

BALYO

Summary of Periodic Maintenance Operations - SC10 / 15 ROBOT

| No. | Maintenance Operations | Who | Every Shift | Weekly | 1000 hours/ 1 year | Every 1000 hours /Every year |
|---|---|-----|-------------|--------|-----------------------|---------------------------------|
| | | | 5 min | 10 min | 1 hour | 1 hour |
| Estimation of Time Required | | | | | | |
| 1 | Check the operation of the "Emergency Stops" on the Movebox (x4) of the navigation module and the Truck Emergency Stop | TU | • | • | • | • |
| 2 | Check the operation of the front, side and rear safety scanners and the curtain laser scanner | TU | • | • | • | • |
| 3 | Check the operation of the tiller in manual mode. | TU | • | • | • | • |
| 4 | Check for correct operation of the radio /WiFi communication module (option). | TU | • | • | • | • |
| 5 | Check operation of the single tone horn (option) and the multi-tone horn (beeper). | TU | • | • | • | • |
| 6 | Check the operation of the blinker indicator lights (x2) and the Blue Spot | TU | • | • | • | • |
| 7 | Check the state (wires correctly aligned) and the operation of the Draw wire Encoders (both lift and shift) - for forks Linear displacement. If necessary, adjust as recommended to avoid rubbing and premature wear of the wire in all fork carriage positions, as indicated in the Periodic maintenance handbook. | TSE | | • | • | • |
| 8 | Clean the laser sensor windows - navigation, front safety, side safety, and rear safety and curtain laser scanners - with dry air and a lint-free cloth as recommended | TSE | | • | • | • |
| 9 | Clean the sensor for pallet presence detection as recommended | TSE | | • | • | • |
| 10 | Check that the mobile rear laser slides correctly on its guide rail and that the rail is clean | TSE | | • | • | • |
| 11 | Check visually the state of all navigation module mountings | TSE | | • | • | • |
| 12 | Inspect the Robot for the presence of all warning and prohibition sticker labels | TSE | | • | • | • |
| Open the front panel of the technical compartment of the pallet truck to carry out some of the following operations: | | | | | | |
| 13 | Check that all connectors are correctly connected (and fastened as necessary) in the technical compartment. | TSE | | | • | • |
| 14 | Check visually the state of the cabling (marks on the cables and insulators damaged), cable ties and other fasteners in the technical compartment. | TSE | | | • | • |
| Disassemble the rear protection plate to carry out some of the following inspections: | | | | | | |
| 15 | Check that all connectors at the rear of the robot are correctly connected (as recommended in the Periodic maintenance booklet). | TSE | | | • | • |
| 16 | Check visually the state of the cabling (marks on the cables and insulators damaged), cable ties and other fasteners of the rear modules. | TSE | | | • | • |
| Disassemble the middle laser / MoveBox calculator casing and perform the following operations: | | | | | | |
| 17 | Clean the MoveBox calculator heat sink and fan using a small vacuum cleaner | TSE | | | • | • |
| 18 | Check the state of the relay and of the radio (if installed) | TSE | | | • | • |
| 19 | Inspect the state of the other Electronic Components present in the MoveBox calculator housing | TSE | | | • | • |
| 20 | Check the connectors of the MoveBox calculator are correctly connected (see document "PR-EXP-022") | TSE | | | • | • |
| 21 | Check that the connectors of the Safety Controller module and the RS422-485 / Ethernet Device Server are correctly connected. | TSE | | | • | • |
| 22 | Check that all other connectors of the of the calculator housing are correctly connected. | TSE | | | • | • |
| 23 | Check visually the connections at the rear of the touchscreen. (The masking plate at the rear of the screen must be disassembled.) | TSE | | | • | • |
| 24 | Check the connection of the connectors of the emergency stops and the blinker light indicators are correctly connected (as recommended). (The casing of the housings on the MoveBox mounting frame must be disassembled.) | TSE | | | • | • |
| 25 | Check visually the state of the cabling (no marks on wires, cables and insulators damaged), cable ties and other fasteners - components listed in operations 17 to 24 inclusive | TSE | | | • | • |
| 26 | Check the tightening torque of all relevant fastening elements of the navigation system - components listed in operations 17 to 22 inclusive | TSE | | | • | • |

TU = Trained User TSE = Trained Service Engineer

• Operation to be performed

Recording periodic maintenance of the SC10 / 15 ROBOT

Date : _____ Number of operation hours: _____

Name of operator / engineer: _____

Tick the operations performed

| | | |
|-----------------|---|--|
| 1 | Check the operation of the "Emergency Stops" on the Movebox (x4) of the navigation module and the Truck Emergency Stop | |
| 2 | Check the operation of the front, side and rear safety scanners and the curtain laser scanner | |
| 3 | Check the operation of the tiller in manual mode. | |
| 4 | Check for correct operation of the radio /WiFi communication module (option). | |
| 5 | Check operation of the single tone horn (option) and the multi-tone horn (beeper). | |
| 6 | Check the operation of the blinker indicator lights (x2) and the Blue Spot | |
| 7 | Check the state (wires correctly aligned) and the operation of the Draw wire Encoders (both lift and shift) - for forks Linear displacement. If necessary, adjust as recommended to avoid rubbing and premature wear of the wire in all fork carriage positions, as indicated in the Periodic maintenance handbook. | |
| 8 | Clean the laser sensor windows - navigation, front safety, side safety, and rear safety and curtain laser scanners - with dry air and a lint-free cloth as recommended | |
| 9 | Clean the sensor for pallet presence detection as recommended | |
| 10 | Check that the mobile rear laser slides correctly on its guide rail and that the rail is clean | |
| 11 | Check visually the state of all navigation module mountings | |
| 12 | Inspect the Robot for the presence of all warning and prohibition sticker labels | |
| 13 | Check that all connectors are correctly connected (and fastened as necessary) in the technical compartment. | |
| 14 | Check visually the state of the cabling (marks on the cables and insulators damaged), cable ties and other fasteners in the technical compartment. | |
| 15 | Check that all connectors at the rear of the robot are correctly connected (as recommended in the Preventive maintenance booklet). | |
| 16 | Check visually the state of the cabling (marks on the cables and insulators damaged), cable ties and other fasteners of the rear modules. | |
| 17 | Clean the MoveBox calculator heat sink and fan using a small vacuum cleaner | |
| 18 | Check the state of the relay and of the radio (if installed) | |
| 19 | Inspect the state of the other Electronic Components present in the MoveBox calculator housing | |
| 20 | Check the connectors of the MoveBox calculator are correctly connected (see document "PR-EXP-022") | |
| 21 | Check that the connectors of the Safety Controller module and the RS422-485 / Ethernet Device Server are correctly connected. | |
| 22 | Check that all other connectors of the of the calculator housing are correctly connected. | |
| 23 | Check visually the connections at the rear of the touchscreen. (The masking plate at the rear of the screen must be disassembled.) | |
| 24 | Check the connection of the connectors of the emergency stops and the blinker light indicators are correctly connected (as recommended). (The casing of the housings on the MoveBox mounting frame must be disassembled.) | |
| 25 | Check visually the state of the cabling (no marks on wires, cables and insulators damaged), cable ties and other fasteners - components listed in operations 17 to 24 inclusive | |
| 26 | Check the tightening torque of all relevant fastening elements of the navigation system - components listed in operations 17 to 22 inclusive | |
| Comments | | |
| | | |



Record of weekly preventive maintenance

| | | | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Date: | Date: | Date: | Date: | Date: | Date: |
| Number of hours: | Number of hours: | Number of hours: | Number of hours: | Number of hours: | Number of hours: |
| Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: |
| Signature: | Signature: | Signature: | Signature: | Signature: | Signature: |
| Date: | Date: | Date: | Date: | Date: | Date: |
| Number of hours: | Number of hours: | Number of hours: | Number of hours: | Number of hours: | Number of hours: |
| Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: |
| Signature: | Signature: | Signature: | Signature: | Signature: | Signature: |
| Date: | Date: | Date: | Date: | Date: | Date: |
| Number of hours: | Number of hours: | Number of hours: | Number of hours: | Number of hours: | Number of hours: |
| Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: |
| Signature: | Signature: | Signature: | Signature: | Signature: | Signature: |

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|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Date: | Date: | Date: | Date: | Date: | Date: |
| Number of hours: | Number of hours: | Number of hours: | Number of hours: | Number of hours: | Number of hours: |
| Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: | Maintenance performed by: |
| Signature: | Signature: | Signature: | Signature: | Signature: | Signature: |