# BNR ASC Training

ASC name

Location, date

CRANE PAYMENT INNOVATIONS

# Training Agenda

- Review of BNR principles, modules, and basic operations
- Overview of the BNR technical documentation
  - BNR Service manual, BNR User Manual, BNR Integration Manual, BNR Specifications
- Other BNR resouces
- The BNR Support Tool and its functions
- The BNR Flash Tool
- Overview of BNR Servicing and Maintenance
  - ASC System / Process

# Training Agenda

- BNR diagnostics, troubleshooting, error reporting
- BNR Testing
  - BNR inspection checklist (before repair), BNR testing procedures (after repair)
- BNR servicing and maintenance
- Hints and review of jam clearing
- CPI Service Management and its importance
- BNR Spare parts
- BNR Web site & FTP site and CPI periodic communications (new FW releases, bulletins, etc.)

# Training Agenda

- BNR Repair workshop: modules disassembly
  - Resources: the BNR Repair Guide and Repair videos
  - Loader (full module disassembly)
  - Chassis
  - Spine
  - Main Module

- BNR Repair workshop: modules adjustments and other service procedures
  - Bundler Slippage Calculation
  - Main Module Diverter Adjustment
  - Recycler Tape Cleaning & Adjustment
  - Main Module calibration
  - BNR Modules testing procedures

# Review of BNR basic principles, BNR modules and BNR basic operations

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# Training Overview

- BNR Modules
- BNR codification, the BNR family
- How BNR processes the bills


Final Bill Flow w naration.wmv

# BNR Modules


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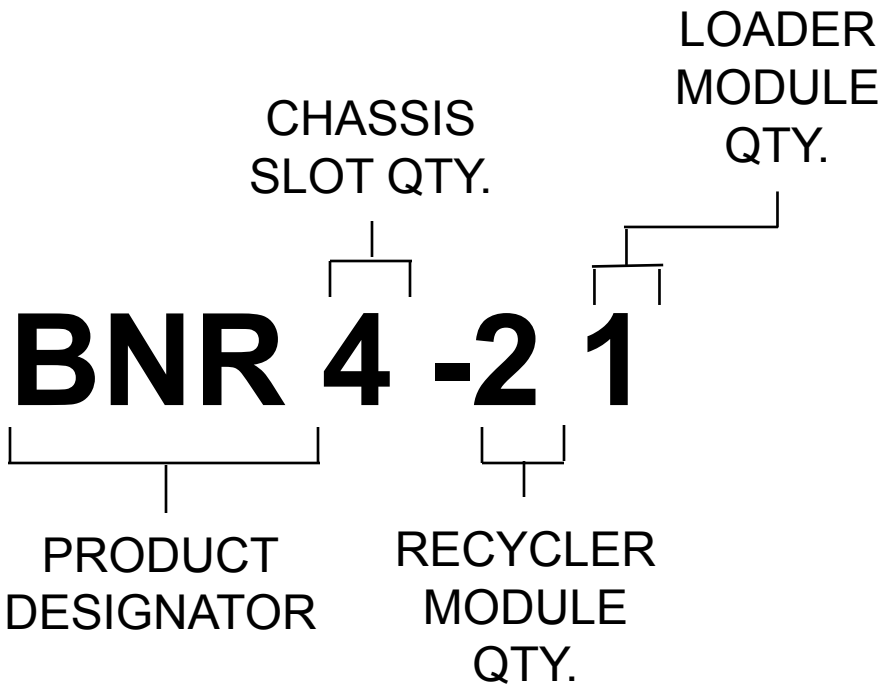
# BNR Codification

## Model Versioning



# BNR Codification

BNR4-21

BNR4-11

BNR4-20

BNR4-10

BNR3-11

BNR3-20

BNR3-10

BNR3-00

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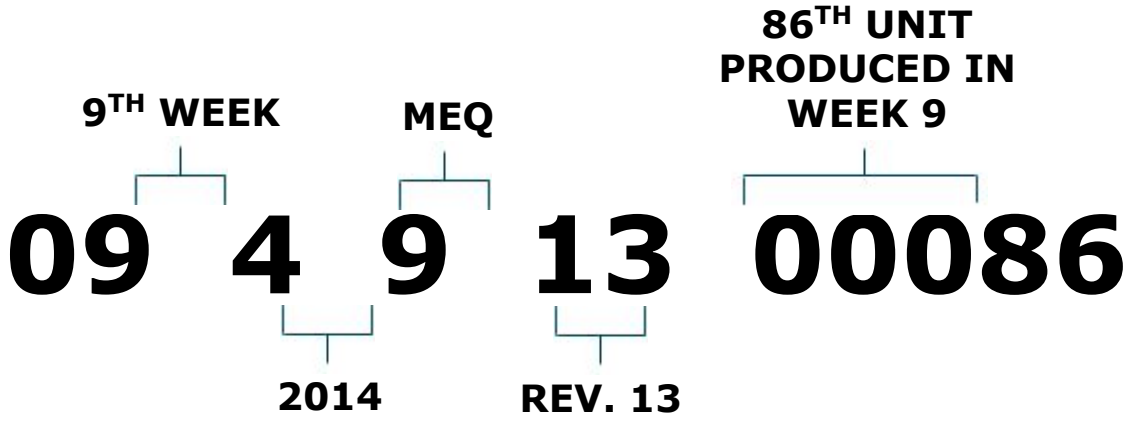
# BNR Codification

- Module Serial Number (MSN)
- CTO Serial Number (CTO)

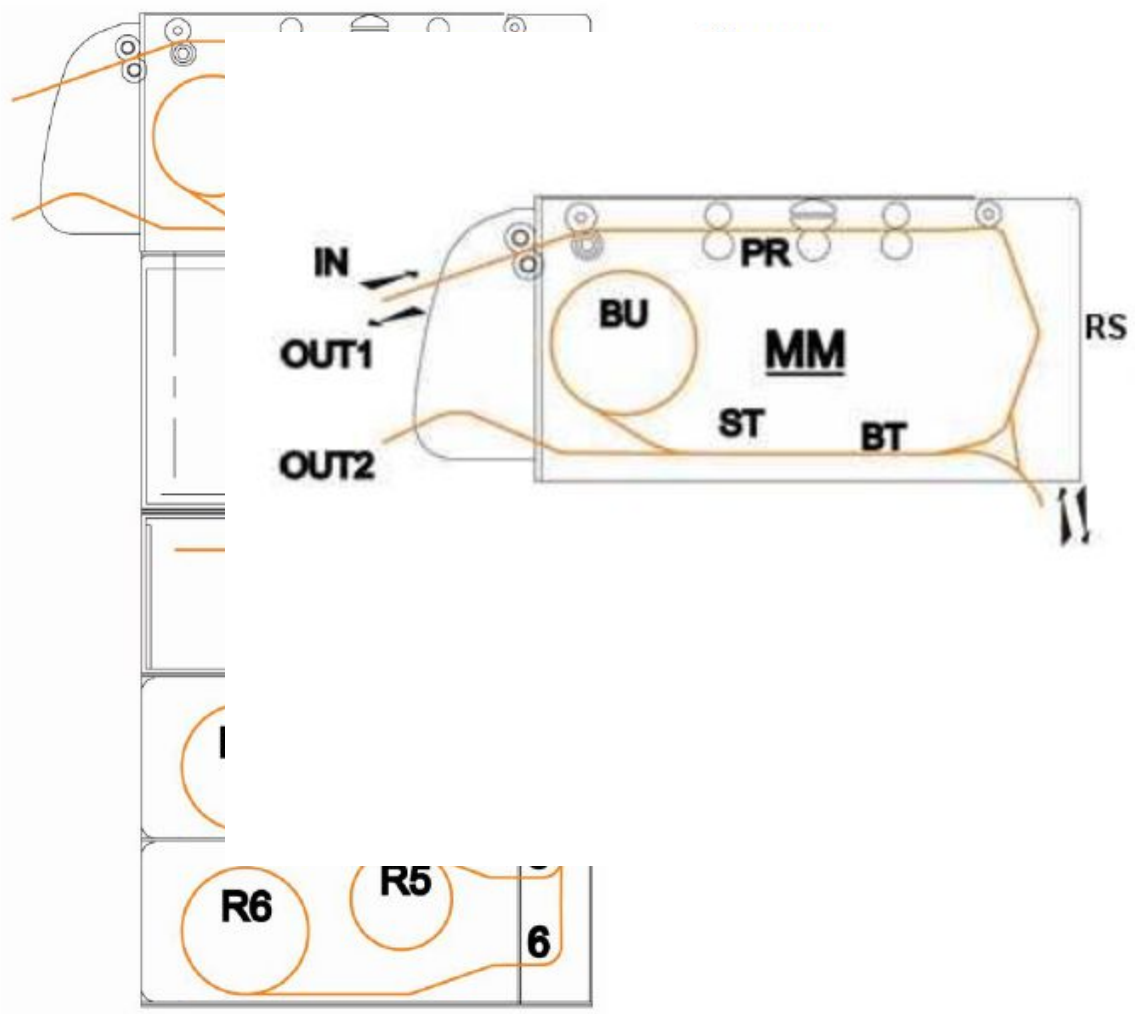
## Understanding Serial Numbers

- All Serial Numbers are 11-digit
- Example: MSN# 09491300086 (Main Module)



# Review of BNR principles and modules

- Modules and sub-modules designation




**BNR Service Manual**

| | |
|---|---|
| MM = | Main Module |
| IN = | Inlet for banknote insertion |
| OUT1 = | Outlet for banknote rejection |
| OUT2 = | Outlet for banknote return or dispense |
| PR = | Positioner |
| RS = | Recognition Sensors (Reading Heads) |
| BT = | Bottom Transport |
| ST = | Stacker |
| BU = | Bundler |
| ▬ = | Banknote path |

# BNR technical documentation overview

CRANE PAYMENT INNOVATIONS

# BNR Technical Documentation

## BNR Product Specifications

Every possible nominal value that identifies and describes the BNR characteristics and performance, including: system codification, EMC compliancy, power supply, mounting, validation parameters, expected life, expected performance (MCBJ), cleaning intervals, etc.

## BNR Integration Manual

Includes: BNR naming and codification, banknotes processing, mechanical and electrical integration, mounting options, SW integration, Support Tool .zconf file for FW update through Flash Tool, etc.

## BNR User Guide

Includes: modules basic handling, BNR LEDs and troubleshooting codes, Easy Jam clearing

# BNR Technical Documentation

## BNR Service Manual

Includes: unpacking the BNR and mounting, getting started with the ST, advanced jam clearing, preventive maintenance reco, cleaning instructions, basic disassembling (exchanging modules and basic parts)

## Other Documentation and Resources

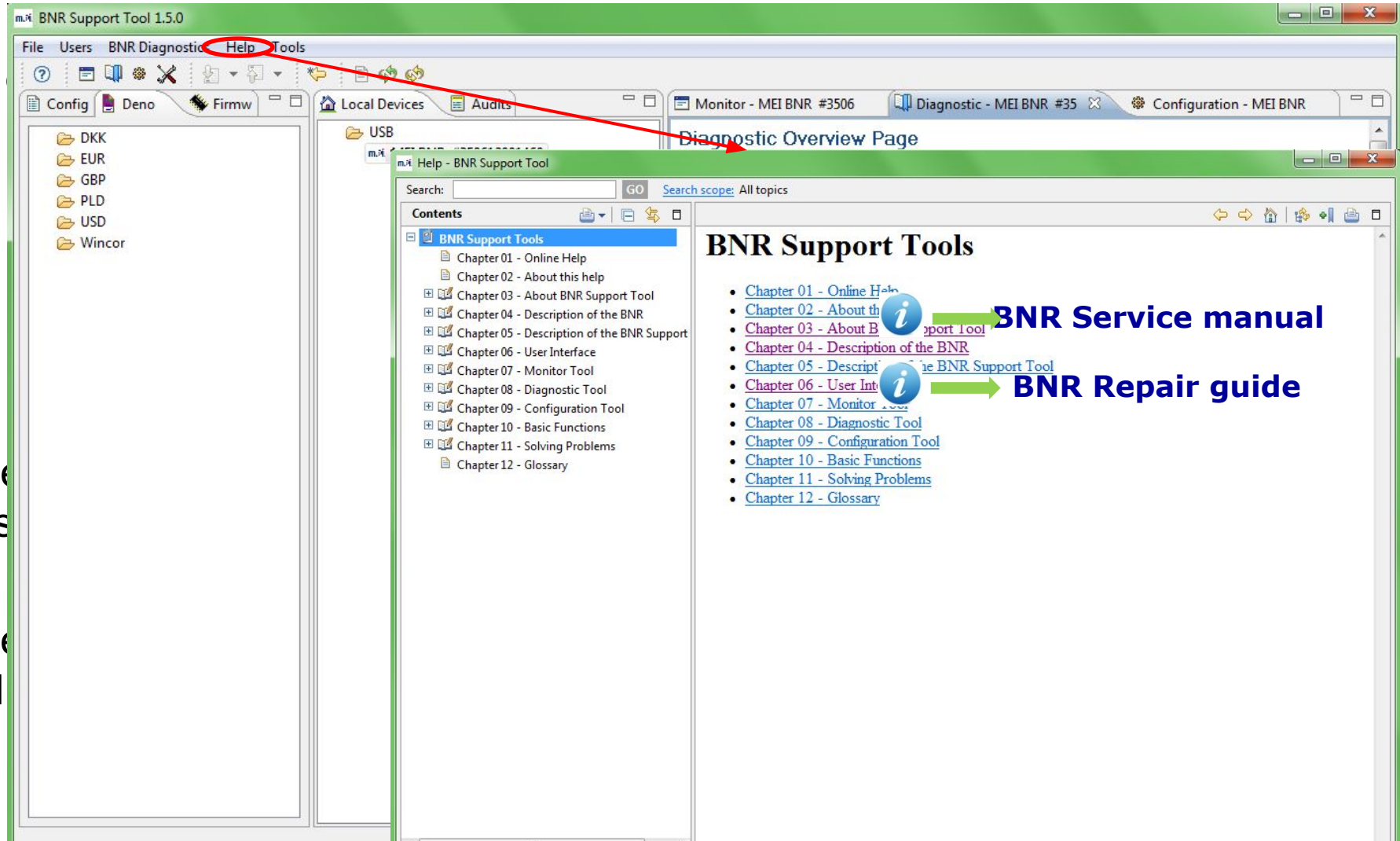
- BNR Official Training Videos
- BNR “How to…” Files (Unofficial)
- BNR Sensors and Troubleshooting Diagrams
- BNR Repair and Maintenance Guide
- BNR Troubleshooting Guide (Unofficial)
- BNR Fault Code Spreadsheet (Unofficial)
- BNR Spare Parts Catalogue

# The BNR Support Tool

CRANE PAYMENT INNOVATIONS

# The BNR Support Tool

The powerful tool that serves every purpose on the BNR:

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## Support Tool Demonstration

- "Diagnostics" Tool
  - Troubleshooting and Analytic Purposes
- "Configuration" Tool
  - Creating and Applying Unit Configurations
- "Monitor" Tool
  - Bill Handling and Unit Operations

## Use the BNR Support Tool to...

- Add/download bills
- Delete bills
- Generate and save a diagnostic file
- Park recyclers
- Add a cash unit module and set it
- Inhibit/activate bills
- Download FW
- Point to the proper FW/Billset/Audit Repositories
- Create a Configuration File

**BNR "How to" files**

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# BNR Diagnostic Collection

"Unofficial" Document

Explaining How-to

**BNR DIAGNOSTIC COLLECTION PROCEDURE**

Below is a detailed procedure regarding the collection of diagnostic files via the BNR Support Tool:

1) Ensure that the unit is powered correctly via the host or other external power source
2) Disconnect the USB / NCR cable from the host
3) Power up your PC and open the BNR Support Tool
   a. Username: admin / Password: admin


4) At the next pop-up (below) select "Direct Access" from the two options provided.


1

# The BNR Flash Tool

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# The BNR Flash Tool

- Very simple to use, once zconf file is
- Specific manual is provided
- Examples on how to create and use a

**BNR User manual**

**BNR "How to..."**

MEI BNR

Banknote Recycler

BNR Flash utility

User manual

Release G4





Information subject to change without prior notice

# BNR diagnostics, troubleshooting and error reporting

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# BNR diagnostics, troubleshooting and error reporting

- BNR diagnostics LEDs
- BNR Support Tool and diagnostic file
- Proper documentation: BNR troubleshooting Guide and
- BNR Sensors diagrams
- ....experience

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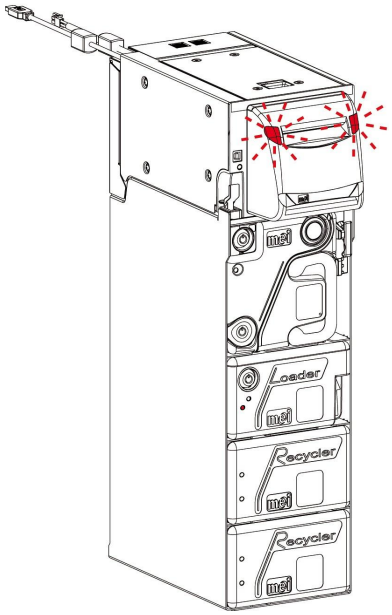
# BNR diagnostics, troubleshooting and error reporting

## LEDs codes for basic troubleshooting

"BLINKING RED"

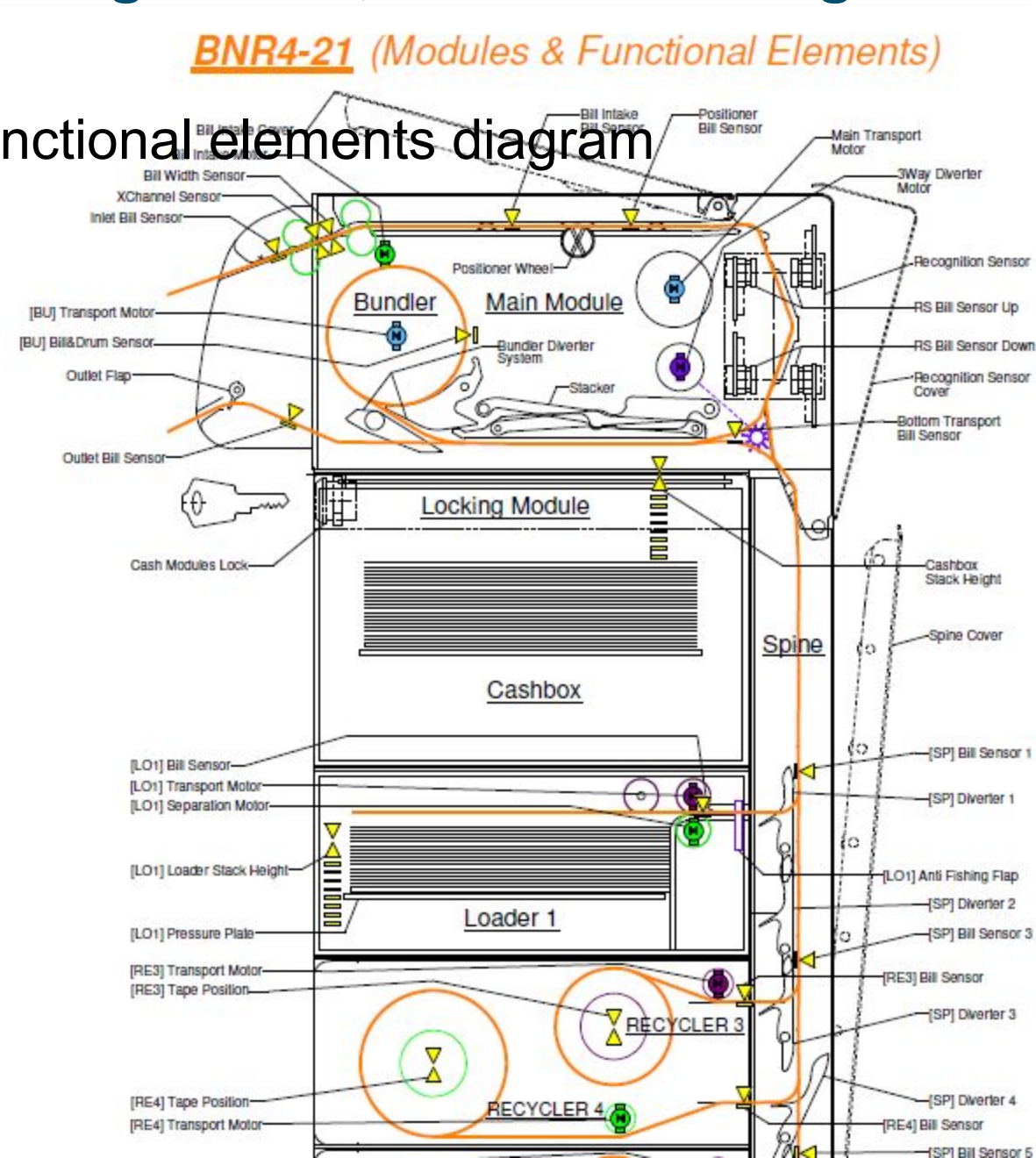



| External Indicator – FW version 1.0.0 | | | | System / Module Status | You need to |
|---|---|---|---|---|---|
| | | | - | Locked | Take no action |
| Off | Off | Off | - | "Reset" required | After Switch-on, have the BNR to "Reset" |
| GREEN x1 | GREEN x1 | GREEN x1 | - | Operational | Take no action *(CB ready to insert)* |
| Off | Off | GREEN | - | Bill Storage not OK *(Loader only)* | Fill the Loader Cassette with banknotes |
| Off | Off | RED x1 Long (1 sec.) | - | Cash type Status not OK *(Re, Lo)* | Configure the Module |
| Off | Off | RED x3 Fast continually | - | Remove Bill in Transport *(jam, stopped, bill error)* | Clear the Jam, refer to "EASY JAM CLEARING" or refer to the Service Manual |
| RED x3 Fast | Off | RED x3 Fast | - | Not Operational *(wrong module, OOS, transport error)* | Require a "Reset" command |
| RED | Off | RED | - | Cash-Box full or not rearmed | Empty the CB, rearmed it, refer to "CASH-BOX HANDLING" |
| - | - | - | GREY | | |

 **BNR User Manual**

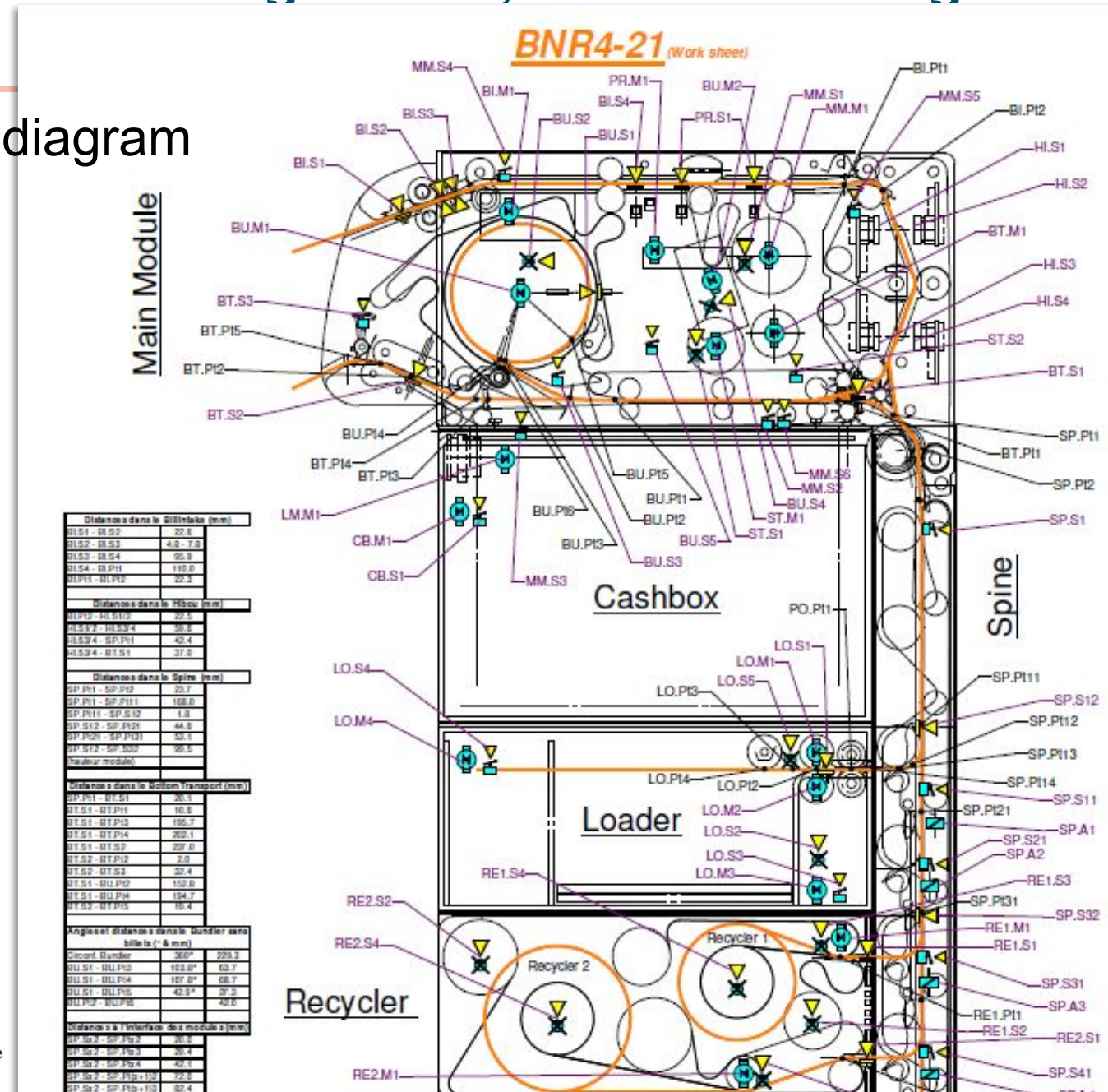
# BNR diagnostics, troubleshooting and

The BNR modules and functional elements diagram



# BNR diagnostics, troubleshooting and

The BNR sensors diagram




| Distances dans le Billintake (mm) | |
|---|---|
| BI.S1 - BI.S2 | 22.6 |
| BI.S2 - BI.S3 | 4.8 - 7.8 |
| BI.S3 - BI.S4 | 95.9 |
| BI.S4 - BI.Pt1 | 110.0 |
| BI.Pt11 - BI.Pt2 | 22.3 |

| Distances dans le Hibou (mm) | |
|---|---|
| HI.Pt2 - HI.S1/2 | 22.5 |
| HI.S1/2 - HI.S3/4 | 38.6 |
| HI.S3/4 - SP.Pt1 | 42.4 |
| HI.S3/4 - BT.S1 | 37.0 |

| Distances dans le Spine (mm) | |
|---|---|
| SP.Pt1 - SP.Pt2 | 20.7 |
| SP.Pt1 - SP.Pt11 | 168.0 |
| SP.Pt11 - SP.S12 | 1.8 |
| SP.S12 - SP.Pt21 | 44.6 |
| SP.Pt21 - SP.Pt31 | 53.1 |
| SP.S12 - SP.S32 | 99.5 |
| hauteur module) | |

| Distances dans le Bottom Transport (mm) | |
|---|---|
| SP.Pt1 - BT.S1 | 20.1 |
| BT.S1 - BT.Pt1 | 10.8 |
| BT.S1 - BT.Pt3 | 156.7 |
| BT.S1 - BT.Pt4 | 202.1 |
| BT.S1 - BT.S2 | 227.0 |
| BT.S2 - BT.Pt2 | 2.0 |
| BT.S2 - BT.S3 | 32.4 |
| BT.S1 - BU.Pt2 | 152.0 |
| BT.S1 - BU.Pt4 | 194.7 |
| BT.S2 - BT.Pt5 | 18.4 |

| Angles et distances dans le Bundler sans billets (° & mm) | | |
|---|---|---|
| Decent Bundler | 300° | 209.3 |
| BU.S1 - BU.Pt2 | 163.8° | 63.7 |
| BU.S1 - BU.Pt4 | 167.8° | 68.7 |
| BU.S1 - BU.Pt5 | 42.5° | 27.2 |
| BU.Pt2 - BU.Pt6 | | 42.0 |

| Distances à l'interface des modules (mm) | |
|---|---|
| SP.Sa2 - SP.Pb2 | 20.6 |
| SP.Sa2 - SP.Pb3 | 20.4 |
| SP.Sa2 - SP.Pb4 | 42.1 |
| SP.Sa2 - SP.Pb+1/2 | 12.6 |
| SP.Sa2 - SP.Pb+1/3 | 82.4 |

# BNR

## The BNR Troubleshooting guide

A powerful guide to the BNR troubleshooting (still to be officially released)

# The BNR Troubleshooting guide

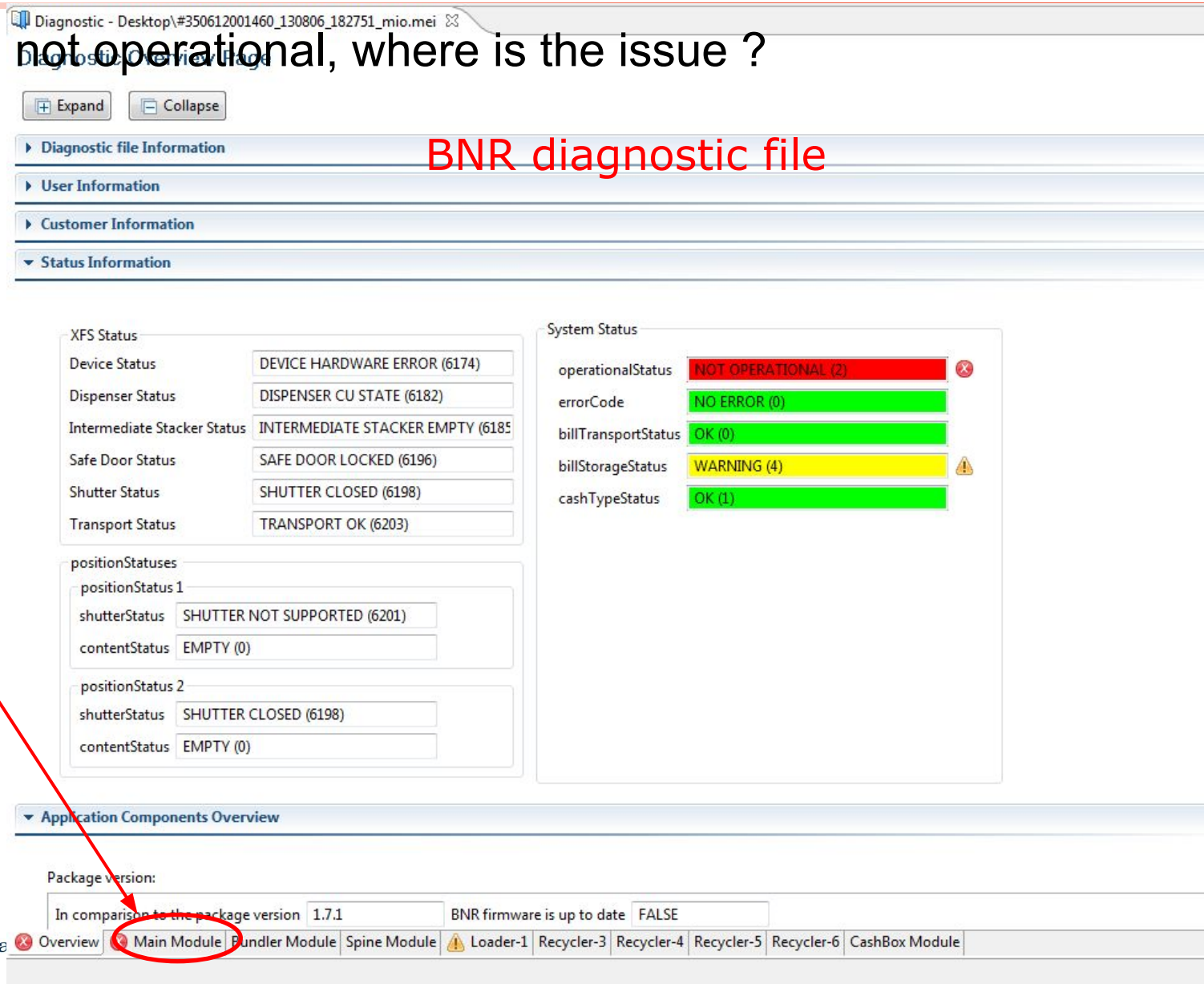
Provides the link between the info visible at ST and the corrective action. The info it provides is mainly at Service Technician level, but the indications can be useful also at ASC level to help locate and identify the issue.


Let's make an example !

# BNR Advanced Troubleshooting

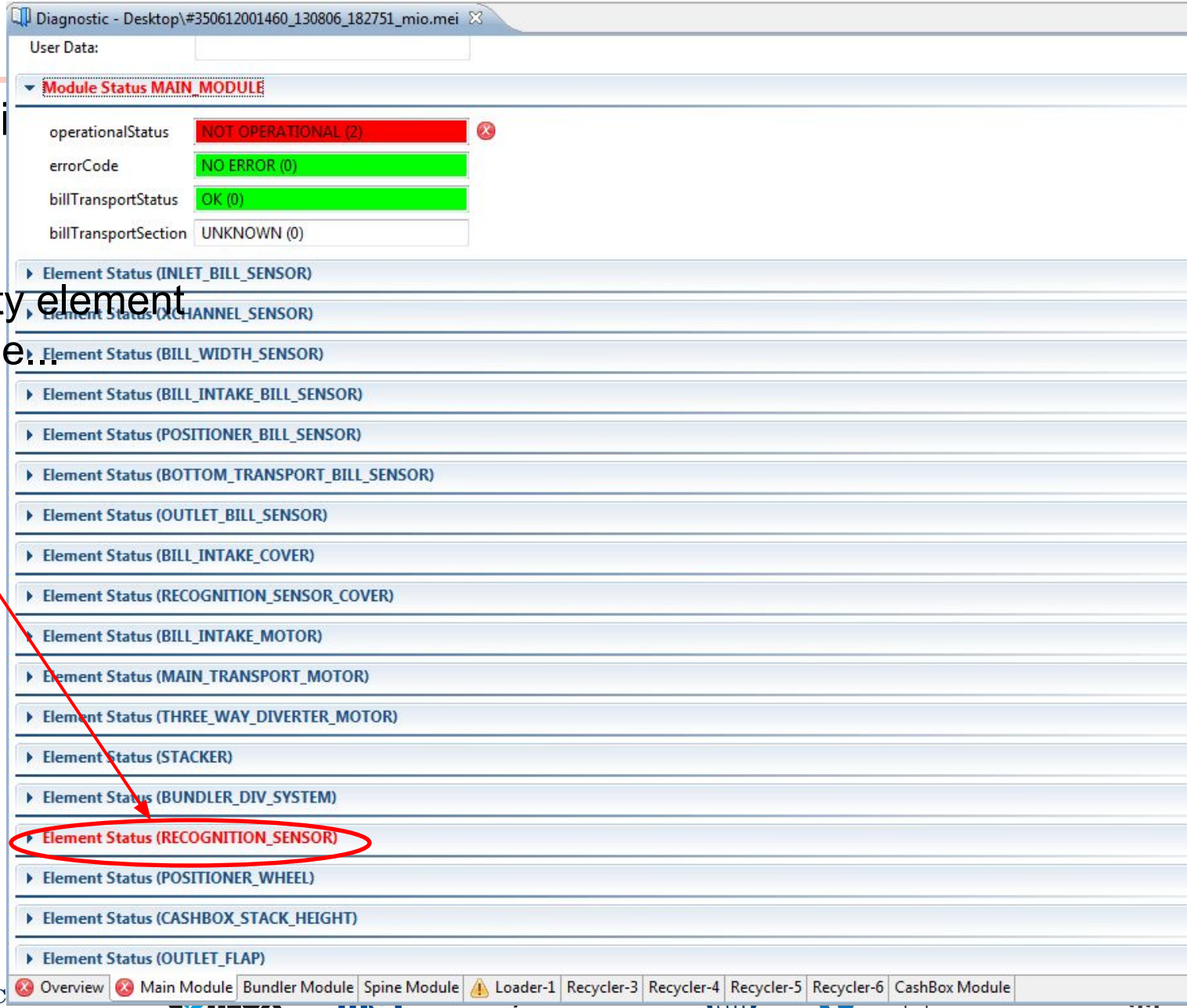
This BNR unit is not operational, where is the issue ?

locate the faulty module...



Which element i

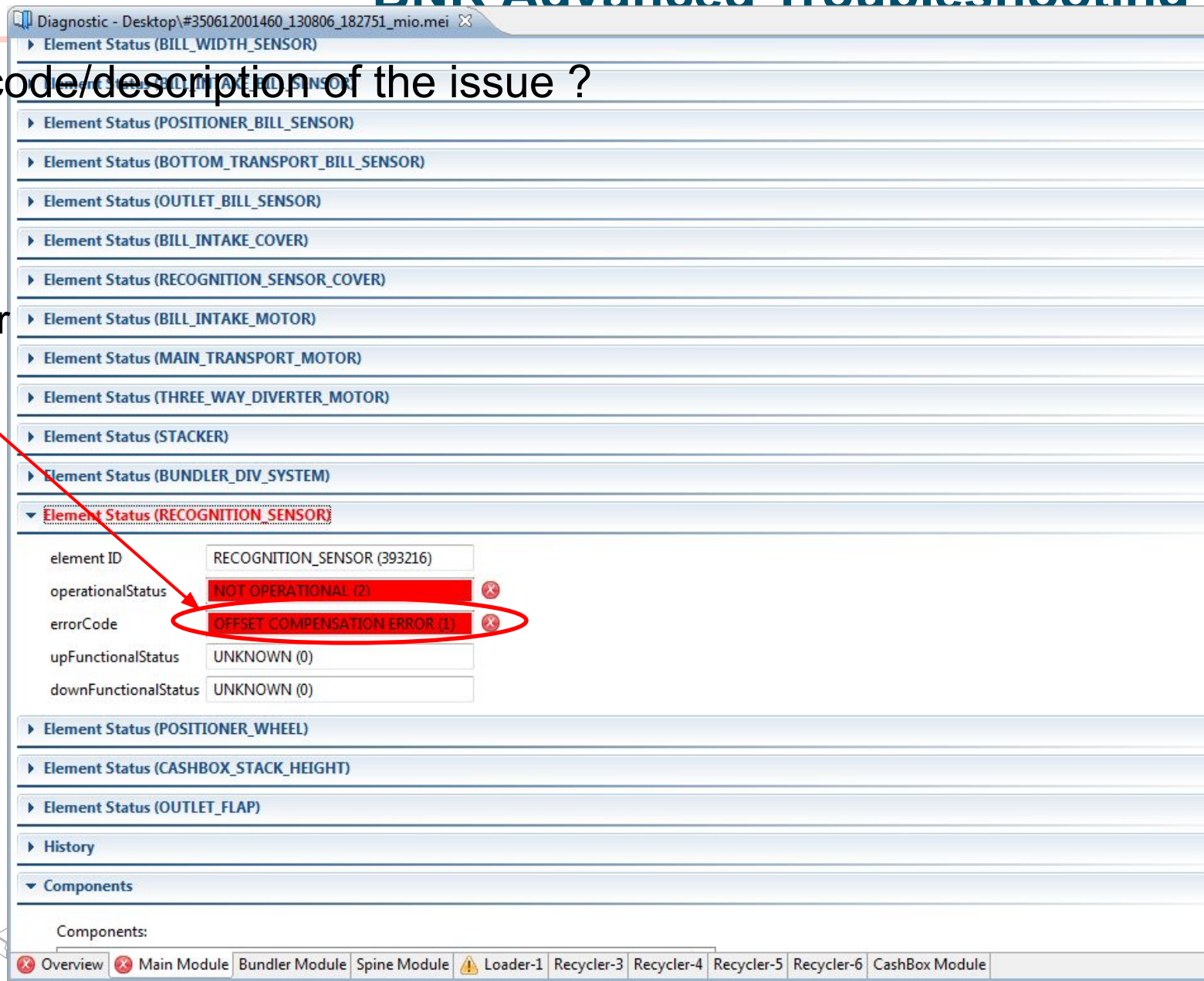
...locate the faulty element inside the Module...



# BNR Advanced Troubleshooting

Which is the code/description of the issue ?

...and its error code



# BNR Advanced Troubleshooting

Now we take the BNR Troub

Look for the faulty element and ....

- **errorCode:**
  NO_ERROR (0)

  BLOCKED (1): The bundler diverter system motor's speed was null or too low.
  CANNOT_POSITION (2): The bundler diverter system failed to reach the requested position.
  EXTRACTION_POS_NOT_CONFIRMED (3): The bundler diverter system position confirmation sensor (BU.S3) should have been covered on extraction position.
  OUTLET_POS_NOT_CONFIRMED (4): The bundler diverter system position confirmation sensor (BU.S3) should have been covered on outlet position.
  CANNOT_FIND_MARK (5): The bundler diverter system could not find the position mark during initialisation cycle.

  **SOLUTION:** *1)Advanced Field Operator:* remove cashbox. Remove unexpected object (if any) in the Bundler area. Secure BNR.
  ***2) Host:*** send Reset command.
  **If problem persists:**
  ***3) Field Service Technician:*** Main Module needs to be repaired.

3.11 Recognition Sensor

| Element Status (RECOGNITION_SENSOR) | |
|---|---|
| element ID | RECOGNITION_SENSOR (393216) |
| operationalStatus | OPERATIONAL (0) |
| errorCode | NO ERROR (0) |
| upFunctionalStatus | UNKNOWN (0) |
| downFunctionalStatus | UNKNOWN (0) |

- **operationalStatus:**
  OPERATIONAL (0): The module or element is operational. No errors

  CHECKING_ERROR (1): Cannot determine operational state of the module. Will be determinate on next test.

  **SOLUTION:** ***Host :*** Send Reset command





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# BNR Advanced Troubleshooting

...the error code

SUGGESTED ACTION

is provided

3.11 Recognition Sensor

**Element Status (RECOGNITION_SENSOR)**

| | |
|---|---|
| element ID | RECOGNITION_SENSOR (393216) |
| operationalStatus | OPERATIONAL (0) |
| errorCode | NO ERROR (0) |
| upFunctionalStatus | UNKNOWN (0) |
| downFunctionalStatus | UNKNOWN (0) |

- **operationalStatus:**
  OPERATIONAL (0): The module or element is operational. No errors

  CHECKING_ERROR (1): Cannot determine operational state of the module. Will be determined on next test.
  **SOLUTION:** ***Host:*** Send Reset command

  NOT_OPERATIONAL (2): Module not operational. Module or sub-module part has an error. Refer to **errorCode**

- **errorCode:**
  NO_ERROR (0)

  OFFSET_COMPENSATION_ERROR (1): Impossible to compensate the offset.
  REMAINING_OFFSET_TOO_LOW (2): The remaining offset is too low.
  C_COEF_DIV_BY_ZERO (5): Divide by zero while calculating C coefficients.
  C_COEF_NEG_VALUE (6): One or more c coefficients are below zero.
  C_COEF_OVERFLOW (7): Overflow on C coefficients.
  C_COEF_OUT_OF_RANGE (8): One or more C coefficients values are out of range.
  **SOLUTION:** ***Field Service Technician:*** Open Recognition Module. Check if flat cable is correctly connected. If not, **Power off**, insert correctly the flat cable then power on. Close Recognition Module.

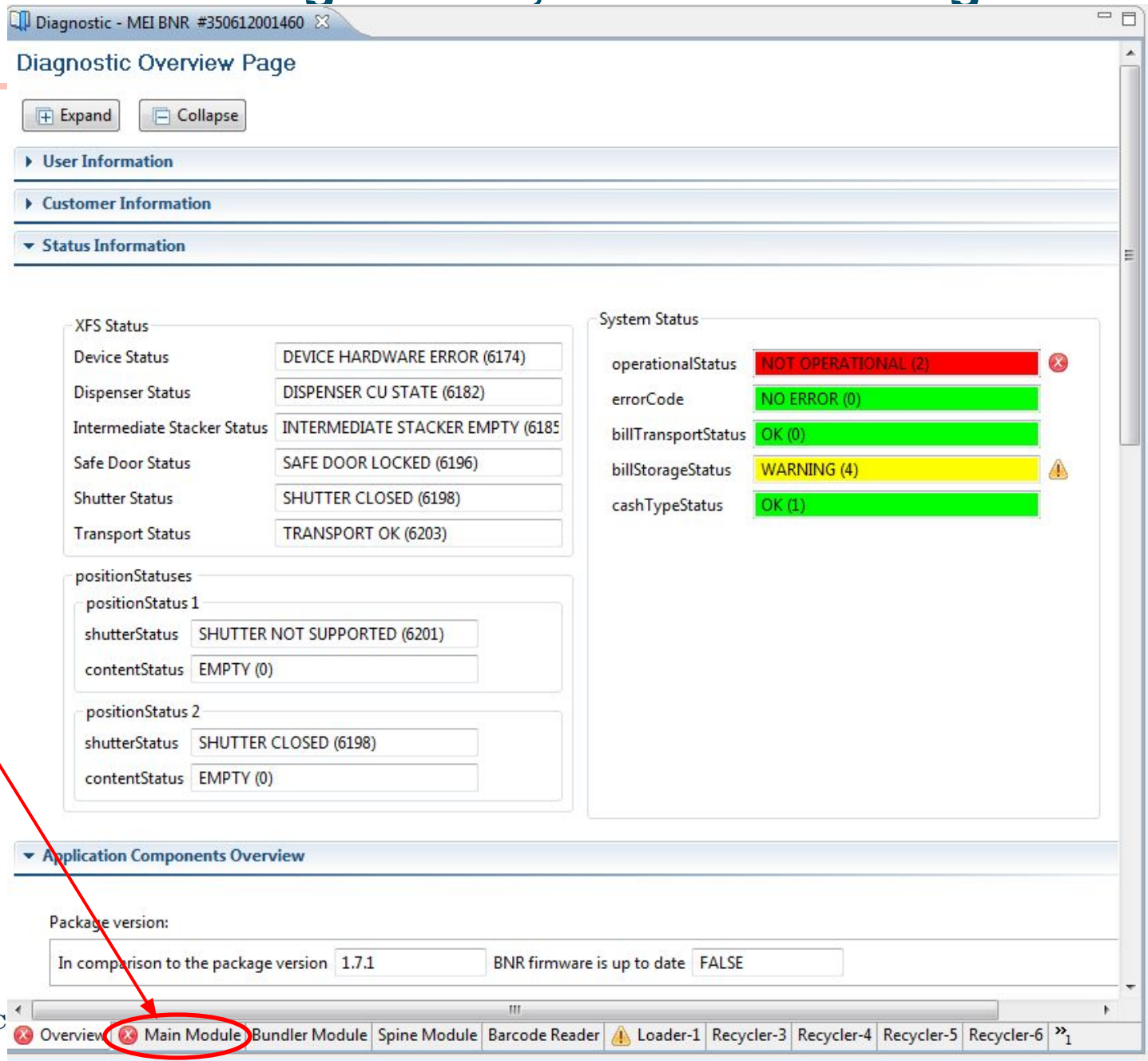
# BNR Advanced Troubleshooting

A proper knowledge of the BNR elements functions and sensors position is also required to carry out an effective troubleshooting

Let's see this through another example !

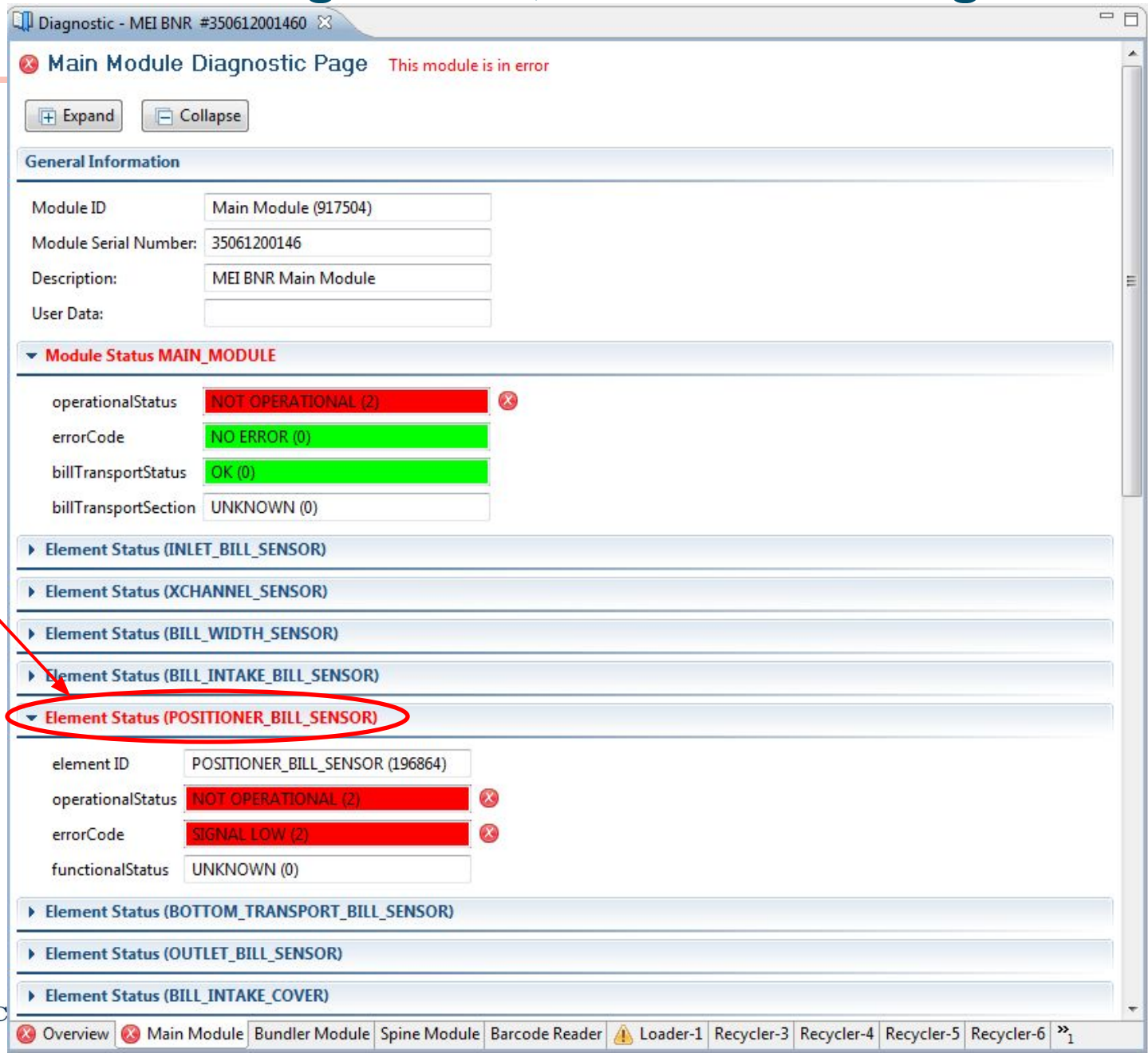
# BNR diagnostics, troubleshooting and

Faulty module...



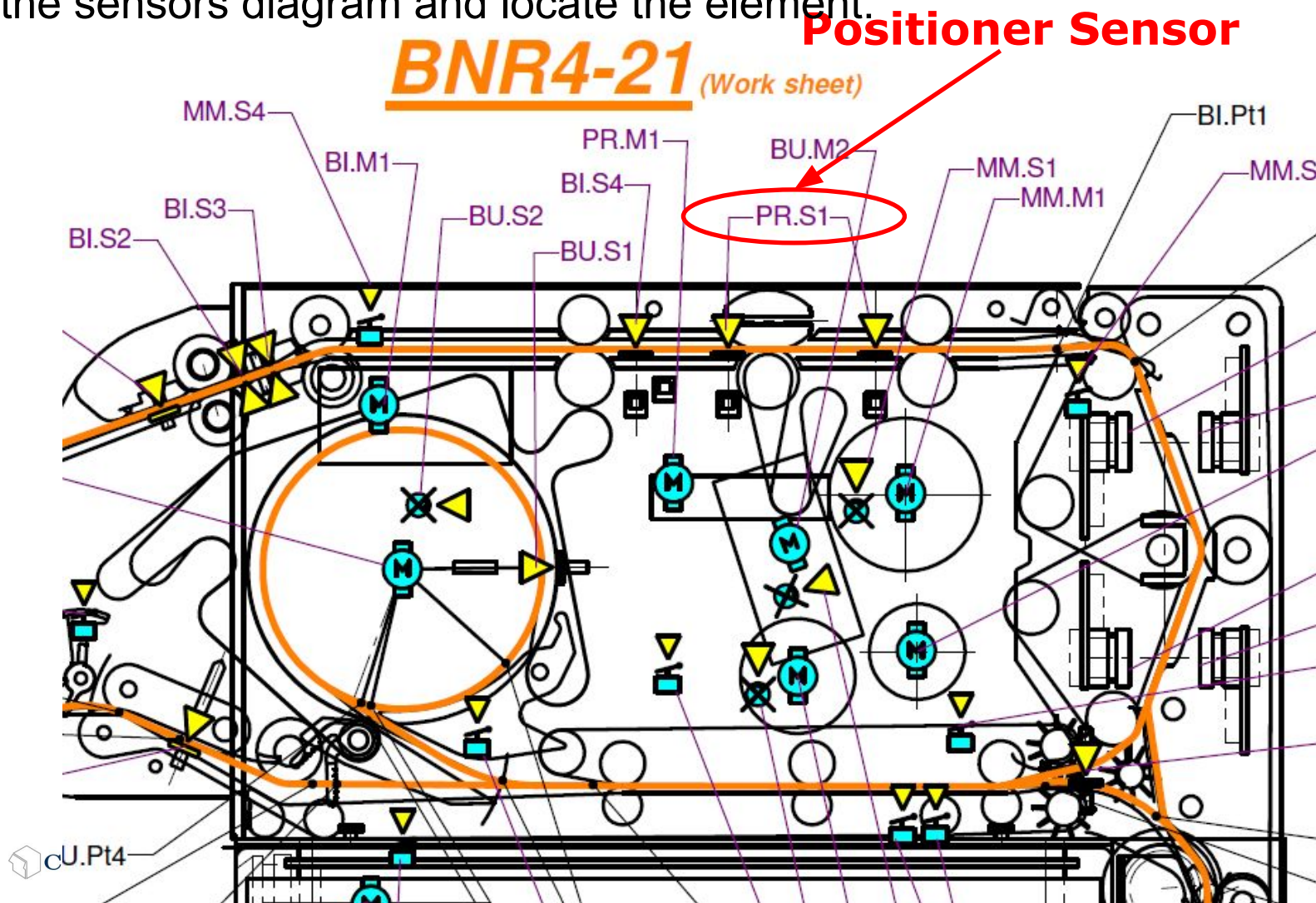
# BNR diagnostics, troubleshooting and

...faulty element and error



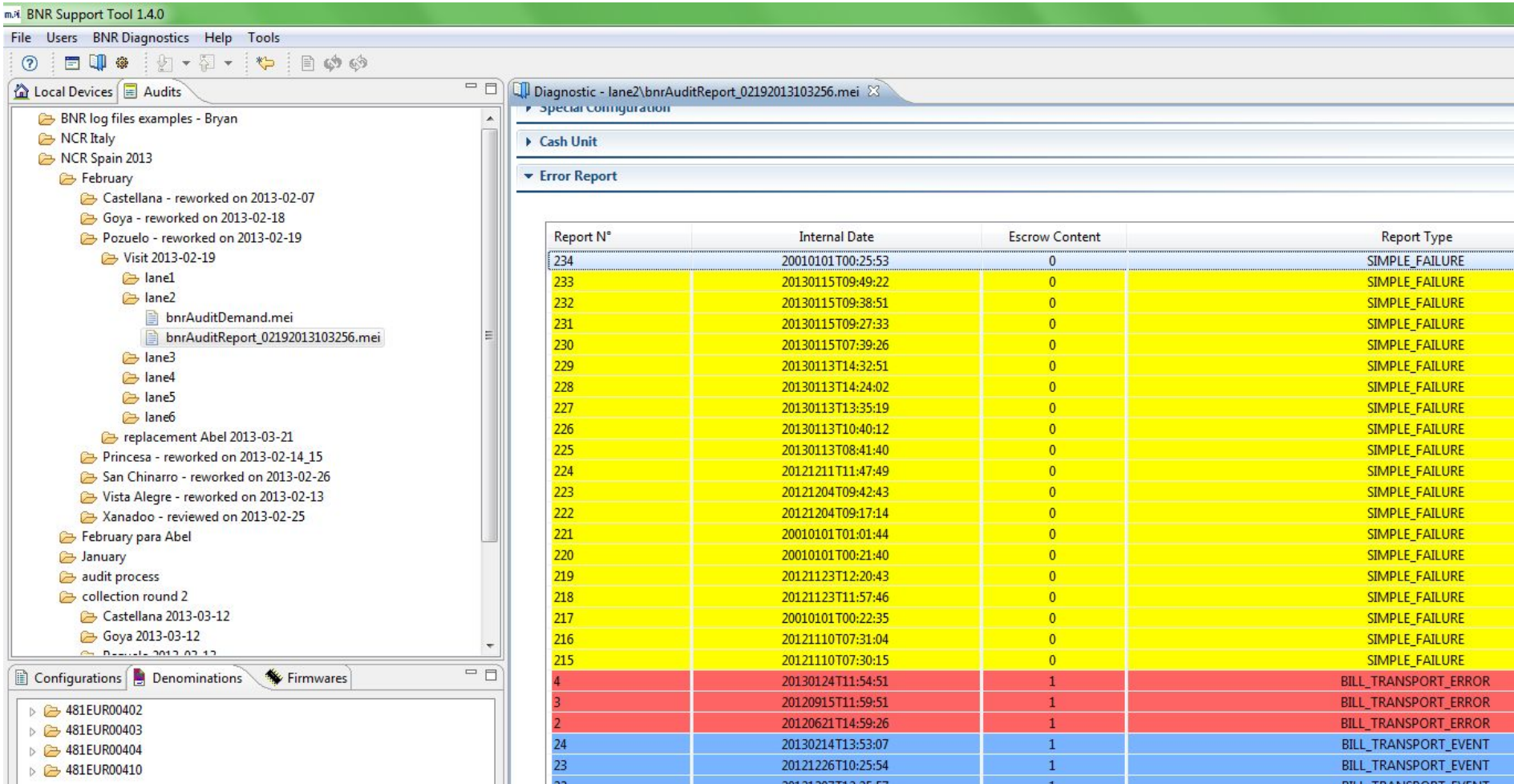
# BNR diagnostics, troubleshooting and error reporting

Now we take the sensors diagram and locate the element:



# BNR Advanced Troubleshooting

BNR diagnostic file log entries: records all bill events inside the BNR system (motors, sensors, etc.) useful to understand the reason of a problem.



# BNR diagnostics, troubleshooting and error reporting

The “Fault code spreadsheet”

Maps the BNR ST error code into the proper SAP code:

| Main Module | | |
|---|---|---|
| Module | Fault Code | Error Description |
| Main Module | MM01 | No Error |
| Main Module | MM02 | Incompatible_SW |
| Main Module | MM03 | Boot_Running |
| Inlet Sensor | MM04 | Signal_High |
| Inlet Sensor | MM05 | Signal_Low |
| X Channel Sensor | MM06 | Signal_High |
| X Channel Sensor | MM07 | Signal_Low |
| Bill Width Sensor | MM08 | Signal_High |
| Bill Width Sensor | MM09 | Signal_Low |
| Bill Intake Bill Sensor | MM10 | Signal_High |
| Bill Intake Bill Sensor | MM11 | Signal_Low |
| Positioner Bill Sensor | MM12 | Signal_High |
| Positioner Bill Sensor | MM13 | Signal_Low |
| Bottom Transport Bill Senso | MM14 | Signal_High |
| Bottom Transport Bill Senso | MM15 | Signal_Low |
| Outlet Bill Sensor | MM16 | Signal_High |
| Outlet Bill Sensor | MM17 | Signal_Low |
| Main transport Motor | MM18 | Speed_To_Low |
| Stacker | MM19 | Cannot_Position |
| Stacker | MM20 | Hardware_Failure |
| Stacker | MM21 | Blocked_At_Home |
| Stacker | MM22 | Blocked_At_Bill_Path |
| Stacker | MM23 | Blocked_At_CB_Entry |
| Stacker | MM24 | Blocked_Around_Home |
| Stacker | MM25 | Stopped_At_Bill_path |
| Stacker | MM26 | Stopped_At_CB_Entry |
| Stacker | MM27 | Cannot_Move_To_TrashBin |
| Stacker | MM28 | Blocked_In_CB |
| Stacker | MM29 | Stopped_In_CB |

SAP code

| Loader | | |
|---|---|---|
| Module | Fault Code | Error Description |
| Loader | LO01 | No_Error |
| Loader | LO02 | Com_Breakdown |
| Loader | LO03 | Incompatible_Module |
| Loader | LO04 | Missing_Module_Type |
| Loader | LO05 | Wrong_Module_Type |
| Loader | LO06 | Boot_Running |
| Bill Sensor | LO07 | Signal_High |
| Bill Sensor | LO08 | Signal_Low |
| Bill Sensor | LO09 | Com_Breakdown |
| Transport Motor | LO10 | Not Started |
| Transport Motor | LO11 | Com_Breakdown |
| Transport Motor | LO12 | Speed_To_Low |
| Pressure Plate | LO13 | Com_Breakdown |
| Pressure Plate | LO14 | Plate_Blocked |
| Pressure Plate | LO15 | Plate_To_Low |
| Anti Fishing Flap | LO16 | Closed |
| Anti Fishing Flap | LO17 | No_Com |
| Loader | LO18 | Replaced_Spare_Part |

| Spine | | |
|---|---|---|
| Module | Fault Code | Error Description |
| Spine | SP01 | No_Error |
| Spine | SP02 | Com_Breakdown |
| Spine | SP03 | Incompatible_Module |
| Spine | SP04 | Missing_Module |
| Spine | SP05 | Opened |
| Spine | SP06 | Wrong_Module_Type |
| Spine | SP07 | Boot_Running |
| Spine Bill Sensor | SP08 | Signal_High |

# BNR diagnostics, troubleshooting and error reporting

Troubleshooting practical exercise !

# BNR testing

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# BNR testing

- Tests and checks on the BNR:

Makes sense to perform checks on the unit both before we operate on it for repair, and after. Purpose at preliminary stage is get a picture of the overall situation (and possible faults) on the unit. Then, after the repair actions on it, make sure the unit is fully functioning.

# BNR testing

- "Pre-repair", to be carried out on a unit incoming for service/repair. Purpose is identify possible issues/weaknesses beyond the ones that have been possibly raised by the customer. This can be done going through an "inspection check-list".

  **BNR Repair Guide**

- "After-repair", quite obviously, this is aimed to verify that the service/repair operations have been successful, unit is fully functioning and ready to return to the field.

  **BNR Bulletin (still unofficial)**

  **BNR Repair Guide**

- Pre-repair: insp
- After-repair: bu

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| Interlo Assem |
| Shockblo Leve |
| Modul |
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| Recogni Sens Ribbo |

mei | bnr

# BNR testing

# BNR-SRV-000

**Loader:**

| | Description | Operation |
| --- | --- | --- |
| 1 | Notes Dispense | 100 billets dispensed from the loader to the outlet in bundles (6x 15 and 1x 10). |
| 2 | Noise | Make sure the loader makes no unusual noise while loading the notes. |
| 3 | Diagnostics | Save diagnostics file. |

**Recyclers:**

| | Description | Operation |
| --- | --- | --- |
| 1 | Control of the drum capacity:<br>• RE30 28/30 min<br>• RE60 58/60 min | • If variant is USD load the notes in the loader and dispense to the recycler.<br>• If another variant is used insert the notes in the MM inlet.<br>• Check RE30 and RE60 counters. |
| 2 | Empty Recyclers | Run empty recyclers to CB macro. |
| 3 | Park recyclers | Launch the PARK command to secure the RE tape for transport. |
| 4 | Diagnostics | Save diagnostics file. |

**Spine:**

| | Description | Operation |
| --- | --- | --- |

# BNR servicing and maintenance

CRANE PAYMENT INNOVATIONS

# BNR servicing and maintenance

- Recommended **preventive maintenance intervals** are specified in the BNR Service Manual. Actions to be carried out either in the field (OEM technicians), either at A
- Specific cleaning instructions, only...) are also provided in th
- More in depth operations – sp knowledge and high expertise the Repair Workshop !

**BNR Service Manual**

BNR maintenance: Indoor environment

| Frequency | 50k unit cycles, | 20k loader cycles, | 250k unit cycles | 500k unit cycles , |
|---|---|---|---|---|
| Type | cleaning | cleaning | Overhaul | Overhaul |
| Location | Field | Field | Service Center | Service Center |
| **Module** | | | | |
| Main Module | Air jet[2] | | Clean BU roller & belt<br><br>(Only up to MM12 version) | Clean BU roller & belt *<br>Clean all tires , rollers & belts<br>Clean all light pipes (air) |
| Cash Box | Air jet | | - | - |
| Loader | Air jet | Air jet<br>Cleaning with IPA[3] | - | Clean all light pipes (air) |
| Recycler | Air jet | | Clean RE roller & tape<br><br>(Only up to RE10 version) | Clean RE tape & roller<br>Clean all light pipes (air) |
| Spine | Air jet | | - | Clean belts & rollers<br>Clean all light pipes (air) |
| Chassis (Interlock) | Air jet | | - | Clean all light pipes (air) |

# BNR jams clearing (hints)

CRANE PAYMENT INNOVATIONS

# BNR jams clearing (hints)

- This topic is not specifically of ASCs interest. For more info about this subject:

  -“Easy“ jam clearing → **BNR User Manual**

  -“Advanced” jam clearing → **BNR Service Manual**

# BNR repair workshop

CRANE PAYMENT INNOVATIONS

# BNR repair workshop

## BNR Repair: Training sub-units

| Training sub-unit | BNR Module | Module element | Type of operations | Level | Resources | Link to available resources |
|---|---|---|---|---|---|---|
| MM-1 | **Main Module** | Positioner | Remove-refit/replace | ASC | Official Repair Videos | Removing Positioner WEB.mp4<br>Reinstalling Positioner WEB.m4v |
| MM-2 | **Main Module** | Positioner O-ring | Remove-refit/replace | ASC | Unofficial video | Replacing the O ring of the positioner V2012.10.2 |
| MM-3 | **Main Module** | Bezel Assy | Remove-refit/replace | ASC | Official Repair Videos | Replacing Bezel Assembly WEB.m4v |
| MM-4 | **Main Module** | Oulet Flap | Remove-refit/replace | ASC | Official Repair Videos | Replacing outlet flap WEB.m4v |
| MM-5 | **Main Module** | Inlet sensors | Cleaning | ASC | - | - |
| MM-6 | **Main Module** | Piston | Remove-refit | ASC | Official Repair Videos | Removing Piston WEB.m4v<br>Reinstalling Piston WEB.m4v |
| MM-7 | **Main Module** | Cables | Remove-refit/replace | ASC | Official Repair Videos | Replacing Cable WEB.m4v |
| MM-8 | **Main Module** | Up/Down sensor | Remove-refit/replace | ASC | Official Repair Videos | Replacing Up-sensor WEB.m4v<br>Replacing Down-sensor WEB.m4v |
| MM-9 | **Main Module** | RS Rear Guide | Remove-refit/replace | OEM (?) | Unofficial video, Bulletin | How to replace the HI Roller guide rev 01.mpg<br>FG00711 RearGuide Bulletin.pdf |
| MM-10 | **Main Module** | Bundler | Calculate slippage of the bundler | ASC | Excel macro,<br>Draft doc by JamesC | Calcul glissement Bundler.xlsx<br>Draft - Nettoyage Bundler - BU Cannot find mark - |
| MM-11 | **Main Module** | Bundler | Cleaning | ASC | Unofficial video | BNR CLEANING BUNDLER 2011.04.19 V01.mpg |

# BNR repair workshop

- Repair workshop part 1: Modules disassembly
  - Main Module:
    - Positioner, Positioner O-ring
    - Piston
    - Bezel, inlet, outlet
    - Up sensor, down sensor
    - RS rear guide
  - Loader:
    - Full module disassembly
  - Chassis:
    - Interlock and bar
  - Spine:
    - Gear wheel and Spine door

**BNR ASC official videos**

# BNR repair workshop

- Repair workshop part 2: other service procedures

  - Rotating diverter adjustment
  - Bundler: slippage calculation, cleaning, coding wheel replacement
  - BNR calibration
  - Sensor board replacement
  - Cashbox
  - Loader: cleaning
  - Recycler: tape adjustment, cleaning, green roller

# BNR spare parts

CRANE PAYMENT INNOVATIONS

- CPI always keeps ASCs upda
  Spare Parts Catalogue. Curre

- The catalogue has consistent
  continuously adding new part
  for a given part, not yet availa
  your request to CPI Tech Sup

- RETAIN THE PARTS ! In orde
  product and spot possible we
  retain the replaced/broken pa
  Until new indications will be p
  like ASCs to follow.

MEI BNR Spare parts Catalogue 2013

| MAIN MODULE | | | | Price-list |
|---|---|---|---|---|
| Part Number | Designation | Additional Description | | EUR |
| 668508001P1 | ST-piston assy spare | | | 100.00 |

| MAIN MODULE | | | | Price-list |
|---|---|---|---|---|
| Part Number | Designation | Additional Description | | EUR |
| 655934001P1 | PR-Positionar assy spare | | | 301.00 |

| MAIN MODULE | | | | Price-list |
|---|---|---|---|---|
| Part Number | Designation | Additional Description | | EUR |
| 668006203P100 | S BNR,PAN HEAD SCR TORX M4X5,PK100 | | pack 100 | 11.50 |

| MAIN MODULE | | | | Price-list |
|---|---|---|---|---|
| Part Number | Designation | Additional Description | | EUR |
| 676591001P100 | S BNR,KNURLED HEAD SCREW M3X8,PK100 | | pack 100 | 76.50 |

| MAIN MODULE | | | | Price-list |
|---|---|---|---|---|
| Part Number | Designation | Additional Description | | EUR |
| 675707001P1 | RS-up-B-sensor-assy spare | | | 151.00 |

# CPI service management

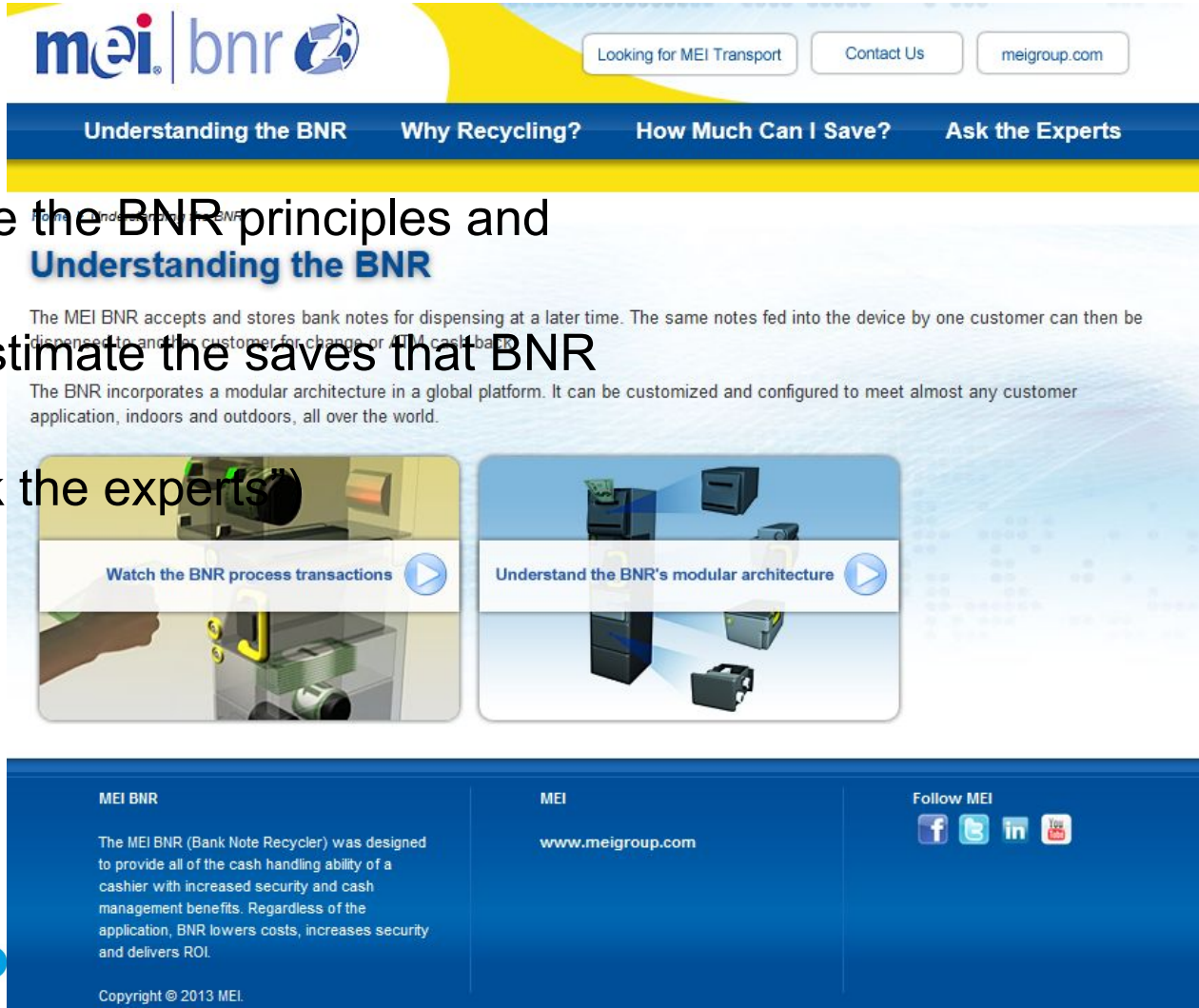
CRANE PAYMENT INNOVATIONS

# BNR Web site, FTP site and CPI periodic communications

CRANE PAYMENT INNOVATIONS

# BNR repair workshop

- The MEI BNR website
  - Videos that illustrate the BNR principles and advantages
  - ROI calculator to estimate the saves that BNR allows
  - F.A.Q. section (“ask the experts”)
  - More...




CashCode

# BNR Resources

- Guides and Bulletins Outlined in this Presentation
- MEI Gaming / Retail Tech Support Website
- BNR Applications Engineers
  - Luis Fuller (luis.fuller@cranePi.com)
  - Fabio Materia (fabio.materia@cranePi.com)
  - Pat Erbe (pat.erbe@cranePi.com)
  - Shane Timmons (shane.timmons@cranePi.com)
  - Abdel Latoui (abdel.latoui@cranePi.com)