Trouble shooter for the robot

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| --- | --- |
| Fine motion |  |
| Junction |  |
| Miss |  |
| Package Handling |  |
| Shelf |  |
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Table : List of keywords

# Robot misses return junction on the shelf.

Keywords:

Shelf,Junction,Miss

Following a package handling by fine motion

Keywords

Fine motion

Package Handling

# I have Errors.

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| Error | Reason | What can I do |
| 0x7110 | exp\_right\_wheel\_encoder\_mismatch Two encoder measure the wheel position: The motor encoder and the wheel encoder.  The wheel encoder is the basis for all the navigation.  The difference between the encoders should be small (backlash only, as the transmission ration is known)  A mismatch normally shows a fault in the wheel encoder | You can still take the robot to safety in manual modes (e.g. using BIT)  You must the wheel encoder for automatic motion.  Hint:  In most cases the issue is wiring |
| 0x7111 | exp\_left\_wheel\_encoder\_mismatch  See 0x7110 above, but for the left wheel | See 0x7110 above |
| 0x7139 | exp\_home\_verify\_failed\_rsteer  After homing, right steer motor motion and potentiometer indication did not correlate  When the robot wakes up it does [homing](#PotHoming). Following a small motion, the potentiometer increment is compared to the encoder increment. Too big difference tells that either the potentiometer or the encoder is defective.  If after an initial motion the potentiometer increment and the encoder increment compare correctly, the homing is “verified” and no more comparisons are made | The defect may be:   * Defective potentiometer, mostly its wiring. * Reversed connection of potentiometer feed and return wires. * Wrong gear ratio set to a GRT driver. * Steering Encoder type not configured correctly.   Work around:  Use the ***Cheats*** dialog  Use the “Work with defective potentiometer” dialog, fill the values for actual axes angles, and press “set to robot & ignore potentiometer”, then you can restart the motors using the ***BIT*** dialog |
| 0x713a | exp\_home\_verify\_failed\_lsteer  After homing, left steer motor motion and potentiometer indication did not correlate  See 0x7139 above for detail |  |
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# I want to test

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| I want to | Keywords | What to do |
| Catch why a should-be-automatic robot goes to manual state |  | Run the script:  >> ProgTestGoToManual  Before the mission. You can disconnect the CAN cable.  If problem occurs, recorder shall be automatically launched.  Use the script:  >>FetchTestGoToManual  To retrieve the records.  Results in  AnaProg2Manual.mat |
| I get communication errors or motor errors from the manipulator on package handling |  | Run the script:  >> ProgManipRunRecord  Before the suspect package handling. You must have a connected CAN cable.  Recorder shall launch immediately.  After 30 seconds  Use the script:  >>FetchManipRunRecord  To retrieve the records.  Results in  AnaManipRunRecord.mat |

# I want to do

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| I want to | Keywords | What to do |
| Dynamixel 12V RS485 communication is down, robot stays in PRE\_OPERATIONAL, I want to operate the robot motors |  | Enter the “Cheats” dialog, check  “Allow Motion with undetermined shoulder width” |
| Robot should ignore its wheel arm in mission, allowing programs that do not specify track width |  | Turn robot on, it will report having wheelarm.  Verify state is ground-good-to-go.  Enter the “Cheats” dialog, check  “Robot shall ignore wheel arm”.  Note:  BIT will continue to show that wheel-arm exists |
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# Help topics

## Homing an encoder using a potentiometer

Some axes (steering, neck) use [incremental encoders](#IncrementalEncoder) for position measurement.

The axis position is [measured absolutely](#AbsoluteMeasurement) by a [potentiometer](#Potentiometer).

The potentiometer is not good for real-time control: the resolution is low, and it is too noisy, so it must be averaged too much time for useful accuracy.

On power up, the potentiometer reads the yet stationary absolute wheel position; this reading serves to initialize the position of the incremental encoder.

Once initialized, the encoder readings are absolute, and its readings are suitable for real-time control.

# Definitions

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| Absolute measurement | A measurement with respect to an absolute reference.  For example: The absolute measure of steering is the angle between the steering axis and its position when the robot travels straight. |
| Incremental encoder | Encoder that measures only the distance passed since its powering on.  For the reading to tell you the actual position, you must know the initial location. |
| Potentiometer | A resistive sensor, with a sliding resistance divider.  https://en.wikipedia.org/wiki/Potentiometer |
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# Known problems.

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| On wheel arm release, the time allowed for leader convergence is enough for dynamixel to fault overload, so dynamixel faults before time is out | Reduce timeout? Not sure, because on time out a fatal occurs anyway |
| No automatic restart of dynamixel on overload problem | Quite a shitty integration & coding, not sure it is worth the effort |
| Correct wakeup after dynamixel reboot | Not sure it is verified with the Olivier error handling |
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