# TROUBLE SHOOTING GUIDE


ZIPWAKE

CHOOSE COMFORT. ENJOY PERFORMANCE.

**TROUBEL SHOOTING GUIDE**
DYNAMIC TRIM CONTROL SYSTEM SERIES S

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www.zipwake.com

# GENERAL INFORMATION

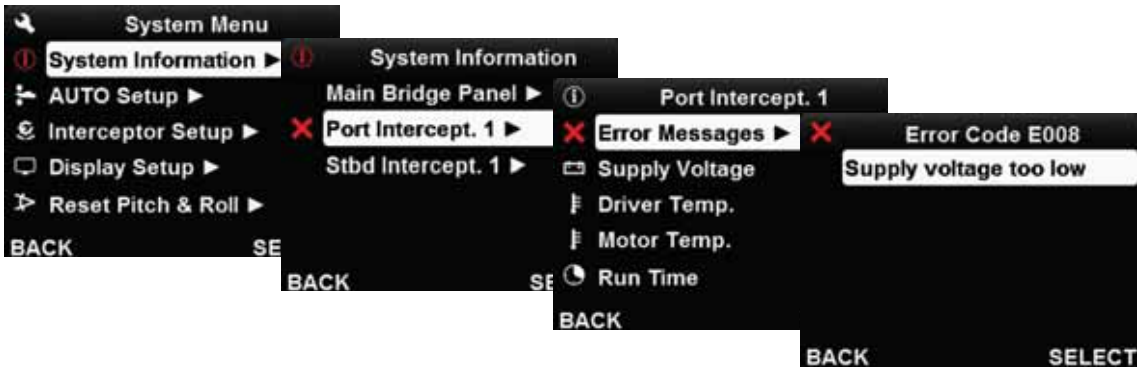
- Zipwake Series S Dynamic Trim Control System consists of sealed units which in case of failure shall be replaced as complete units. Units shall never be opened (warranty void) and only the failing component shall be returned under the warranty program. Consequently, trouble shooting is essentially about isolating failing components for replacement.

- Always ensure the system is updated with the latest software. Visit www.zipwake.com to download the latest software.

- The Control Panel (CP-S) and the Servo unit (SU-S) can report error codes. The CP-S and SU-S have their individual sets of error codes (bit encoded). The Distribution Unit (DU-S) do not generate any error codes.

- Presence of system error is indicated in the CP-S display by a flashing red info–symbol ⓘ in combination with a red cross ✕ in case of SU-S error code. In addition, a system error message flashes for about 3 seconds.


- An error code is read from the CP-S menu,
**MENU – System Information – <Select a unit> – Error message**




- Multiple errors give an error code corresponding to the sum of the individual error codes. As an example, E1536 indicates presence of the two error codes E512 and E1024. Each error message text is listed in the CP-S menu.

E512 + E1024 = Error code E1536

For more information, refer to Operator's Manual and Installation Guide available on **www.zipwake.com**

FOR INTERNAL USE ONLY

# CP-S ERROR CODES

| Bit code | Description | Error message displayed on control panel | Corrective actions | Error code is cleared when... |
|---|---|---|---|---|
| **1** | Low voltage detect | Supply voltage too low | • Check battery supply voltage (>12V).<br>• Check the power cable connection to the battery. | ...supply voltage goes above 9V. |
| **2** | High voltage detect | Supply voltage too high | • Check the distribution unit power cable.<br>• Check battery supply voltage (12-32V). | ...supply voltage goes below 32V. |
| **4** | Rotary encoder failure | Button/wheel failure | • Check if any buttons or wheels are stuck.<br>• Use fresh water to spray and remove any dirt on the control panel front. | ...power turned on (main switch toggle). |
| **8** | Accelerometer failure | Acc/gyro error | • Turn off the sustem for 10 minutes, then restart. | ...power turned on (main switch toggle). |
| **16** | Gyro failure | Acc/gyro error | • Turn off the sustem for 10 minutes, then restart. | ...power turned on (main switch toggle). |
| **32** | High circuitboard temp | Panel temp. too high | • Check if the panel is mounted close to any heat source.<br>• Try mounting the panel in another (cooler) location. | ...circuitboard temperature goes below 75°C. |
| **64** | GPS error | No GPS signal | • Check GPS source and GPS status on the Select GPS source menu page (norm. set to Auto).<br>• If an external GPS or NMEA 2000 GPS is installed, check the cables for damage.<br>• Check the NMEA 2000 GPS source is turned on.<br>• Clean and reattach the control panel connectors. | ...GPS signal is acquired (received). |
| **128** | Software exception error | Program error | • Restart the system.<br>• Visit www.zipwake.com for upgrades resolving the issue. | ...power turned on (main switch toggle). |
| **256** | <not used> | | | |
| **512** | Too few interceptors | Interceptor not connected | • Check the servo cables for damage.<br>• Clean and reattach the connectors on the distribution unit.<br>• Ensure a single interceptor installation is connected to distribution unit PORT 3. | ...more than one servo unit detected (connected).<br>...a single interceptor is detected (connected) at PORT 3. |
| **1024** | CAN-bus error | Communication error | • Check the system cables for damage.<br>- Clean and reattach the connectors on the distribution unit and control panels.<br>• Identify failing component.<br>- Disconnect all interceptors and flybridge control panels.<br>- Reconnect units one-by-one to identify which unit triggers error.<br>Note: connect the interceptor one-by-one to DU at PORT 3 to avoid triggering error code E512<br>- Replace failing unit. | ...I-BUS communication is restored. |


Series S Control Panel (CP-S)

# SU-S ERROR CODES

| Bit code | Description | Error message displayed on control panel | Corrective actions | Error code is cleared when... |
|---|---|---|---|---|
| **1** | High motor temperature | Motor temperature high | • Turn off the system for 10 minutes, then restart. | ...motor temp. goes below 81°C. |
| **2** | Motor drive failure - HALL sensors | Motor HALL sensor failure | • Turn off the system for 10 minutes, then restart. | ...power turned on (main switch toggle). |
| **4** | Motor drive failure - Phases | Motor drive failure | • Turn off the system for 10 minutes, then restart. | ...power turned on (main switch toggle). |
| **8** | Low voltage detected | Supply voltage too low | • Check battery supply voltage (>12V).<br>• Check the power cable connection to the battery.<br>• Check the distribution unit power cable. | ...supply voltage goes above 8V. |
| **16** | Interceptor stroke too small | Interceptor stroke too small | • Turn off the sustem for 10 minutes, then restart. | ...system is restarted (power button). |
| **32** | Interceptor stroke too big | Interceptor stroke too big | • Restart the system.<br>• Remove the interceptor front and check that the blades are moving correctly. Remove any growth, dirt or paint.<br>• Reinstall the front, run the interceptor and check that the blades are moving correctly (run Interceptor Check). | ....system is restarted (power button). |
| **64** | Electronics failure | Electronics failure | • Restart the system.<br>• Visit www.zipwake.com for upgrades resolving the issue. | ...power turned on (main switch toggle). |
| **128** | Emergency stop | Overload, interceptor stuck | • Check that the blades are moving correctly (run Interceptor Check).<br>• Check for excessive growth, dirt, paint or sealent on the interceptor and between the moving components.<br>• Remove the interceptor front and check that the blades are moving correctly.<br>• Verify no components are missing (screws, seal, strip, rollers, slide blocks).<br>• Verify the back plate is flat within tolerance according to installation guide.<br>• Reinstall the front (tighten with designated torque), run the interceptor and check that the blades are moving correctly (run Interceptor Check).<br>• Verify that the system is not connected to power supply via automatic (thermal/magnetic) fuse. | ....system is restarted (power button). |
| **256** | High voltage detected | Supply voltage too high | • Check battery supply voltage (12-32V). | ...supply voltage goes below 32V. |
| **512** | High circuitboard temp | Motor driv temp. too high | • Turn off the system for 10 minutes, then restart. | ...circuitboard temp. goes below 64°C. |
| **1024** | Motor over current | Motor over current | • Turn off the system for 10 minutes, then restart. | ...system is restarted (power button). |

Series S Servo Unit (SU-S)

# SU-S: E032 – INTERCEPTOR STROKE TOO BIG

## ERROR CODE TRIGGER

- The electronics sense the electrical motor operates out of range, primarily occurs in connection to system startup.

## POSSIBLE CAUSES AND CORRECTIVE ACTIONS

- **Insufficient power supply**

  NOTE: E032 due to poor power supply will effect all servo units!

  1. Check battery and/or charger condition to ensure the supply delivers the expected power.
  2. Check power supply connections and verify that all cables have the correct dimensions (wire diameters shall be 12 AWG or larger).
  3. Verify power supply is not connected via automatic thermal/magnetic fuses.
  4. Connect Zipwake directly to a new separate battery to completely rule out the power supply as cause of failure.

- **Electrical failure of SU-S**

  1. Rule out power supply issue (see previous check-list).
  2. Check if the SU-S that reports error operates (makes any movement) at system turn on.
  3. Replace SU-S if confirmed it is not operating.

- **Servo unit's screw shaft has broken**

  1. Restart the system and listen for the SU-S operating at system turn on (or when powered up as connected to the DU-S). A screw shaft failure is suspected if the SU-S runs for a longer period (a couple of seconds) than normal, followed by the error code E032.
  2. Disconnect servo unit from the interceptor back plate and check the movement of screw shaft and nut when motor is running. If the shaft/nut is not moving or can be visually confirmed to be broken, replace the servo unit.

# SU-S: E128 – OVERLOAD, INTERCEPTOR STUCK

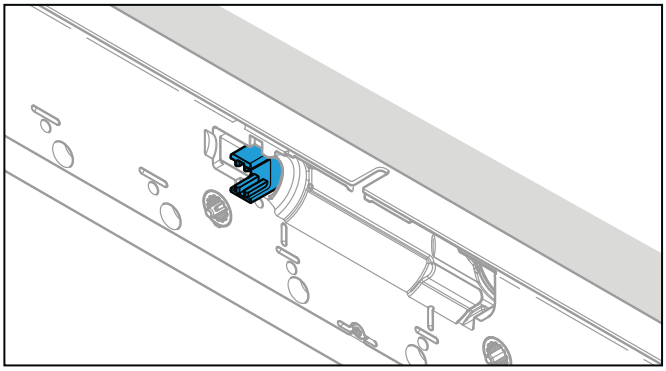
## ERROR CODE TRIGGER

- The electronics sense too high load to the SU-S electrical motor.

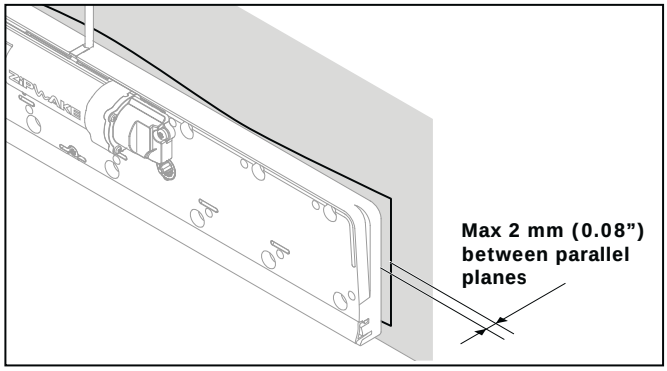
## POSSIBLE CAUSES AND CORRECTIVE ACTIONS

- **Insufficient power supply that does not supply enough power during temporary peaks in interceptor load**
  1. Measure voltage and verify no significant temporary voltage drops occur during operation.
  2. Check power supply connections and verify that all cables have the correct dimensions. Wire diameters shall be 12 AWG or larger.
  3. Verify power supply is not connected via automatic thermal/magnetic fuses.
  4. Connect Zipwake directly to a new separate battery to completely rule out the power supply as cause of failure.

- **Obstructed interceptor blade movement**
  1. Check that the blades are moving correctly – run Interceptor Check. Compare with the results obtained for the Interceptor Check executed in connection to the installation. In case of any indication the blades are obstructed (Interceptor Check readout not in the green range), check for excessive marine growth, dirt, paint or sealant on interceptor's moving parts.
  2. Remove the Interceptor front and verify that the blade and backplate's connecting rod are moving freely (shall be easy to move by hand).
  3. Verify the servo is working properly and runs freely - run Interceptor Check with the front removed, and also with the SU-S removed from the backplate. The readings should be distinctly lower than the result with the front and blade mounted.
  4. Verify no components are missing (screws, seal).
  5. Verify the back plate is mounted flat within tolerance according to installation guide, see illustration below.
  6. Correct (clean or replace) any idientified source that obstruct the interceptor blade movement.



Connecting rod shall move freely.

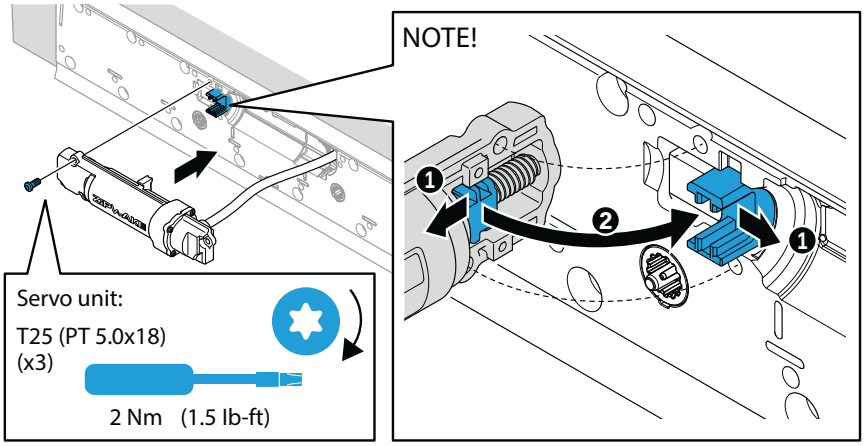



Transom flatness tolerance.

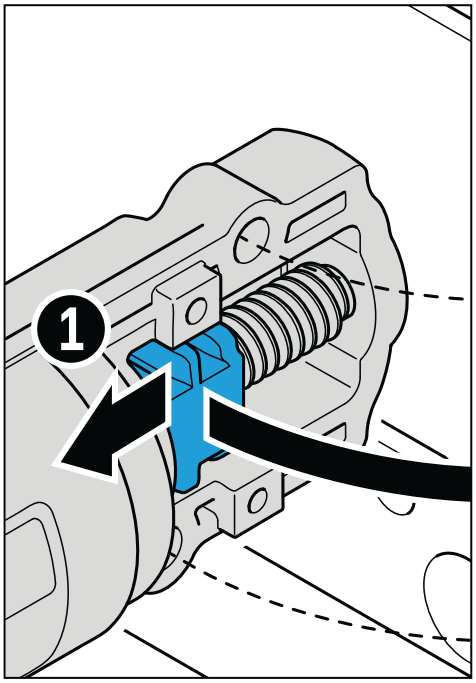
- **Screw shaft nut of SU-S is not fitted correctly to the interceptor backplate's connecting rod**
    1. Remove the SU-S from the backplate and verify the screw shaft nut and connecting rod are fitted correctly when remounted.

- **Electronic failure**
    1. Remove the SU-S from the backplate and verify nothing is mechanically preventing movement (see previous "Obstructed interceptor blade movement").
    2. Examine the behavior when powering up the SU-S. Replace the SU-S if the motor do not operate at all (there should be more than just a 'click' sound – compare with a functional SU-S).

- **Screw shaft nut stuck in outer position can occur if inner position cannot be reached during SU-S startup sequence.**
    1. Remove any obstacles (growth, dirt, mud, paint etc.) that prevents the interceptor blade to fully retract.
    2. Check and verify the SU-S is mounted with the screw shaft nut and the backplate connecting rod fitted correctly (see illustration below).
    3. If the screw shaft nut do not retract from the outmost position when the SU-S is removed from the backplate, then free the screw shaft nut by using a torx screwdriver at the shaft end to gently rotate the screw shaft just enough to free the nut from the end stop. Connect the SU-S to the distribution unit and let the motor retract the screw shaft nut to the inner position.




Instructions of mounting the SU-S to the backplate. Ensure screw shaft nut is fitted correctly to the backplate's connecting rod.



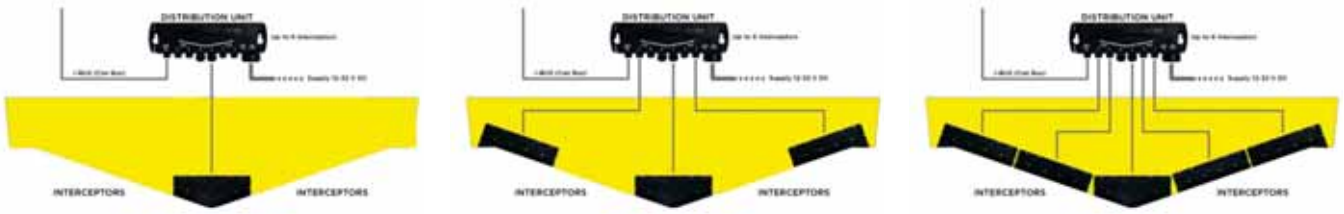
# CP-S: E512 – INTERCEPTOR NOT CONNECTED

## ERROR CODE TRIGGER

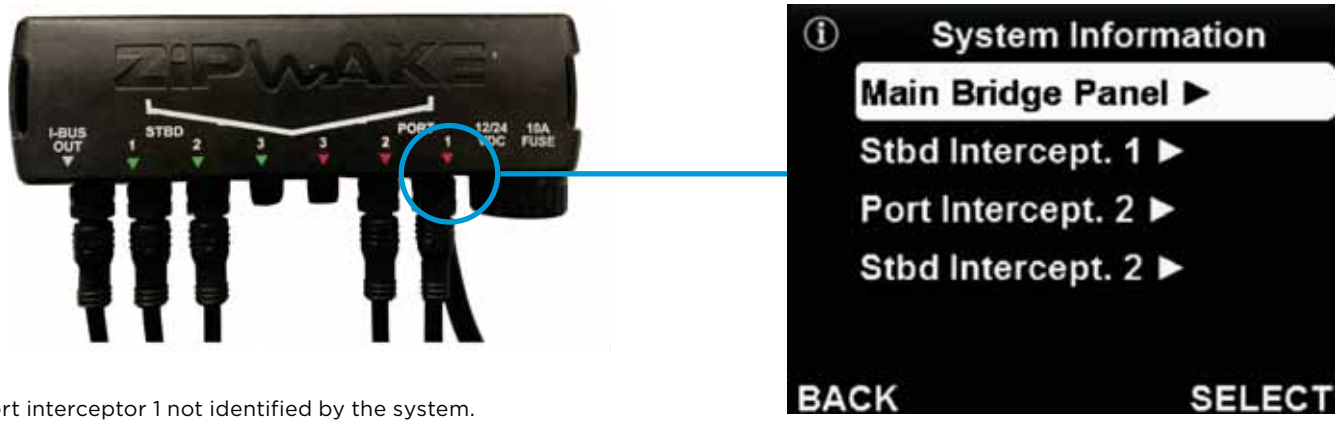
- The system cannot identify interceptor or interceptor pairs.

## POSSIBLE CAUSES AND CORRECTIVE ACTIONS

- **No interceptor is connected to the DU-S**
  1. Connect at least one interceptor to complete the system installation.
- **An installation with odd number of interceptors are not correctly connected to the DU-S**
  1. Connect the interceptor pairs to the DU-S starting at PORT/STBD 1.
  2. Connect the single (centerline mounted) interceptor to the PORT3 connector at the DU-S (see illustration below).
- **A connected servo unit is not identified by the system**
  1. Check that the system units listed in the CP-S under 'System Information' agrees with the actually connected units.
  2. Check cable and connectors for dirt or damage. Try connecting SU-S to a different connector of the DU-S. Replace any damaged cables/units.
  3. Verify function of the servo units individually by disconnect all and reconnecting them one-by-one to DU-S at the PORT3 connector.
  4. Replace any failing servo unit that does not get recognized by the system or otherwise does not operate properly.




Installations with a centerline interceptor connected to DU-S PORT 3.




Port interceptor 1 not identified by the system.

# CP-S: E1024 – COMMUNICATION ERROR

## ERROR CODE TRIGGER

- No or unreliable communication between system units.
  **NOTE:** E1024 is frequently accompanied with error code E512, resulting in an error code E1536.

## POSSIBLE CAUSES AND CORRECTIVE ACTIONS

- **Damaged cable to SU-S or cable connecting DU-S and CP-S or between extra CP-S**
  1. Examine the cables and connectors for dirt or damages.
  2. Replace any damaged or bad cable/units.
- **The system includes only one DU-S and one CP-S, i.e. there is no other unit connected for the CP-S to communicate with.**
  1. The error is cleared once at least one additional unit, CP-S or SU-S is connected.
- **System unit failure that corrupts the communication link**

  Identify the failing unit.

  1. Disconnect all units in the system except one CP-S connected to the DU-S on the I-BUS OUT connection.
  2. Connect the SU-S units one-by-one to the DU-S at PORT3 connection and identify which SU-S that triggers the error code when connected. Extra CP-S units are tested by connecting to the main CP-S at the I-BUS OUT connection.
  3. Replace any unit identified to trigger error code and verify full functionality with the complete system connected.

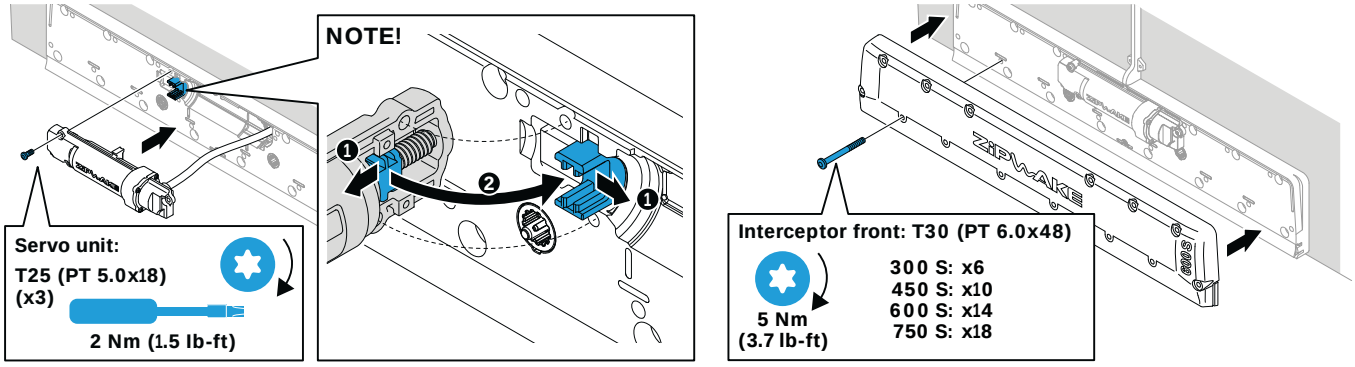

SU-S connected one-by-one to DU-S at PORT 3.

Presence of error message for a specific unit identifies the failing system unit.

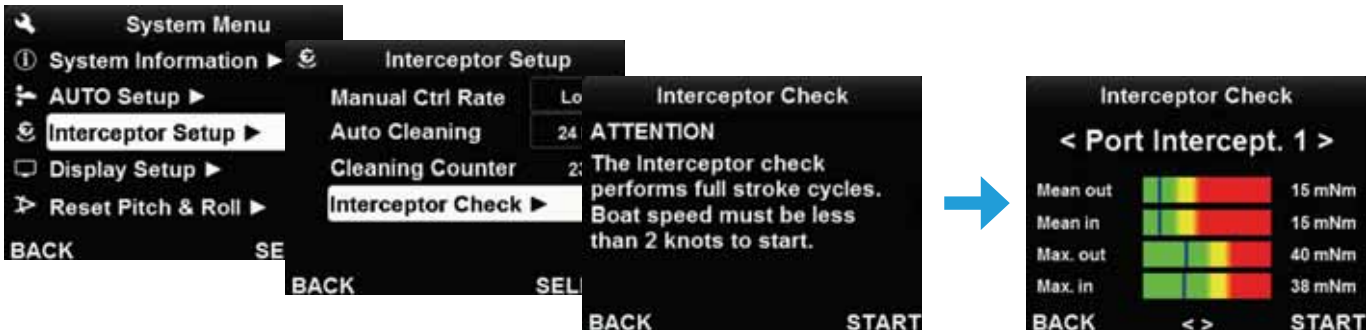
# REINSTALLATION OF SU-S AND INTERCEPTOR FRONT

## INSTALLING THE SERVO UNIT AND INTERCEPTOR FRONT

- Verify the connecting rod moves freely in the backplate.
- Verify the screw shaft nut is correctly fitted to the connecting rod in the backplate when mounting the servo unit. Tighten screws with designated torque (2 Nm).
- Verify the interceptor blades are moving easily (blades shall be easy to move by hand.)
- Reinstall the front and tighten the screws with designated torque (5 Nm).
- Run the Interceptor Check and verify that the blades are moving freely within tolerance range (all the readings of Interceptor Check are in green range). Document and archive the results for later reference.




Instructions of mounting the SU-S and the front to the backplate. Ensure screw shaft nut is fitted correctly to the backplate's connecting rod. Tighten the screws with designated torque (2 Nm and 5 Nm, respectively).




Starting Interceptor Check from the Control Panel menu.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