NV12

QUICK START AND CONFIGURATION GUIDE

INTELLIGENCE IN VALIDATION

NV12 Quick Start and Configuration Guide

1 Introduction

This manual is intended to help with the setting up and installation of the NV12

This manual contains the essential information that a user needs to quickly assemble and configure an NV12 for installation into a host machine or for testing on the bench.

This Manual has been developed using NV9USB+ firmware NV00093570000T18 and NVR-280 Firmware NR02800000000P25.

For later firmware versions please download the relevant manual.

2 Assembly

2.1 Bezel Fitting and Removal

The bezel is fitted by lining up the locking pins of the unit to the guides on the bezel and pushing the bezel towards the bulk of the unit to lock the bezel in place.
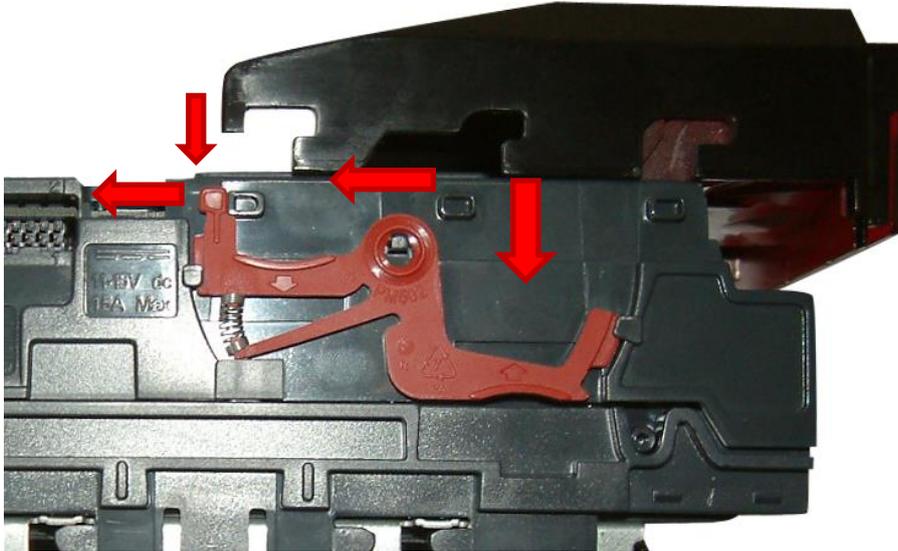
To remove an installed bezel the push locking arm must be lifted towards the bezel to unlock. The bezel can then be pulled forwards and removed.

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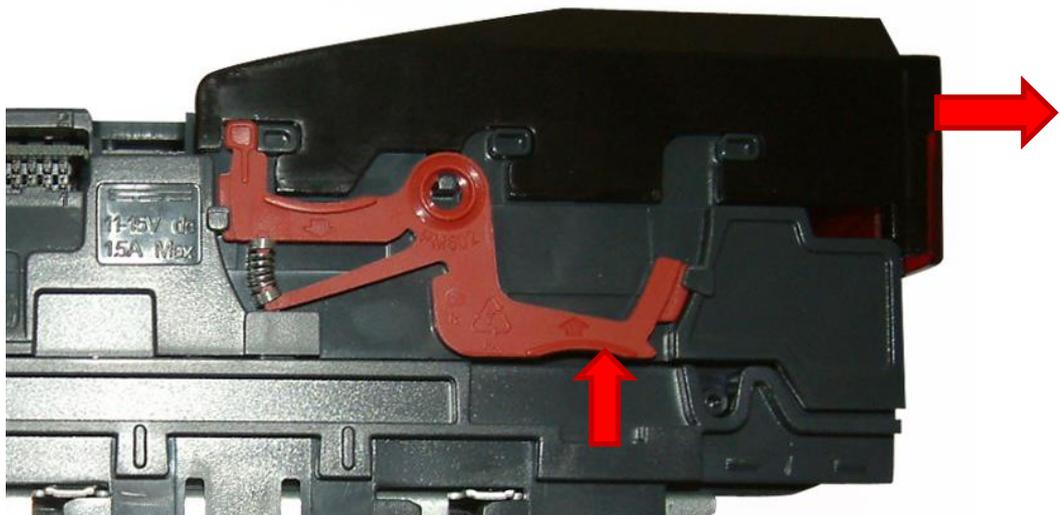
2.2 Removing the Cashbox

To remove the slide in cashbox push the release catch away from the unit and pull the cashbox forwards.
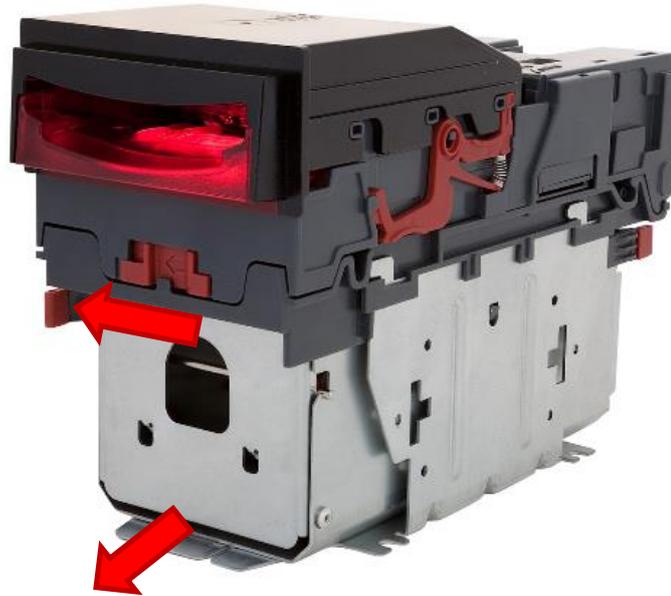
2.3 Removal and Fitting of NVR-280 Printer head

The NVR-280 is removed from the unit by unlatching both sides of the unit and lifting vertically off.

To fit the Unit reverse these steps.

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2.4   Inserting Thermal Paper

Place paper roll on to the holder and clip on to the top of the NV12 with the paper protruding from the rear of the unit. Power the NV12 and insert the paper to have the paper readied automatically.

3   Technical Specifications

3.1   Electrical Specification

DC Voltage	Minimum	Nominal	Maximum
Absolute limits	10.8V	12 V	13.2 V
Supply ripple voltage	0 V	0V	0.25 V @ 100 Hz
Supply Current			
Standby			200 mA
Running			5 A

⚠ **WARNING!**	Ensure that the voltage supplied to the NV12 is not lower than 10.8 V and that the power supply can provide sufficient current to avoid incorrect operation.
Use a suitable power supply	

We recommend that your power supply is capable of supplying 12v DC at 5A.

3.2   Printer Specification

Paper Thickness	55-80g/m^2
Paper Width	80mm
Printing Width	72mm
Printer Resolution	W8 dots/mm x H8 dots/mm
Printing Temperature	Up to 90°C
	-10 to 50°C (Non condensing)

Operating temperature and humidity range

(image from LTPD247A/B, LTPD347A/B THERMAL PRINTER MECHANISM TECHNICAL REFERENCE)
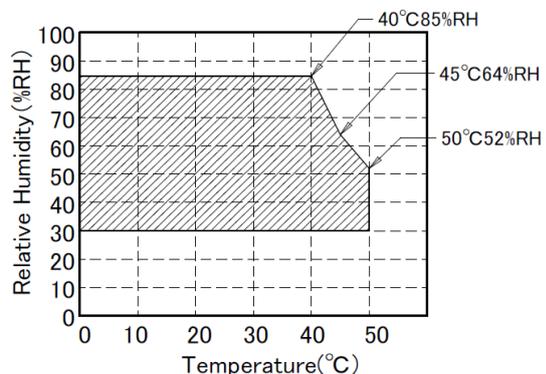
3.3   Interface Specification

Inputs are pulled up internally to 5V. They should be driven by an open collector in the host machine, which will pull the NV12 input low when required.

Outputs are open collector which will pull the host input low when required.

Interface Logic Levels	Logic Low	Logic High
Inputs (Pulled Up Internally)	0 V to +0.5 V	+3.7V to +12V
Outputs (2k2Ω Pull-up)	+0.6 V	Pull-up voltage of host interface
Maximum current sink		50 mA per output

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4 Connectors and Pinout

4.1   16 Pin Connector

Pin	Description
1	TTL Data Out (Tx)
5	TTL Data In (Rx)
11	USB Data +
12	USB Data -
13	USB power (+5V)
15	+12V
16	0V

4.2   6 Pin Molex

Pin	Description
1	0V
2	RS232 Data in (RX)
3	TTL Data in (RX)
4	+12V
5	RS232 Data Out (TX)
6	TTL Data Out (TX)
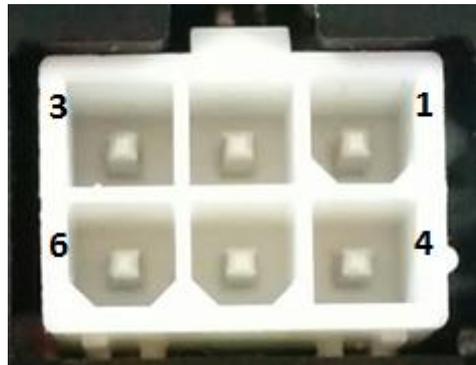
4.3 Connector

Note: Maximum notch height = 1.5mm

CON2, CON3, CON4, CON5, CON6, CON1 (drawing views)

Connectivity

CON1 Pin	Ferrite 1 loop	CON2 Pin	CON3 Pin	CON4 Pin	CON5 Pin	CON6 Pin	Gauge (AWG)	Vendor	Description
6	1	-	-	-	-	1	26	Molex	39-01-2065 housing (2x 6 way 4.2mm pitch Mini-Fit Jr receptacle)
5	1	-	-	-	-	5	26	Molex	0039000209 (tin plated, female, brass) crimps (4A @ 22AWG, 2A @ 26AWG)
4	1	-	-	-	-	-	22	See notes	Cable tie to secure ferrite into place
1	1	16	3	-	1	15	22/26	-	Ferrite (2 turns)
5	1	-	3	1	1	16	26	-	20mm black heat shrink sleeve (spread along the length)
2	1	-	2	1	-	-	26	Molex	Standard AWG 26 wire (see comments below)
								-	Standard AWG 22 wire
								Molex	90142-0016 housing
								Molex	90119-0120 (tin plated) crimps
								Deltron	Stackable black 4mm banana plug (553-0500-01)
								Deltron	Stackable red 4mm banana plug (553-0500-01)

Colour / Comment

Colour	Comment
White	SSP_TXD (Printer to Host)
Blue	SSP_RXD (Host to Printer)
Red	V_IN
Black	GND
Grey	RS232 (Data out from Printer)
Purple	RS232 (Data in Printer)

Soldered together
To CON1.1 (22AWG)
To CON2.16 (26AWG)
To CON5.1 (22AWG)
To CON3.3 (26AWG)

Ferrite Sleeve
Ferrite sleeve needs to have >572Ω @ 100MHz.
Recommended parts:
a) Wurth 74270060 - 714Ω @ 100MHz (two turns)
b) Edgar FL8 RH10 x 20 x 6.35 - 724Ω @ 100MHz (two turns)

1 turn = threaded through ferrite sleeve
2 turns = threaded through with one loop

Parts List

Item	QTY	
A	1	
B	6	
C	1	
D	1	
E	9	
F	10	
G	2	
H	2	
J	7	
K	1	
L	1	

Comments
CON1 connects to NVR280 Printer
CON2 connects to Host
CON3 connects to SSP
CON4 connects to V+ (12V)
CON5 connects to V- (GND)
CON6 connects to NV9 Validator

For item F, 2 wires (white & blue) are from CON1 to CON2; 1 wire (black) is from CON2 to the soldered intersection, and 3 wires (grey, purple & black) are from CON1 to CON3 (do not strip ends at CON3). A further 4 wires (F) are from CON1 to CON6 (white, blue, red & black) without passing through the ferrite. CON4 and CON5 are for powering up the NVR280 Printer so V+ can be connected to 12V.

Note to Manufacturers
Certificates are needed for the following:
RoHS compliance ■ UL94-V0 rated (connector housing) ■ UL94-VW1 rated (all other parts)

All dimensions are in mm ±5mm, unless specified

MATERIAL: All parts must be rated to at least UL 94-VW1. All connector housings must be rated to UL94-V0. Must be RoHS compliant.

DRAWN BY: C. Hyde   DATE: 10/02/15

TITLE: NVR280 PRINTER HARNESS

DRAWING NO: WR02043   ISSUE: B

5 Configuration and Fault Codes

5.1 Dipswitch and Button Functionality

Switch	Function
1	Change NVR-280 Interface
	Toggling the switch On then Off will change between the NVR-280's primary interface and SSP
2	n/a
3	Toggle NV9USB+ Button Function/Enable Test Ticket
	When in the off position the NVR-280 button Functions as the NV9USB+ configuration Button In the On position the button can be held to print a Test Ticket.
4	Safe Mode: Enables SSP with default settings
	If the switch is in the On position and the unit is power cycled the NVR-280 will start in SSP.

NV9USB+ Button functions

Action	Power Status	Function
Press and hold (more than 2 seconds) until the bezel illuminates, then release	Powered ON	Sets validator to Programming mode (SSP)
Press once (less than 1 second)	Powered ON	Enables Configuration Card programming – press again to cancel this mode
Press twice (within half a second)	Powered ON	Shows current interface type (see flash count table below)
Press and hold as validator is powered up	Powered OFF / ON	Resets to factory settings

5.2 NVR-280 Printer Head Error Codes

Number of Flashes		Red			
		1	2	3	4
Yellow	1	No NV9USB+ Connection detected	No Paper	Diverter not opened	Unknown error
	2	Initialization Fail	Tab not found	Diverter not closed	Tickets low
	3	No Print Head	Load fail	Burst fail	
	4	Ticket Path Open		Cut fail	
	5			Unknown jam	

If the NVR-280 has a constant RED Light with the Yellow LED flashing the unit is running low on paper.

5.3 NV12 Bezel Flash Codes

Number of LONG flashes	Number of SHORT flashes				
	1	**2**	**3**	**4**	**5**
1	Note Path Open	Note Path Jam	Unit Not Initialized	Sensor Covered	
2	Cash Box Removed	Cash Box Jam			
3	Firmware Checksum	Interface Checksum	EEPROM Checksum	Dataset Checksum	Note Float Incompatible
4	PSU too Low	PSU too High			

6   Programming, Dataset loading and Template Design

To Program, load a dataset and design a template on the NV12 a WR02043 cable should be used with an IF17 to interact with a PC.

To use the Programs linked below the NV12 will have to be set to SSP.

https://www.dropbox.com/sh/8wmc3rnp65bolr3/AADp0ZU86YTh5zYqWgAGn90La?dl=0

6.1   Programing and Dataset Loading

To install the firmware and dataset to the NV12, connect to a PC and run Validator Manager (Version 4.3.3 or later). Validator Manager will automatically detect the unit.

For information on how to use Validator Manager please use the relevant manual.
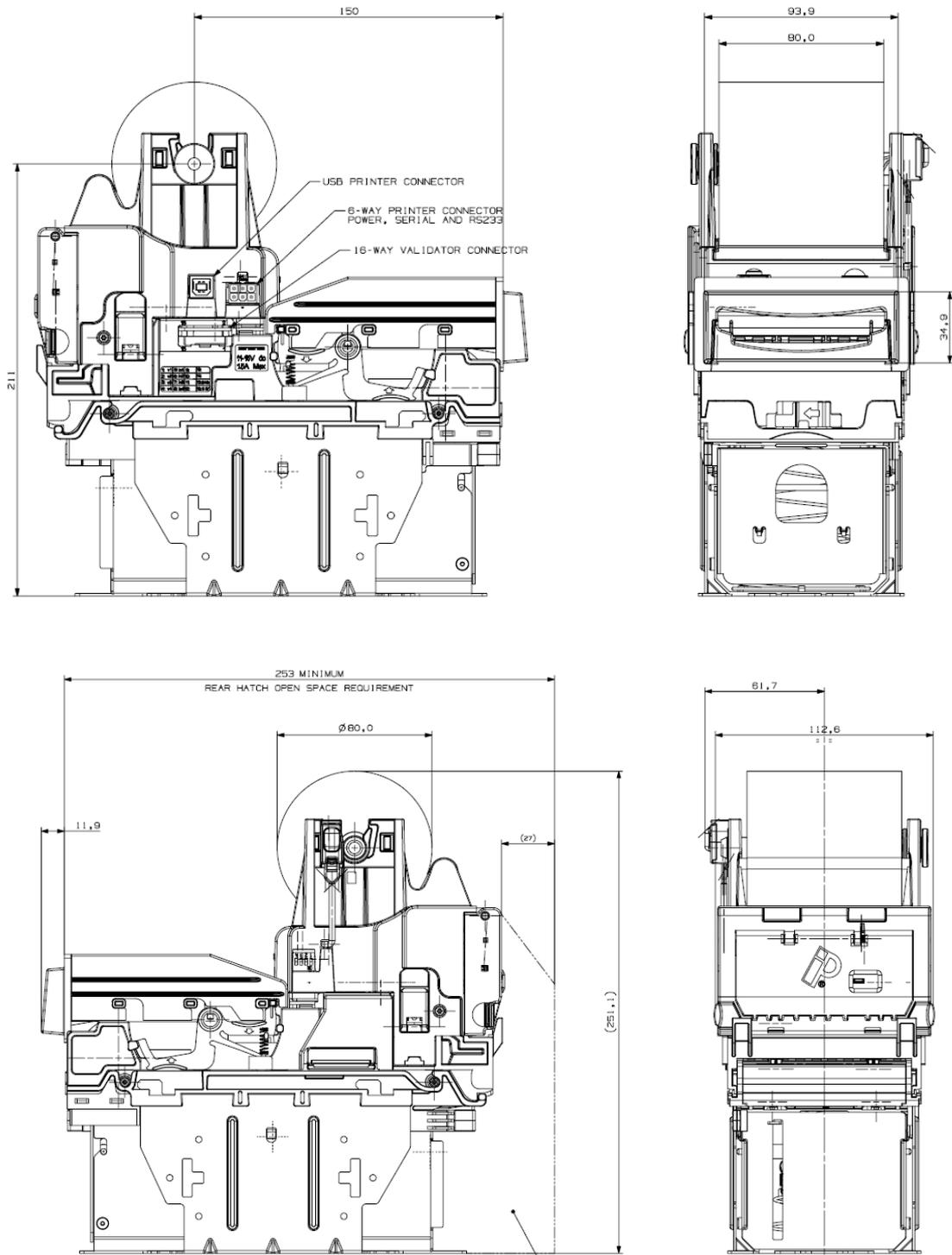
6.2   Template Design

To design and add templates to the NV12 connect to a PC and run Ticket Template Manager. Ticket Template Manager will automatically detect the unit.

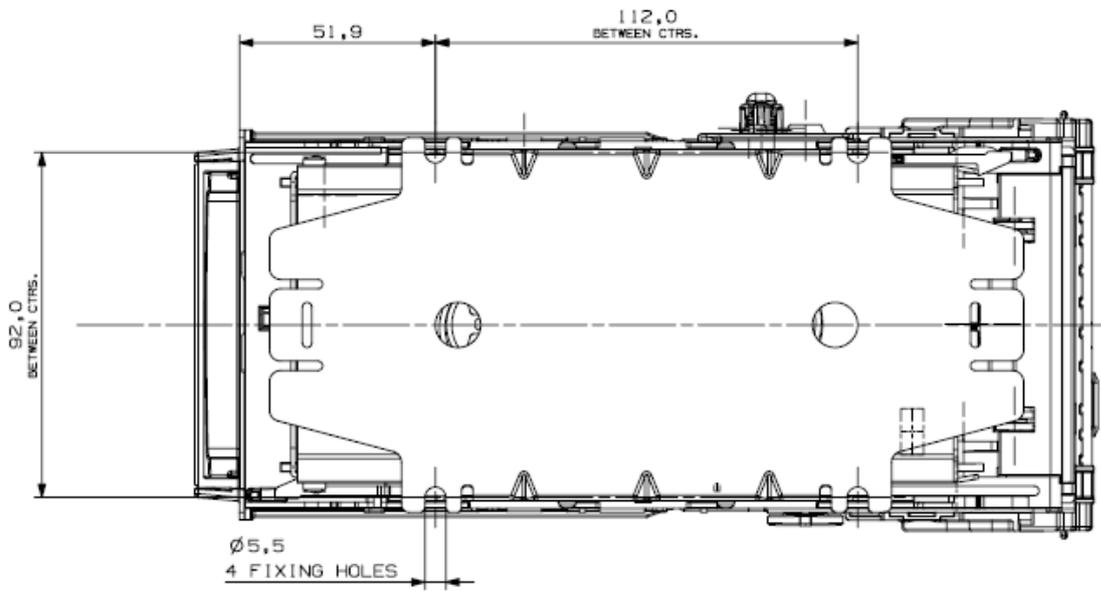For information on using Ticket Template Manager please use the relevant manual.

6.3   Dimensions

(300 note cashbox shown, 600 available on request)

6.4　　Mounting Face Dimensions

7   Maintenance and Cleaning

Do not clean the unit while powered; allow time for the printer to cool before proceeding to clean.

For cleaning purposes separate the NVR-280 head and the NV9USB+.

7.1   NV12 Base

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.

To open the NV9USB+, push the clasp on the front of the NV9USB+ and open.
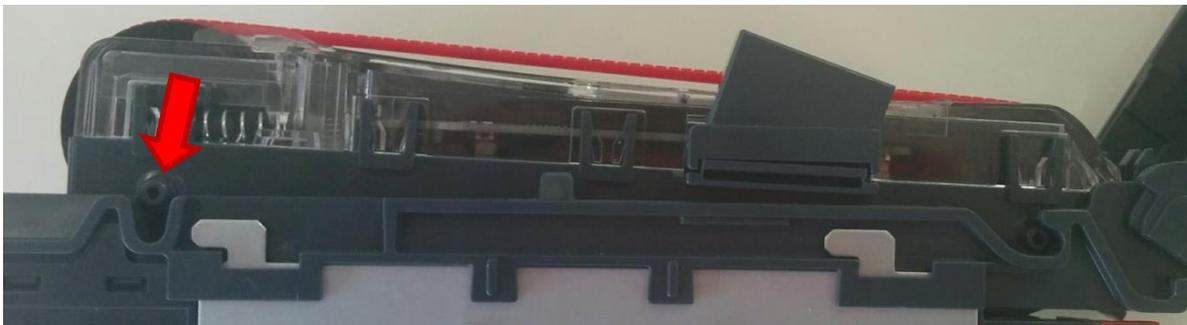
Once the unit is open proceed to clean the clear plastics with a cloth and mild detergent.
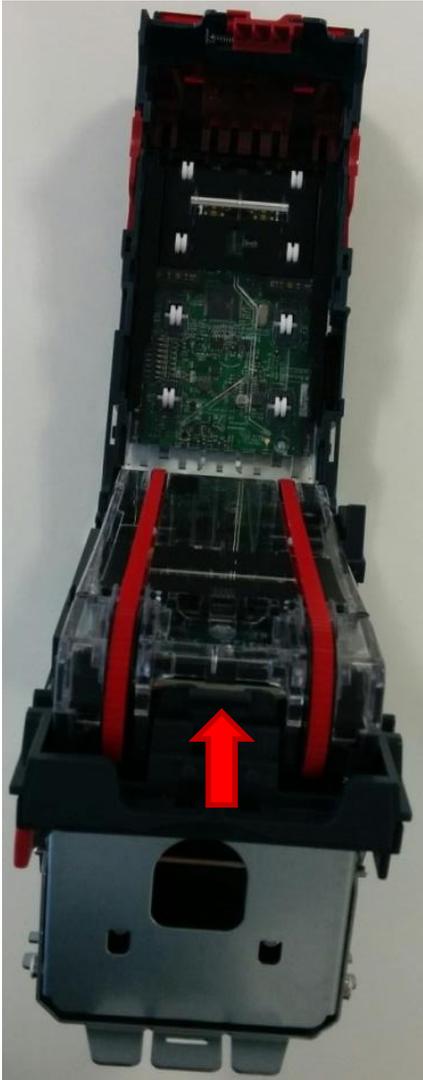
To clean the rear sensor and pusher plate remove lozenge by pushing the catch indicated on the left.

To reinsert lozenge place locking pins into rear grooves and clip the front of the unit into position.
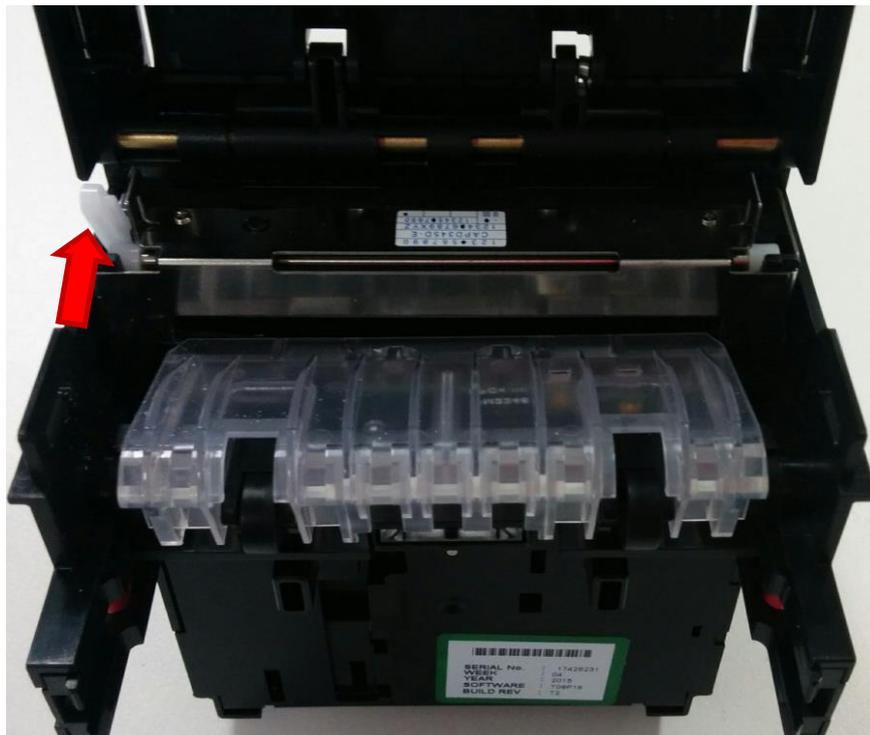
7.2   NVR-280 Print Head

To clean the NVR-280 Print head release the back of the unit using the buttons and pull the rear panel of the unit up.

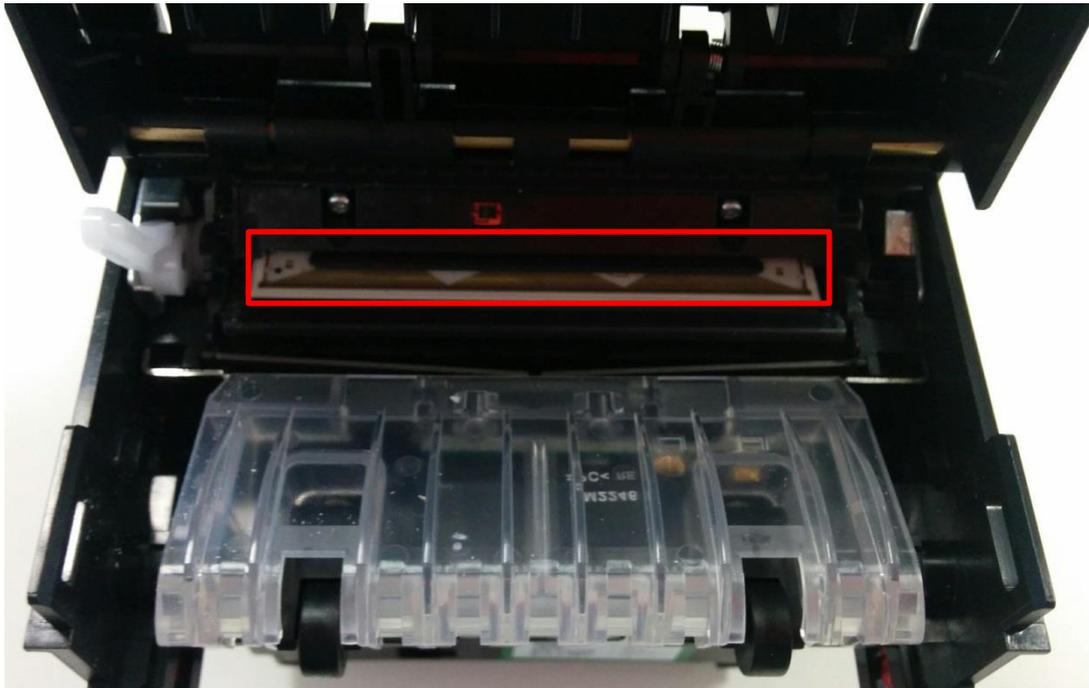Release the Printer Platen by pushing the leaver towards the top panel of the NV12 until a click occurs.

This will release the printer platen which should then be removed.

Use ethyl or isoprople alcohol to clean the thermal printer indicated below.

Use Presurised air to clean plastics of paper debris, use only when alcohol has dryed.

To reassemble push the platen back into position until it clicks. Then push the rear panel of the unit back into position.

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