

6 Troubleshooting

6-1 POOR CUTTING RESULT

| NO. | CHECK POINT | ACTION | REFERENCE | OUTLINE |
|-----|---|-----------------------------|---|--|
| 1 | Cutting condition | Explain to user | User's Manual | |
| 2 | Cutter is not fixed correctly | Explain to user | User's Manual | |
| 3 | Workpiece is not fixed correctly | Explain to user | User's Manual | |
| 4 | Cutter is worn out or cracked | Replace the cutter | | |
| 5 | Foreign substance is put on the Gears (X/Y/Z-axis) | Remove foreign substance | | |
| 6 | Wrong Spindle Belt tension | Refix the Spindle Motor | [3-1 SPINDLE MOTOR REPLACEMENT] | |
| 7 | Backlash of the Gears (X/Y/Z-axis) | Refix the Motor | [3-2, 3-3, 3-4 Each MOTOR / BELT REPLACEMENT] | |
| 8 | Damage on the Gears (X/Y/Z-axis) | Replace the Gear | [3-2, 3-3, 3-4 Each MOTOR / BELT REPLACEMENT] | |
| 9 | Wrong Belt tension | Adjust Belt tension | [3-2, 3-3, 3-4 Each MOTOR / BELT REPLACEMENT] | |
| 10 | Motor is broken (X/Y/Z-axis, Spindle) | Replace the Motor | [3-2, 3-3, 3-4 Each MOTOR / BELT REPLACEMENT] | |
| 11 | Damage on the Spindle Belt | Replace the Spindle Belt | [3-1 SPINDLE MOTOR REPLACEMENT] | Referential replacement cycle of the Spindle Belt is 2000 hours. |
| 12 | Spindle Bearing is worn out | Replace the Spindle Bearing | [3-6 SPINDLE BEARING REPLACEMENT] | |
| 13 | Life of the Spindle Unit / Cutting dusts go into the Spindle Unit | Replace the Spindle Unit | | Referential replacement cycle of the Spindle Unit is 2000 hours. |

6-2 NOISE

[CHECK POINT]

| STATUS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|------------------------|---|---|---|---|---|---|---|---|---|----|----|
| Cutting is in progress | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Spindle is rotating | | ○ | ○ | ○ | | ○ | ○ | ○ | | | |
| Initial Movement | | | | | | | | | ○ | ○ | ○ |

[OUTLINE]

| No. | CHECK POINT | ACTION | REFERENCE | OUTLINE |
|-----|-----------------------------------|---|------------------------------------|--|
| 1 | Improper Engraving Conditions | Reset the Engraving Conditions properly | | Severe engraving conditions can make big noise. |
| 2 | Cutter is not installed correctly | Refix the cutter | | When the Cutter is not installed correctly, the engraving result becomes unstable. |
| 3 | Spindle Unit is loose. | Refix the Spindle Unit | | When the Spindle Unit is not fixed properly, the engraving result is not stable. |
| 4 | Life of the Spindle Belt | Replace the Spindle Belt | | Life time of the Spindle Belt is 2,000 hours. When it becomes close to the life, the Spindle Belt flutters and it affects the revolution of the Spindle Unit and causes the engraving result to be poor. |
| 5 | Too much load on the Z-axis | Refix the Z Motor | [3-4 Z MOTOR / Z BELT REPLACEMENT] | When there is too much load on the Z-axis, the Up/Down movement can not be done smoothly and it affects the engraving result. |
| 6 | Life of the Spindle Unit | Replace the Spindle Unit | | Life time of the Spindle Unit is 2,000 hours. When it becomes close to the life, the engraving result is poor. |
| 7 | Life of the Spindle Motor | Replace the Spindle Motor | [3-1 SPINDLE MOTOR REPLACEMENT] | Life time of the Spindle Motor is 6,000 hours. When it becomes close to the life, the engraving result is poor. |
| 8 | Life of the Spindle Bearing | Replace the Spindle Bearing | [3-6 SPINDLE BEARING REPLACEMENT] | The worn bearing could cause unstable revolution and so, revolution sound varies or noise occurs. |
| 9 | X/Y/Z Drive Gear is dirty | Clean the Drive Gear | | When the Drive Gear gets dirty by foreign substances or oil, it doesn't mesh the Motor and makes some noise. |
| 10 | X/Y/Z Drive Gear cracks | Replace the Drive Gear | | When the Drive Gear cracks, it doesn't mesh the Motor and makes some noise. |
| 11 | X/Y/Z Slide Shaft is dirty | Clean or replace the X/Y/Z Slide Shaft | | When the Drive Shaft is dirty or the foreign substances adhere to the bearing, the movement cannot be done smoothly and it results in making some noise. |

6-3 SPINDLE REVOLUTION PROBLEM (Unstable revolution/Not move at all)

[CHECK POINT]

| STATUS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------------------------|---|---|---|---|---|---|---|---|---|----|
| Cutting is in progress | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Spindle is rotating | | ○ | ○ | | | | | ○ | ○ | ○ |

[OUTLINE]

| No. | CHECK POINT | ACTION | REFERENCE | OUTLINE |
|-----|--|---|---------------------------------|---|
| 1 | Improper Engraving Conditions | Reset the Engraving Conditions properly | | When setting up the engraving speed too fast or cut-in depth too deep, the load on the S Motor increases and [MODELING] lamp blinks. Reset the engraving conditions properly for the material. |
| 2 | Lack of the Spindle warming time | Warm up the Spindle | | The grease in the spindle bearing become high viscous under the cryogenic temperature or soon after purchasing. Without warming up, it causes unstable spindle revolution and [MODELING] lamp might blink. |
| 3 | Spindle Belt slips | Refix the Spindle Motor Base | | If the tension of the Spindle Belt is not proper, the Spindle Belt slips or the Spindle Motor runs idle. |
| 4 | Life of the Spindle Belt | Replace the Spindle Belt | | Life time of the Spindle Belt is 2,000 hours. When it becomes close to the life, the Spindle Belt flutters and it affects the revolution of the Spindle Unit and causes the engraving result to be poor. |
| 5 | Rotational resistance of the Spindle Unit | Replace the Spindle Unit | | If you feel the spindle unit cannot rotate smoothly when you rotate it by your hand, the foreign substances may be remaining in the spindle bearing. The spindle cannot rotate smoothly when the foreign substances get lodged on the working part. |
| 6 | Life of the Spindle Unit | Replace the Spindle Unit | | Life time of the Spindle Unit is 2,000 hours. When it becomes close to the life, the engraving result is poor. |
| 7 | Life of the Spindle Motor | Replace the Spindle Motor | [3-1 SPINDLE MOTOR REPLACEMENT] | Life time of the Spindle Motor is 6,000 hours. When it becomes close to the life, the engraving result is poor. |
| 8 | Bad contact between the Spindle Motor and Main Board | Re-connect the cables | | The spindle doesn't rotate if there is a bad contact in the cables between the Spindle Motor and the Main Board. |
| 9 | Cut-line in the X Flat Cable | Replace the X Flat Cable | | The spindle doesn't rotate if there is a cut-line in the cables between the Spindle Motor and the Main Board. |
| 10 | Spindle Driver IC is broken | Replace the Main Board | [3-5 MAIN BOARD REPLACEMENT] | If there is a short-circuit between the Spindle Motor and the Main Board, or an overload occurs due to the cutter lodged on the workpiece, the IC on the Main board brakes and the spindle doesn't rotate. |

6-4 DOES NOT START CUTTING

| NO. | CHECK POINT | ACTION | REFERENCE | OUTLINE |
|-----|---|--|-----------|--|
| 1 | Front Cover is not closed completely | Close the Front | | The machine doesn't start cutting operation if the Front Cover is not closed for safety purpose. |
| 2 | Cover Sensor cable is disconnected / Cover Sensor is broken | Connect the Cover Sensor cable / Replace the Cover Sensor | | |

6-5 THE MACHINE DOES NOT OPERATE PROERLY (THE POWER CAN NOT BE TURNED ON)

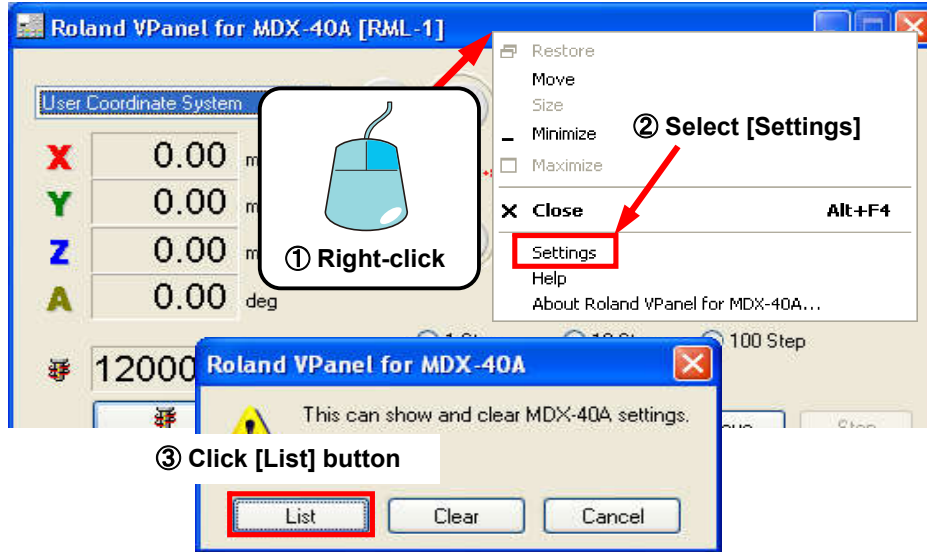
| NO. | CHECK POINT | ACTION | REFERENCE | OUTLINE |
|-----|--|--|--------------------------------------|--|
| 1 | Emergency Stop button is being pressed | Release Emergency Stop button | | The power can not be turned on when the Emergency Stop button is pressed. |
| 2 | The sensor SWs for Cover-open are defected | Check the cable connection Replace the sensor SWs | | In this case, MODELING, SCANNING, VIEW blink at the same time. (Only VIEW blinks when opening the cover after turning on the sub power.) |
| 3 | The voltage between AC inlet and SW Power Supply | Replace the cable No.1, No.2 and No.3 Replace the Emergency Stop button Replace the Power SW Check the power-supply voltate | [2-1 WIRING MAP] | There is a cut-line between the AC inlet and SW Power Supply. Emergency Stop button or Power SW is broken. Make sure to confirm your local voltage of household wall socket. |
| 4 | SW Power Supply is broken | Replace SW Power Supply | [2-1 WIRING MAP] [2-2 MAIN BOARD] | You can check the voltage of the SW Power Supply in reference to the service note section 2. (Disconnect the connector and measure the voltage on the connector side.) |
| 5 | Main Board is broken | Replace Main Board | [2-1 WIRING MAP] [2-2 MAIN BOARD] | You can check the voltage of the Main Board in reference to the servicenote section 2. |
| 6 | Panel Board is broken | Replace Panel Board | | You can check if the each key on the panel works by using MDX-40APit. Check the each voltage of the main board above before replacing the Panel Board. |
| 7 | Firmware is broken | Reinstall Firmware | | |

6-6 ERROR CODE

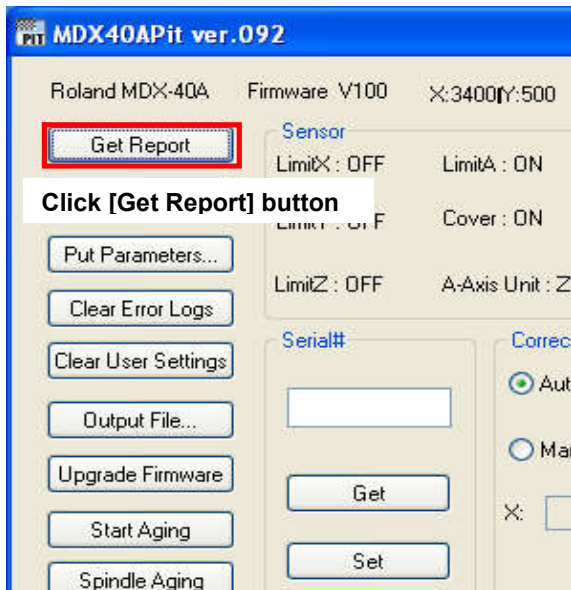
The error code can be checked with the system report available from the VPanel or MDX40APit.

How to get the system report

VPanel



MDX40APit



```

<< SYSTEM REPORT >>
MODEL: MDX-40A
SERIAL #:
VERSION
MAIN: V000
BOOT: B000
SYSTEM INFO.
DIPSW4321: 0010
USB SERIAL: A
SYSTEM SW: 0041.0000
TOTAL WORK TIME: 6000h0m
POSITION
~~~~~~
ROTARY SYSTEM P2: 250000,0,0
SPINDLE UNIT
TOTAL TIME: 6000h0m
TIME: 0h0m
CLEAR COUNT: 3
3: 2000h
2: 2000h
1: 2000h
ERROR LOG.
NEW: 0707
: 0109
: 0000
: 0000
<< END >>
    
```

The latest four errors can be checked as ERROR LOG



Both VPanel and MDX40APit may not be able to communicate with the machine depending on the error. In that case, turning on the power as firmware upgrade mode (Turn on the main power while pressing [UP] and [DOWN] keys) may solve the communication problem. There is no way to check the error code unless VPanel or MDX-40APit can communicate with the machine.

ERROR CODE LIST

| CODE | Blinking LED | CAUSE | ACTION |
|-----------|------------------------------|--|---|
| 0004 | MODELING SCANNING VIEW | Connection of the A-axis Unit is disconnected during operation | Check the cable connection of the A-axis Unit |
| 0005 | MODELING | Unspecified error has occurred during controlling the Spindle | Replace the Spindle Board Replace the Main Board |
| 0006 | SCANNING | Piezo Sensor Initialize Error has occurred | Check the cable connection of the ZSC-1 |
| 0007 | MODELING SCANNING | 2nd detected position of the limit is different from the 1st one. (2 times consecutive detection of the limit position - 1st detection: Write the position, 2nd detection: Confirm the position) | Check if each Limit SW works properly with MDX40APit Replace the Limit SW |
| 0105 | MODELING | Spindle Motor is not connected | Check the cable connection of the Spindle Motor |
| 0107 | MODELING SCANNING | X-axis limit is not detected | Check if the X-axis Limit SW works properly with MDX40APit Replace the Limit SW |
| 0109 | MODELING VIEW | Front Cover is opened during cutting | Close the Front Cover and restart the machine. Check if the Front Cover Limit SW works properly with MDX40APit Replace the Front Cover Limit SW |
| 0207 | MODELING SCANNING | Y-axis limit is not detected | Check if the Y-axis Limit SW works properly with MDX40APit Replace the Limit SW |
| 0305 | MODELING | Spindle control circuit becomes too hot | Check the cutting condition Replace the Spindle Board Replace the Spindle Motor Replace the Spindle |
| 0307 | MODELING SCANNING | Z-axis limit is not detected | Check if the Z-axis Limit SW works properly with MDX40APit Replace the Limit SW |
| 0405 | MODELING | Spindle Motor becomes too hot | Check the cutting condition Replace the Spindle Motor Replace the Spindle Check the cable connection on the thermistor board Replace the thermistor board |
| 0407 | MODELING SCANNING | A-axis limit is not detected | Check if the A-axis Limit SW works properly with MDX40APit Replace the Limit SW |
| 0605 | MODELING | Spindle Motor gets overcurrented | Check the cutting condition Replace the Spindle Motor Replace the Spindle |
| 0707 | MODELING | Overload has been given to the Z-axis Motor | Check the cutting condition Replace the Z-axis Motor |
| 0208/0408 | MODELING SCANNING VIEW | Impossible to access the EEPROM | Replace the Main Board |
| 0B05 | MODELING | Communication error has occurred during controlling the Spindle | Check the cable connection between the Main Board and the Spindle Board Replace the Spindle Board Replace the Main Board |
| 0D05 | MODELING | Impossible to rotate the Spindle due to lack of voltage | Check the voltage of the Main Board and the Spindle Board in reference to the service note section 2 Replace the Main Board Replace the Spindle Board Replace the Spindle Motor Replace the Spindle |
| - | MODELING SCANNING | An error occurred during initialization of the machine | Check the cutting condition Replace the Spindle Motor Replace the Spindle |
| | MODELING VIEW | A front cover was opened during cutting or spindle rotation | Check if the A-axis Limit SW works properly with MDX40APit Replace the Limit SW |
| | MODELING | The spindle motor error occurred | Check the cutting condition Replace the Spindle Motor Replace the Spindle |