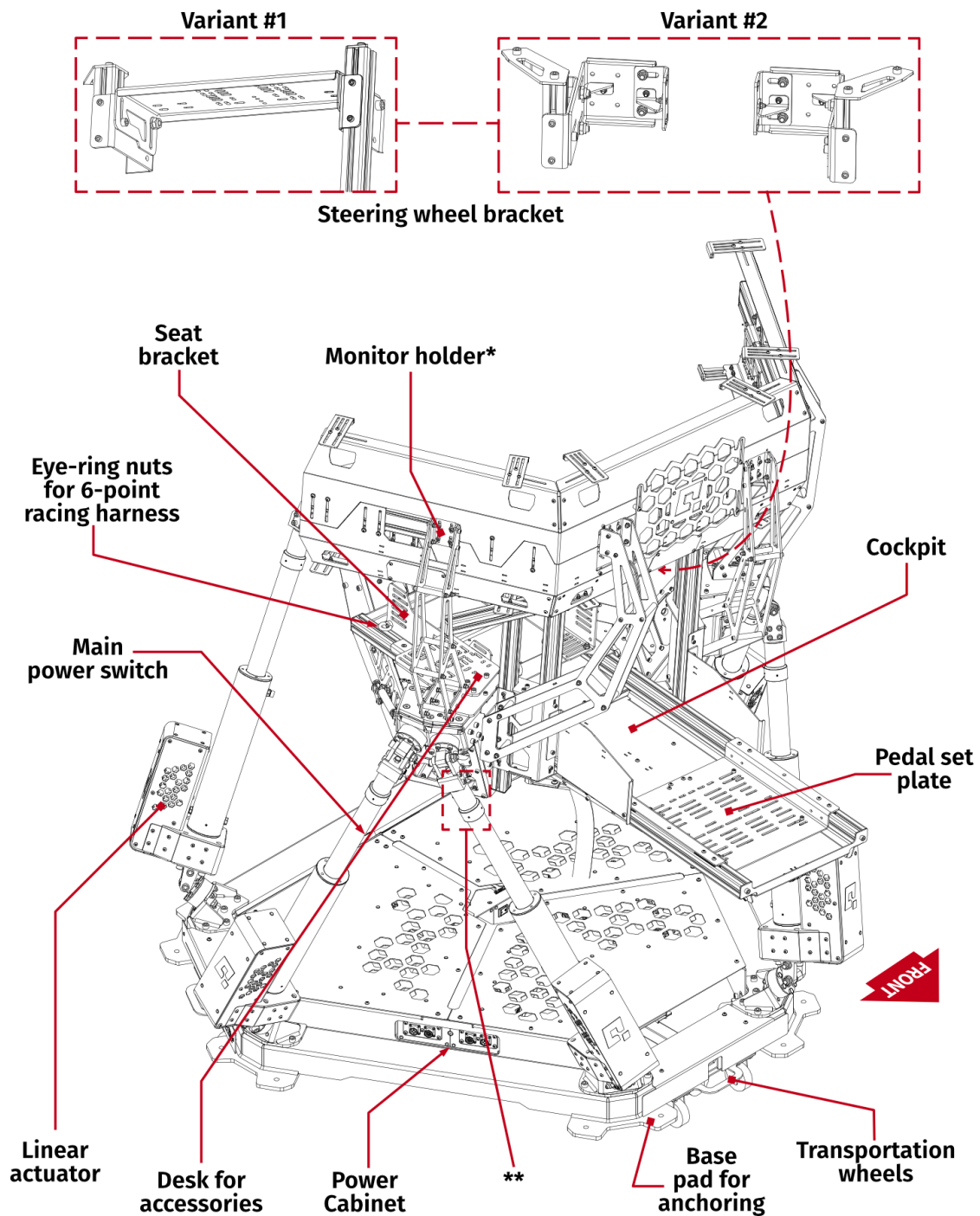
INFO

Check if connected PC is capable of running the game at stable 90 frames per second or more when VR Headset is used. Lower values can cause VR sickness.

- **DO NOT** use QS-S35 if you are pregnant, tired, or under the influence of alcohol or drugs.
- **STOP USING** the QS-S35 immediately if pain, fatigue or any discomfort appears.
- For every two hours of playing, we recommend at least **15 MINUTES OF BREAK**.
- **DO NOT** put your hands or legs in the actuators range of motion!
- **DO NOT** use the QS-S35 around small children or pets.
- **DO NOT** put any items between actuators and stabilization plates.
- **DO NOT** pull the wires connecting the actuators with the power cabinets.

3. PRODUCT DESCRIPTION

3.1. COMPLETE OVERVIEW



* Monitors not included

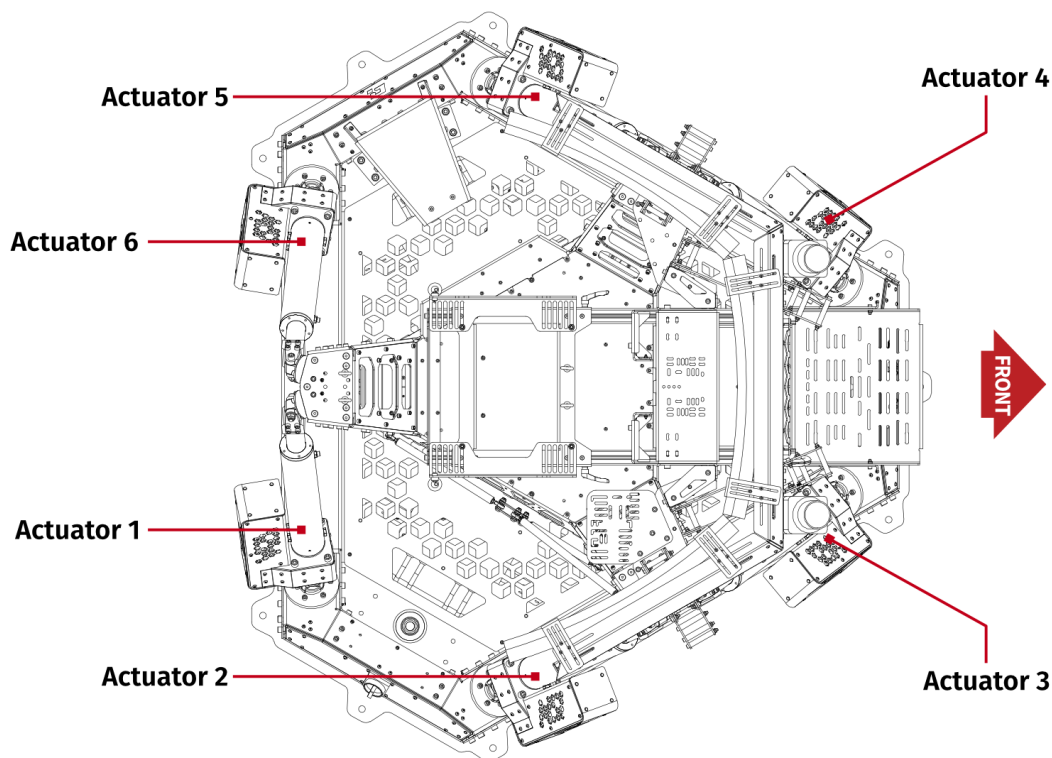
** The newer revision of QS-S35 features modified piston rods - this change does not affect the machine's performance.

3.2. BASIC INFORMATION

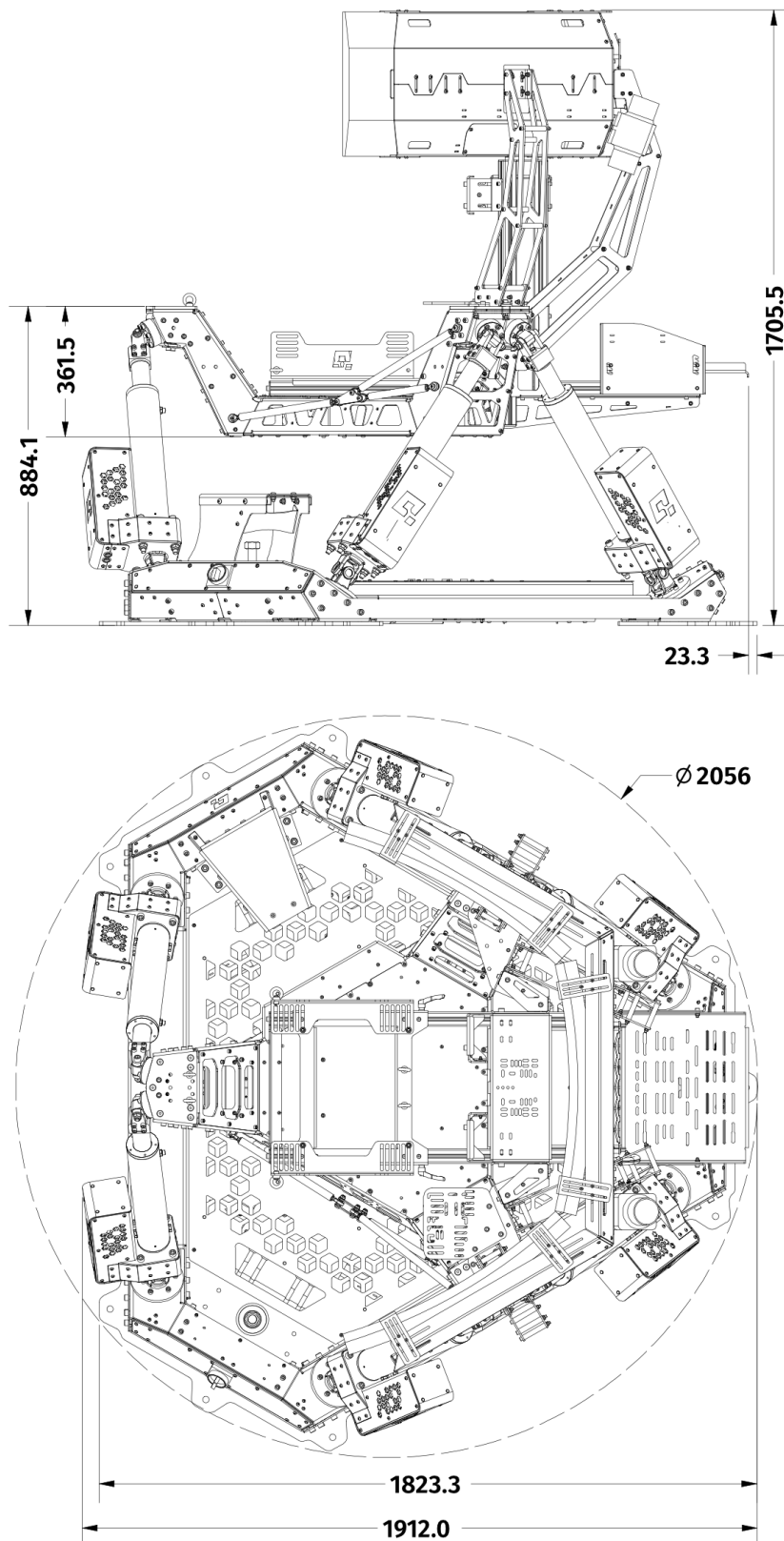
QS-S35's performance:

Motion envelope	Single excursion		Maximum excursion	
Movement type	Single -	Single +	Maximum -	Maximum +
Roll	15.8 deg	15.8 deg	16.6 deg	16.6 deg
Pitch	14.3 deg	14.3 deg	18.6 deg	18.6 deg
Yaw	22.9 deg	22.9 deg	27.0 deg	27.0 deg
Heave	169.8 mm	173.3 mm	169.8 mm	173.3 mm
Surge	306.4 mm	283.6 mm	365.0 mm	365.0 mm
Sway	270.5 mm	270.5 mm	317.0 mm	317.0 mm

QS-S35's actuators numbering:



3.3. QS-S35 DIMENSIONS



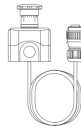
*ALL DIMENSIONS IN MILLIMETERS

3.4. COMPONENTS LIST

QS-S35 components:



1 x
Power
supply cable



1 x
Motion lock switch



1 x
M10
controller



1 x
BUS
communication
cable



1 x
USB cable



3 x
Wheel module



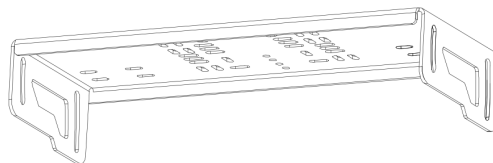
9 x
Wheel module
bolt M16 x 35
(DIN 912)



9 x
Wheel module
washer A 17
(DIN 125)



9 x
Wheel module
nut M16
(DIN 934)



1 x
Flat steering
wheel bracket

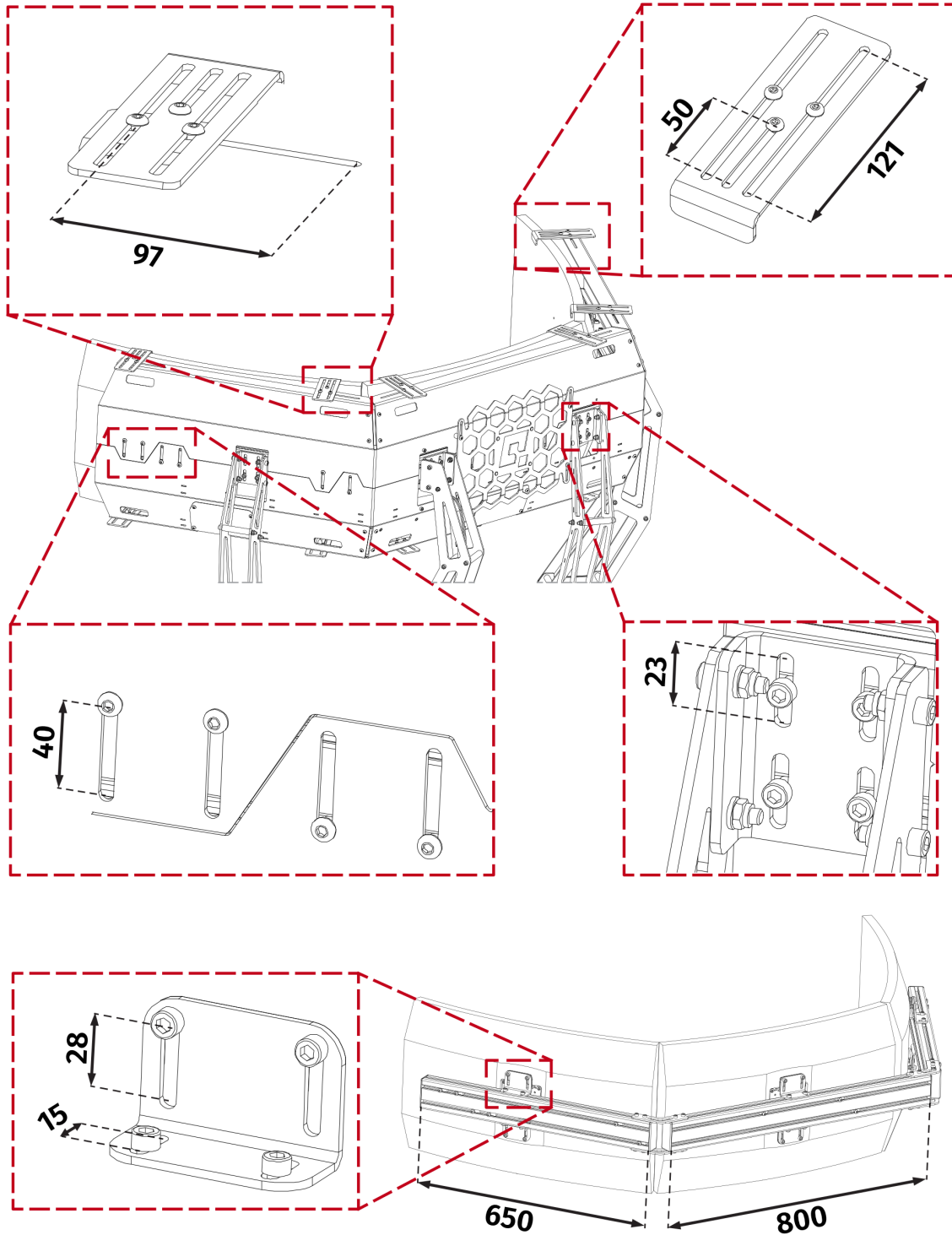
INFO

Monitors are not included. For monitor details go to section 3.5 on page 18.

3.5. MONITOR HOLDER SPECIFICATION

Monitor holder is designed to accommodate different types of monitors. For the most immersive experience it is suggested to use a set of 3 curved monitors with high screen refresh rate.

The available adjustment range is given in the illustration below:



*ALL DIMENSIONS IN MILLIMETERS

Suitable monitor mountings:

- VESA 75 mm x 75 mm
- VESA 100 mm x 100 mm

Manufacturer recommended monitor (3x):

- Diagonal size: 32"
- Curvature: 178° (1500R)
- Weight: up to 5.5 kg (12.1 lbs)
- Dimensions (WxDxH): 709.36 x 92.04 x 429.3 mm (27.93 x 3.62 x 16.9 in)
- Screen refresh rate: 170 Hz

WARNING

The user/integrator is responsible for using a set of monitors other than that suggested by the manufacturer.

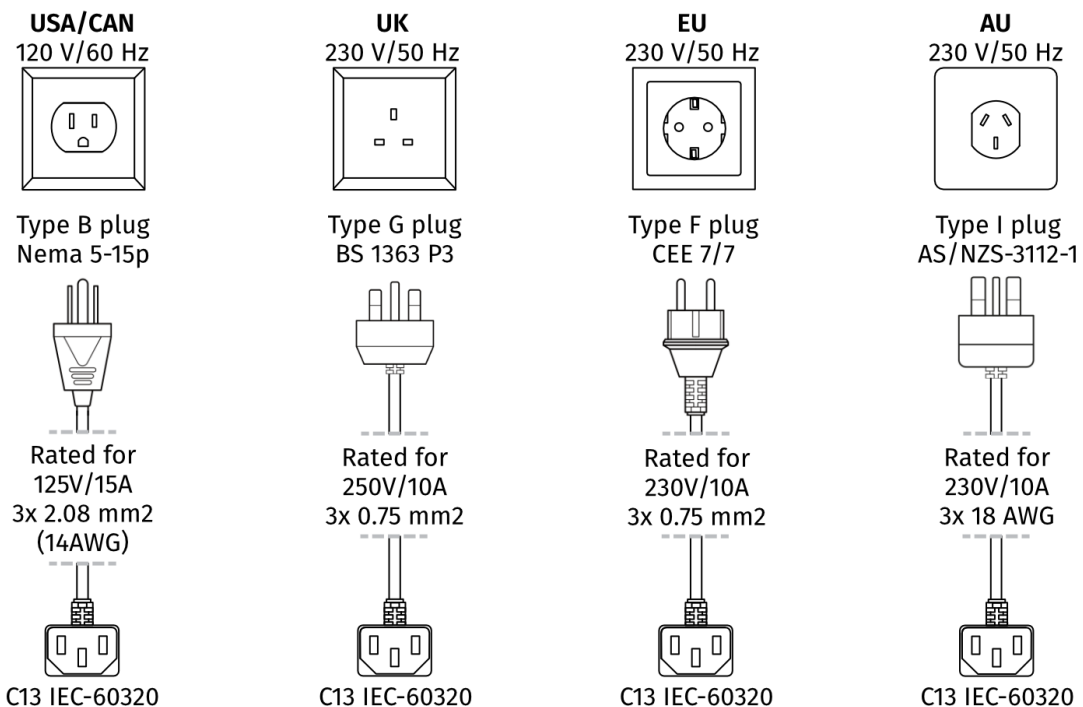
3.6. ENVIRONMENTAL CONDITIONS

QS-S35 must be operated within ambient conditions as specified below:

- Only indoor use
- Temperature : 5° - 40° Celsius / 41° - 104° Fahrenheit
- Humidity : 0 - 70 % (without condensation)
- Maximum altitude : up to 2000 m / 6561 ft

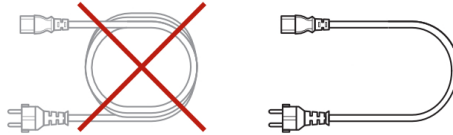
3.7. POWER REQUIREMENTS

QS-S35 requires **230±10% VAC** 50-60 Hz single phase with ground and neutral connection.



INFO

Always **UNWIND THE CABLE COMPLETELY** when using a cable reel and untangle an extension cord before connecting the device to the power supply.



WARNING

- The device is **NOT** intended to be used in an IT earthing/grounding system.
- The product must be connected to the mains power supply with a protective earth (**PE**) and a residual current circuit breaker (**RCCB**).

If you experience issues such as unexpected shutdowns or resets during simulation, it is recommended to inspect the power cables and power source. The use of cables that do not meet the specified requirements may lead to malfunctions. To ensure proper device operation, replace any non-compliant cables with ones that meet the required specifications.

3.8. POWER CONSUMPTION

Voltage - 230V:

Converter specification		Breaker specification	Power consumption	
Average Power [kVA]	Peak Power [kVA]	Peak Current [A]	Average Power (stress test) [kW]	Average Power (typical game) [kW]
2.1	3.2	18	1.2	0.3

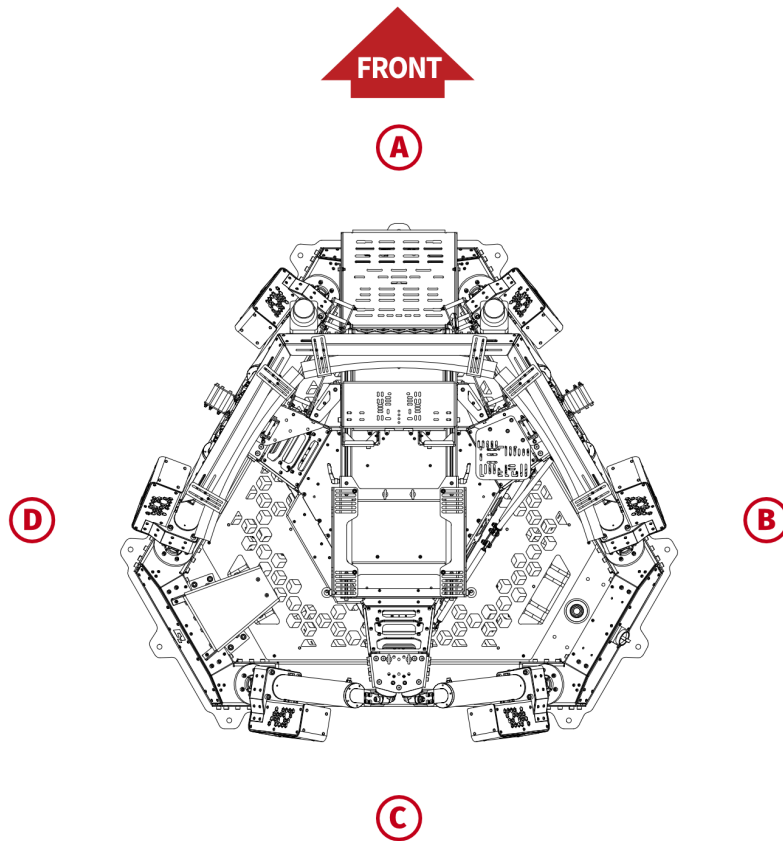
Be aware that with heavier payload, and/or more intensive simulation, average Power consumption may rise.

INFO

QS-S35 works only in Heavy-duty mode.

3.9. NOISE EMISSION

The QS-S35 was checked for noise level based on actual standards. Noise level during normal work condition is not over 80 dB. Measuring method is ISO 11202. Four measuring positions as shown on the picture are placed 160 cm from the floor level and 100 cm from the edge of the device.



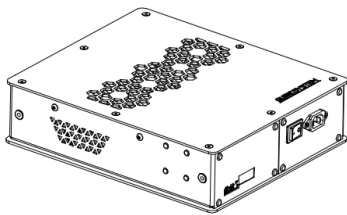
Measurement point	A	B	C	D
Measurement conditions: ■ Sinus input signal ■ Auto acceleration ■ 50% speed ■ Heave 123 mm ■ 0.5 Hz frequency ■ 150 kg ballast load	76.3 dB(A)	76.4 dB(A)	75.7 dB(A)	77.6 dB(A)
■ Typical game ■ 250 kg ballast load	74.6 dB(A)	77.6 dB(A)	75.7 dB(A)	75.4 dB(A)

3.10. COLD START PROCEDURE

For safety reasons, and in strict compliance with the requirements of ISO 14118:2017 (E) concerning the prevention of unexpected start-up, the QS-210, QS-220, QS-V20, QS-CH2, and QS-S25 motion systems require one complete cycle of the Motion Lock switch whenever power is restored after being cut off.

Follow the steps below:

1. Verify that the motion platform is OFF - the power switch on the Power Cabinet is not backlit, and **QubicManager** displays an Offline status.

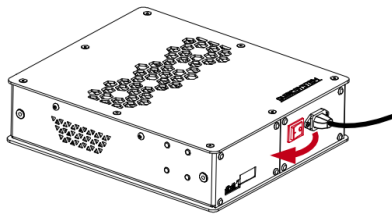


Platform's power is **OFF**

QubicManager bottom left corner:

Status: Offline/Waiting for nodes (4)

2. Turn the Power ON. The platform will not move.

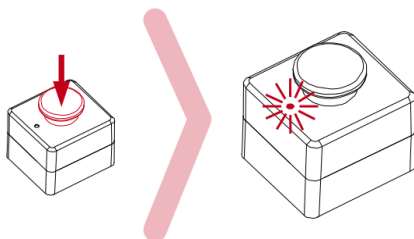


Platform's power is **ON**

QubicManager bottom left corner:

Status: Press and release Motion-Lock (5)

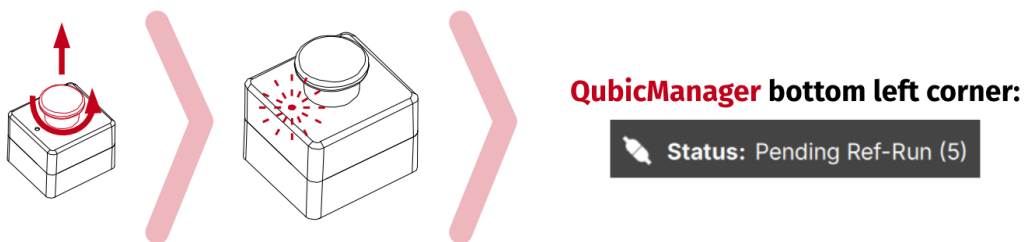
3. Press the **Motion Lock button** - diode emits constant light. The platform will not move.



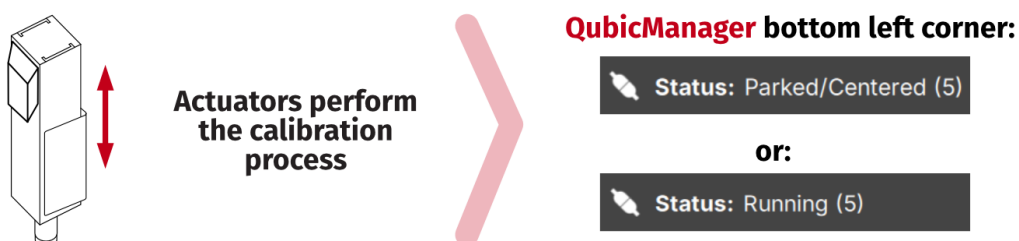
QubicManager bottom left corner:

Status: EMCY/Motion-Lock (5)

-
4. Turn the **Motion Lock button** counterclockwise - diode blinks. The system will perform start-up calibration. Do not change the payload.



5. If the status displays **Parked/centered** or **Running** - the motion platform is ready for operation.



INFO

- If the status displays  **Status: Parked/Centered (5)** - no need to perform a Cold start procedure, the platform is ready for operation.
- If the platform was already powered ON while starting the QubicManager and status displays  **Status: Press and release Motion-Lock (5)** - start from step 3.
- If the Motion Lock was already engaged during start-up and the status displays  **Status: EMCY/Motion-Lock (5)** - no need to cycle through the stages, start from step 4.
- For the procedure to work, M10 controller must be powered on (via USB) - QubicManager does not have to be running.

4. INSTALLATION

WARNING

Dangerous voltage levels can remain in electrical circuits of the device for up to a few minutes after powering off.

Remember, that even though possibilities with QS-S35 are wide, some things should be kept in mind when the designated spot for the rig is chosen. Manufacturer **DOES NOT** approve exceeding or ignoring any of these points and **IS NOT** responsible for malfunctions or failures that are the results of these actions.

- **DO NOT** use the QS-S35 on very soft or fragile surfaces like rubber, glass, or foam.
- Rough concrete can create dust from vibration and cause damage of the machine - concrete must be painted/polished before installation.
- Ensure that all QS-S35 components are mounted properly.
- Be aware that QS-S35 will crawl a little in every direction during operation. Those movements could damage the surface in the long term. Manufacturer, its subsidiaries, and their partners are not responsible for any floor damages (see section **Anchoring** on page 28).
- **DO NOT** mount the rig in tight or cluttered spaces – remember that QS-S35 moves and nothing should restrict its motion range (see section 2.2 on page 11).
- Considering QS-S35's vast range of motion (motion envelope) - ensure you have at least 500 mm from the machine to nearest object.
- Seat belts and other harnesses should be mounted to parts of the motion rig that move in the same way as the seat. **DO NOT** attach them to any static part or ground.
- Cables must not be stretched and should be kept in a way that prevents them from getting under actuator or any part that can crush or tear them.

INFO

If you want to use the QS-S35 in an unusual application, and you are not sure that the desired setup is feasible, please contact the distributor/reseller.

4.1. TRANSPORTATION

Transportation may be conducted either by:

- Rolling the platform on ground using wheel modules
- Lifting the platform with a forklift

WARNING

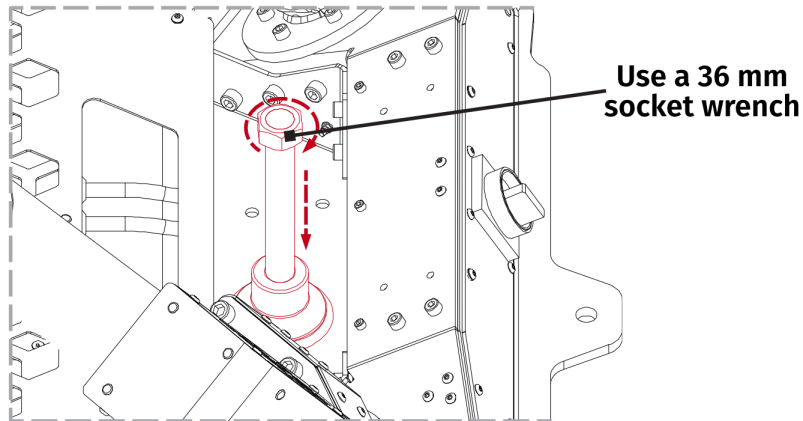
- Considering the size and weight of the machine - transportation must be carried out carefully and with full attention to the surroundings.
- All operations **MUST BE** performed with the power OFF and cables disconnected from the Input Panel.

4.1.1 ATTACHING WHEEL MODULES

The platform can be moved using transportation wheel modules, included in the package. Attach them to the platform to roll it into a designated place. Wheel modules **MUST** then be unfastened. **DO NOT** use the platform while on the wheels.

In order to move the platform:

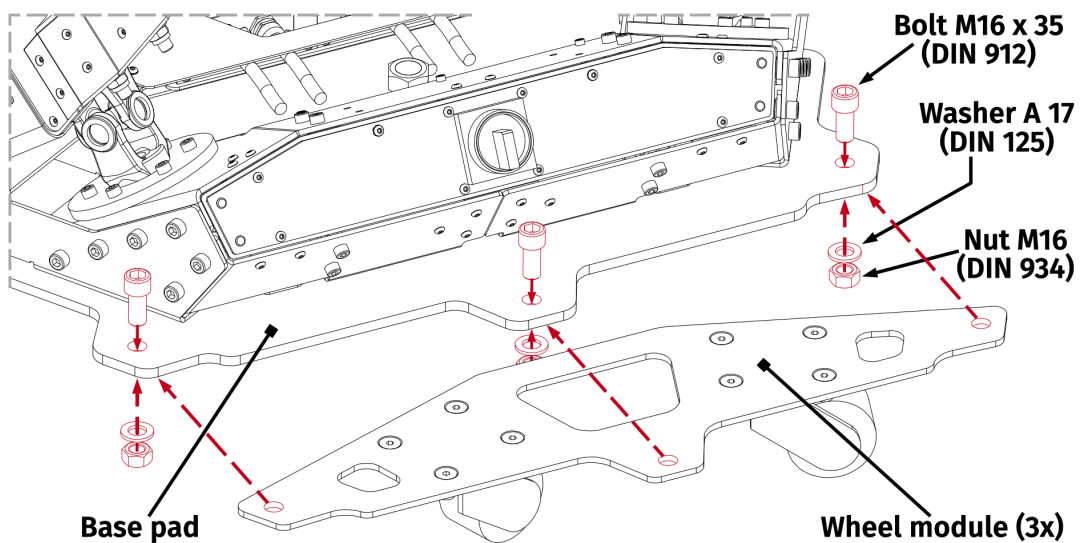
1. Swivel feet (3x) must be extended to lift the platform. Screw them in clockwise using 36 mm socket wrench.



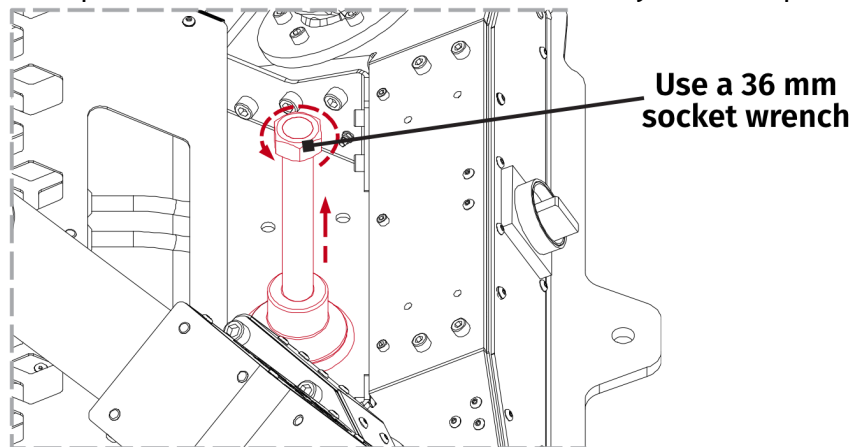
WARNING

To avoid any damage to base pads or swivel feet - extending them **MUST** be performed simultaneously or one by one by 3 cm each (1.18 inch) at a time, going around the machine.

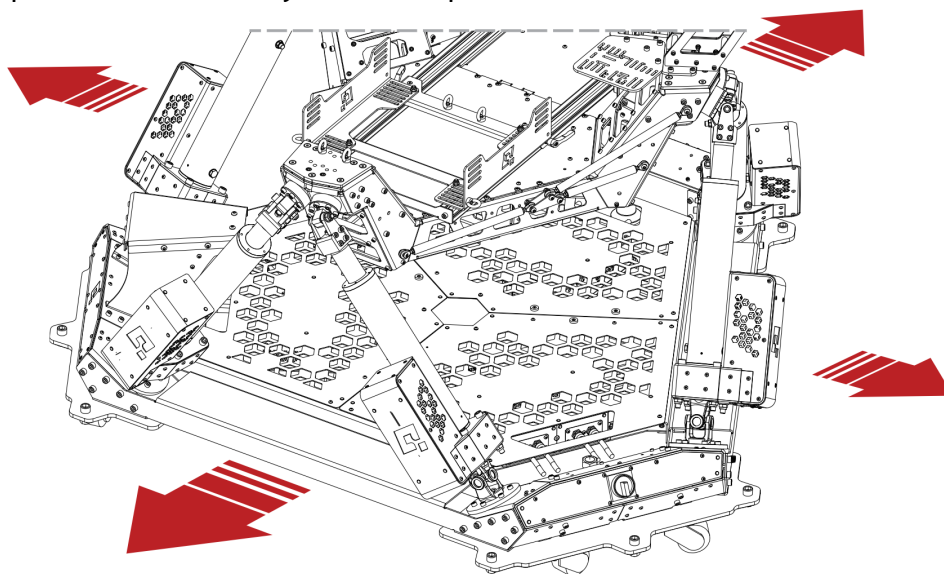
2. Once the platform is raised enough - bolt in the wheel modules (3x) using 14 mm allen key and 24 mm flat wrench (hand tools are not included).



3. Unscrew swivel feet anticlockwise until the platform stands on the wheels only (during that operation the machine should be secured by a second person).



4. The platform is now ready to be transported.



WARNING

- It is recommended that transportation is conducted by a team of at least 2 people.
- **DO NOT** transport the platform on a slope - bottom surface **MUST BE** perfectly flat and level.

5. Once the platform is in its designated place, remove the wheel modules and retrieve the swivel feet - reverse steps 3, 2 and 1.

WARNING

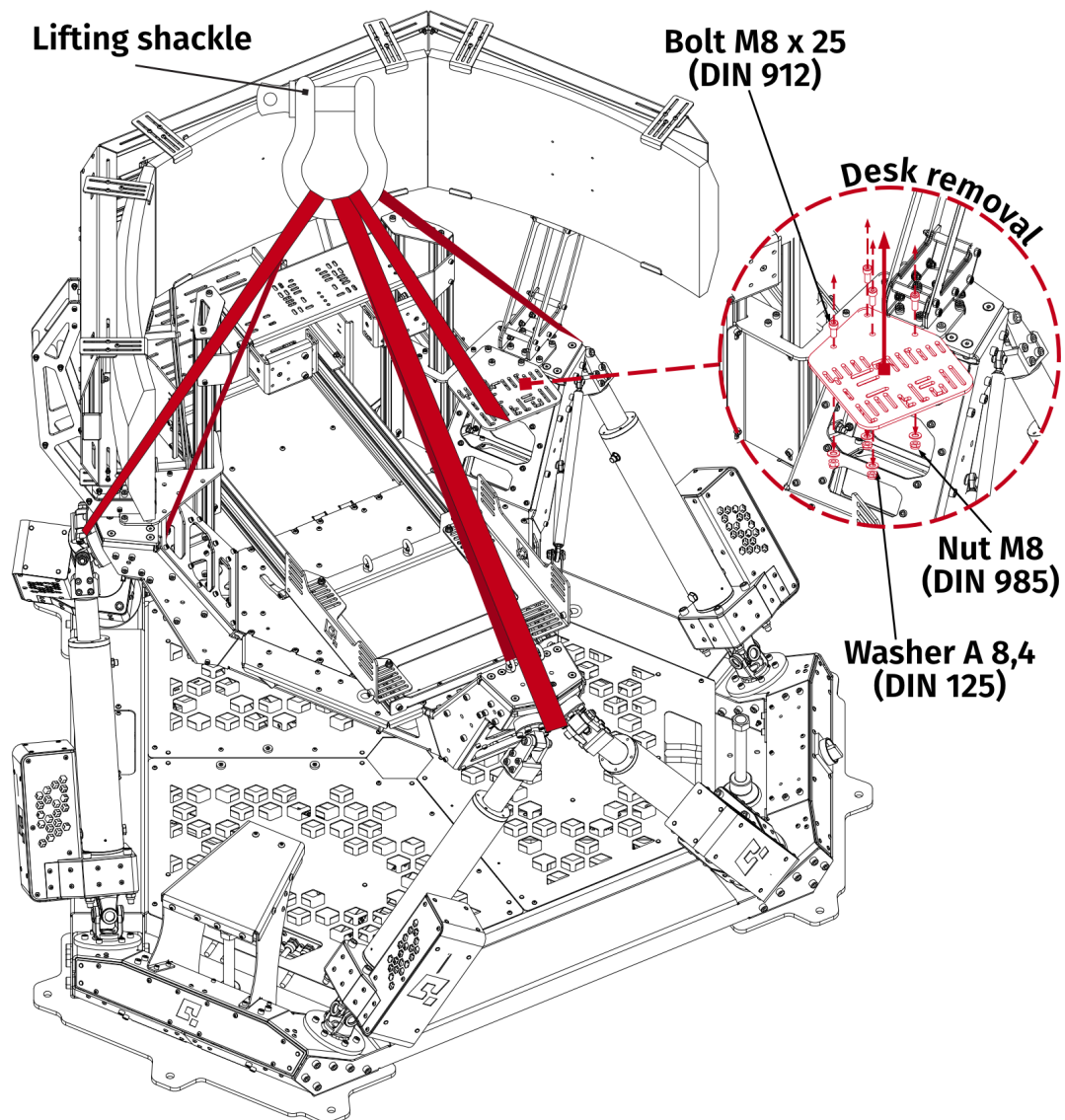
- **DO NOT** use the platform while on the wheels or swivel feet. The machine **MUST BE** standing on base pads.
- It is recommended to anchor QS-S35 to the ground. For details go to section **Anchoring** on page 28.

4.1.2 LIFTING THE PLATFORM

WARNING

- To avoid damaging platform components with lifting straps - side accessory desk should be removed.
- Lifting straps **MUST NOT** be leaning against the monitor holders.

The platform can be moved by lifting it from the ground. **ONLY** use lifting points shown below:



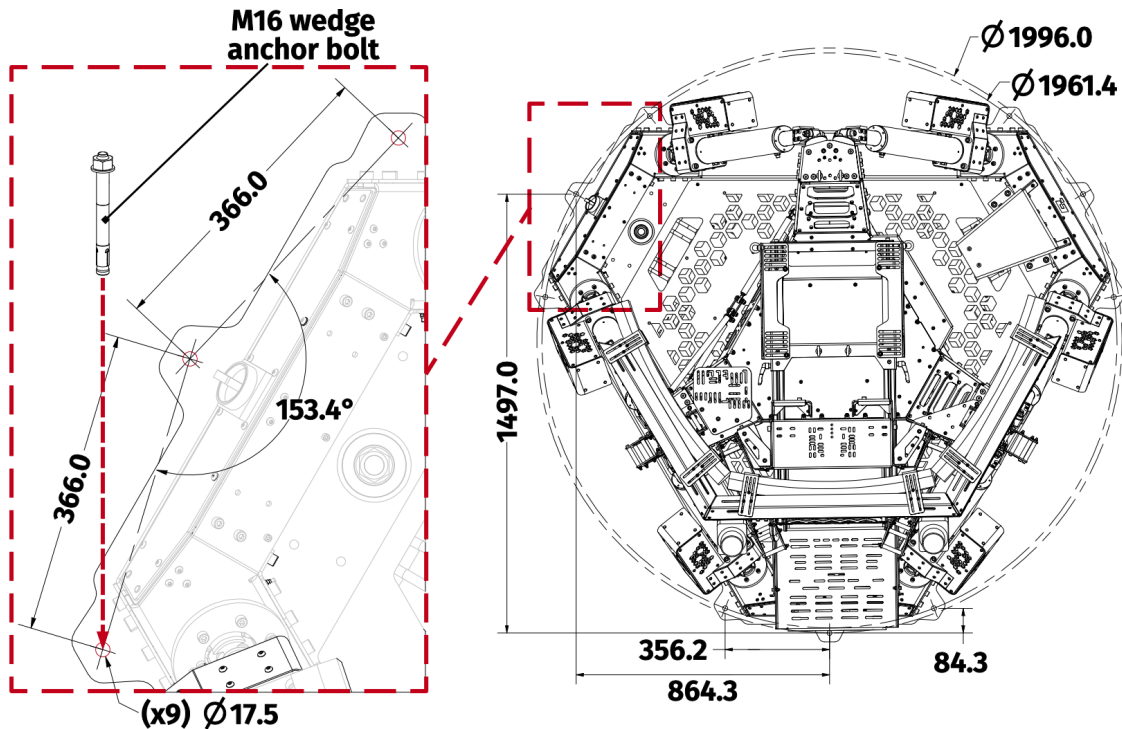
WARNING

- Only a professional forklift operator can operate the forklift/hoist.
- Forklift operator should be assisted by a helper standing in short distance and guiding him while moving the platform.

4.2. ANCHORING

Depending on the floor surface, the platform may crawl in all directions during normal operation. It is recommended to anchor it to the ground.

Anchor holes pattern dimensions:



INFO

- It is recommended to use M16 wedge anchor bolts (x9).
- Wedge anchor bolts must be specifically matched for the type of bottom surface that the machine will be installed on. If you are not sure what type of anchoring hardware should be used - contact a construction expert/structural engineer.

Anchoring:

1. Place the platform in its designated place (mind the minimum required safe distance, see section 2.2 at page 11).
2. Remove transportation wheels and screw out swivel feet so that the platform stands on the base pads - reversal of the transport procedure (4.1 on page 24).
3. Drill out holes straight through the holes in anchoring plates - use eye, ear and respiratory protection gear when using a power drill.
4. Install anchor bolts referring strictly to manufacturer's anchor bolt manual.

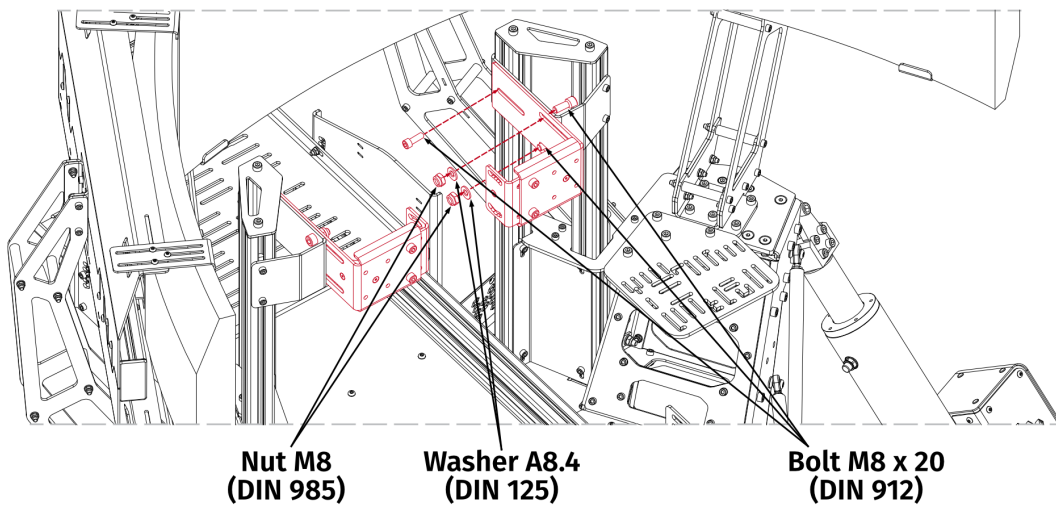
4.3. STEERING WHEEL BRACKET INSTALLATION

QS-S35 is delivered with two variant steering wheel brackets: a flat desk and a direct drive bracket. They are interchangeable and both fit the same mounting brackets and both use the same fasteners.

Direct drive bracket assembly:

In order to remove or install the direct drive bracket:

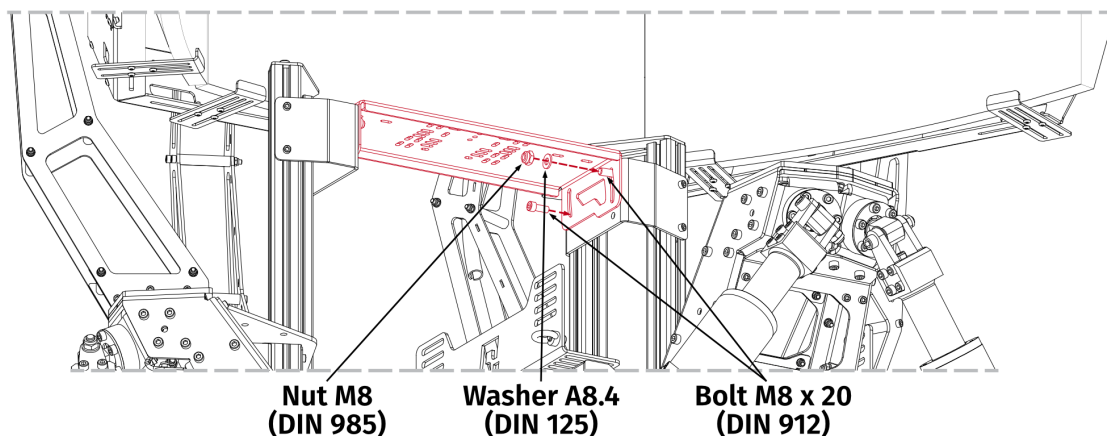
1. Screw in/remove the bolt from the back profile using 6 mm hex key (torque specs: DIN 912 M8 bolt - 23 Nm (17 ft-lbs)).
2. Screw in/remove 2 front bolts using 8 mm hex key and 17 mm flat wrench.
3. Repeat on the other side.



Flat desk bracket assembly:

In order to remove or install the flat desk bracket:

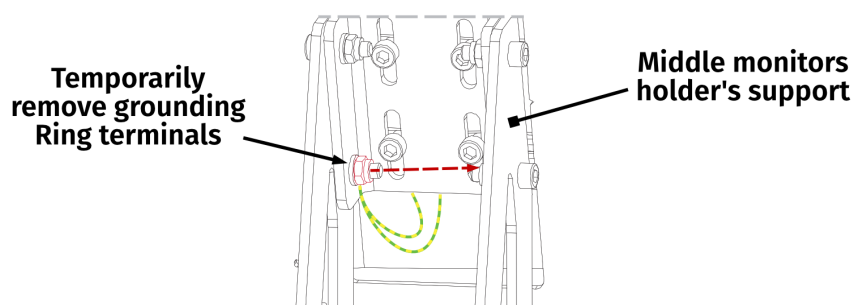
1. Screw in/remove the bolt from the back profile using 6 mm hex key (torque specs: DIN 912 M8 bolt - 23 Nm (17 ft-lbs)).
2. Screw in/remove front bolt using 8 mm hex key and 17 mm flat wrench.
3. Repeat on the other side.



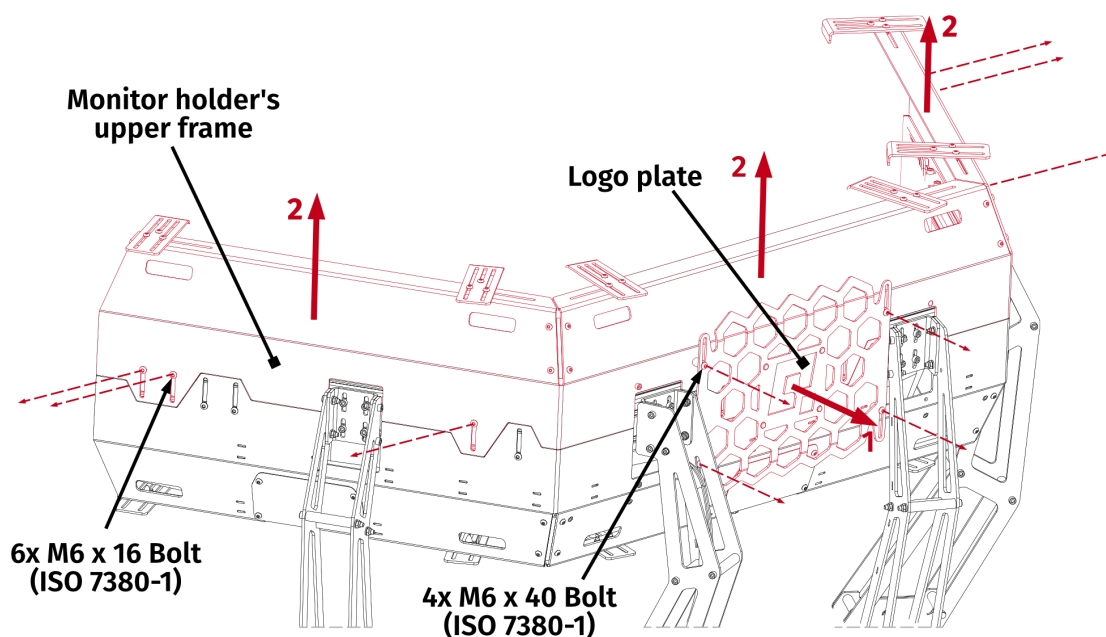
4.4. INSTALLING THE MONITORS

Depending on monitors size - it may be necessary to disassemble monitor holder's upper frame.

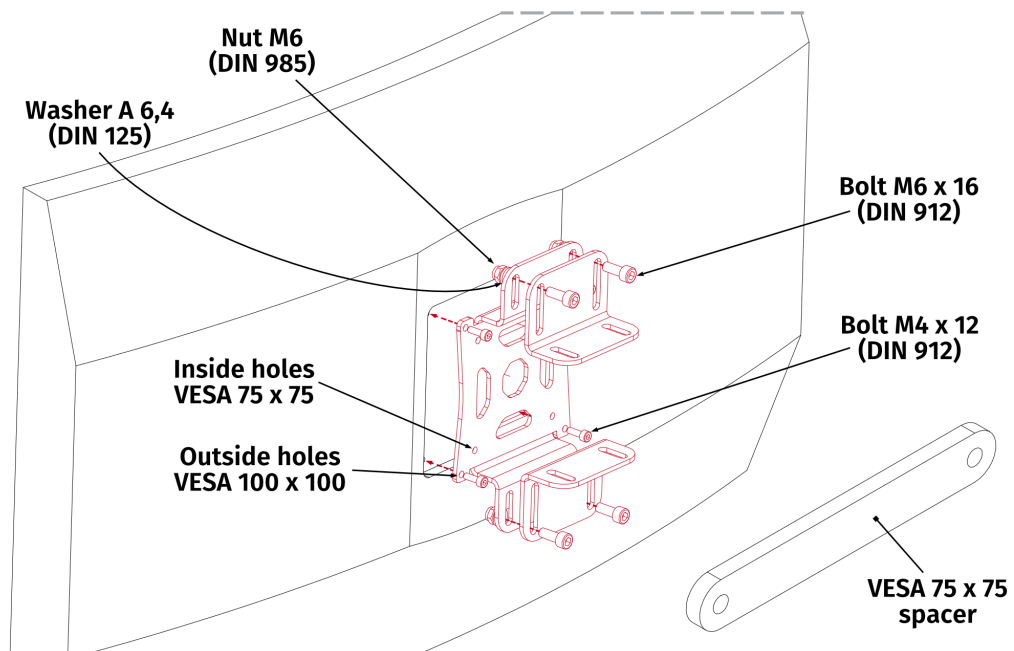
1. In order to remove monitor holder's upper frame - first temporarily remove grounding Ring terminals (using 8 mm wrench and 4 m hex key).



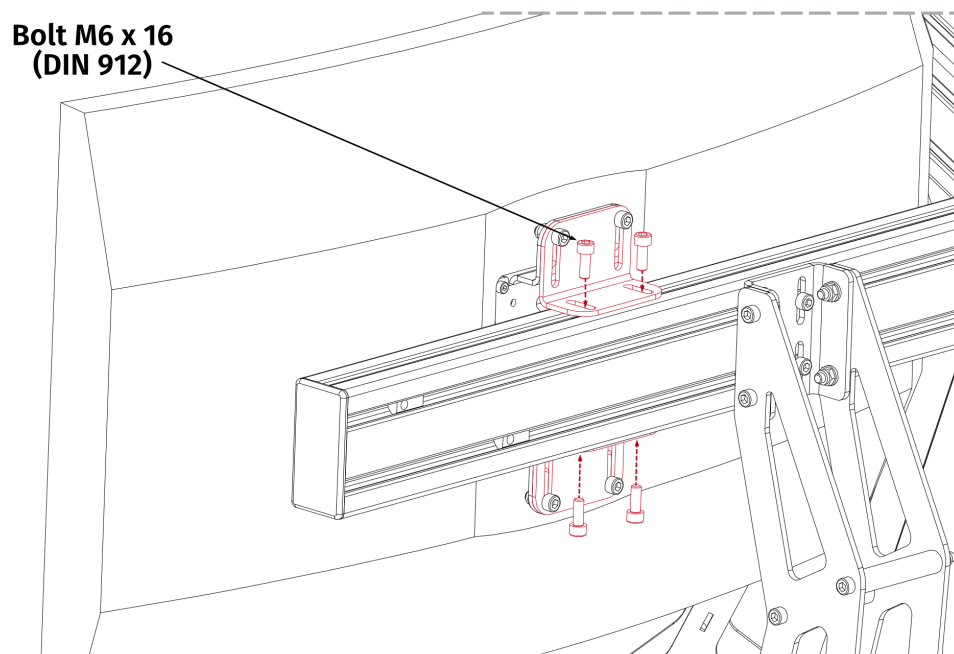
2. Remove Logo plate from the back.
3. Remove monitor holder's upper frame - all three parts together.



-
4. Install VESA brackets to the back of the monitors (DIN 912 M6 bolt - 9.5 Nm (7 ft-lbs)).

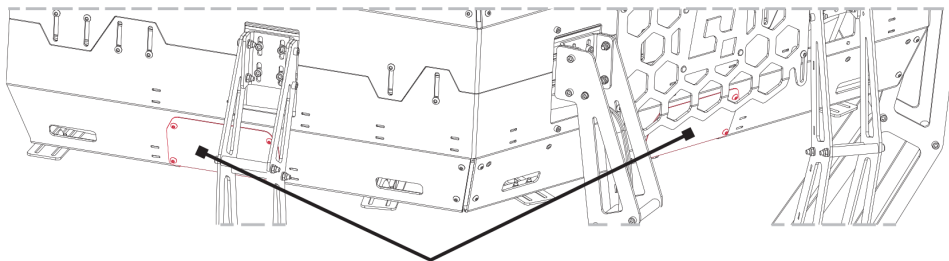


5. Install monitors with brackets to the aluminum profiles (DIN 912 M6 bolt - 9.5 Nm (7 ft-lbs)).



INFO

- For better access to the bottom bolts - remove the blanking plate that covers inspection opening.



Inspection opening

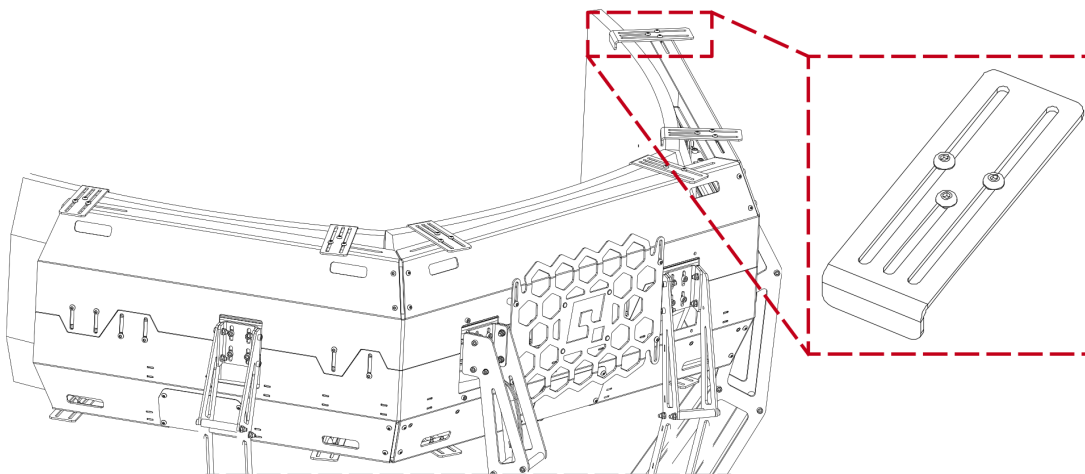
- For cable management, refer to section 4.5 on page 35.

6. Reassemble monitor holder's upper frame, logo plate and grounding Ring terminals (reversal of steps 3, 2 and 1).

WARNING

After reassembly of grounding connection - it **MUST** be tested for electrical safety by a qualified electrician according to local laws and standards.

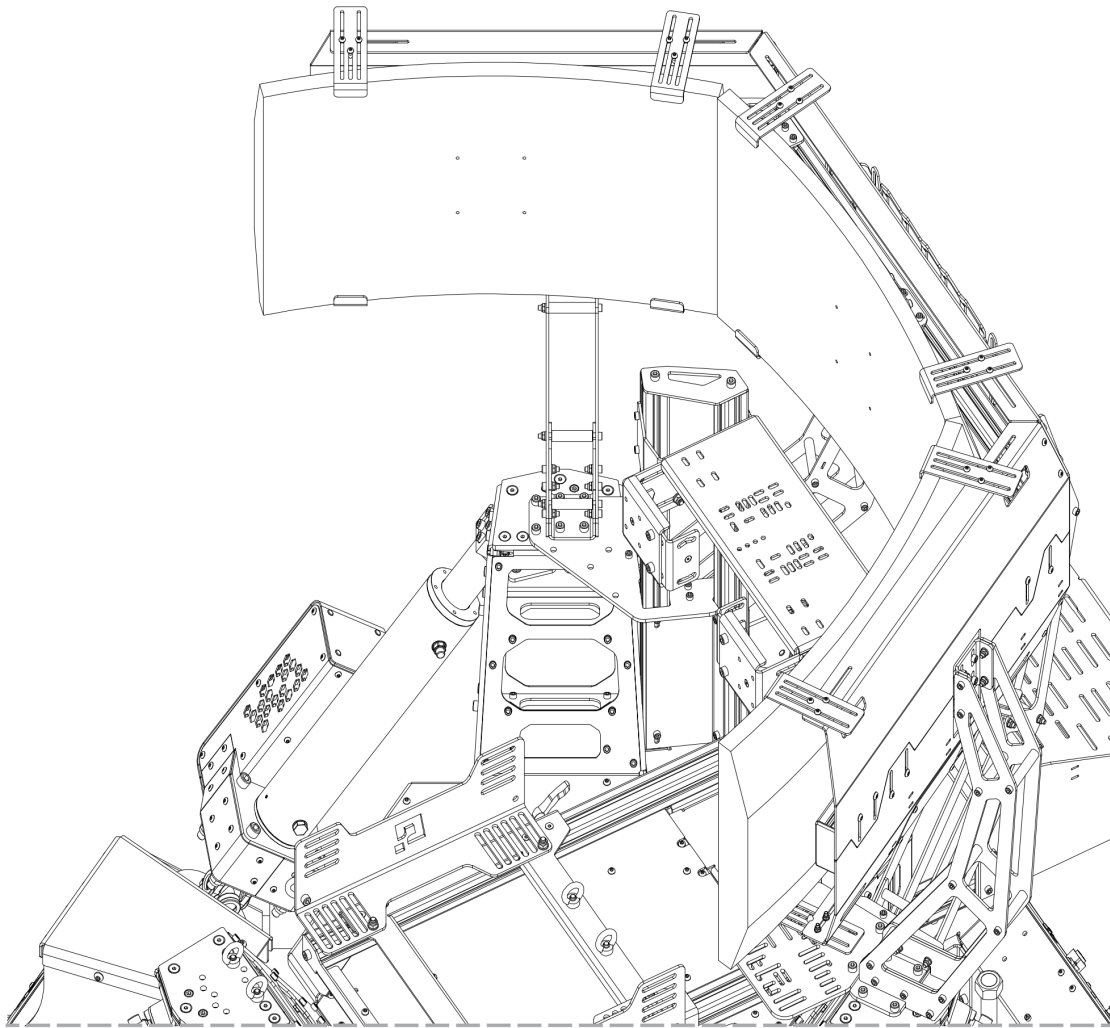
7. Ensure that monitors are held tight by the upper and bottom adjusting brackets.



INFO

For more information on monitor holder adjustment, go to section 3.5 on page 18.

Illustration of a finished monitors assembly:



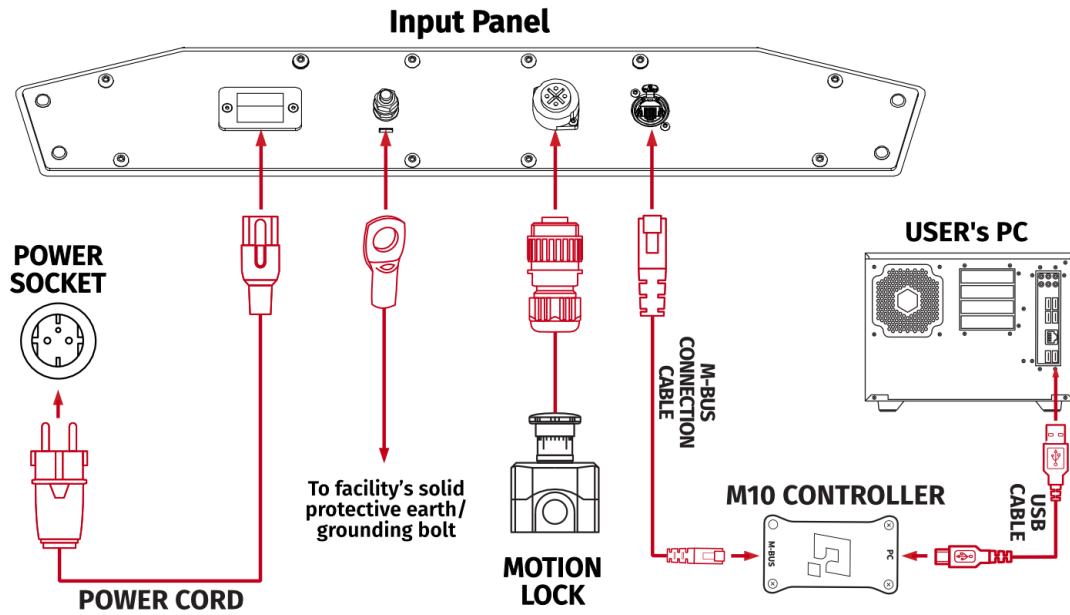
4.5. CABLE CONNECTIONS

For the QS-S35 to operate 4 cables must be connected:

- Power cord connected to power socket
- Grounding bolt connected with facility's ground bolt, using no less than 10mm² cross section cable
- Motion Lock plugged in
- M10 Controller plugged in to your PC

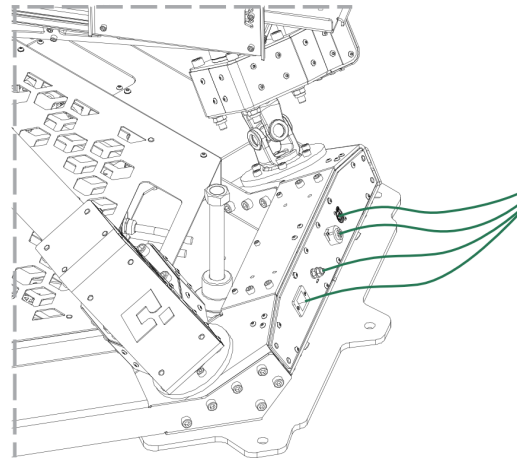
INFO

For full connection diagram go to section **5.5** on page **47**.



WARNING

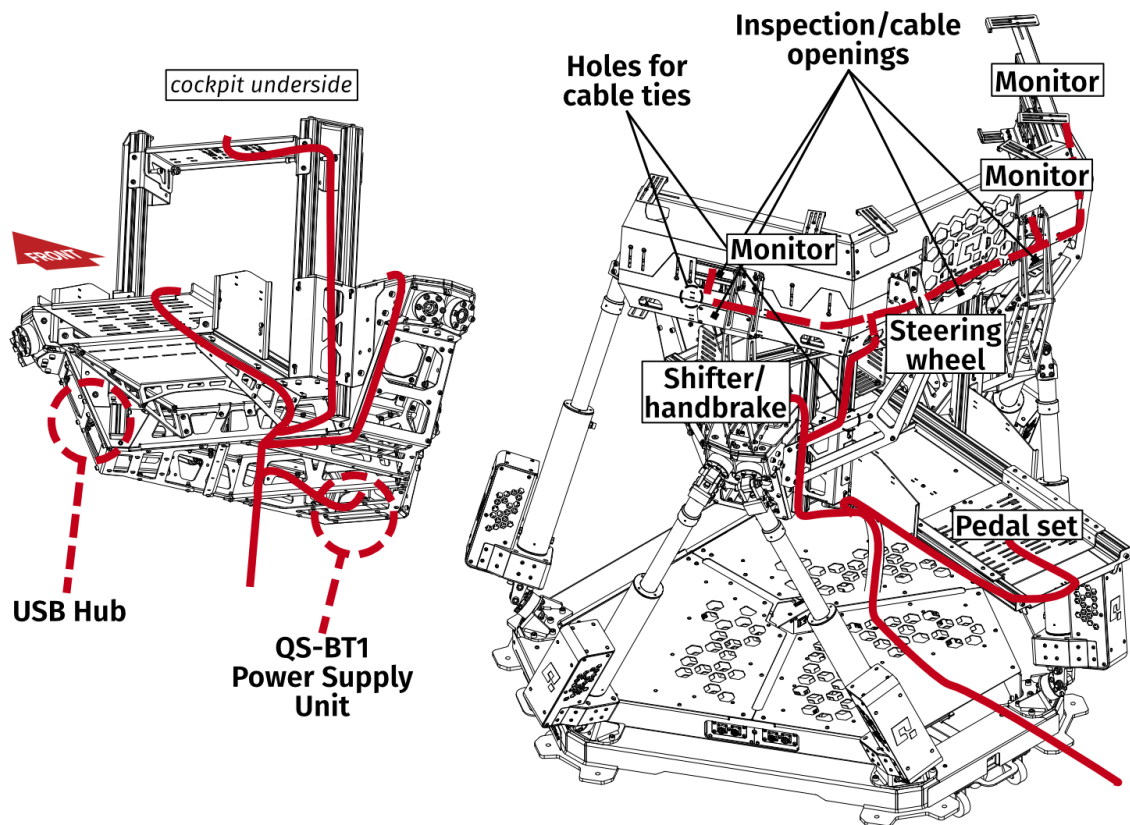
Ensure that cables are plugged in correctly - they are not stretched or loosely connected to the socket and placed out of the moving range of the system components.



- Cables from the accessory components that move along with the platform must be run through the upper frame or under the frame of the cockpit (preferably using cable holders or cable ties).

For better cable management monitor cables should be run inside the monitor holder plate and pulled out behind the monitor holder arm.

Underside of the cockpit is where accessories such as Power Supply units or USB hubs can be installed. There are cable channels installed for better cable management. In order to avoid damaging the cables over time by continuous platform movement - it is recommended to secure any loose cable to the frame with cable ties.

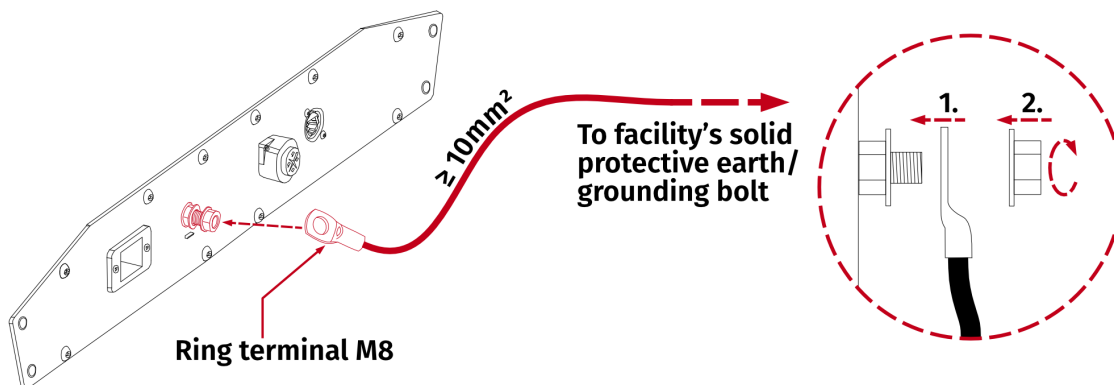


INFO

For monitor installation details go to section 4.4 on page 30.

4.5.1 CONNECTING GROUNDING WIRES

Ensure that before first power up, the grounding wire is connected to the machine, using a dedicated bolt in the input panel of the QS-S35.



INFO

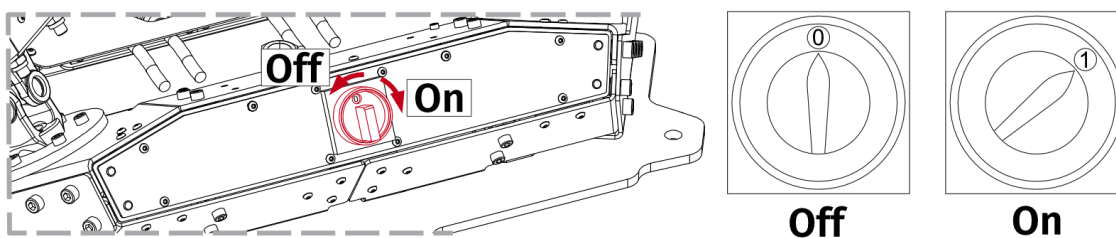
Platform is equipped with a low resistance protective-earth bolt. It must be connected to the facility's solid protective earth/grounding bolt in order to increase suppression level. It is recommended to use at least 10 mm² copper wire.

WARNING

All operations **MUST BE** performed with the platform powered off and by a qualified electrician.

4.6. TURNING THE POWER ON

After the machine is connected correctly, in order to run it, you must turn the power ON by rotating the switch from "0" into "1" position.



WARNING

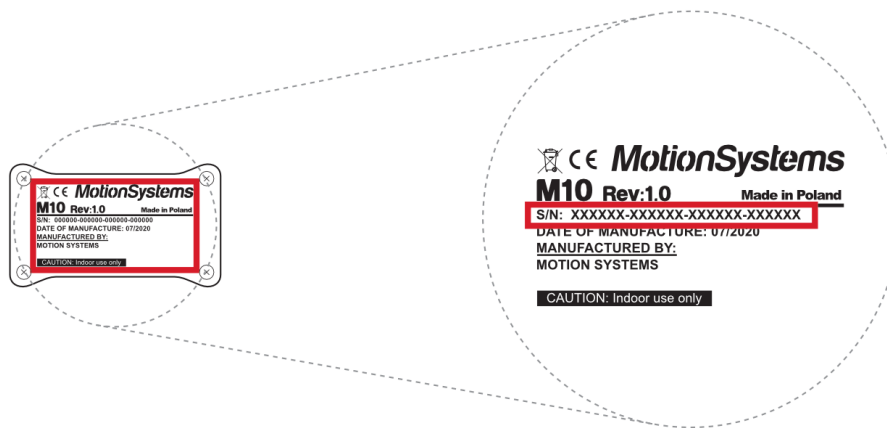
- **DO NOT** change the payload during the start-up calibration.
- **DO NOT** enter the cockpit during the start-up calibration.

4.7. SOFTWARE INSTALLATION

INFO

Note down the QS-S35 serial number before installation as it is needed to access software download page.

The **SERIAL NUMBER** can be found on the M10 identification label in the **XXXXXX-XXXXXX-XXXXXX-XXXXXX** format. This serial number is also used for activation of FSMI (Force-SeatMI) and MT (Motion Theater) licenses - more information on page 42.



To download the software visit: QubicSystem.com/Download

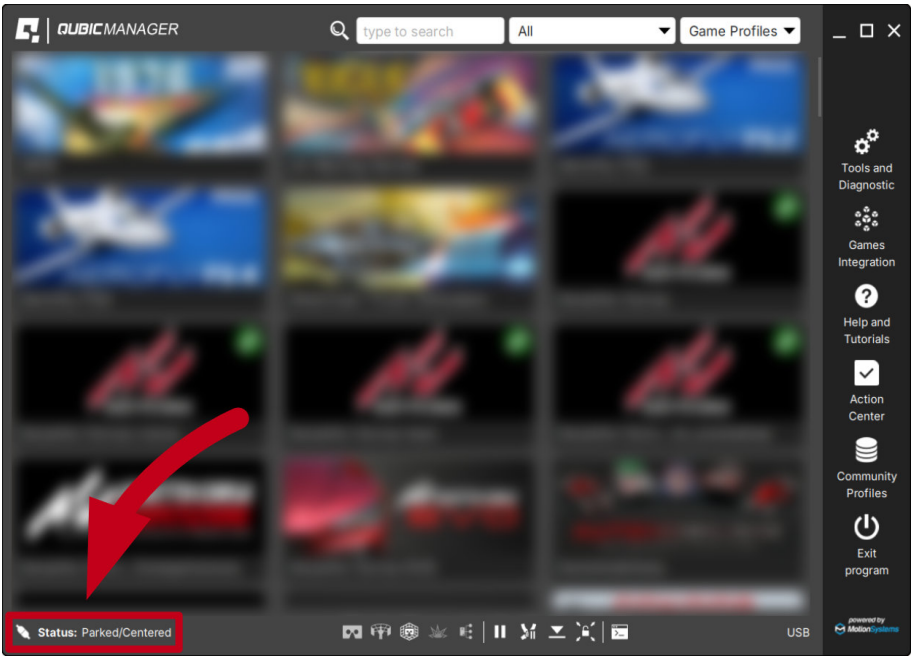
Once the QS-S35 is installed and connected correctly:

1. Download **Qubic Manager Software**.
2. Proceed with the installation steps and launch the application.
3. Connect power connection cord to the wall socket.
4. Turn on the system by switching on the power switch button on the Input Panel.
5. Check position of Motion Lock button, unpress if needed.
6. The QS-S35 will perform a start-up calibration.

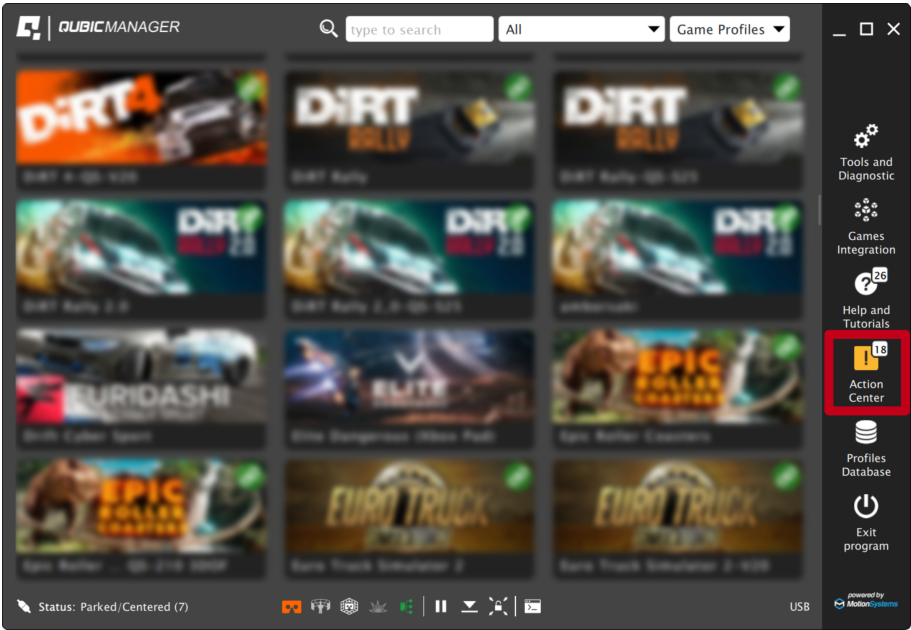
WARNING

- **DO NOT** change the payload during the start-up calibration.
- **DO NOT** enter the cockpit during the start-up calibration.

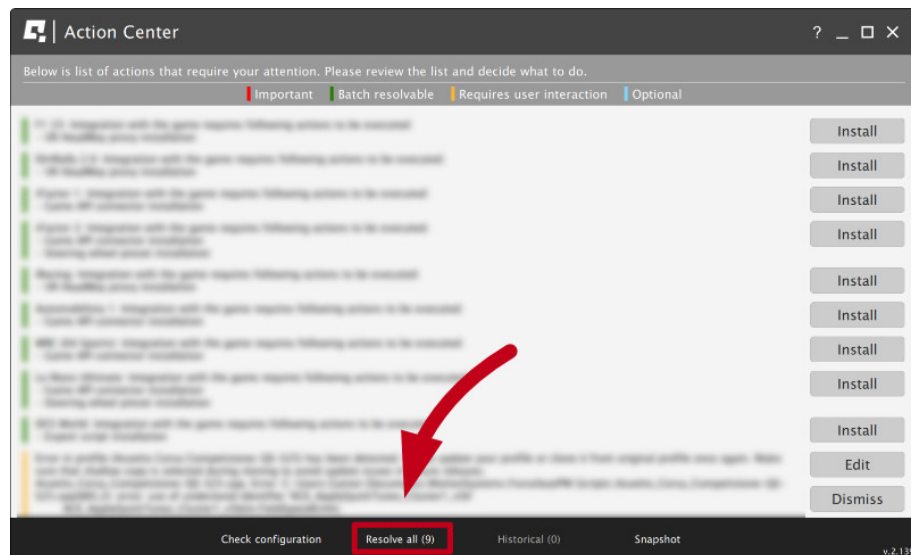
7. If Qubic Manager has recognized the QS-S35 correctly, the status of the machine visible in the lower left corner will change to **Parked/Centered**.



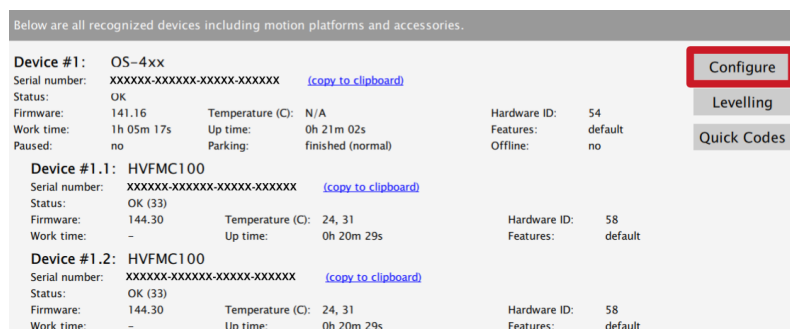
8. Check **Action Center** on the right side panel for a list of actions that requires attention:



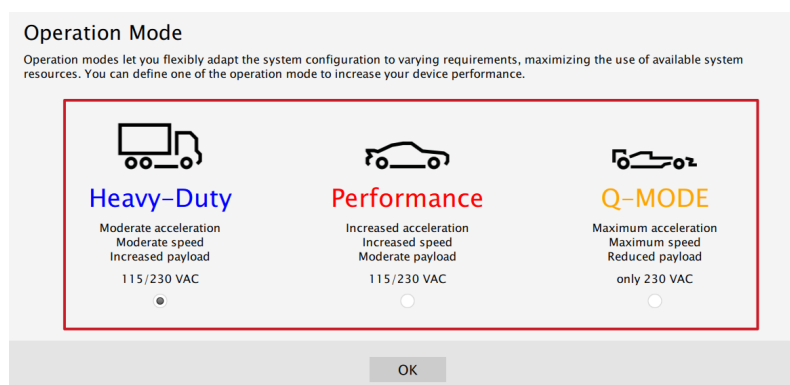
9. It is possible to solve them one by one or by pressing the **Resolve All** button. Firmware update may require additional confirmation in the dialogue box.



10. Go to **Tools and Diagnostics** → **Devices** and select **Configure**.



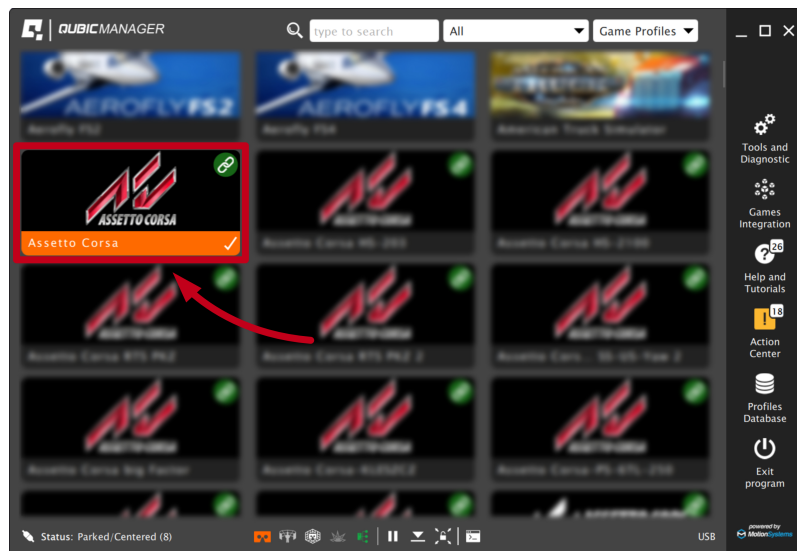
11. Only mode available for QS-S35 is Heavy-Duty:



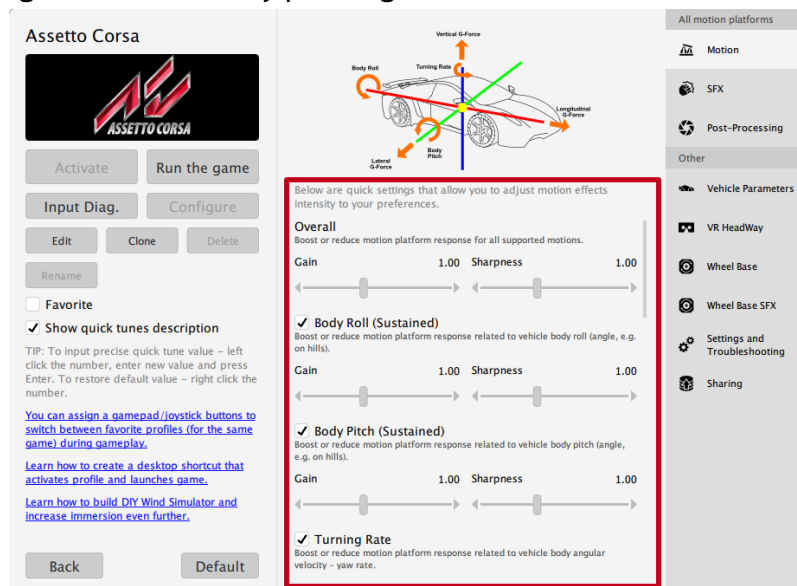
12. Close the configuration and return to the main application window. Choose the game and check profile details by clicking on the game tile.

INFO

Default profiles are integrated with the software and do not require additional installation. List of supported games is available at: QubicSystem.com/Supported-games.



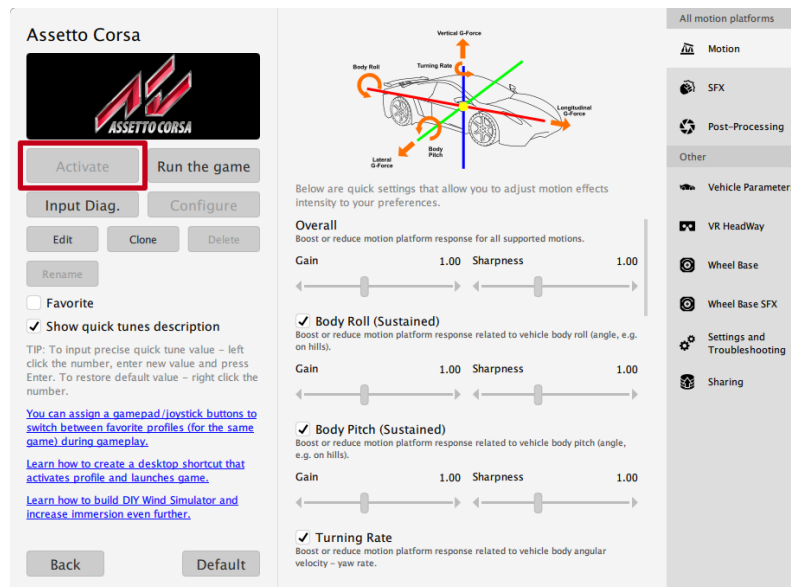
13. Adjust the motion effects intensity to your preferences in the game profile window, scroll down in the window to see all of the settings. You can adjust the settings during the game simulation by pressing **ALT+TAB**.



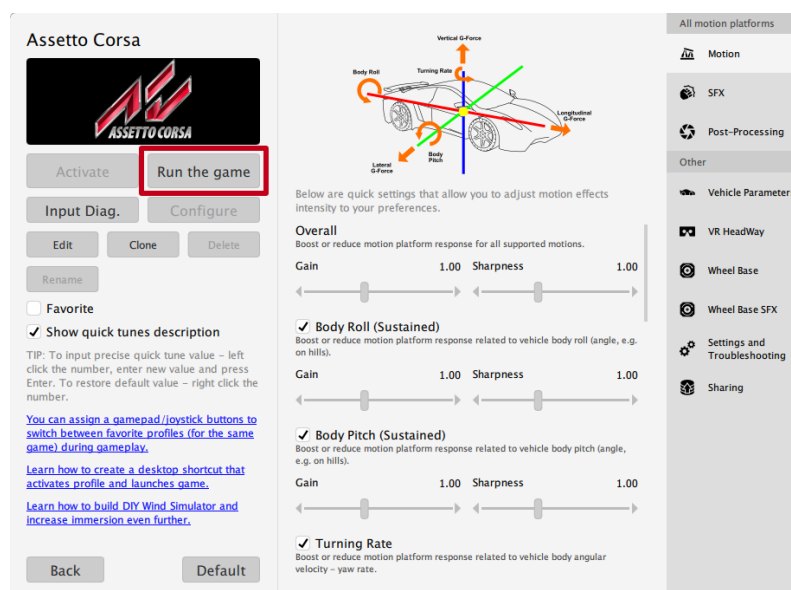
WARNING

The QS-S35 is a high performance machine capable of fast and abrupt movement based on game/simulation input data. User **MUST** maintain a sensible approach when modifying the default game profile.

14. Activate profile by clicking the **Activate** button.

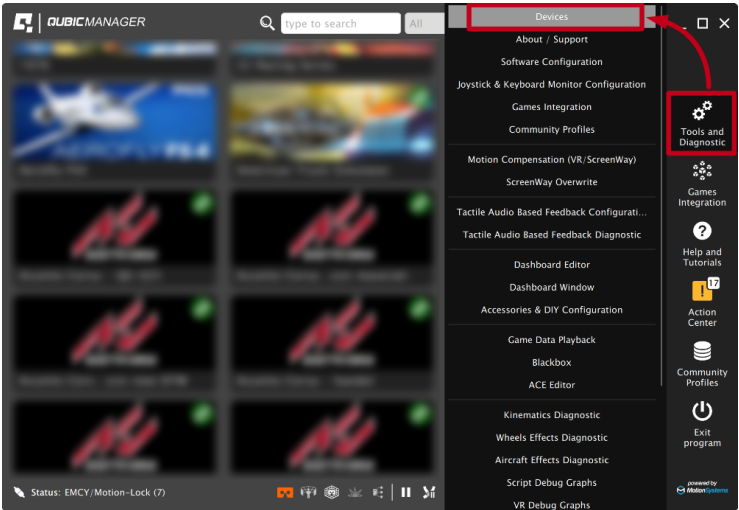


15. Launch the game by clicking the **Run the game** button.



INFO

If you need the serial number to activate other software licenses such as ForceSeatMI or ForceSeatDI, it can be found in the Qubic Manager. After connecting the QS-S35 go to **Tools and Diagnostics → Devices**:



Serial number is visible under the device name:

Below are all recognized devices including motion platforms and accessories.

Device #1: QS-4xx				Configure
Serial number:	XXXXXXXX-XXXXXX-XXXXX-XXXXXX	(copy to clipboard)		Levelling
Status:	OK			Quick Codes
Firmware:	141.16	Temperature (C):	N/A	
Work time:	1h 05m 17s	Up time:	0h 21m 02s	
Paused:	no	Parking:	finished (normal)	
Device #1.1: HVFMC100				
Serial number:	XXXXXXXX-XXXXXX-XXXXX-XXXXXX	(copy to clipboard)		
Status:	OK (33)			
Firmware:	144.30	Temperature (C):	24, 31	
Work time:	–	Up time:	0h 20m 29s	
Device #1.2: HVFMC100				
Serial number:	XXXXXXXX-XXXXXX-XXXXX-XXXXXX	(copy to clipboard)		
Status:	OK (33)			
Firmware:	144.30	Temperature (C):	24, 31	
Work time:	–	Up time:	0h 20m 29s	
Device #1.3: HVFMC100				
Serial number:	XXXXXXXX-XXXXXX-XXXXX-XXXXXX	(copy to clipboard)		
Status:	OK (33)			
Firmware:	144.30	Temperature (C):	24, 32	
Work time:	–	Up time:	0h 20m 29s	
Device #1.4: HVFMC100				
Serial number:	XXXXXXXX-XXXXXX-XXXXX-XXXXXX	(copy to clipboard)		
Status:	OK (33)			

WARNING

The software is provided "as is", without warranty of any kind, express or implied, including but not limited to the warranties of merchantability, fitness for a particular purpose, and non-infringement. In no event shall the authors or copyright holders be liable for any claim, damages, or other liability, whether in an action of contract, tort or otherwise, arising from, out of, or in connection with the software or the use or other dealings in the software. The software sends anonymous usage data to the Motion Systems company. The data is used to improve the software and game profiles. The data is not used for advertising purposes.

5. MAINTENANCE

Maintenance operations are to be conducted by the operator/user, who will need a set of tools listed below:

Tools required

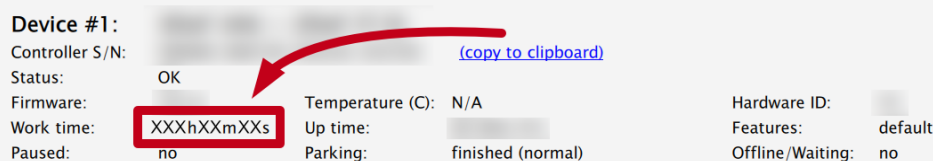
- Vacuum cleaner
- Soft wiping clothes
- Isopropyl alcohol
- Standard grease gun
- Class 3 NLGi lithium grease

5.1. CLEANING THE PLATFORM

INFO

Cleaning should be conducted every 160 working hours or once a month.

To see the working hours counter, go to **Tools and diagnostics** → **Devices**. It is displayed in the QS-S35 device listing:



Device #1:			
Controller S/N:			(copy to clipboard)
Status:	OK		
Firmware:		Temperature (C):	N/A
Work time:	XXXhXXmXXs	Up time:	
Paused:	no	Parking:	finished (normal)
		Hardware ID:	
		Features:	default
		Offline/Waiting:	no

To minimize the risk of abnormal heating that can result in system failure, keep the QS-S35 uncovered, clean and dust-free. Cleaning the unit should be performed with a soft, dry cloth. **DO NOT** use solvents or cleaners that may corrode or damage materials of parts used in the QS-S35 in any other way.

To set up platform for cleaning purposes follow steps below:

1. Follow the power-up of the platform procedure.
2. Run QubicManager software.
3. Select "Tools and Diagnostics" → "Platform diagnostics".
4. In the menu select tab "Actuators position".
5. Scroll down to the bottom to a "Heave" slider.
6. Slowly move it to the maximum right position.
7. Actuators will move to the top position (fully extended).
8. Power down the platform using main power switch (platform will stop on the brakes).

WARNING

Do not climb the platform. Use a freestanding ladder to reach upper parts of the frame for cleaning or maintenance purposes.

Cleaning the frames:

1. Set up platform for cleaning.
2. For cleaning dust or dirt use soft, damp cloth. Make sure not to scratch the paint, it can lead to corrosion.
3. For cleaning oil marks or other lubricants (greases for the actuator joints) use isopropyl alcohol and a soft cloth.

Cleaning the actuators:

1. Set up platform for the cleaning
2. Check for dirt or dust following areas:
 - Actuator cylinder tubes
 - Stuffing box of the actuator cylinder
 - Piston rod of the actuator
 - Flange on the piston rod
 - Lower cardan joint

If any of the above mentioned elements is dirty or dusty use clean cloth to remove it. Isopropyl alcohol can be used to remove contamination caused by lubricants.

During each cleaning of the actuators it is necessary to clean the chrome coating of the piston rod of the actuator with a clean soft cloth.

INFO

Good practice - during cleaning check welds on the base pads, cardan joints and other parts to ensure that there are no cracks or deformations.

5.2. CHECKING MOTION LOCK BUTTON

At least once a month check if Motion Lock button is working correctly:

1. Before anyone steps into the platform - turn on the QS-S35.
2. Push the red Motion Lock button.
3. The machine should stop and not react to any signal.
4. Turn on a simulation or a game to confirm that - with a correct profile activated proceed to a game or a simulation and engage movement.



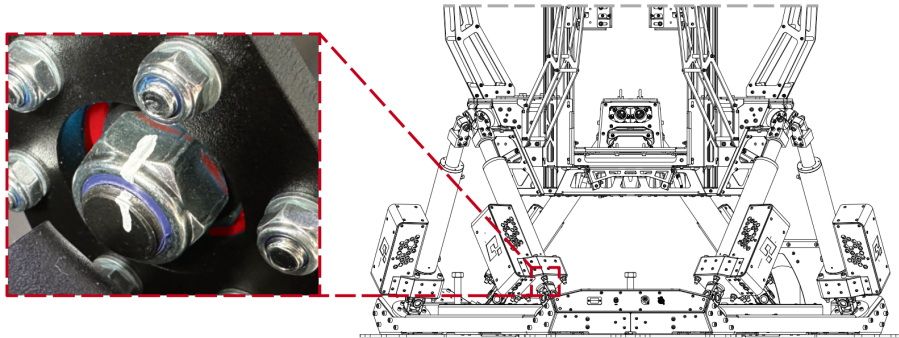
If the Motion Lock Button works correctly - platform does not react nor move in any way.



If the Motion Lock button does not work correctly - platform proceeds to simulate motion from the game/simulation. Check the cable connection and repeat the test. If the problem persists - **DO NOT** use the platform, power it off and contact technical support immediately.

5.3. ELEMENTS SERVICED BY THE USER

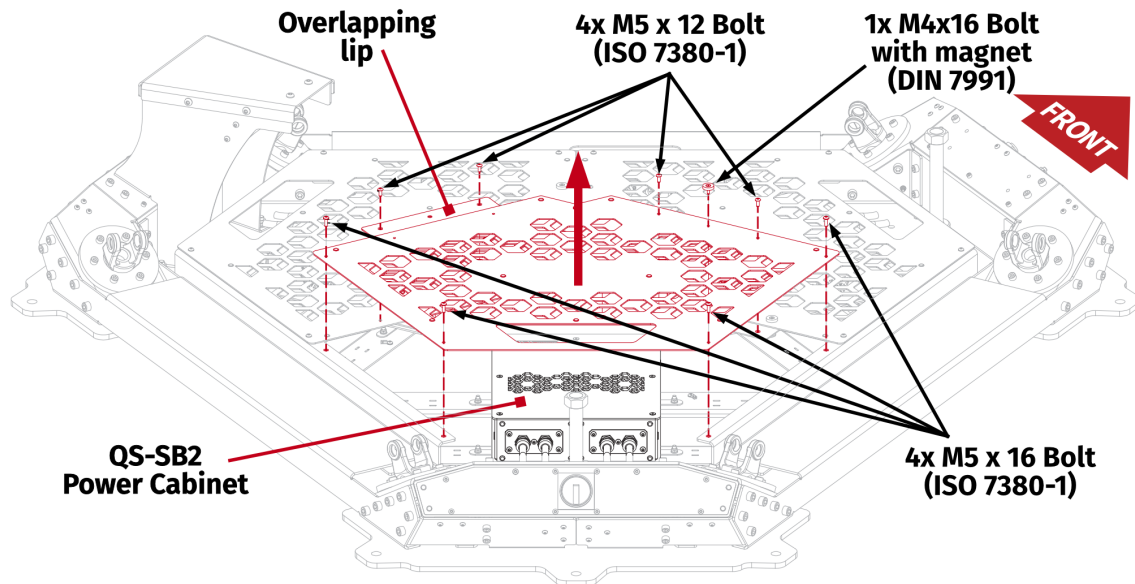
To assure reliable work of the Motion Systems platform it is necessary to conduct control and maintenance work. Platform operator must get acquainted with the procedures and conduct the operations according to time interval as described below. Neglecting those operations might cause loss of warranty during the warranty period.

Timing	Maintenance operation
After first 50 working hours, then every 500 working hours or once every month	Checking connection bolts Each nut is marked with the bolt - markings must be aligned with each other. If the lines are not aligned the connection loosened. Check ALL nuts near the joints and on moving arms of the device. DO NOT use the machine if any of the connection is loose and contact technical support. 

5.4. SERVICE ACCESS TO POWER CABINETS

In order to gain service access to Power Cabinets user/integrator must remove floor plates. There are three, each of them overlapping the next one. Follow the instructions below:

Unscrew 9x bolts from the floor plates using 4 and 2.5 mm hex key. While lifting the floor plate mind the overlapping lip.



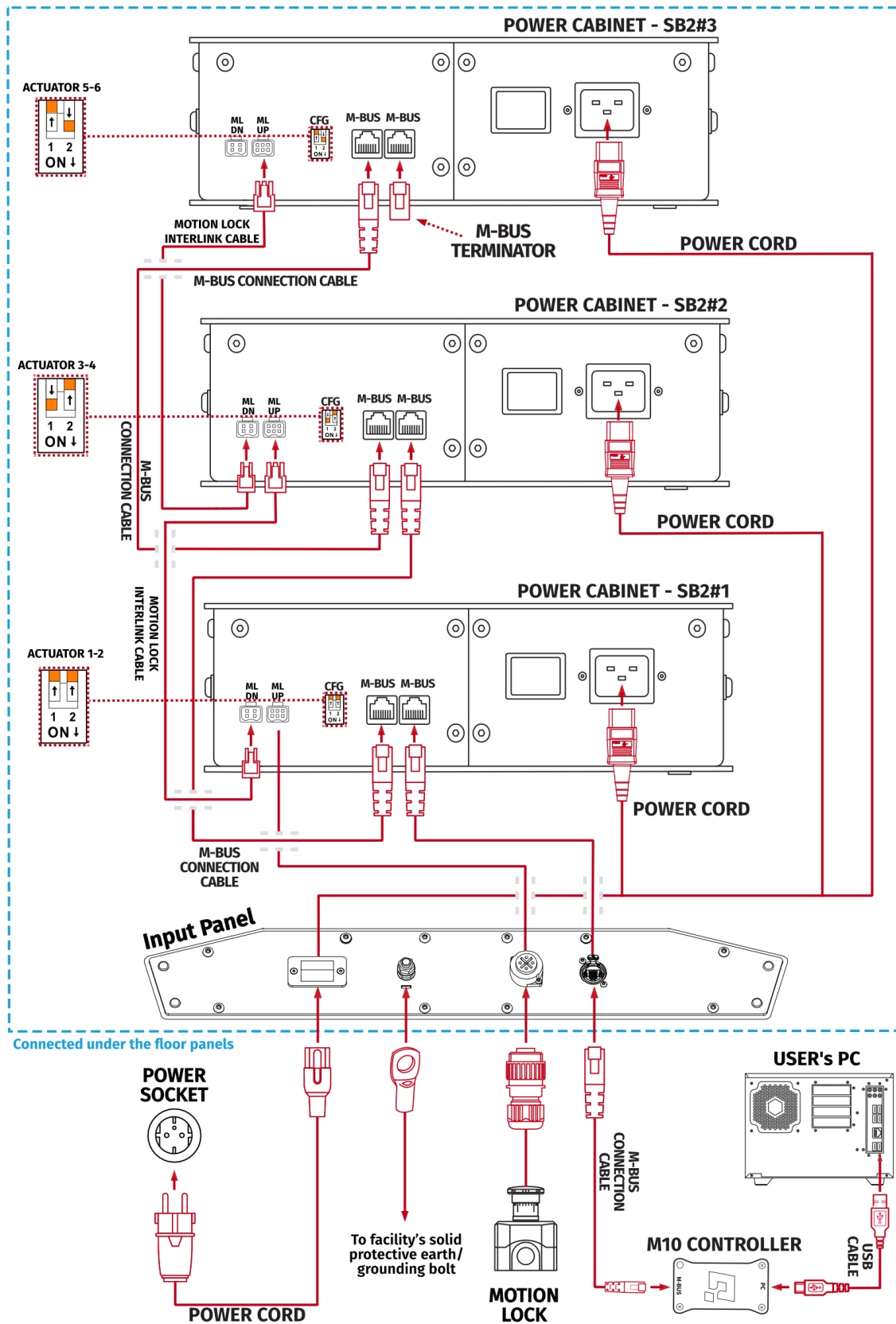
If necessary repeat this step for remaining floor plates.

Reassembly is a reversal of removal (torque specs: ISO 7380-1 M5 bolt - 4.1 Nm (3 ft-lbs); DIN 7991 M4 bolt - 2.1 Nm (1.5 ft-lbs)).

WARNING

The platform shall not be used for simulation with the floor disassembled. Always reassemble the machine completely before using it.

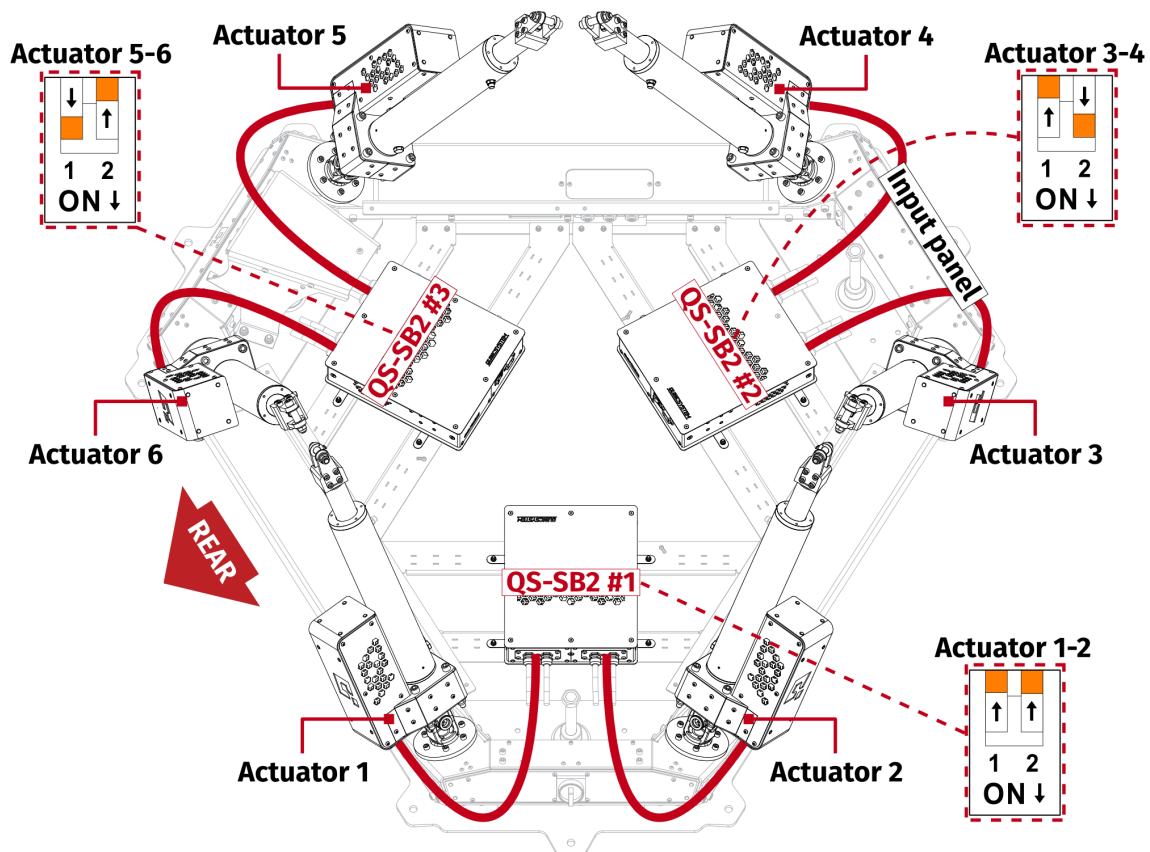
5.5. INTERCONNECTIONS



WARNING

- QS-S35's default factory setting of the CFG switches is correct and ready for operation. The diagram is provided for informational purposes only.
- Motion Lock button and interconnection cables are connected from factory. User must only connect his PC with the machine via M10 controller and power it up.

Actuator layout and CFG switches setup:

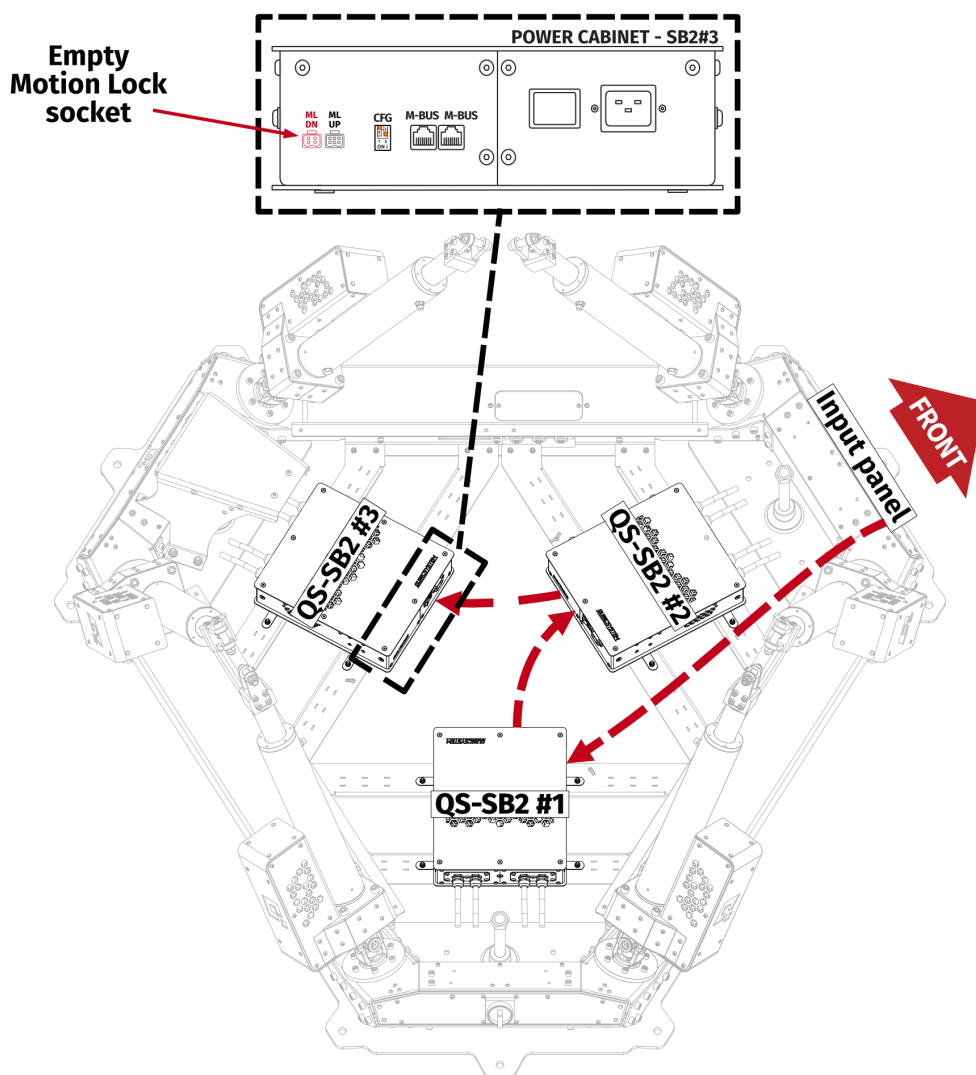


INFO

Gaining access to Power Cabinets is described in section 5.4 on page 46.

5.5.1 CREATING MOTION LOCK CIRCUIT WITH OTHER QS DEVICES

In order to include other QubicSystem devices into QS-S35's Motion Lock circuit, connect them via Motion Lock interlink cable into the last Power Cabinet in line (SB2 #3). For more ML connection diagrams refer to that device's User Manual.



INFO

Gaining access to Power Cabinets is described in section 5.4 on page 46.

5.6. ACTUATOR CONNECTION WITH A POWER CABINET

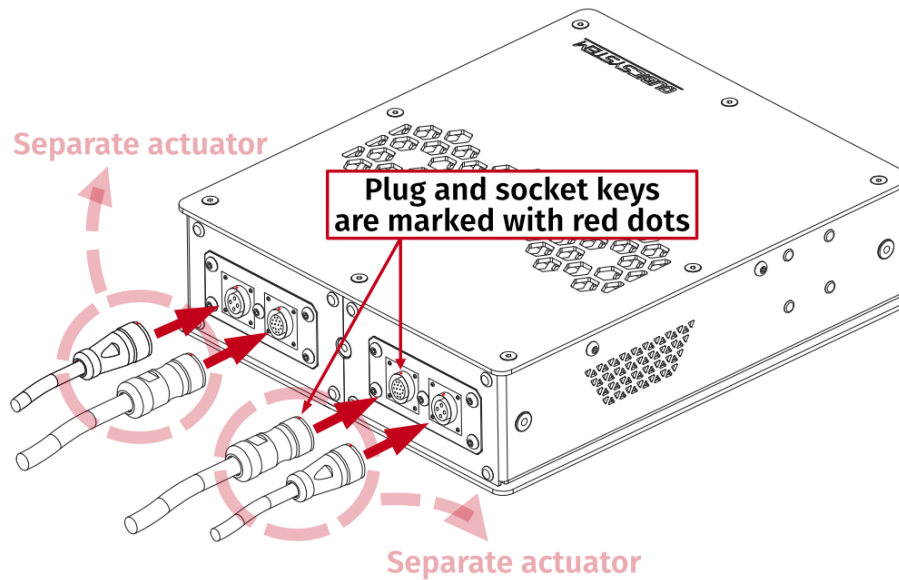
INFO

Revised version of the QS-S35 is equipped with push-pull actuator connectors. If your machine has integrated actuator cables, this section does not apply.

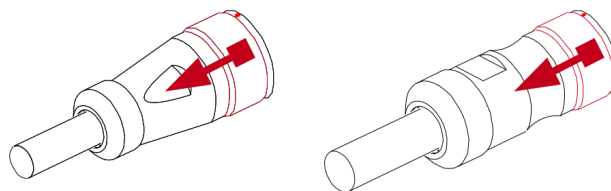
WARNING

- QS-S35's actuators are connected with Power Cabinets from factory and **DO NOT** require any attention from user during initial start-up procedure.
- Plugging and unplugging the actuator must **ALWAYS** be performed with Power Cabinet's power switched OFF.

To connect the actuator to a Power Cabinet - match the plug with the socket (4 vs. 15 pin) and plug it in, matching the key at the top of the plug (also marked with a red dot). Push it in **firmly** until the PUSH-PULL ring lock **clicks in place**.

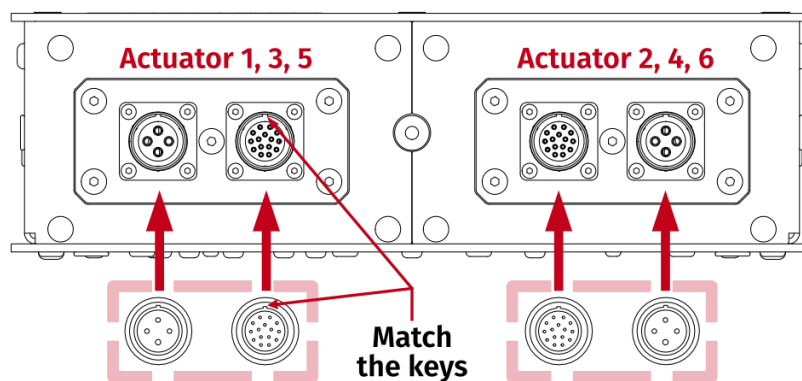


To disconnect the plug, first pull on the metal ring to release the lock and then pull the plug to disconnect:



NEVER pull the plug by the cable

Keep in mind the order of connecting the actuators. Left socket panel is for odd number actuator, and right socket panel is for even number actuators.



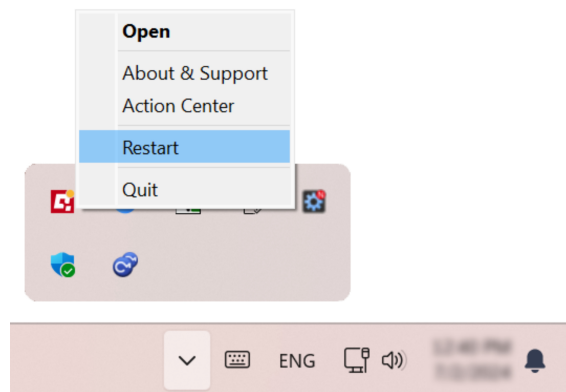
6. TROUBLESHOOTING

WARNING

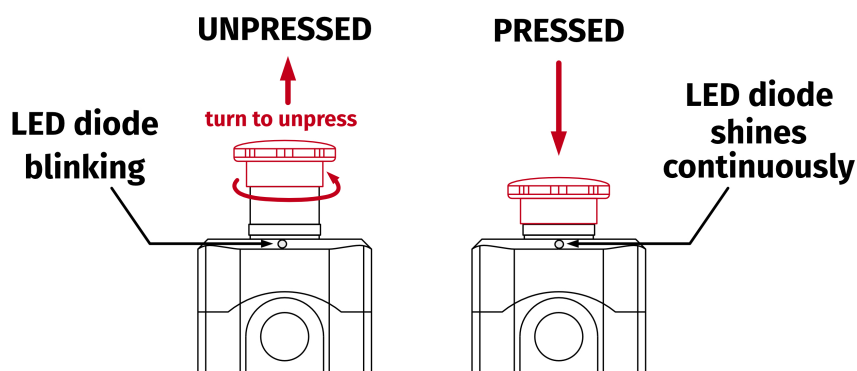
DO NOT attempt to do any repairs by yourself. It could be dangerous and will result in loss of warranty! Repairs should be consulted with technical support and then performed by a qualified technician.

Before contacting technical support, try this:

- Check Action Center in QubicManager.
- Check all cable connections in the device.
- Restart QubicManager application by right-click on the application icon in the system tray and selecting **Restart**:



- Check Motion Lock Switch position (should be unpressed to activate the motion):



- Try different USB ports (also try bypassing the USB hub by a direct PC connection).
- If a problem occurred abruptly, it could be caused by a thermal protection. Turn off the QS-S35, disconnect it from power outlets and wait at least 15 minutes to let it cool down. Try turning it on again later.
- In case of any unclear electrical issues, strange behavior or abnormal work conditions, contact technical support.

6.1. QUBICMANAGER DEVICE STATUSES

-  **Status: Not connected** - no device is detected. If status appears while devices are connected - indicates that firmware update failed (requires firmware recovery) or M10 controller or USB connection is at fault. Check USB connection for loose connections, try different USB ports, bypass any USB hubs, swap USB cable for a different one.
-  **Status: Offline/Waiting for nodes (9)** - Power Cabinets are disconnected or not powered. If this status appears during operation - check power cords, power switches, CFG DIP switches configuration and M-BUS connection cables.
-  **Status: Running** - the device is in simulation/receives input signal.
-  **Status: Paused** - the device is paused (Pause button at the bottom of the QubicManager window).
-  **Status: EMCY/Motion-Lock (5)** - Motion Lock system has been triggered. Unpress the Motion lock button, check the Motion Lock button cable/connection. In a setup with no Motion Lock button - check the Motion Lock jumper.
-  **Status: Press and release Motion-Lock (9)** - the device is waiting for a cold start procedure (more details on page 22).
-  **Status: Pending Ref-Run (9)** - the device is performing calibration/reference run. **DO NOT** change the payload.
-  **Status: Parking/Centering** - the device is parking (the game/simulation was paused or no telemetry input is available).
-  **Status: Parked/Centered (5)** - the device achieved parking position and is in stand-by mode. It is powered, connected and ready to be operational.
-  **Status: Connected with issues** - there is an issue with the connection or power - check the working status in Tools and diagnostic → Devices.

INFO

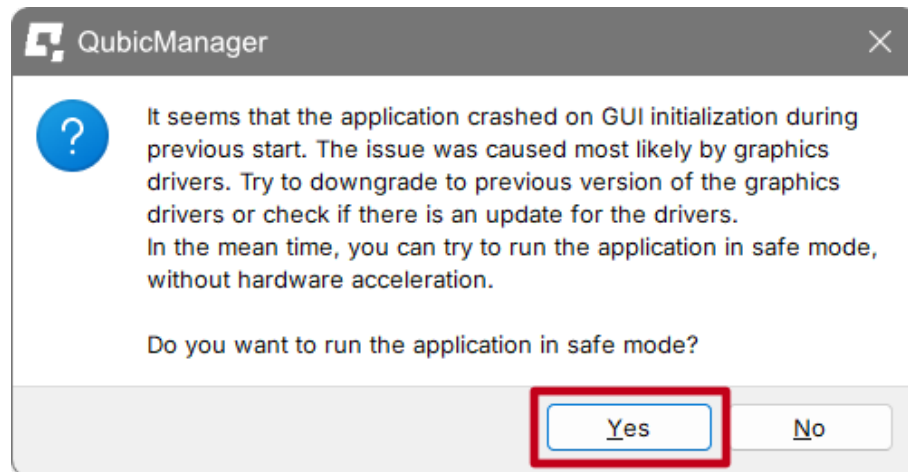
- **ALL** diagnostics and cable connection inspections **MUST** be performed with the device powered **OFF**.
- If any of error statuses persist after performing the troubleshooting steps - please contact technical support.

6.2. COMMON PROBLEMS WITH SOLUTIONS

- **Problem:** QubicManager software crashes on launch with an OpenGL error.

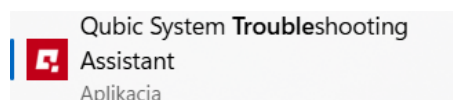
Solution long-term #1: This issue is caused by graphics drivers. Try to downgrade to a previous version of graphics drivers or check for updates.

Solution short-term: To open the app, click **OK** on all the operating system errors. Restart the QubicManager software and you will be presented with a window:

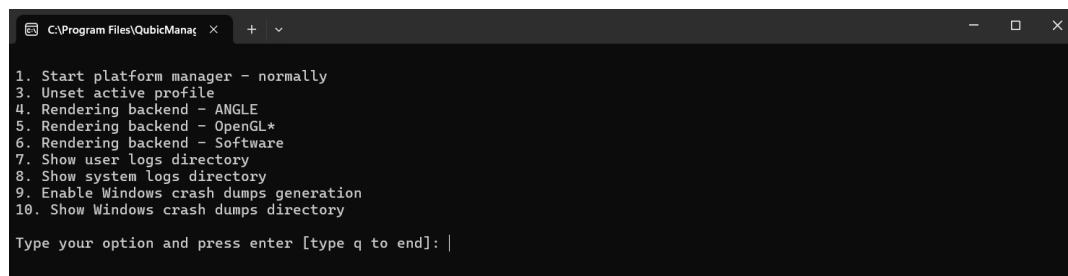


Click "YES" if you want run the application in Safe Mode (it will run a little slower).

Solution long-term #2: In order to overwrite the OpenGL rendering backend permanently, type in **troubleshooting** in Windows search bar. Select **Qubic System Troubleshooting Assistant**.



In the prompt window, type **6** on your keyboard and click **Enter**. Restart the QubicManager application.

A screenshot of a terminal window titled "C:\Program Files\QubicManager". It displays a list of 10 numbered options for troubleshooting. At the bottom, it prompts the user to "Type your option and press enter [type q to end]:".

```
1. Start platform manager - normally
3. Unset active profile
4. Rendering backend - ANGLE
5. Rendering backend - OpenGL*
6. Rendering backend - Software
7. Show user logs directory
8. Show system logs directory
9. Enable Windows crash dumps generation
10. Show Windows crash dumps directory

Type your option and press enter [type q to end]: |
```

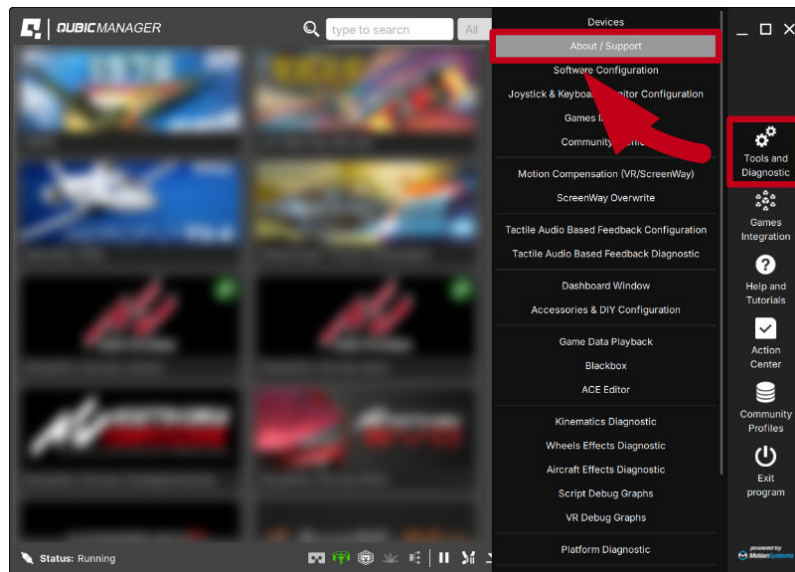
6.3. CREATING A SNAPSHOT

A snapshot is the easiest and fastest way to diagnose a problem. If you send in the zip file generated in the snapshot menu along with a description of the problem, technical support receives all the necessary information about the product and its configuration. It can be then analyzed to provide the best solution.

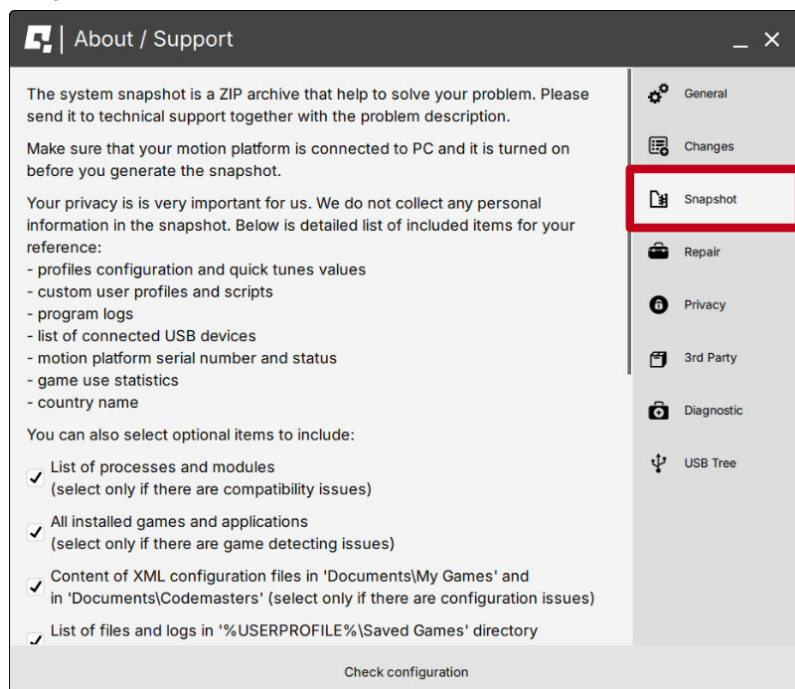
INFO

The QS-S35 and all interconnected Power Cabinets **MUST BE** powered up when creating the snapshot.

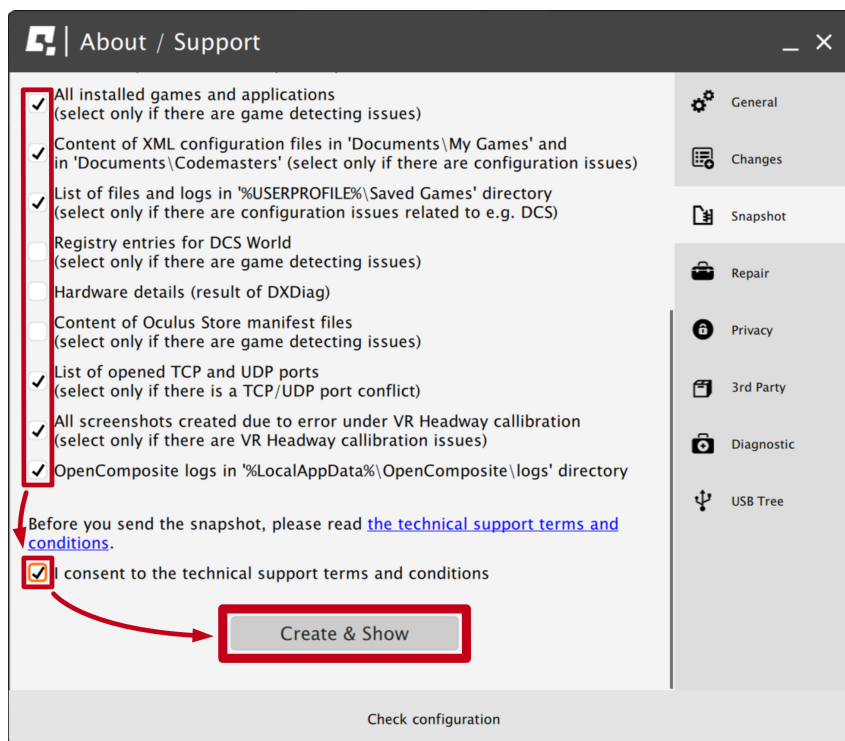
1. Open the main window of the QubicManager application.
2. Go to **Tools and Diagnostic** → **About / Support**.



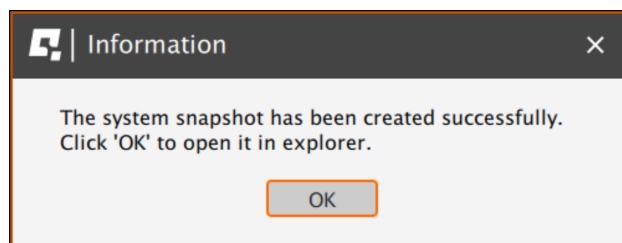
3. Open the **Snapshot** window:



4. Select data that will be included in the snapshot.
5. Scroll down, consent to the technical support terms and conditions and select **Create & Show**:

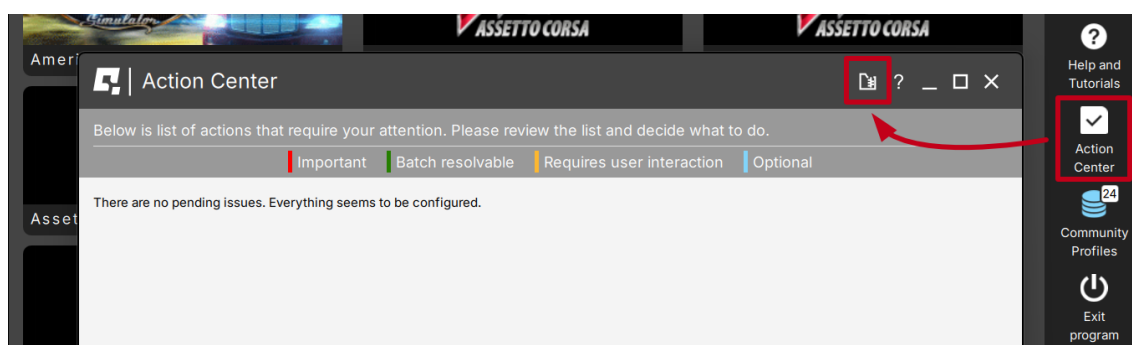


6. The snapshot has been created, click the **OK** button - the folder with the snapshot ZIP file will open.



7. Attach the snapshot ZIP file to your support request.

Alternatively, click Snapshot icon in the top-right corner of the Action Center:



6.4. DISCORD CHANNEL

We strongly recommend joining our discord channel, where our growing community is sharing amazing tips and ideas of how to set up, use and tune the Qubic System products. You can also send questions for our staff or get answers directly from the community.

Join our discord channel by following the invitation link:

QubicSystem.com/Discord



7. ADVANCED APPLICATIONS

INFO

Examples shown in this section describe optional application of external safety and power cut-off devices. If you wish to expand the functionality of your motion system, read the whole section to have a good understanding of how to apply and what functionality to expect. Apply at your own discretion.

WARNING

Motion Lock input is not a SIL/PL (safety integrity level/performance level) rated and **DOES NOT** guarantee safety. If you wish to achieve specific SIL/PL ranking, consider introducing a power cut-off device that is controlled by an external safety relay and cuts off the power to all QS-SB2. Example application of the power cut-off contactor can be found in section **7.3.2** and **7.3.3**.

INFO

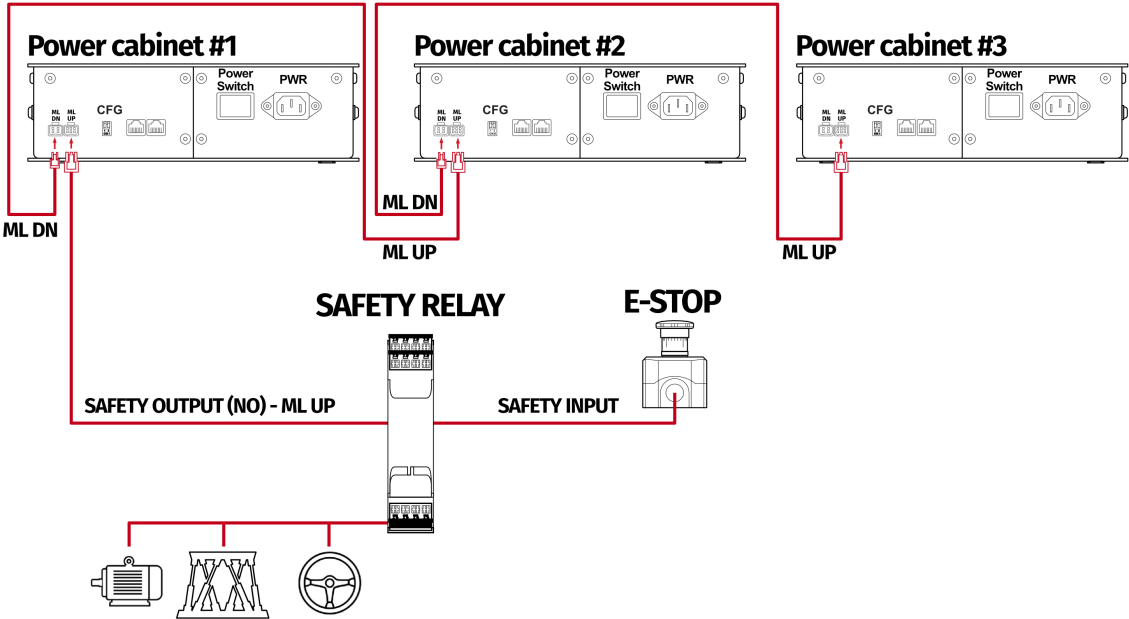
When applying safety relay to the Motion Lock :

- Use input cables according to your safety relay manual.
- Use output cables according to your safety relay manual and cross section no less than 0,75 mm²
- Implementing an additional safety relay requires deactivating Motion Lock cycle procedure at the power up. In order to do that, go to "Tools and diagnostics" → "Devices" → click "Quick codes" next to a "HVFMC200" item → enter code "7c2f47a2" → click "Execute" → wait for the operation to finish → repeat for every HVFMC200 with an unique Serial Number (every second item).

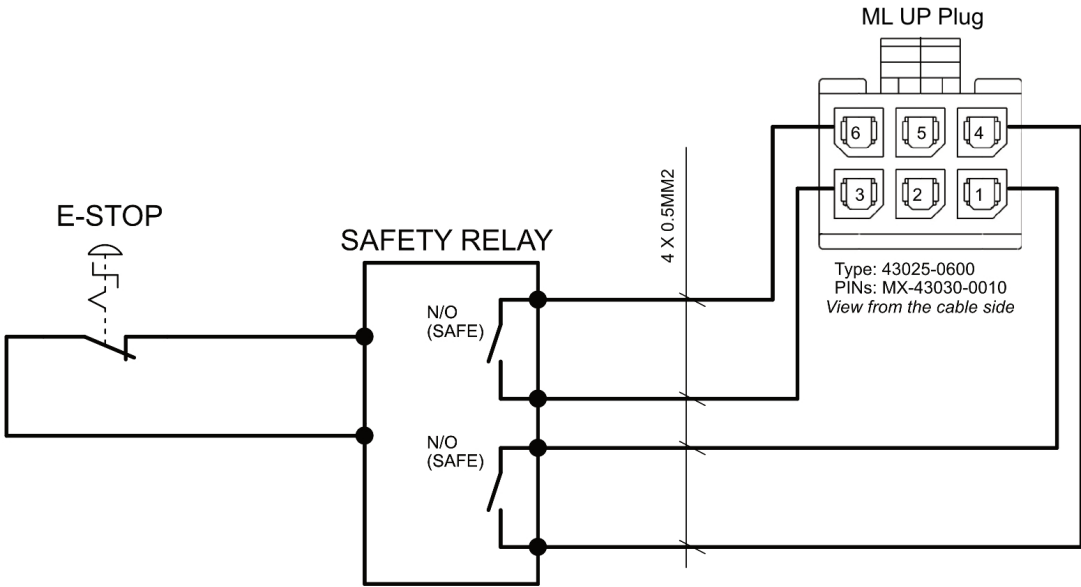
7.1. ADDING ADDITIONAL DEVICES TO THE MOTION LOCK CIRCUIT

If there is necessity to stop other devices, apart from the QS-S35, ML (Motion Lock) and additional user devices can be controlled by safety relay outputs. In the example application, the E-STOP button is connected to the external safety relay. When the E-STOP is triggered, the safety relay will activate the Motion Lock function, which will stop motion of the platform and additional devices.

Example application of single-channel safety relay that controls ML and additional devices:



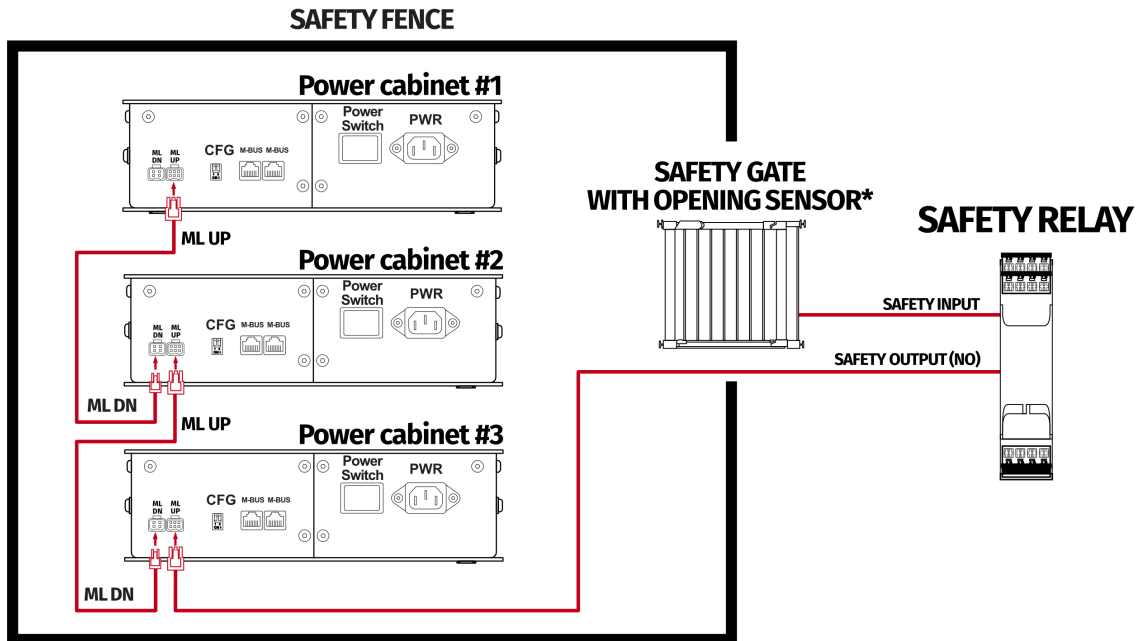
Example wiring diagram of application of one-channel safety relay with E-STOP button:



7.2. IMPLEMENTING THE WORKING ZONE PROTECTION

To protect bystanders from accidental hit from moving parts of the platform, safety gate with opening sensor* can be connected to safety relay input for activating ML function. When the gate opens, the safety relay output activates the ML (Motion Lock) function and stops the motion of the platform.

Example application of safety gate opening sensor:



*Check your safety relay manual for list of applicable sensors

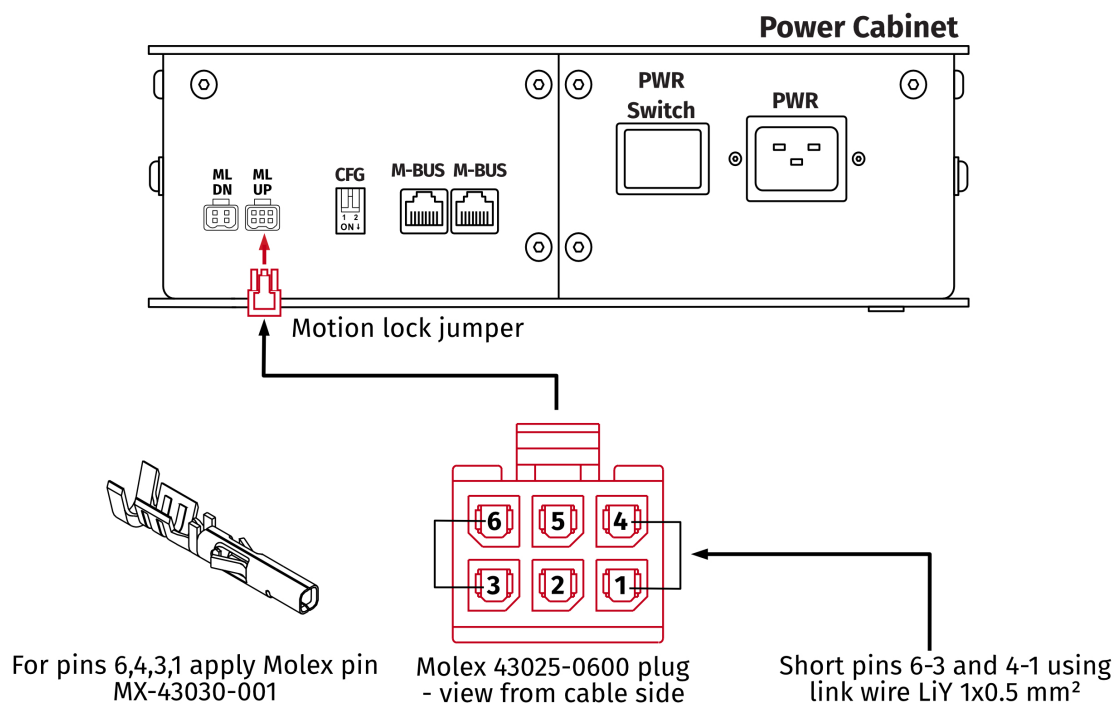
7.3. INCREASING SAFETY LEVEL

WARNING

Modifications of the safety system, involving application of the power line contactors, shall be performed only by somebody competent. A competent person is a qualified and knowledgeable person, who because of their training and experience has the knowledge required to apply those changes. It is user responsibility to commission modification of the safety system to a competent person, experienced with industrial wiring practices, which will be required to undertake the installation. Commissioning shall be undertaken by a trained electrical technician experienced in safety installations.

7.3.1 ASSEMBLING MOTION LOCK JUMPER

To apply solutions which require using power line contactors, Motion Lock connection cables in the QS-SB2 power cabinet needs to be replaced with jumpers. To prepare a jumper, you need to assemble recommended connector as shown below:



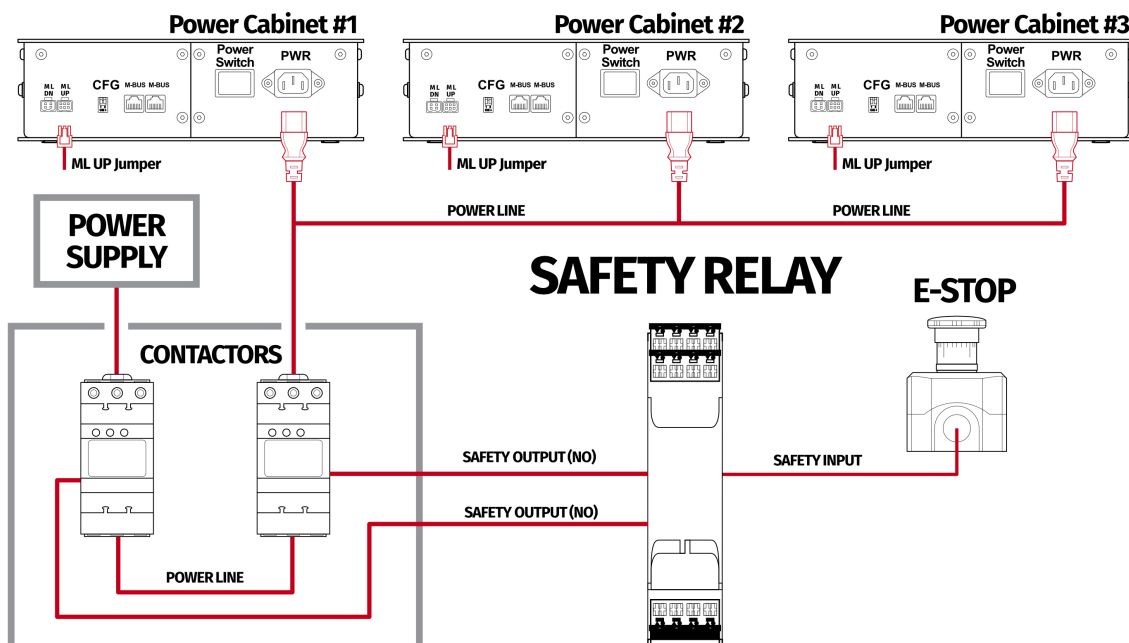
7.3.2 ADDING POWER-CUT CIRCUIT WITH E-STOP BUTTON

If specific SIL/PL rated level needs to be achieved, it might be necessary to install a power cut-off device. Two contactors connected in series and controlled by safety relay can be used to provide or cut-off power line to QS-SB2 power cabinets. When safety function on safety relay input is triggered, a safety relay will switch off the contactors, thus cutting-off the power to the platform. To apply this solution, ML UP connection cables needs to be replaced with prepared jumper as described in section 7.3.1.

INFO

To achieve required safety performance level it is necessary to perform safety risk assessment at user site.

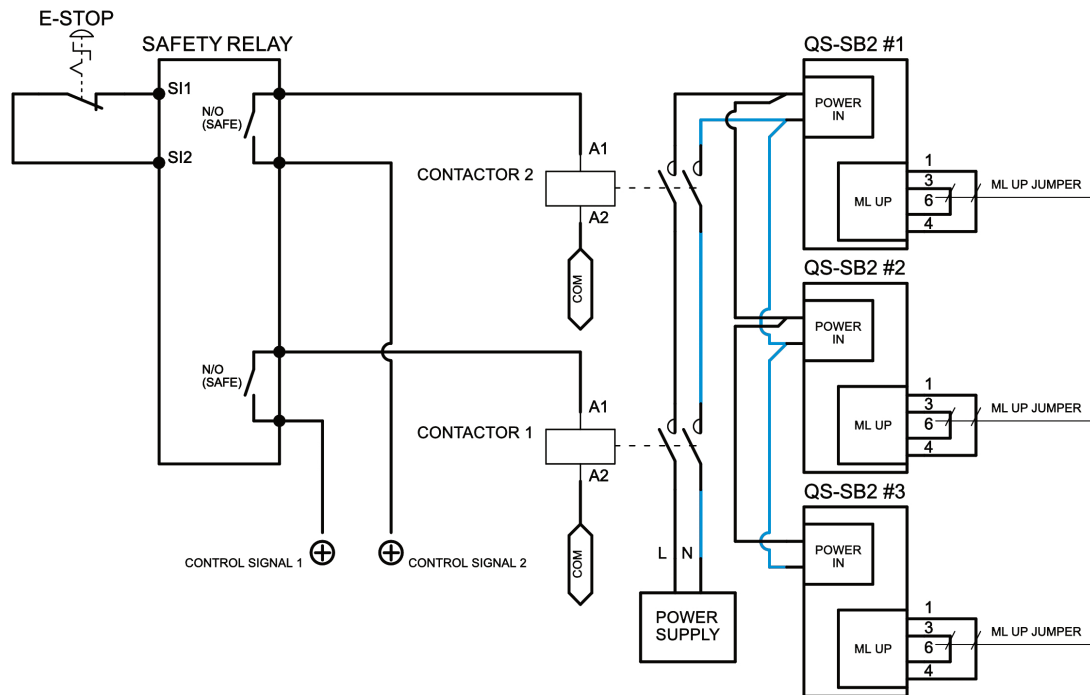
Example application of power line contactors and E-STOP button:



INFO

In order to increase SIL/PL level it's a good practice to apply well-known contactors of two different manufacturers in order to decrease probability of failure resulting from serial production.

Example wiring diagram of application of power line contactors and one-channel safety relay with E-STOP:



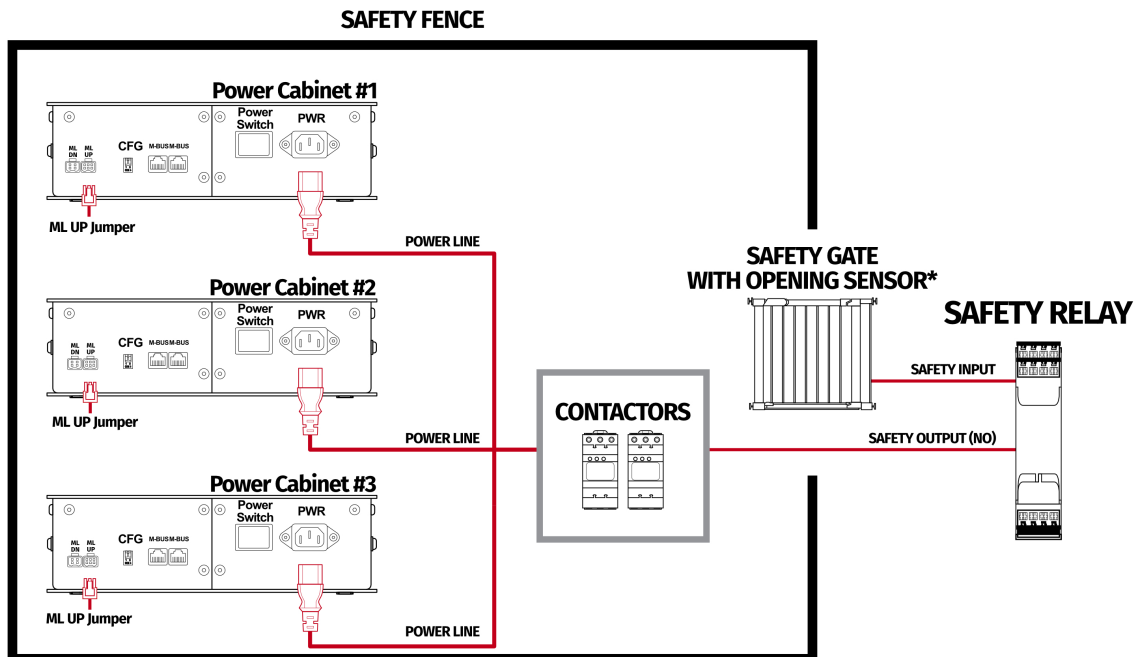
INFO

PE (protective grounding/earthing) connection is omitted for better transparency

7.3.3 IMPLEMENTING THE WORKING ZONE PROTECTION WITH POWER-CUT CIRCUIT

In example application contactors connected in series provide power line to the QS-SB2 power cabinets. When safety function on safety relay input is triggered, a safety relay will switch off the power contactors, thus cutting-off the power to the platform.

Example application of power line contactors with safety gate opening sensor:



*Check your safety relay manual for list of applicable opening sensors

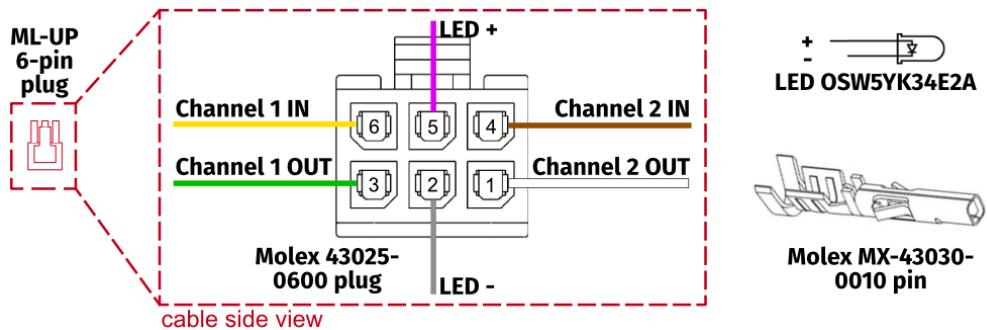
INFO

When applying safety relay and contactors to the power line remember to:

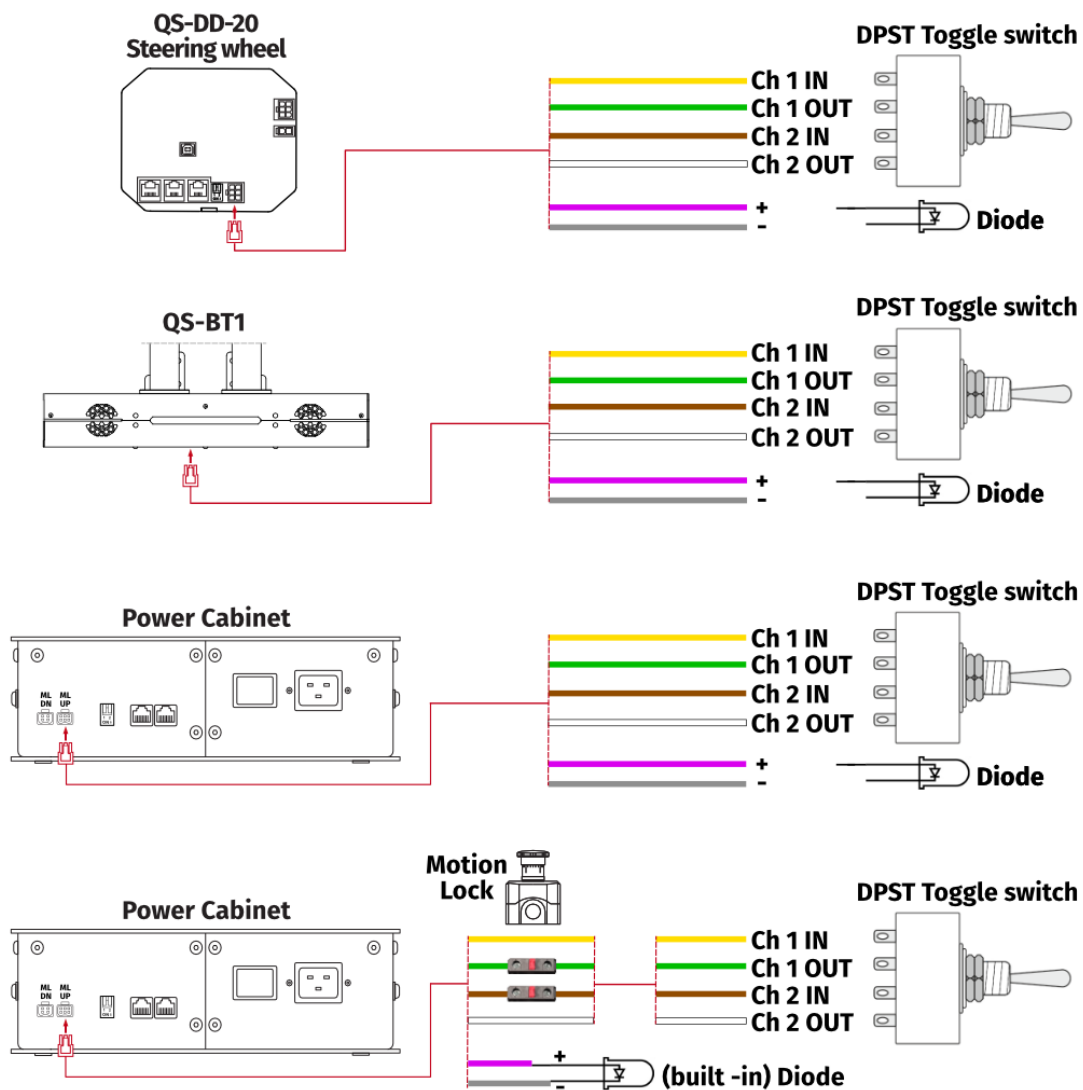
- Use control cables according to your safety relay manual
- Power line cables shall be chosen accordingly to power requirements of motion system. See power requirements of specific motion system.

7.4. IMPLEMENTING NON-FACTORY MOTION LOCK SWITCH

For non-factory Motion Lock plug setup, you must assemble plug and connectors as shown below:



If you want to assemble custom Motion Lock switch or a button box setup (only Double Pole Single Throw switch compatible) using QubicSystem Motion Lock interlink cable, follow the diagrams below:



8. CONFORMITY INFORMATION



The QS-S35 meets the requirements of CE and relevant regulations of the EMC Directive 2014/30/EU.

9. ENVIRONMENTAL IMPACT AND DISPOSAL



DO NOT dispose of this product with standard household waste but drop it off at a collection point for the disposal of Waste Electrical and Electronic Equipment for recycling.

QS-S35 is shipped with wooden cases/cardboard boxes. If the packaging is no longer needed, it can be fully recycled.

QS-S35 is an advanced device and if stored or disposed of incorrectly it could harm the environment or/and other people. When the device is no longer in use it should be disposed in environmental safe manner in compliance with applicable local work and environmental protection regulations. If no other agreement of disposal was concluded, the device shall be dismantled for disposal as follows:

- Metal parts should be scrapped.
- Electric and electronic components should be disposed of in the specialized disposal center.
- Other materials should be sorted and disposed of accordingly to the local law and regulations.

10. LIABILITY DISCLAIMER

If permitted under applicable law, Motion Systems and its subsidiaries disclaim all liability for any damages caused by one or more of the following:

- The product has been modified, opened, or altered.
- Failure to comply with assembly instructions.
- Inappropriate or abusive use, negligence, an accident (an impact - for example).
- Normal wear.

INFO

If permitted under applicable law, Motion Systems and its subsidiaries disclaim all liability for any damages unrelated to the material or manufacturing defect with respect to the product (including, but not limited to, any damages caused directly or indirectly by any software, or by combining the QS-S35 with any unsuitable element or other elements not supplied or not approved by Motion Systems for this product).

11. WARRANTY

Motion Systems warrants to the consumer that this product shall be free from defects in materials and workmanship, for a warranty period which corresponds to the time limit to bring an action for concerning this product.

For commercial customers there is a one (1) year limited warranty, starting on the original date of purchase.

For non-commercial customers there are two (2) years warranty, starting on the original date of purchase.

Within the warranty period, the product will be repaired or replaced free of charge, excluding shipping charges.

This warranty shall not apply:

- If the product has been modified, opened, altered, or has suffered damage as a result of inappropriate or abusive use, negligence, an accident, normal wear, or any other cause unrelated to a material or manufacturing defect (including, but not limited to, combining the QS-S35 with any unsuitable element, including in particular power supplies, chargers, or any other elements not supplied or approved by Motion Systems for this product).
- In the event of failure to comply with the instructions provided by technical support.
- To software (said software being subject to a specific warranty).
- To accessories (cables, cases, for example).
- If the product was sold at public auction or if the product has suffered damage as a result of force majeure: flood, fire, earthquake, storm.

This warranty is non-transferable. No new warranty period commences if the product is repaired or replaced. Your statutory rights towards the seller are not affected or restricted by this warranty. Motion Systems, and their partners are not liable for any indirect, incidental, or punitive damages from use of this product. In case of malfunction during the warranty period immediately contact technical support.

12. COPYRIGHT

Qubic System is a trademark of Motion Systems. All rights reserved.

All the contents in this user manual are the intellectual property of Motion Systems. No part of this manual, including the products and software described in it, shall be modified or translated into any language without the prior written permission of Motion Systems. Specifications and information in this manual are subject to change at any time without obligation to notify any person of such revision or changes. Illustrations are not binding.

INFO

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13. MANUFACTURER INFORMATION

Qubic System is a brand
that belongs to **Motion Systems**

HQ address:
Miedziana 7 Street
55-003 Nadolice Wielkie
Poland



Motion Systems homepage

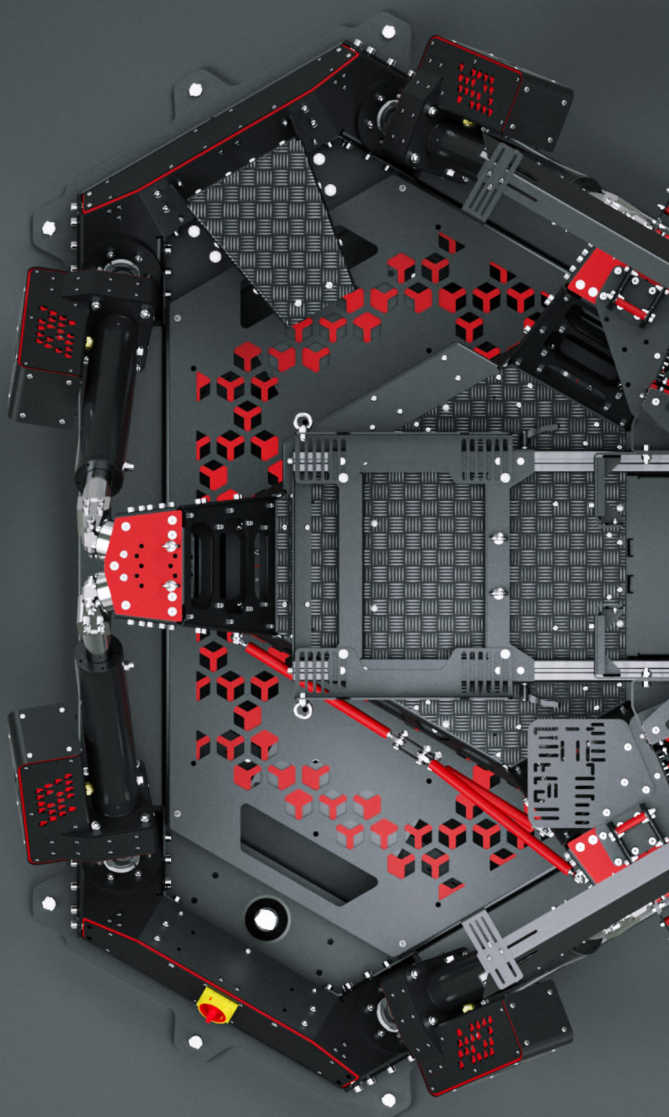


QubicSystem homepage

INFO

In support queries please contact your reseller.

 QUBICSYSTEM



Q5 S35