COSBER

INSTALLATION GUIDE

CAR Suspension Tester

COSBER C-ESC Series

CONTENT

1 General

1.1 Important notes

- First, thank you for choosing this product.
- This manual is included with the product. For the sake of efficient use of the system, users should read the instructions carefully before installation and keep them carefully for reference later and for maintenance purposes.
- The specifications and information mentioned in the instructions are for information purposes only. Your content may be updated periodically without notice.
- This product should only be used for the intended use for which it is specifically designed. It should not be used for other purposes under any circumstances. The manufacturer is not liable for any damage resulting from improper use of the product.
- Please strictly adhere to the "guidelines" and "instructions" during operation and remember that the system must be maintained regularly.
- This product should only be operated and used by specially trained professionals.
- Personnel who are not members of our company are not authorized to disassemble or modify the product or use it for any other purpose beyond the detection function of the system itself without our consent.
- In cases where the product is damaged by human factors or force majeure (earthquake, flood, etc.), the user must take effective remedial action quickly and notify our company as soon as possible.

1.2 Safety

Before starting, suppressing, connecting, and operating the system, read the instructions carefully and strictly adhere to them.

INFORM OTHER USERS AND BYSTANDERS OF DANGERS AND ALWAYS INFORM THEM ABOUT DANGEROUS CONSEQUENCES AND PREVENTIVE MEASURES.

WARNING!

Designation	Probability of occurrence	Severity of risk
Danger	Imminent danger	Injury and death
Warning	Danger	Injury
Hint	Danger	Minor injury

1.2.1 Beware of electric shocks.

1.2.2 Keep away from the rotating rollers! Risk of crushing can lead to injury and death.

1.2.3 Installation Note

All necessary configuration settings and calibration of the sensors should be conducted exclusively by Cosber technical personnel or approved partners of Cosber.

2 Installation of the system

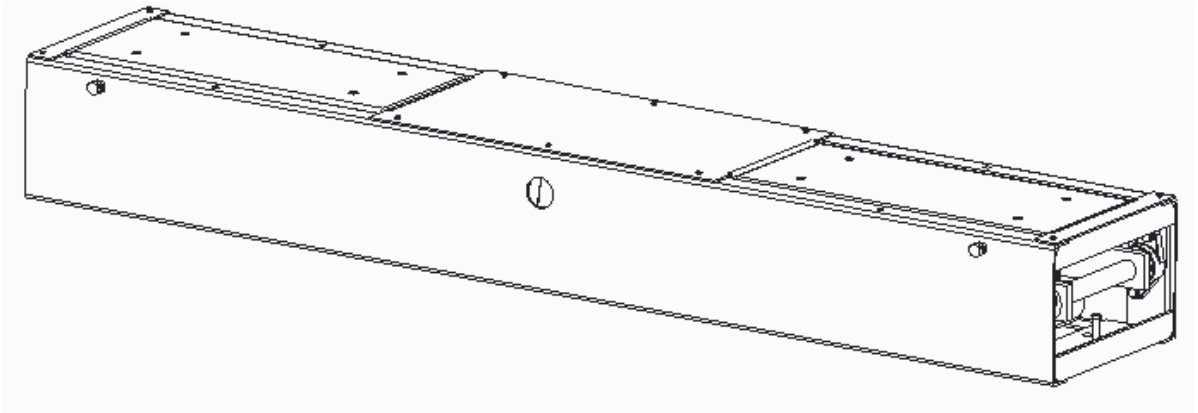
2.1 Preparatory work

2.1.1 Visual inspection of parts

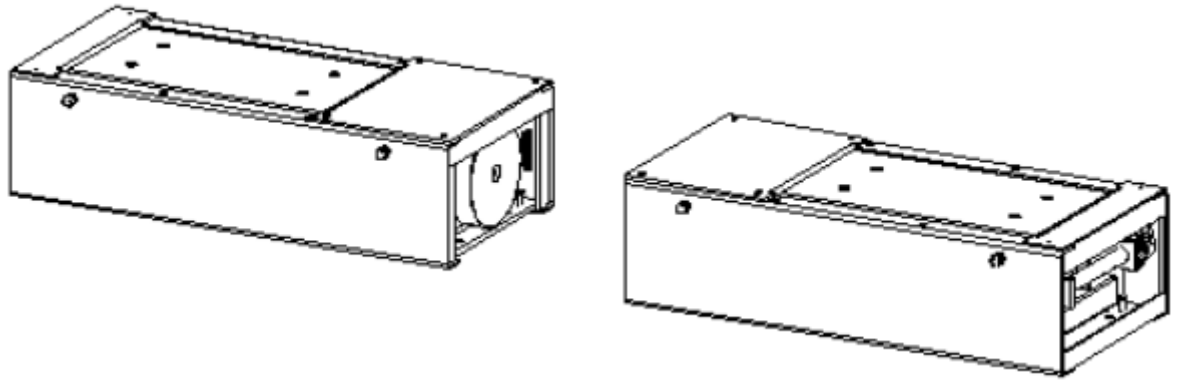
Scope of delivery in the minimum configuration:

- A test bench (including signal cables and power cables for connecting the motor to the control cabinet)

View Type ESC-20

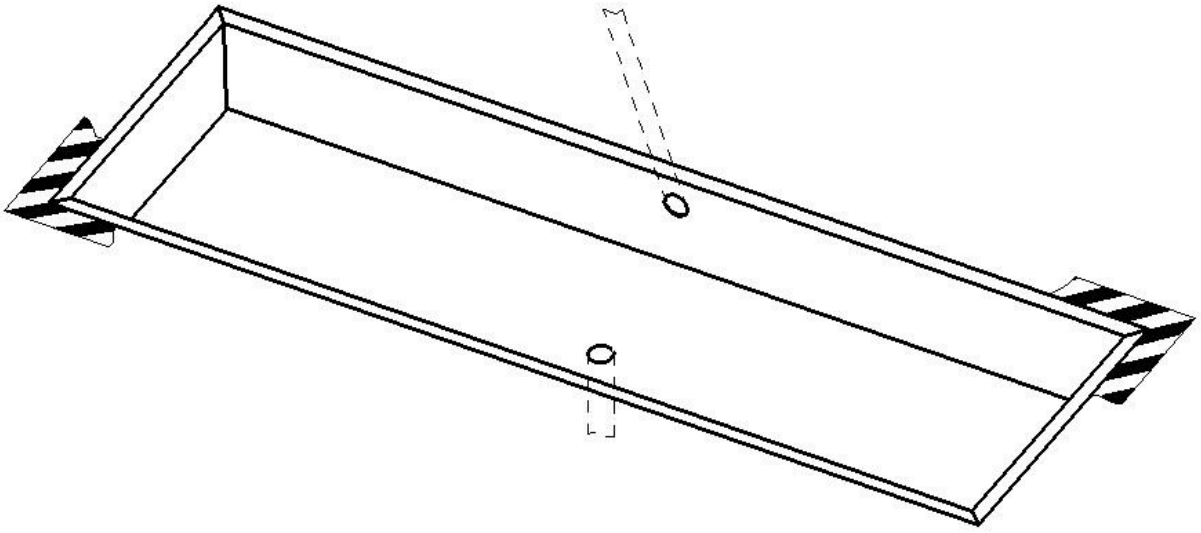


View Type ESC-70

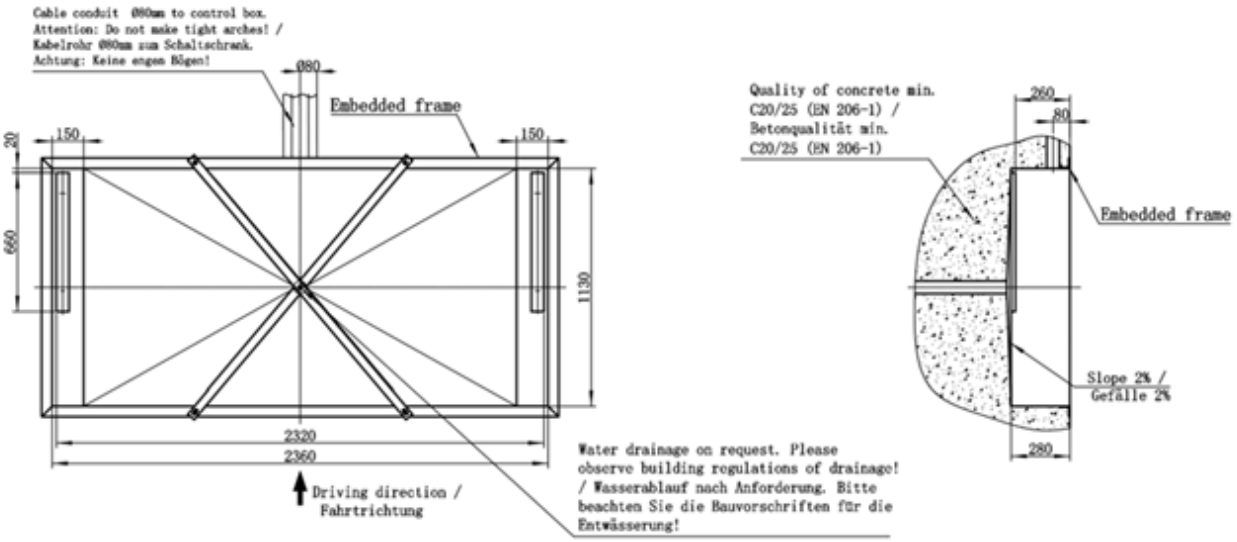


- Check that all parts are present according to the packing list.
- Check that the system is intact in all parts. The user should take effective remedial action quickly and immediately inform our company if any damage occurs due to an error or force majeure (e.g., earthquake, flood, etc.).

2.1.2 Inspection of the pit



- COSBER C-BTC 22 + C-ESC20:

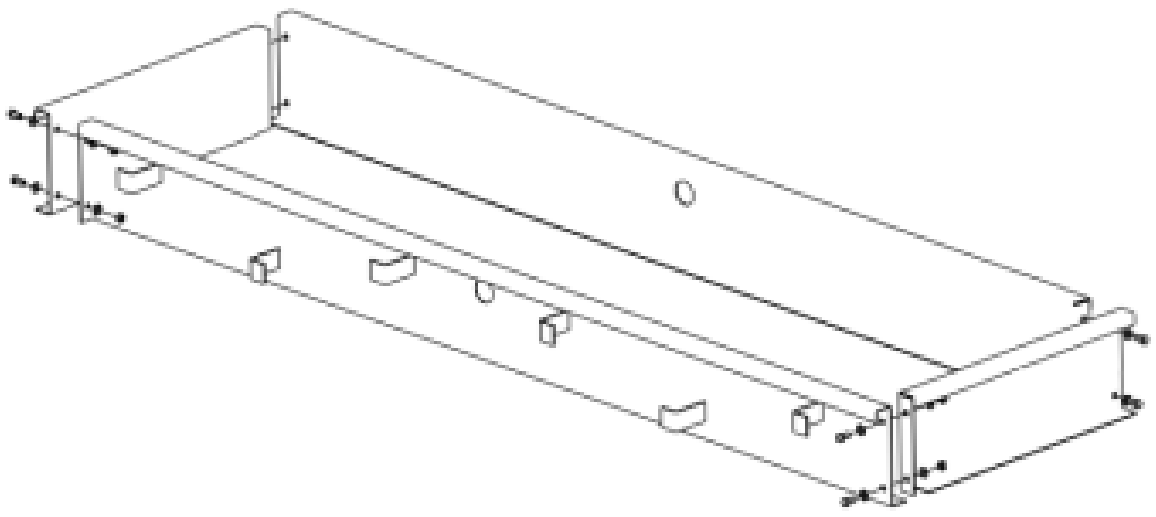


- Check the length, width and depth of the pit, the arrangement of the outlet opening and other dimensions against the specifications in the drawing of the product. The bottom of the pit is flat on both sides, and the middle of the pit has a slope of 2% up to the water drain. The cable duct must not be clogged under any circumstances. The infrastructure and concrete must meet all requirements and be fully cured.

Model	Test plate [mm]	Length [mm]	Width [mm]	Height [mm]
C-ESC20	700 x 300	2.320	420	275
C-ESC70	700 x 400	1.200	550	325

2.1.3 Foundation frame

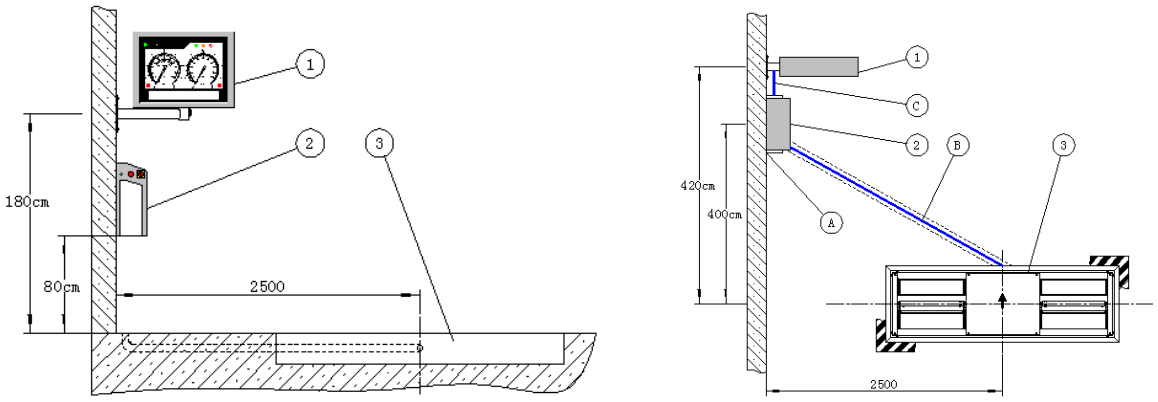
Assembly drawing of foundation frame:



2.1.4 Location

- The system and its components should be assembled in the workshop at the most suitable location.
- Always consider the needs of your customers, local or national regulations, safety requirements, operational or technical specifications and take all requirements into account when deciding on a location and planning them.

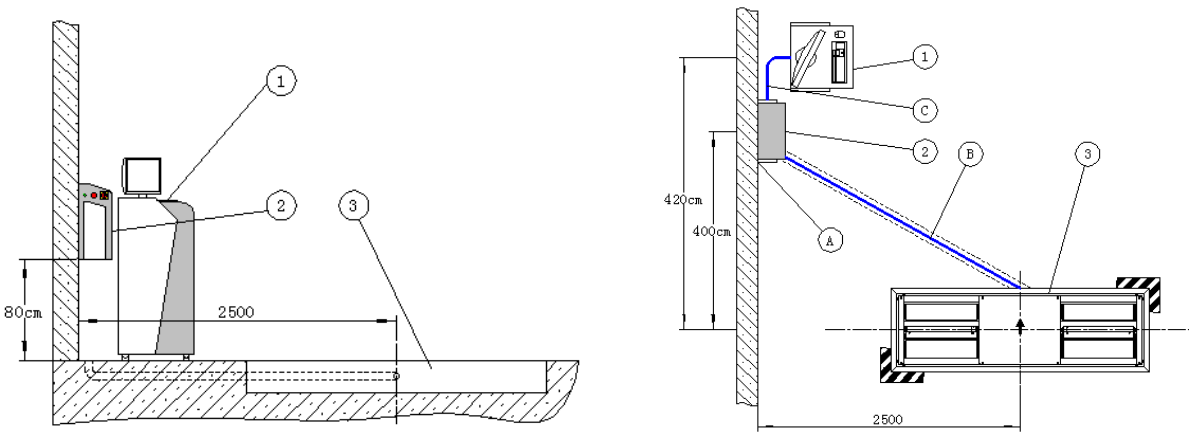
2.1.4.1. Assembly sketch with analogue display



Pos.	Designation
1	Analog Display
2	Switchboard
3	Brake test bench

Pos.	Designation	Connection
A	Power cord	Control cabinet <=> main switch (to be provided by the customer)
B	Power cables, signal cables	Control cabinet <=> brake test bench
C	Signal	Control cabinet <=> analogue display

2.1.4.2. Installation diagram with PC connection



Pos.	Designation
1	PC and PC cabinet (optional)
2	Switchboard
3	Brake test bench

Pos.	Designation	Connection
A	Power cord	Control cabinet <=> main switch (to be provided by the customer)
B	Power cables, signal cables	Control cabinet <=> brake test bench
C	Signal	Control cabinet <=> PC

2.1.5 Requirements for power connection and wiring

WARNING!

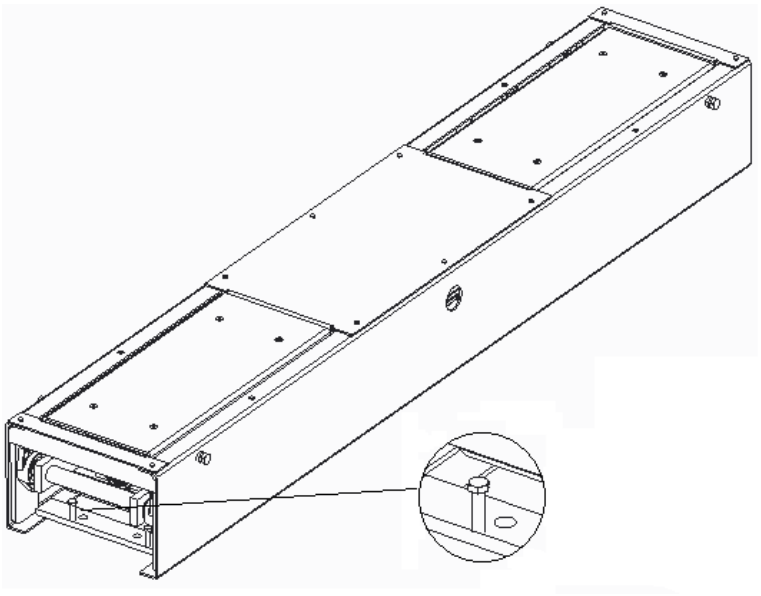
- The main switch must comply with all national standards and safety regulations. It must also meet the requirements of the system in terms of power supply/power consumption.
- The main switch must be earthed in accordance with applicable national standards and safety regulations. Grounding is especially important so that the system can be operated safely and run stably.
- If installed at a location where there are strong voltage fluctuations in the grid, lightning protection or surge protection should also be provided on the power supply.
- Before connecting the power cable, check that the main switch is in the OFF position.
- Personnel must work with insulation and insulated safety shoes during assembly.

2.2 Assembly of the test bench

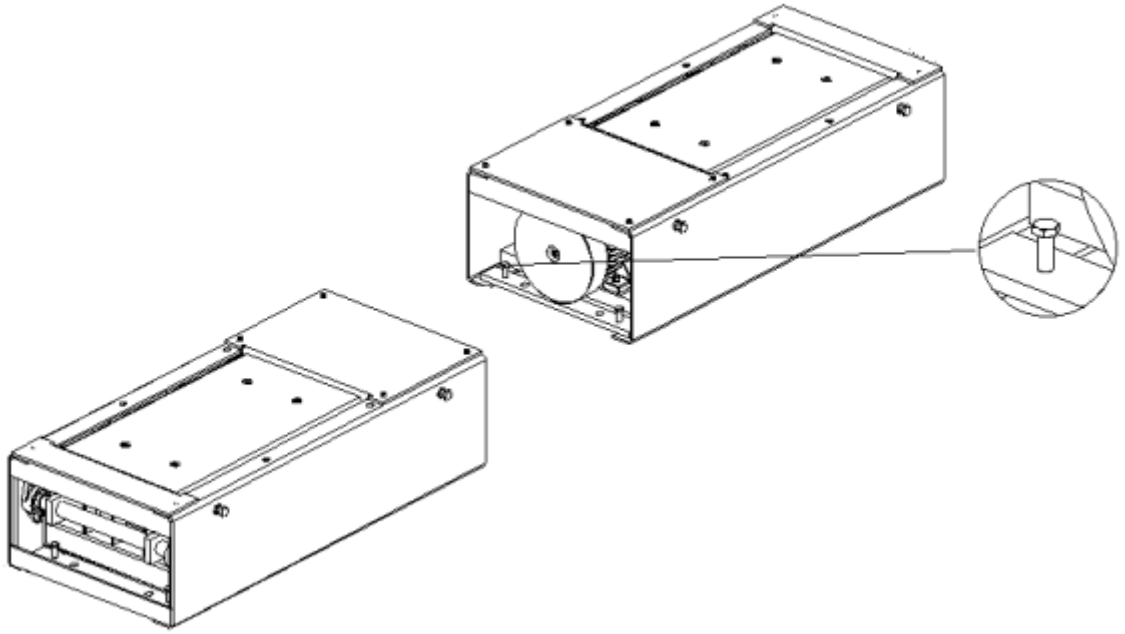
2.2.1 Leveling

- Before installation, check the leveling of the test bench and whether the weighing sensor is placed on the foundation frame.
- If the height of the support plate is not correct, adjust the smaller height deviation by the adjustment screw. After adjusting the height, the lock nut must be tightened on the adjustment screw. In case of larger height deviations, replace the plate.
- After the device is in the foundation pit, the four adjustment screws of the stand must be exposed to the force at the same time.

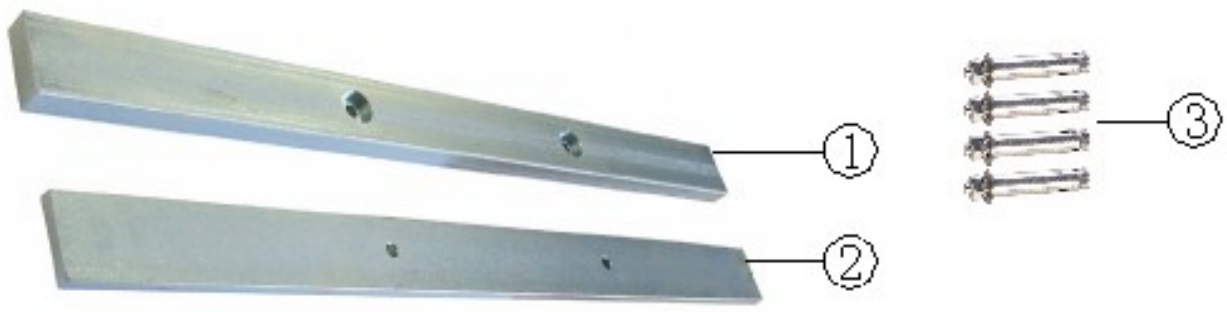
2.2.1.1 Leveling screws on the ESC-20



2.2.1.2 Leveling screws on the ESC-70



2.2.2 Height Compensation Plates (Optional)



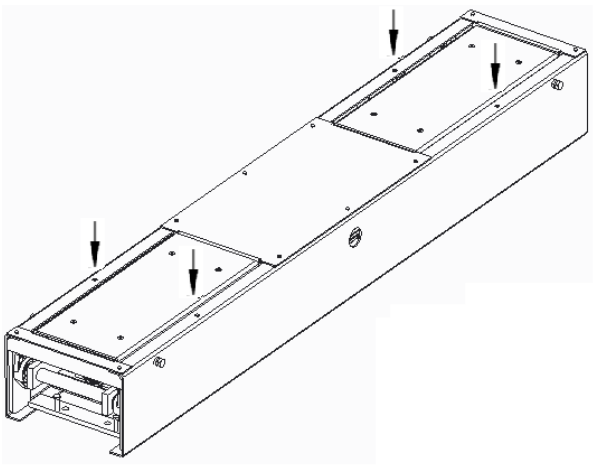
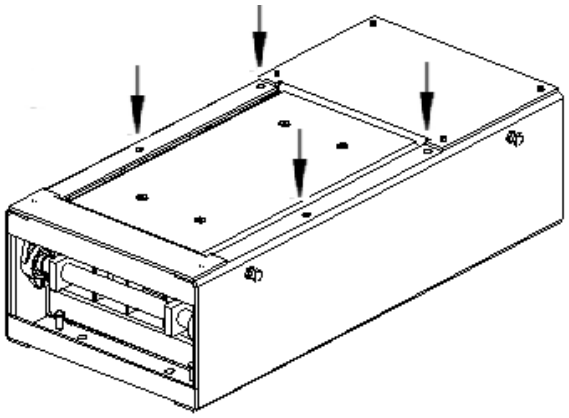
No.	Article	Designation	Quantity
1	20.02.02.0013	Height Compensation Plate 20 mm	2
2	20.02.02.0014	Height compensation plate 10 mm	2
3	70.05.16.1209	Impact armature M12x120	8

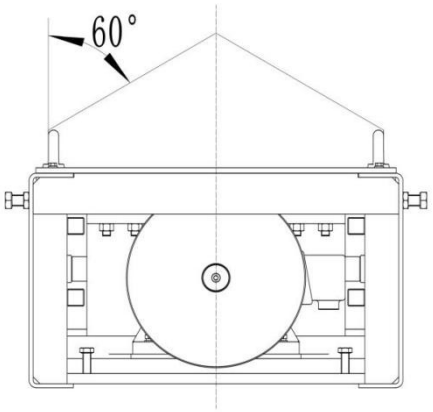
- Before mounting, measure the depth at all four corners of the pit.
- If the depth of the pit is not correct, minor deviations in height can be compensated for with the screw. After adjusting the height, you need to tighten the lock nut on the adjusting screw. Larger differences in height can be compensated for by installing an adjustment plate: 20 mm and 10 mm plates are available and can be used depending on the situation. The adjustment plate can be placed under the adjustment screw and fixed in the pit with the mounting screws.
- After assembly in the pit, the four adjustment screws must be tightened evenly.

2.2.3 Cable duct

- Use the threading tool to pass the brake test bench power cable and signal cable through the cable guide tube and connect the cables to the exit of the control cabinet.
- Due to the limited space available, assemble the threading tool before placing the system in the pit.

2.2.4 Lifting the brake test bench

Lifting points ESC-20	Lifting points ESC-70
	



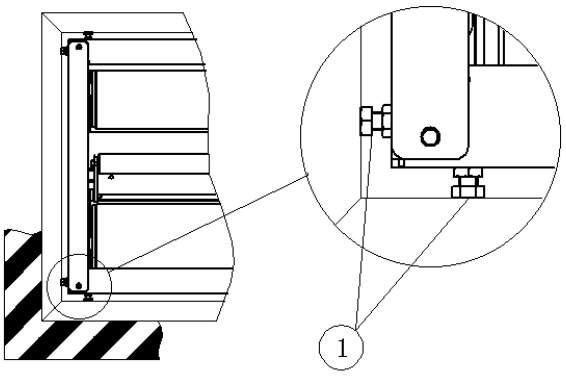
- Properly assemble four M16 eyebolts as shown in the position shown.
- Hook the eyebolt with the lifting rope and hang it on the hoist or forklift arm.
- The load capacity of hoists or forklifts must be more than 1000 kg.
- The inclination of the hoist rope must be less than 60°.
- The lifting operation must meet the requirements for the safe operation of the hoist or forklift.
- Slowly lower the suspension tester into the foundation pit.
- Make a note of the direction of the suspension test bench.
- After lowering the suspension tester, use a leveling instrument to check and adjust the level, raise it back up and adjust it again if necessary.

TAKE CARE OF YOUR SAFETY AT ALL TIMES AND AVOID INJURIES CAUSED BY FALLING OBJECTS DURING THE LIFTING AND TRANSPORT PROCESS!

WARNING!

- Personnel must comply with the applicable requirements for personal protective equipment (PPE) during installation.
- No person may be under the lifted load.

2.2.5 Fixing the Test Bench



- After verifying that the test stand is properly inserted, adjust the eight bolts on the top edge so that there is an even gap between the test stand and the foundation. Then secure the adjustment with locking nuts.
- Use the fastening screws on the lower frame as a template to set the drill holes accordingly and attach the impact anchors.

2.3 Assembly of the control cabinet

See instructions for the brake test bench.

2.4 Mounting the analog display

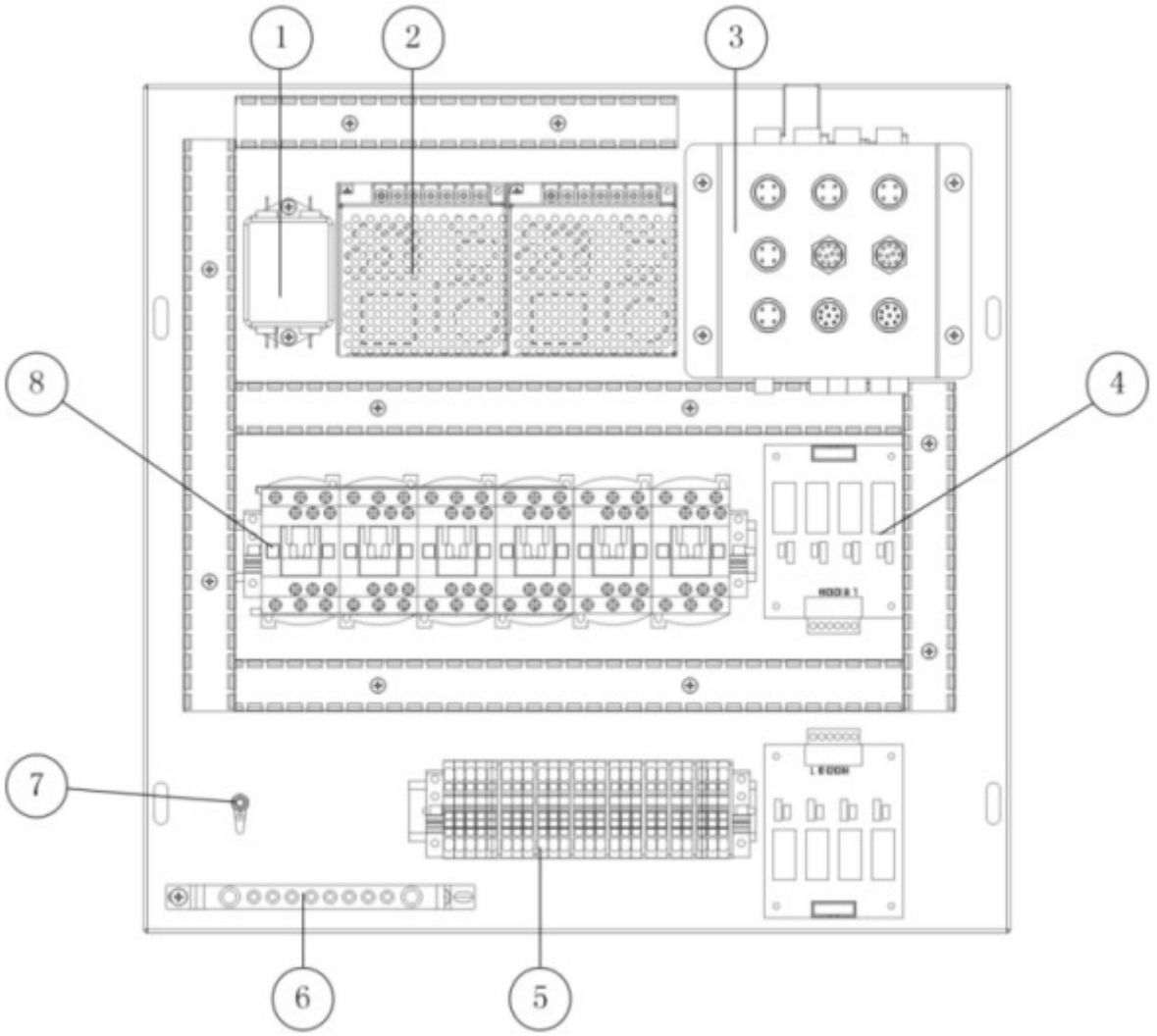
See instructions for the brake test bench.

3 Switchboard

WARNING!

BEFORE CONNECTING THE POWER CABLE, CHECK THAT THE MAIN SWITCH IS IN THE OFF POSITION.

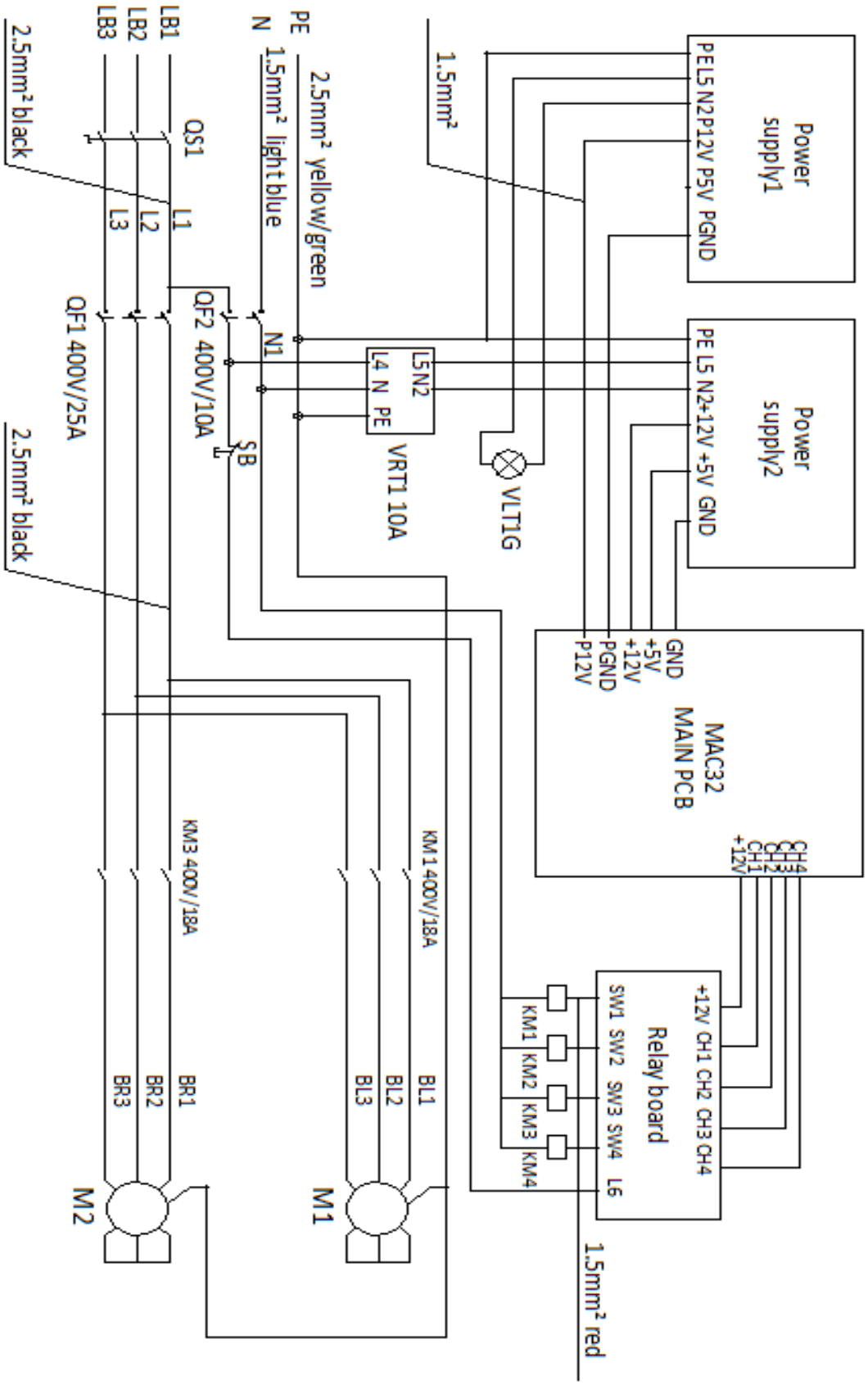
3.1 Control cabinet description.



No.	Description	Function
1	Filter	This filters out interference and harmonics in the power supply
2	Power supply	Powers the main control board, sensors, and other low-voltage components
3	Main Control Board	The main control board controls the motor rotation via the relay board. It also collects the sensor signal, converts it into test data, and displays the data via the instrument cabinet or computer
4	Relay board	Used to control on/off AC contactor
5	Wiring terminal	One connector for the convenience of the external electrical wiring and internal cable of the control cabinet
6	Grounding terminal	Used to connect to the ground
7	Floor Shield	Protect the ground wire

8	AC contactor	The AC contactor controlled by the relay board for the forward and backward rotation of the left and right motors

3.2 Schematic



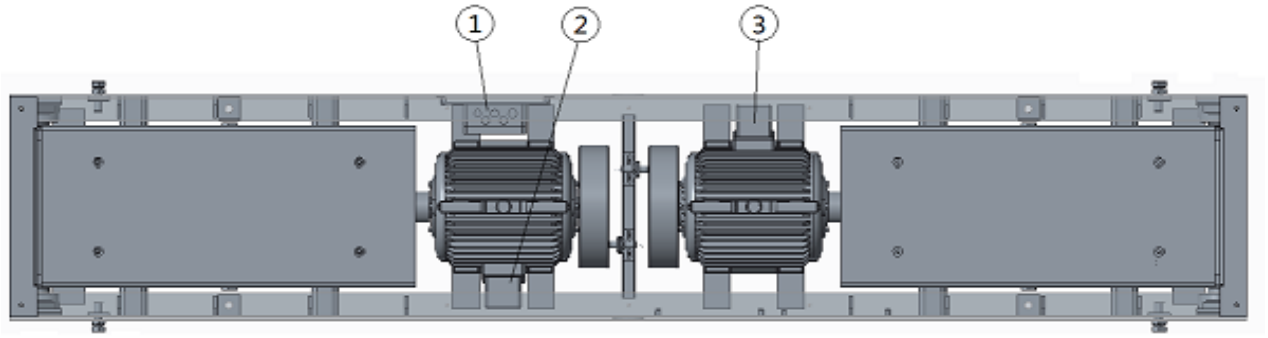
3.3 Electrical connections

3.3.1 Main power cable connection

See instructions for the brake test bench.

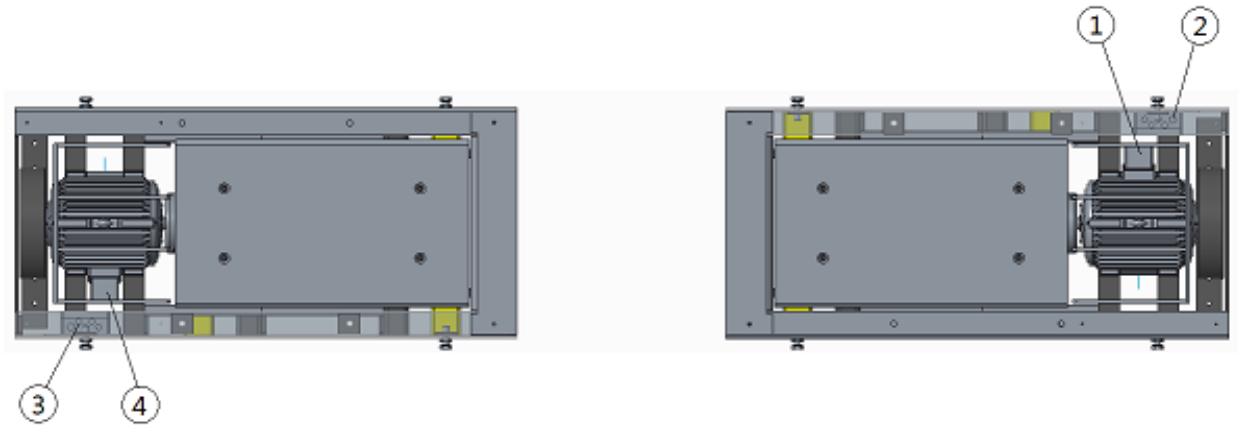
3.3.2 Connection of the test bench

3.3.2.1. Cable Description Test Bench ESC-20



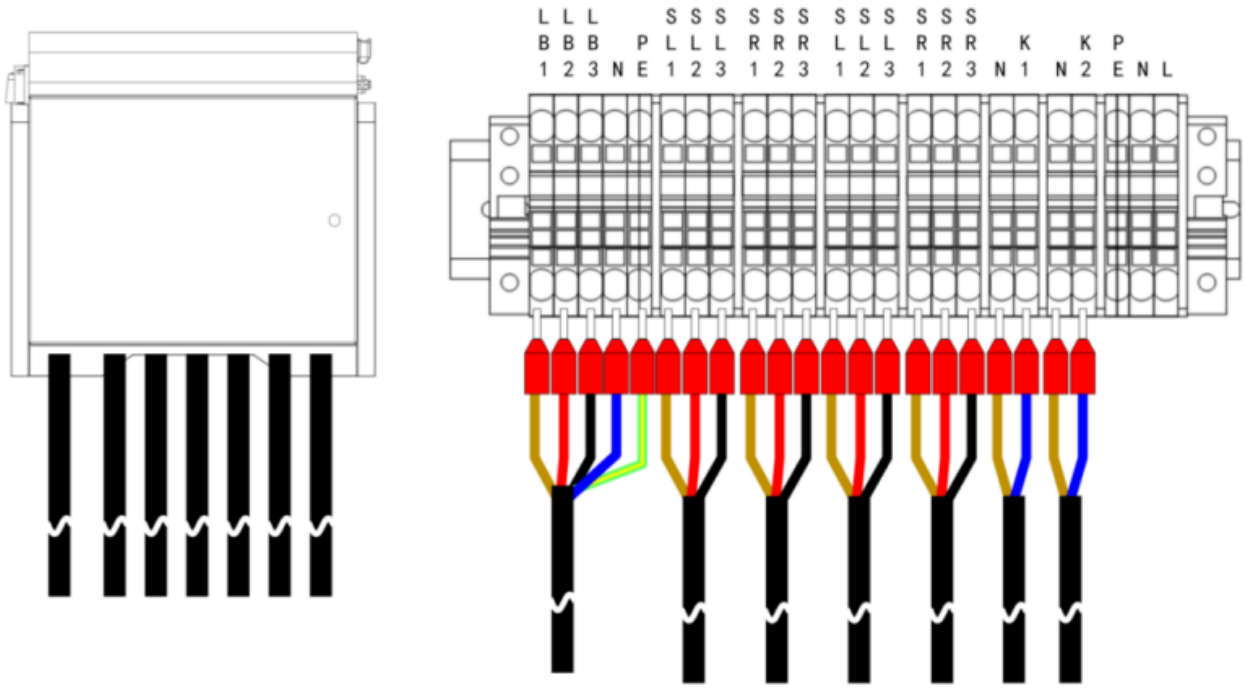
No.	Description	Management
1	Gear motor left	Power cable motor left
2	Junction box	Signal
3	Gear motor right	Power cable motor right

3.3.2.2. Cable Description Test Bench ESC-70



No.	Description	Management
1	Gear motor right	Power cable motor right
2	Junction box right	Signal cable right
3	Gear motor left	Power cable motor left
4	Junction box left	Signal cable left

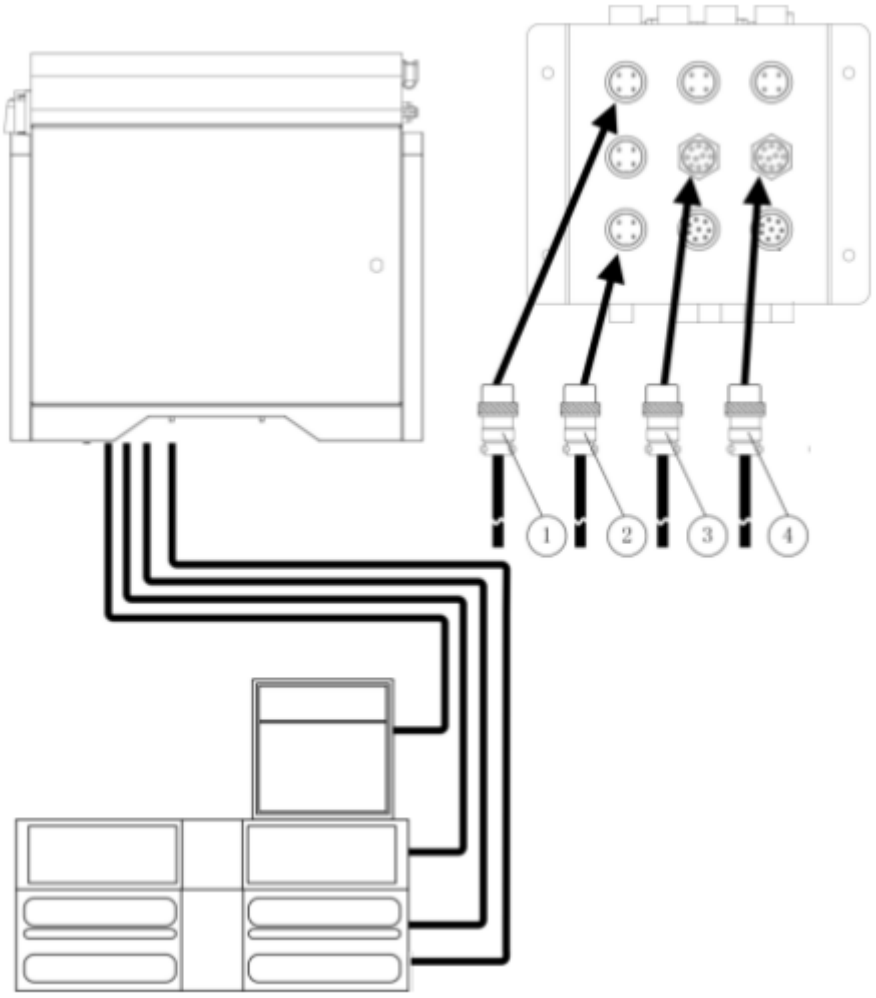
3.3.2.3. Connection of the motor power cables



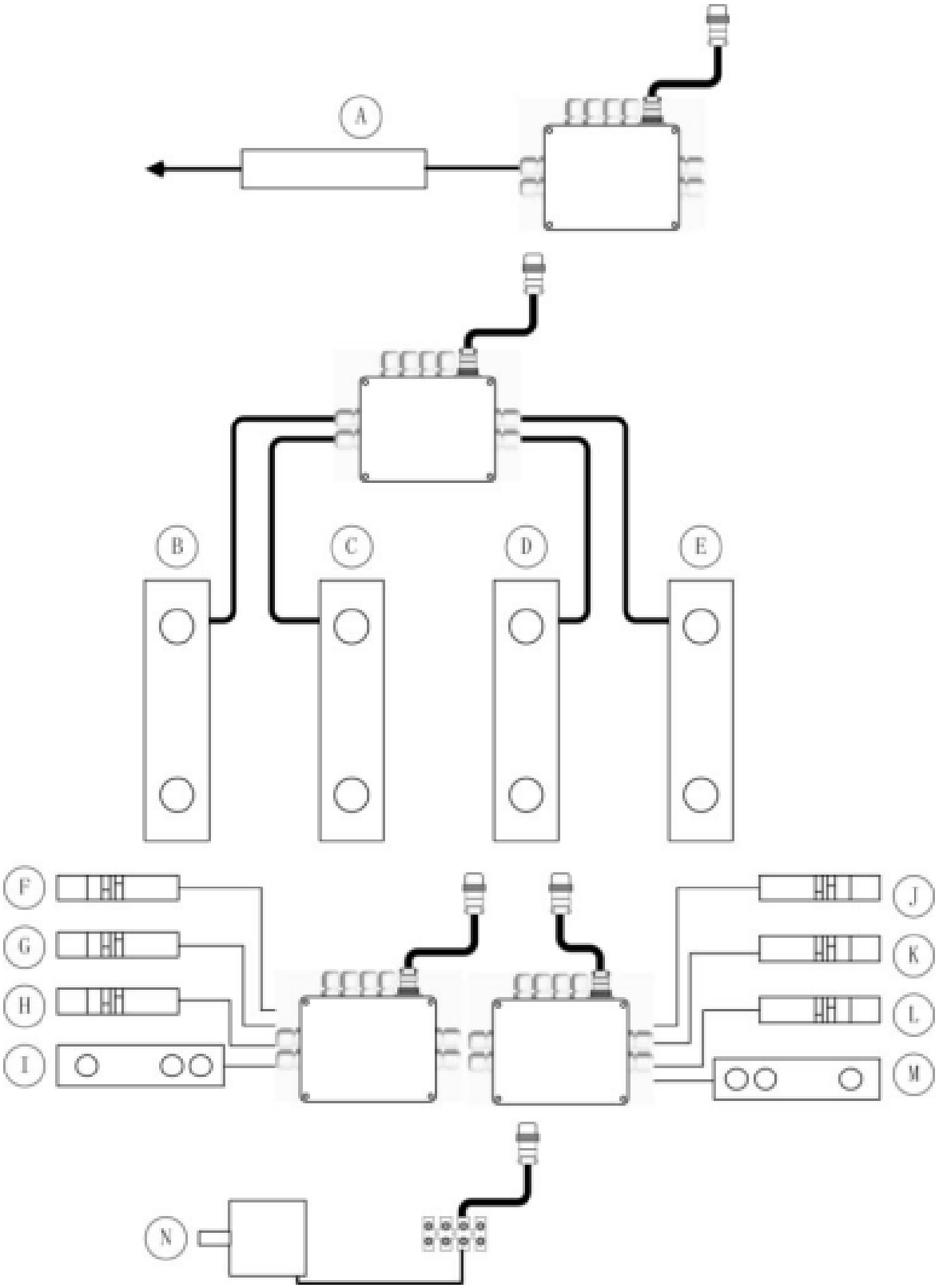
No.	Description	Connection
1	Power supply	LB1 – LB2 – LB3 – N – PE
2	Left brake motor power cable	PE – BL1 – BL2 – BL3
3	Right brake motor power cable	PE – BR1 – BR2 – BR3
4	Power cable of the left suspension motor	PE – SL1 – SL2 – SL3
5	Right suspension motor power cable	PE – SR1 – SR2 – SR3
6	Move Up (Lock)	N – K1
7	Down (Unlock)	N – K2

- Connect the labeled left motor cable one after the other: SL1 – SL2 – SL3 – PE.
- Connect the labeled right motor cable one after the other: SR1 – SR2 – SR3 – PE.
- Connect the yellow-green ground wire to the ground terminal.

3.3.2.4. Connection of the signal cables



No.	Description	Connection
1	Signal cable for track plate	Track plate
2	Signal line for landing gear tester	Axle load
3	Signal cable for brake test bench left	Brake Left
4	Signal cable for brake test bench on the right	Brake Right



No.	Name	Signal
A	Weight sensor	5V
		AIN 7
		GND
B	Left Pressure Sensor 1	+12V
		AIN 1
		CAL
		GND
C	Left Pressure Sensor 2	+12V
		AIN 1
		CAL
		GND
D	Right Pressure Sensor 1	+12V
		AIN 3
		CAL
		GND
E	Right Pressure Sensor 2	+12V
		AIN 3
		CAL
		GND
F	Proximity switch left 1	12V
		SIN 0
G	Proximity switch left 2	12V
		SIG 2
H	Proximity switch left 3	12V
		SIG 4
I	Left force sensor	12V
		AIN 0
		CAL
		GND
J	Right Proximity Switch 1	12V
		SIG 1
K	Right Proximity Switch 2	12V
		SIG 3
L	Right Proximity Switch 3	12V
		SIG 5
M	Right force sensor	12V
		AIN 2
		CAL
		GND
N	Encoders	12V
		SIG 4

		SIG 5
		GND

3.3.3 Connecting to a PC

See instructions brake test bench

4 Start

4.1 Installation checklist

- Before starting up the system for the first time, check that all assembly work has been completed properly.
- Before checking the wiring, check that the main switch is in the OFF position.

1) Check that the system and all accessories are fully assembled.
2) Check if there are suitable disconnectors at the site.
3) Check that all components are properly assembled.
4) Check that the motor power cable of the test bench is properly connected to the terminal in the control cabinet.
5) Verify that the test bench signal cable is properly connected to the motherboard in the control cabinet.
6) Check that the main power cable of the control cabinet is properly connected to the disconnect switch.
7) Check whether the protective conductor is connected.
8) Check that the serial cable on the main control panel of the control cabinet is properly connected to the USB port of the PC.
9) Check that the power cable of the analog display is properly connected to the terminal in the control cabinet.
10) Verify that the analog display serial signal cable is properly connected to the motherboard in the control cabinet.

4.2 Check at startup.

WARNING!

BEWARE OF ELECTRIC SHOCK WHEN SWITCHING ON THE MAIN SWITCH. IF AN ELECTRIC SHOCK OR ELECTRICAL LEAKAGE CURRENT OCCURS, YOU MUST DISCONNECT THE POWER SWITCH IMMEDIATELY.

1) Turn on the power switch on the control cabinet and check whether the operating light appears.

2) Turn on the 3-phase disconnect switch and the single-phase disconnect switch in the control cabinet and check whether the internal circuit in the control cabinet is operating normally.

3) When you turn on the power, make sure that all the lights on the analog display light up, the pointers are moving, and the display is showing something. After starting, the pointer returns to its original position, the operating light appears, and the other lights go out.

4) Start the software program and check if the engine rotation is correct.

5) Start the software program and check that the system signal is correct.

ATTENTION!

ENSURE THAT ALL COMPONENTS ARE CORRECTLY ASSEMBLED AND PROPERLY WIRED BEFORE USING THE EQUIPMENT.

5 Software system

See instructions for the brake test bench.

6 Notes

Cosber GmbH
Lise-Meitner-Str. 3
82152 Krailling
GERMANY

Phone: +49 (0) 89 262 07 66-00
Fax: +49 (0) 89 262 07 66-60
E-mail: info@cosber.de
Web: www.cosber.de