

SECTION 2

NV9 USB MANUAL SET

FIELD SERVICE MANUAL

INTELLIGENCE IN VALIDATION



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NV9 USB MANUAL SET – SECTION 2

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2. FIELD SERVICE MANUAL

This section is one part of a complete manual set: typically, a field service engineer who is maintaining the product would use this section.

This section contains the essential information that the field engineer needs to clean, maintain and fault find an NV9 USB Validator that is installed in a host machine.

The NV9 USB Validator has been designed to minimise any problems or performance variations over time. This has been achieved by careful hardware and software design; this attention to the design means there is very little user maintenance required.

2.1 Cleaning

The NV9 USB Validator has been designed in a way to prevent damage and airborne contamination reaching the optical sensors; however, depending upon the environment the NV9 USB may require occasional cleaning or belt changing.



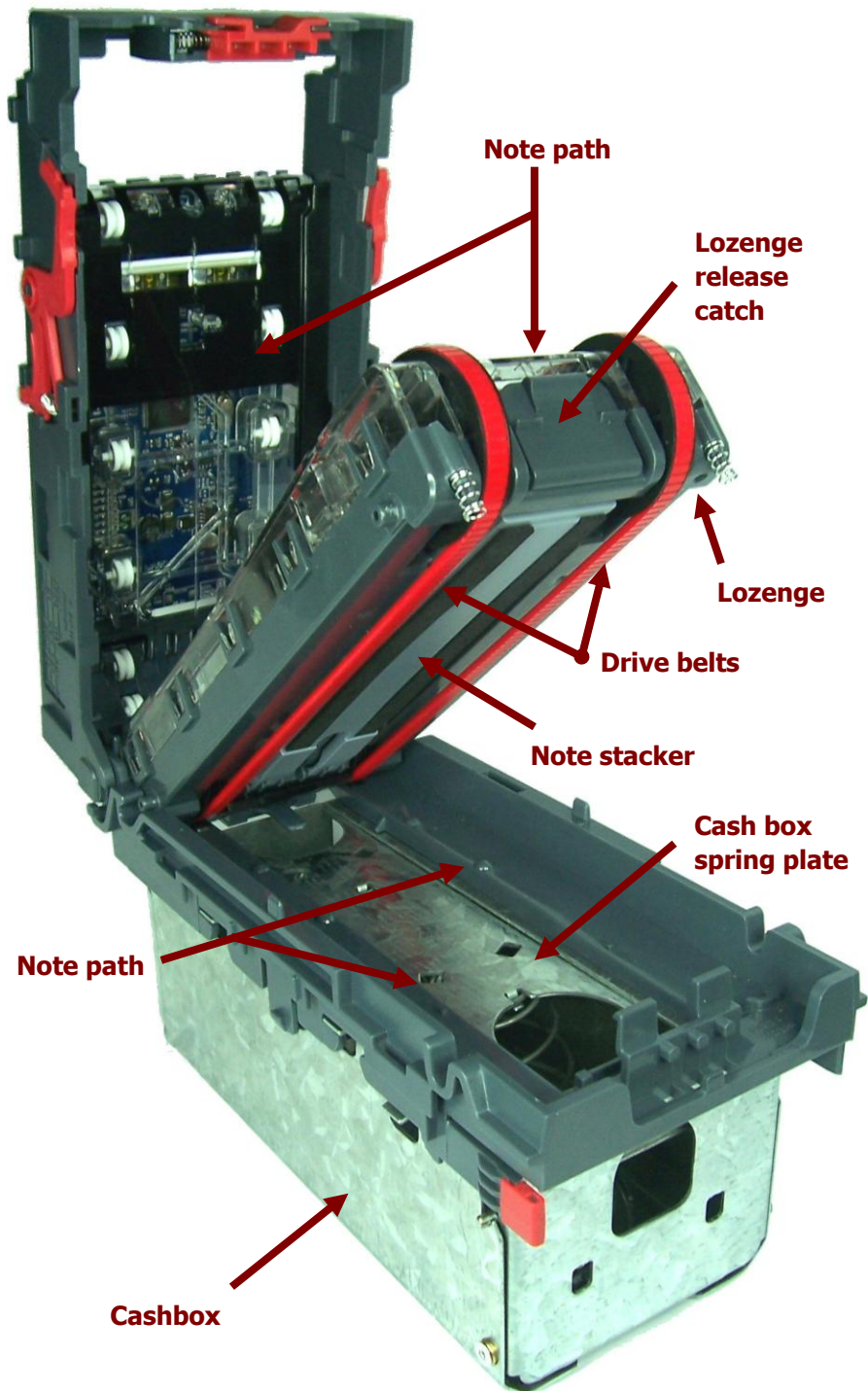
Caution!

Do not use solvent based cleaners on any part of the NV9 USB unit.

Do not use solvent based cleaners such as alcohol, petrol, methylated spirits, white spirit or PCB cleaner. Using these solvents can cause permanent damage to the unit; only use a mild detergent solution as directed below.

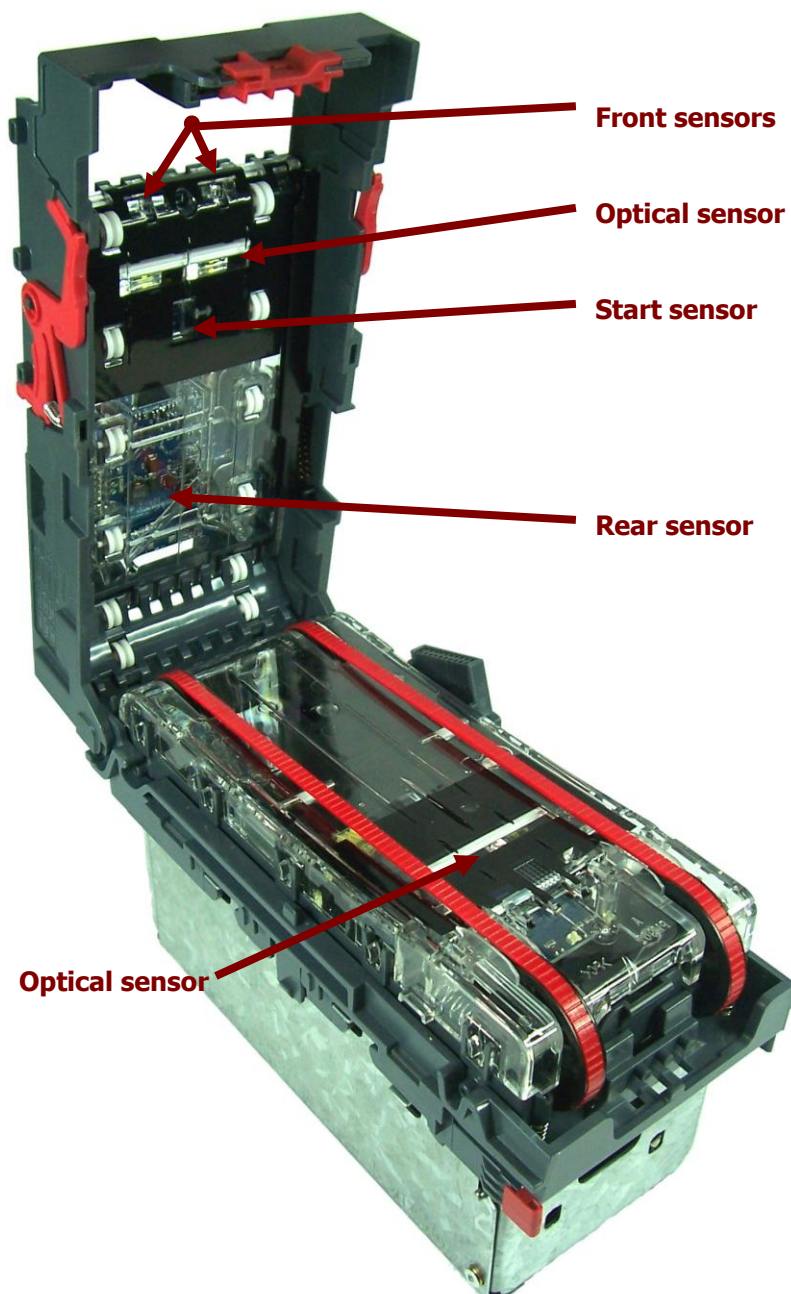
To clean the NV9 USB, open the note path by sliding the red release catch on the front of the validator to the left (as indicated in the picture) - this will allow access to the lozenge and note path



**WARNING!**

Disconnect power **BEFORE**
any cleaning operation

Unless stated otherwise, you should disconnect the power **BEFORE** carrying out any cleaning operations to avoid the risk of causing damage to the validator.



Examine the note paths, lozenge and note stacker for any dirt or debris, and carefully clear and wipe the surfaces of the note paths and lozenge with a soft lint free cloth that has been dampened with a water and mild detergent solution (i.e. household washing up liquid.) - be very careful when cleaning around the sensor lenses and make sure they are clean and dry before closing the cover and restarting the unit. Do not try to polish the sensor lenses – if a lens is badly scratched, contact ITL technical support for advice.

Also check that the note stacker and cash box spring plate are not jammed.

**Caution!**

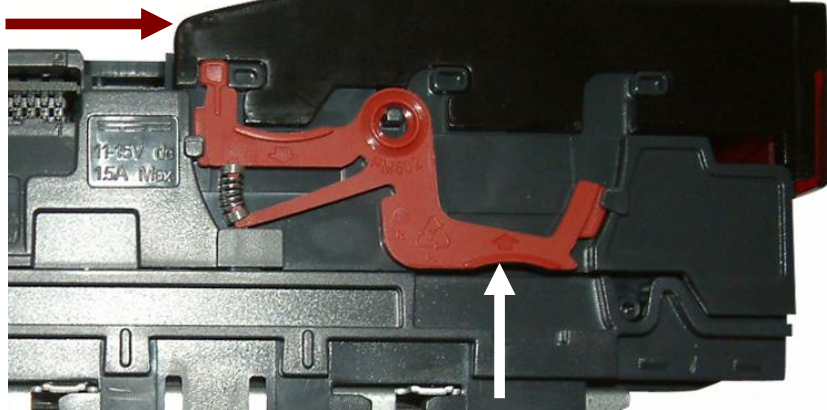
Be careful cleaning sensors.

When cleaning the recessed front sensor, use a small soft brush or cotton bud – do not use anything sharp or abrasive.

Cleaning the belts is a simple operation. Ensure the validator is enabled (i.e. bezel lights are illuminated), then remove the bezel:

- The bezel is removed by pushing the red locking arms on both sides of the validator upwards, and sliding the bezel away from the locking arms

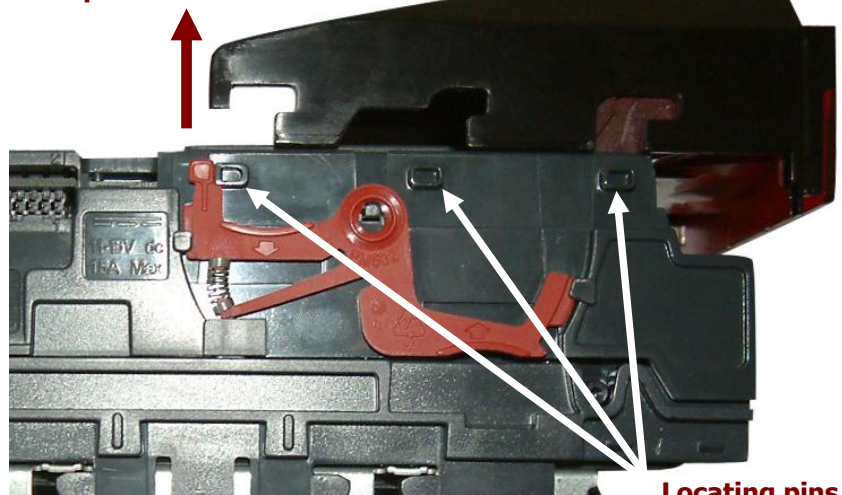
b. Slide bezel away from locking arms



a. Push locking arms upwards

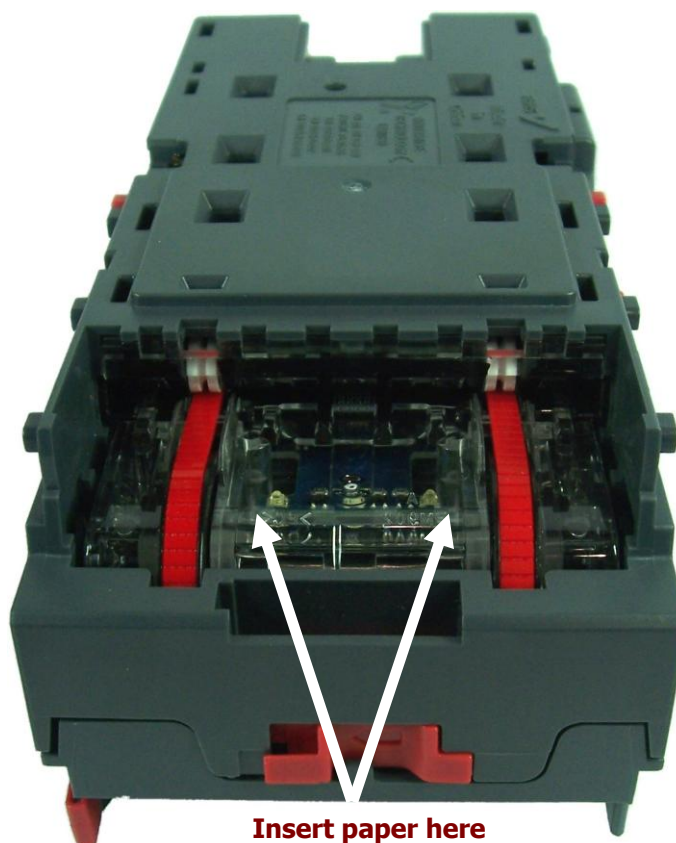
- Lift the bezel off once the bezel has been slid fully across and is clear of the locating pins

Lift upwards to remove



Locating pins

- Insert a piece of paper, which is narrower than the width between the two belts, in the centre of the note path to activate the drive motor
- Use a lint free cloth dampened with water and containing a mild detergent (such as dish detergent) and hold against each drive belt as it turns.



Repeat this procedure until all dust and debris has been removed from both belts. Finally, use a DRY lint free cloth to remove any excess moisture and refit the bezel. The bezel is refitted by pushing the bezel back onto the locating pins and sliding backwards until all six pins are engaged in the slots. The locking arms will then spring back and locate into the bezel.

**Caution!**

Check locking arms.

Always make sure that **BOTH** locking arms are fully located in the bezel – trying to operate the validator if they are not correctly located can cause transport issues or unit damage

**Caution!**

Do not use any lubricants.

Do not lubricate any of the note transport mechanism, belts or any part of the note path, as this can affect the operation of the validator.

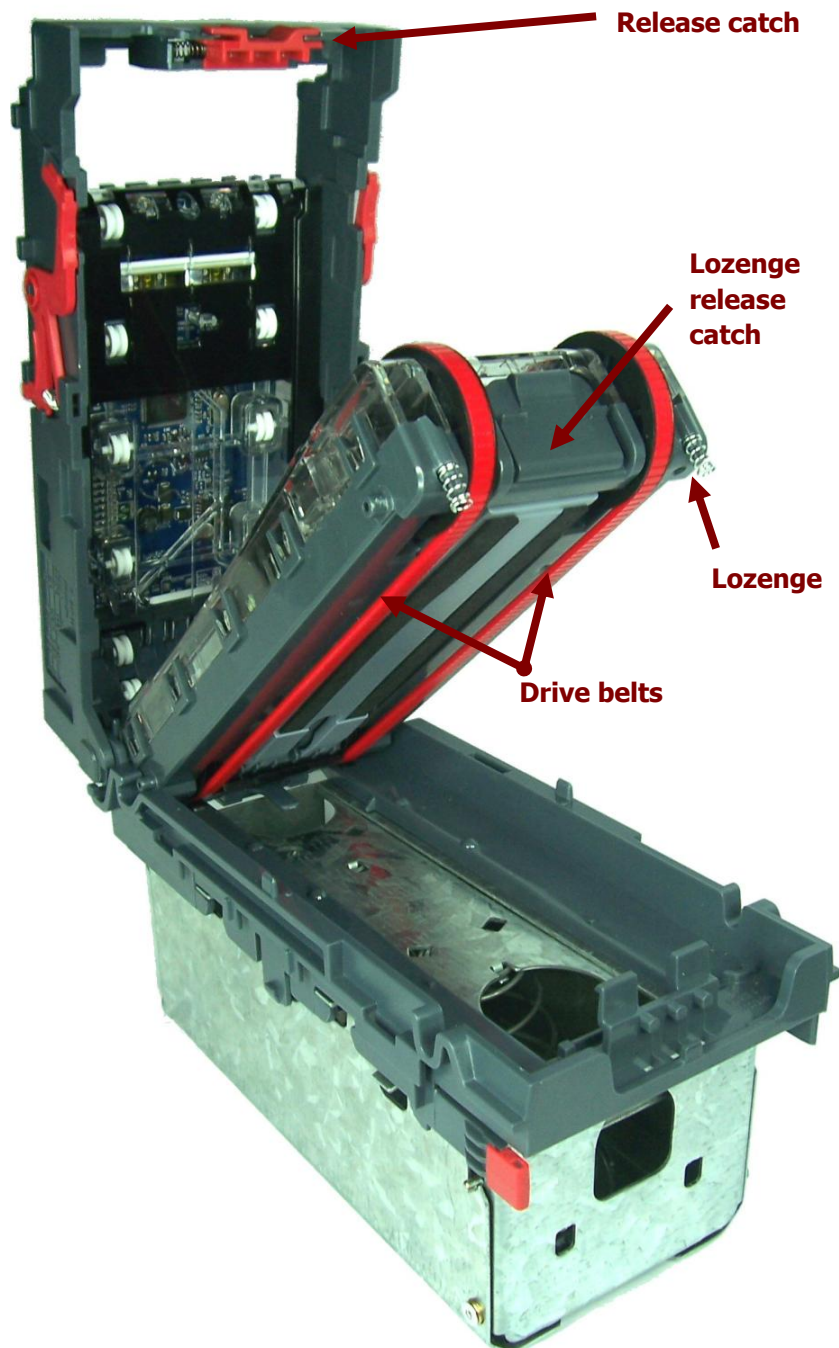
If the belts are worn or damaged, they should be replaced (ITL part number FD00106). This is a simple procedure, and is carried out as follows:

**WARNING!**

Do not try to disassemble

Do not attempt to disassemble the validator head – trying to do this could result in the validator needing reinitialisation, cause personal injury or could damage the unit beyond repair.

- Open the top of the unit using the Release catch
- Release the lozenge by gently pressing the Lozenge release catch
- Remove and place the lozenge on a clean dry surface
- Press in the large wheels to release the belt tension and then remove the belts, sliding them off the smallest wheels first
- Replace the belts by fitting them over the lozenge, largest wheels first
- Reassemble and close the unit



2.2 Fault Finding - Flash Codes

The NV9 USB Validator has inbuilt fault detection facilities. If there is a configuration or other error the NV9 USB front bezel will flash in a particular sequence; a summary of the Bezel Flash Codes for the NV9 USB is shown below:

Flashes		Indicated Error	Comments
Long	Short		
0	0	None	
1	2	Note path jam	Remove obstruction and follow the cleaning procedure in subsection 2.1 of this manual
	3	Unit not initialised	Contact ITL technical support
	4	Internal sensor unable to calibrate	Ensure note path is firmly closed, then cycle the power to the unit. If the problem persists contact ITL technical support
3	1	Firmware checksum error	Download new firmware
	2	Interface checksum error or unable to set programmed interface	
	3	EEPROM checksum error	
	4	Dataset checksum error	
4	1	Power supply too low	Check power supply
	2	Power supply too high	

2.3 Technical Specifications

The full technical specifications for the NV9 USB Validator can be found in Section 6, Appendix B of this manual set. A brief summary is given here:

DC Voltage	Minimum	Nominal	Maximum
Absolute limits	10.8 V	12 V	13.2 V
Absolute limits (when fitted with IF5 interface)	18 V	---	48 V DC or 34 V AC
Supply ripple voltage	0 V	0V	0.25 V @ 100 Hz
Supply Current			
Standby	200 mA		
Running	1 A		
Peak (motor stall)	1.5 A		

Interface Logic Levels	Logic Low	Logic High
Inputs	+0 V to +0.5 V	+3.7 V to +12 V
Outputs (2.2 k Ω pull-up)	+0.6 V	Pull-up voltage of host interface
Maximum current sink	50 mA per output	



WARNING!

Use suitable power supply

Ensure that the supply voltage to the NV9 USB is not lower than 10.8 V and that the power supply can provide sufficient current to avoid incorrect operation and excessive note rejects.

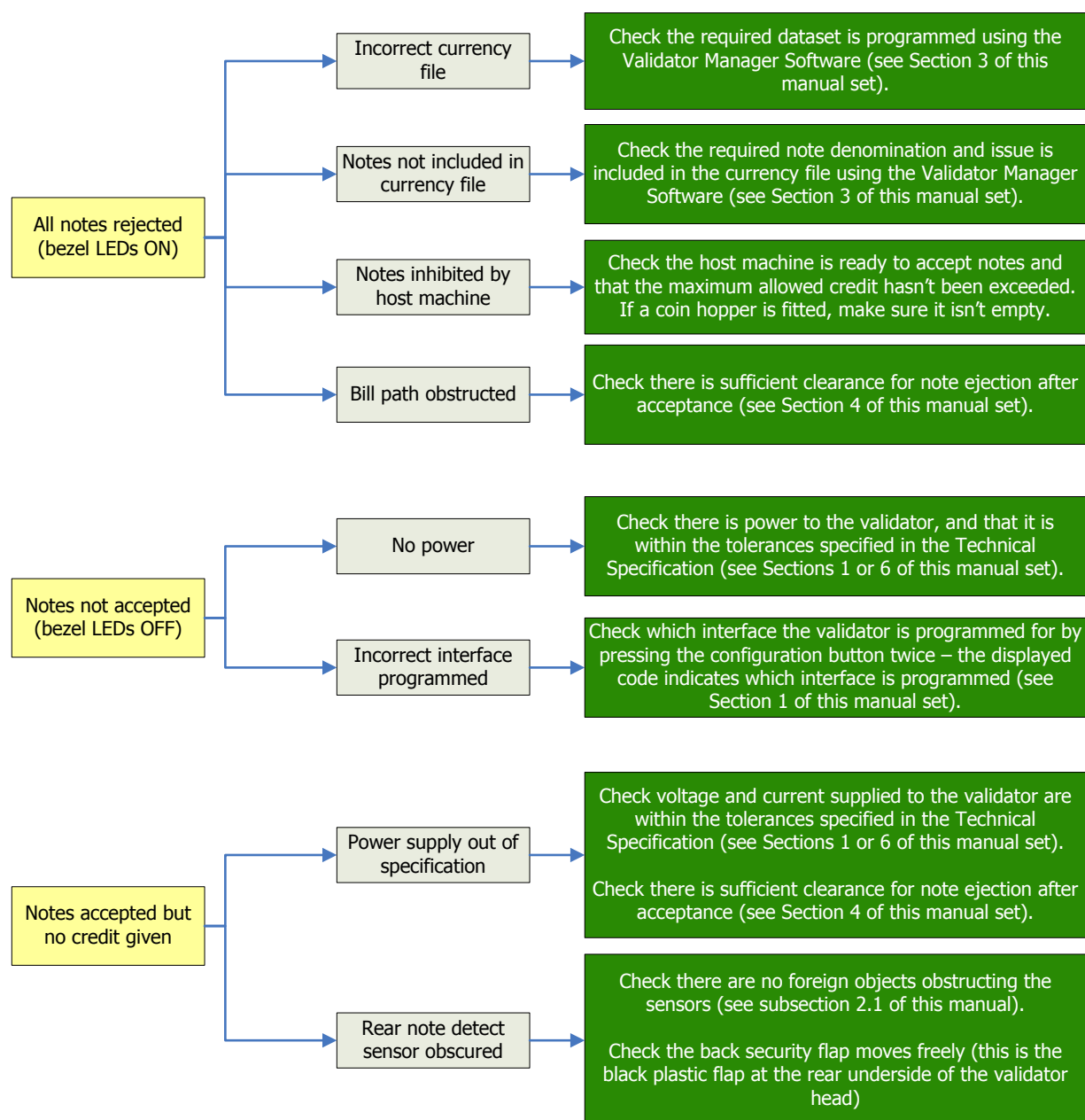
We recommend that your power supply is capable of supplying 12V DC at 3 A.

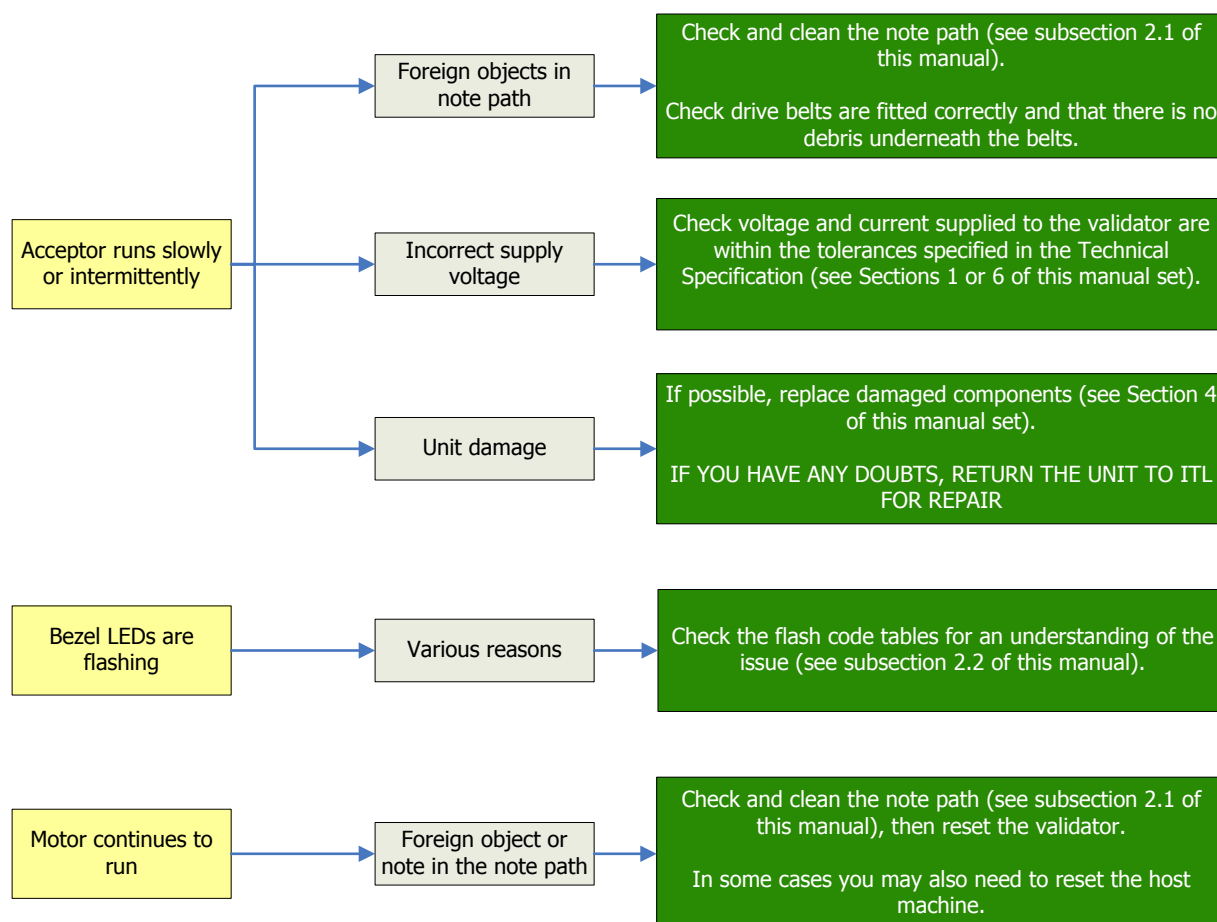
- For 12V operation, use TDK Lambda model SWS50-12. This power supply is available from a variety of suppliers including Farnell (stock code 1184645) and RS (stock code 466-5869).



2.4 Fault Finding Flow Chart

Please use this flow chart with the Flash Codes in subsection 2.2 as an aid to help resolve any configuration or start up problems you might have after installing the NV9 USB validator





If you are unsure about the cause or how to resolve the problem, please contact ITL's technical support department. Support contact details can be found on the ITL website (www.innovative-technology.co.uk), or on the last page of this section.

2.5 Frequently Asked Questions

a. Why are there no DIP switches on the unit?

- The NV9 USB has no dipswitches. Configuring the unit is carried out using a configuration button mounted on top of the unit – see Section 1, subsection 1.3 of this manual set for more information.

b. In what orientation can I use the NV9 USB validator?

- The NV9 USB can be mounted horizontally or vertically, depending on the type of bezel and cashbox selected. See Section 1, subsection 1.1 of this manual for more information on mounting the validator – check the ITL website to see the currently available range of cashboxes and bezels.

c. Some or all notes are not accepted

- Check that no inhibits are set in the Validator Manager software (see Section 3 of this manual set). If the problem persists, contact ITL Support for further assistance.

d. How do I clean the validator?





- Follow the instructions given in subsection 2.1 of this manual.

2.6 Spare Parts

Full details of the interface cable connector pinouts, connector types / makes and other related information can be found in Section 4 of this manual set. The user can obtain the following parts for the NV9 USB validator:


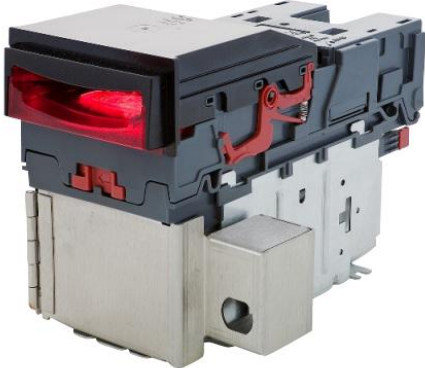
ITL Part Number	Description	Details
CN00392	Power and USB Communication Cable	USB 2.0 Compliant Type A to 16 way header cable




Technical drawing of the CN00392 Power and USB Communication Cable. The drawing shows a USB Type A connector (CON1) on the left and a 16-pin header connector (CON2) on the right. The cable length is 1500mm. The USB connector has a top view and a front view. The 16-pin header has front and bottom views. The bottom view of the header shows pins 1 through 16. The cable has two power wires: a red wire labeled 'Red +12V' and a black wire labeled 'Black 0V'. The distance from the USB connector to the power wires is 1500mm. The distance from the power wires to the header is 15mm, and the distance from the power wires to the USB connector is 60mm. The header has a 20mm section, a 15mm section, and a 15mm section.


Bezels		
ITL Part Number	Description	
PA00188	Vertical Upstack Bezel Assembly	
PA00189	Horizontal Bezel Assembly	
PA00190	Vertical Upstack Extended Snout Bezel Assembly	
PA00191	Vertical Downstack Extended Snout Bezel Assembly	
PA00256	66mm Vertical Upstack Bezel	No image available
PA00268	69mm Fixed Width Horizontal Bezel	No image available
PA00296	Vertical Up/Down Flat 66mm Bezel Assembly	No image available

PA00896	Horizontal Bezel Assembly (NV11)	
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Cashboxes

PA00185	Clip-on Cashbox Assembly (300C)	
PA00186	Locking Cashbox Assembly (300L)	

PA00192	Slide-on Cashbox Assembly (300S)	
PA00193	Clip-on Cashbox Assembly (600C)	
PA00194	Slide-on Cashbox Assembly (600S)	

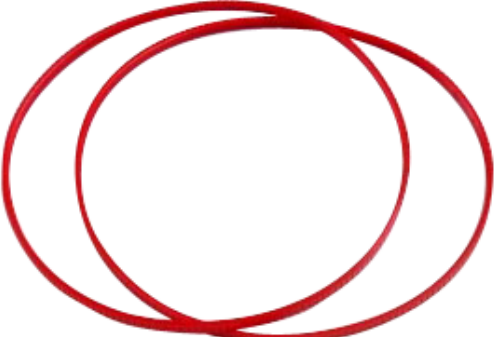
PA00898	Standard Cashbox Assembly (NV11)	
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**Information**

Check website for options.

There are many variants of bezel and cashbox type available for the NV9 USB validator. Please check the ITL website (www.innovative-technology.co.uk) for up to date information on the options available.

Drive Belts

FD00106	NV9 USB Red Drive Belt	
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