
Morgana VFX Service Manual



T08138A
16 March 2021

⚠ WARNING:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

The product (System) which is connected to this machine will be class A

📖 NOTE

The domestic environment is an environment where the use of broadcast radio and television receivers may be expected within a distance of 10 m of the apparatus concerned.

16 March 2021

Morgana VFX

Cover

Introduction

This manual contains instructions on the operation and maintenance of this machine. To get the maximum versatility from this machine all operators should carefully read and follow the instructions in this manual. Keep this manual in a handy place near the machine. Please read the Safety Information before using this machine. It contains information related to USER SAFETY and PREVENTING EQUIPMENT PROBLEMS.

How to read this manual

Notation conventions

Whenever necessary, the following points for attention are indicated in this manual.

WARNING:

Indicates a potentially hazardous situation which, if instructions are not followed, could result in death or serious injury.

CAUTION:

Indicates a potentiality hazardous situation which, if instructions are not followed, may result in minor or moderate injury or damage to machine or property.

NOTE

This sign refers to:

Remarks for making the operation much easier. You get practical hints or knowledge to assist you in the machine operation such as:

Preparations required before operating

How to prevent papers from being misfed or damaged

Precautions required or actions to take after misoperation

Limitations like numerical limits, functions that cannot be used together or conditions under which a particular function cannot be used or obtained.

Information.

[]

Keys that appear on the machine's display panel.

Safety Information

When using this machine, following safety precautions should always be followed.

Safety during operation

WARNING:

- To avoid hazardous situations such as electric shock or danger while exposed to moving, rotating or cutting devices, do not remove any covers, guards or screws other than those specified in this manual.
- Turn off the power and disconnect the power plug (by pulling the plug, not the cable) if any of the following conditions exist:
 - Before disassembling or assembling parts of the System and peripherals.
 - You drop objects or spill something into the equipment.
 - You suspect that your equipment needs service or repair.
 - Machine covers have been damaged
 - You notice unusual noises or odours when operating the equipment.
 - If the power cable or plug becomes worn out or otherwise damaged.
 - Before cleaning and care (unless otherwise specifically instructed).
- If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hand away from electrical or mechanically driven components.
- Note that components of the System and peripherals can be supplied with electric voltage even if the main power switch is turned off and the power cord is disconnected.
- Electromagnetic compliance:
 - This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
 - The product (System) which is connected to this machine will be class A.

⚠ WARNING:

- Always connect the equipment to a properly grounded power source (wall outlet). Wall outlet should be located near the system and easily accessible. If in doubt, have the power source checked by a qualified electrician.
- Improper grounding of the equipment can result in electrical shock. Never connect the machine to a power source that lacks a ground connection terminal. This machine is destined for specific purpose only. Any use going beyond this specific purpose is regarded as beyond the determination. The manufacturer will not be liable for damages resulting from any use beyond the determination, unallowed operation, respectively. The user alone bears the risk.
- Do not make arbitrary changes or modifications to the machine. The manufacturer will not be liable for modifications made at the machine on your own and damages resulting thereof. EC declaration of conformity and the mark CE will be invalidated, if you make changes at the machine or at the individual components.
- Do not override or bypass electrical or mechanical interlock devices.
- The machine is to be used only by authorized and instructed persons. The responsibilities on operating the machine have to be strictly laid down and observed so that there are no unclear competences regarding safety aspects.
- Vent holes serve for air circulation to protect the machine from overheating. Make sure that the holes are not covered.
- Do not expose fingers or other parts of the body to moving, rotating or cutting devices such as for instance between upper and lower trimmer knives.
- Always locate the equipment on a solid support surface with adequate strength for the weight of the machine.

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1 Installation Procedure

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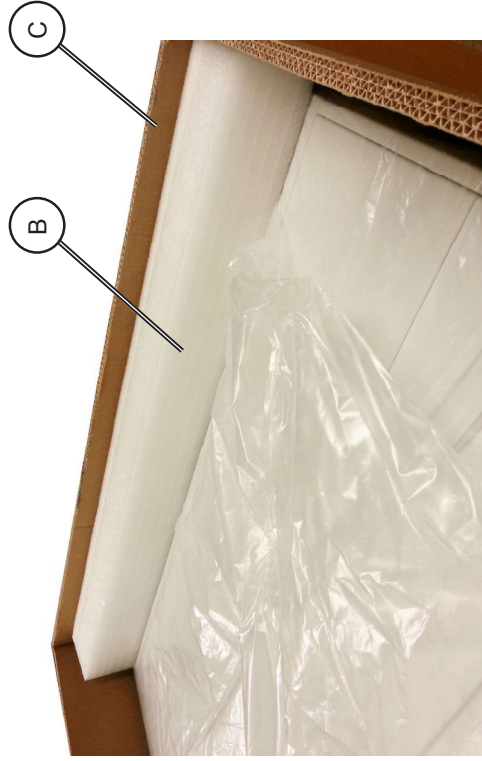
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These installation instructions for Morgana VFX are intended to be used only for the eWire Binder and Digoater Pro 400. If installing the VFX to either a PSQ160 or a PSQ224, please follow the procedure outlined in the installation manuals of those machines instead.

1.1 Unpacking Instruction



1. Remove the ramp (not shown in the picture above) and the ramp supports [A] (2x) and save them for later;



2. Remove packaging foam [B], then lift the cardboard box upwards and remove it [C];



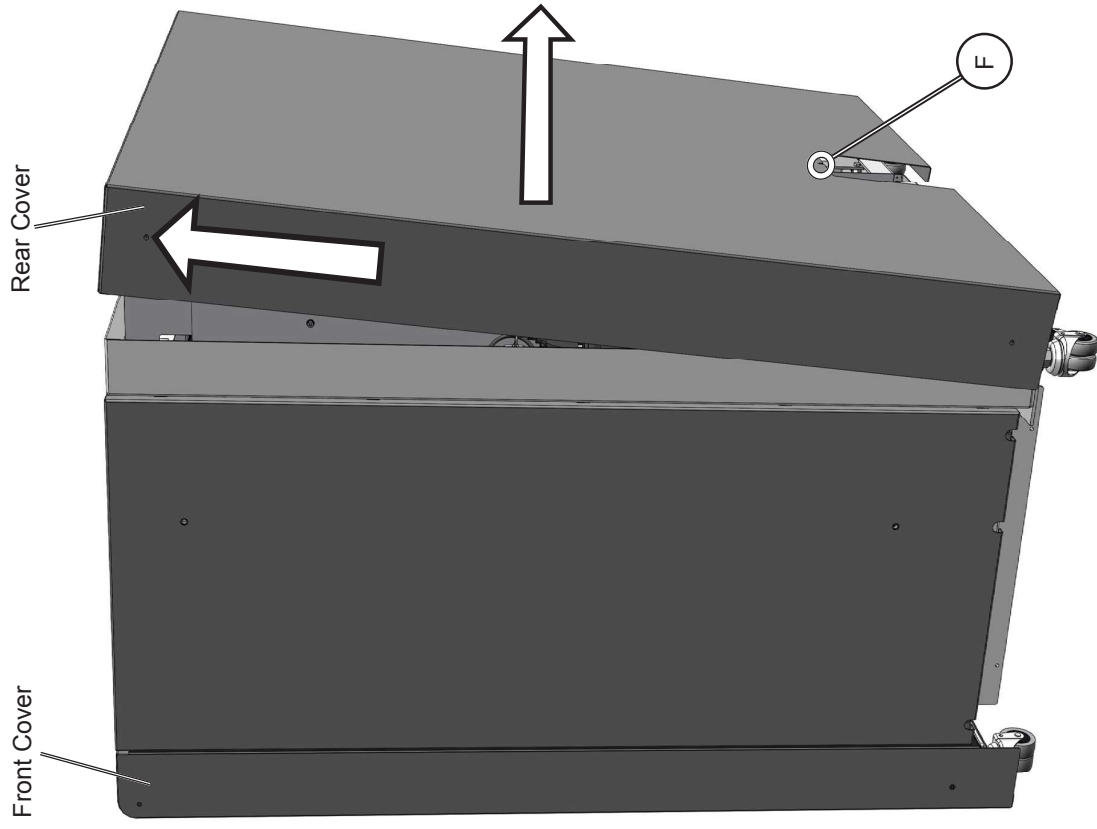
3. Remove the side packaging foam and the plastic wrap;



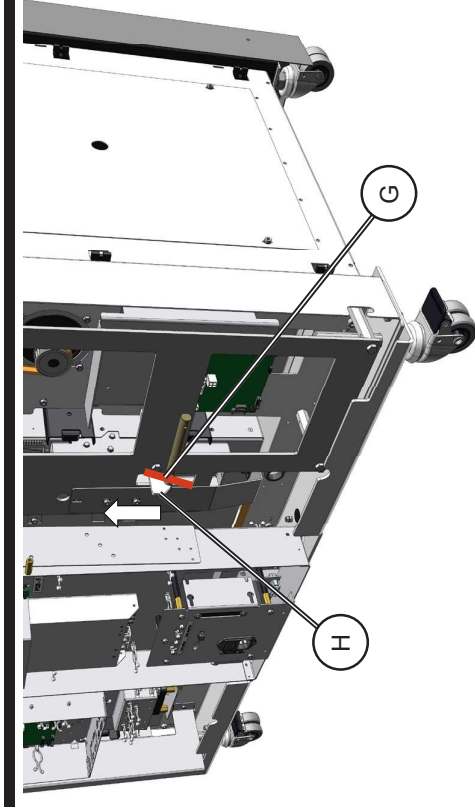
4. Open the cardboard sides [D];



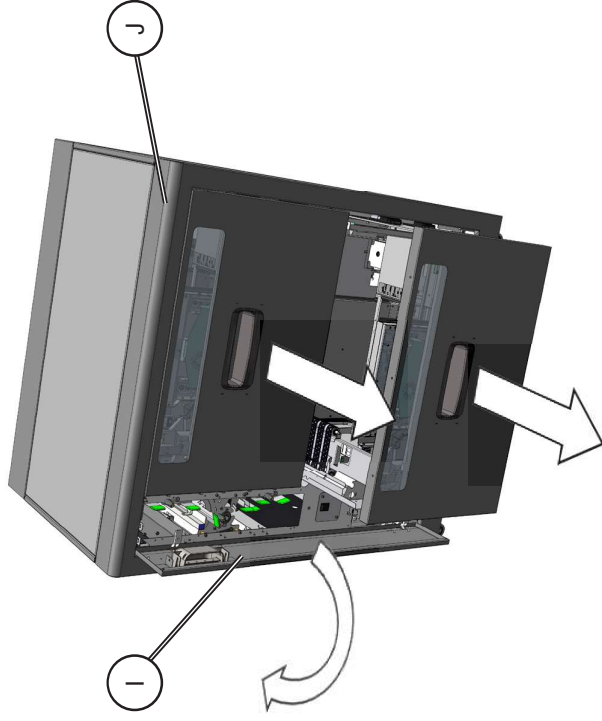
5. Remove the power cord and communication cable [E].



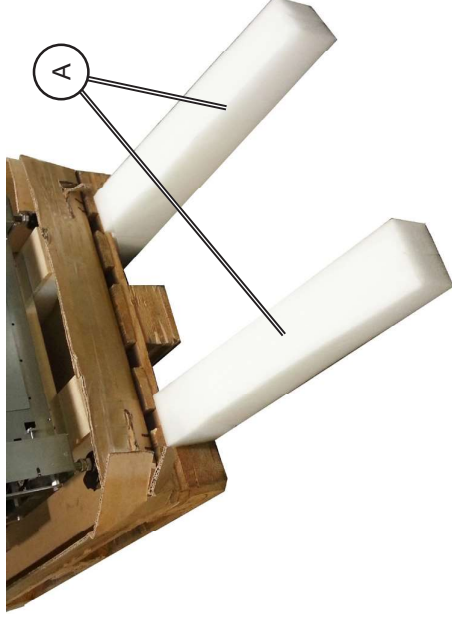
6. Loosen the screw [F] on the rear of the machine;
7. Lift up rear cover, tilt out its top and remove it.



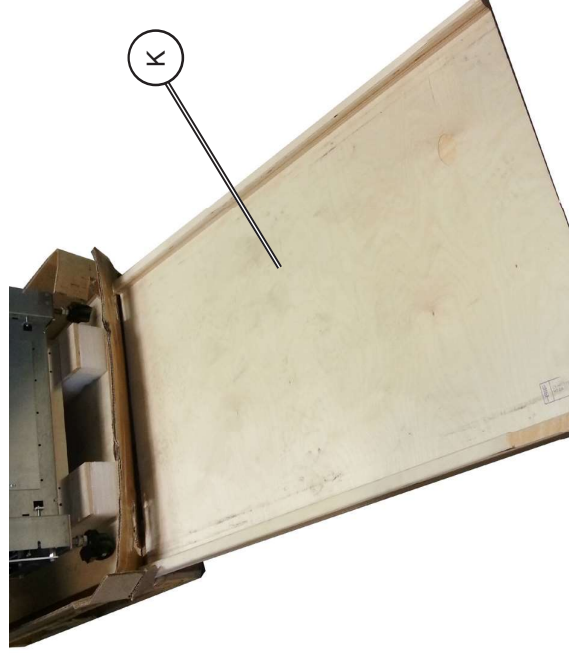
8. Cut the red tie wrap [G] (transport protection);
9. Lift the latch [H] and push in the tray;
10. Repeat steps 8 and 9 for the upper tray;



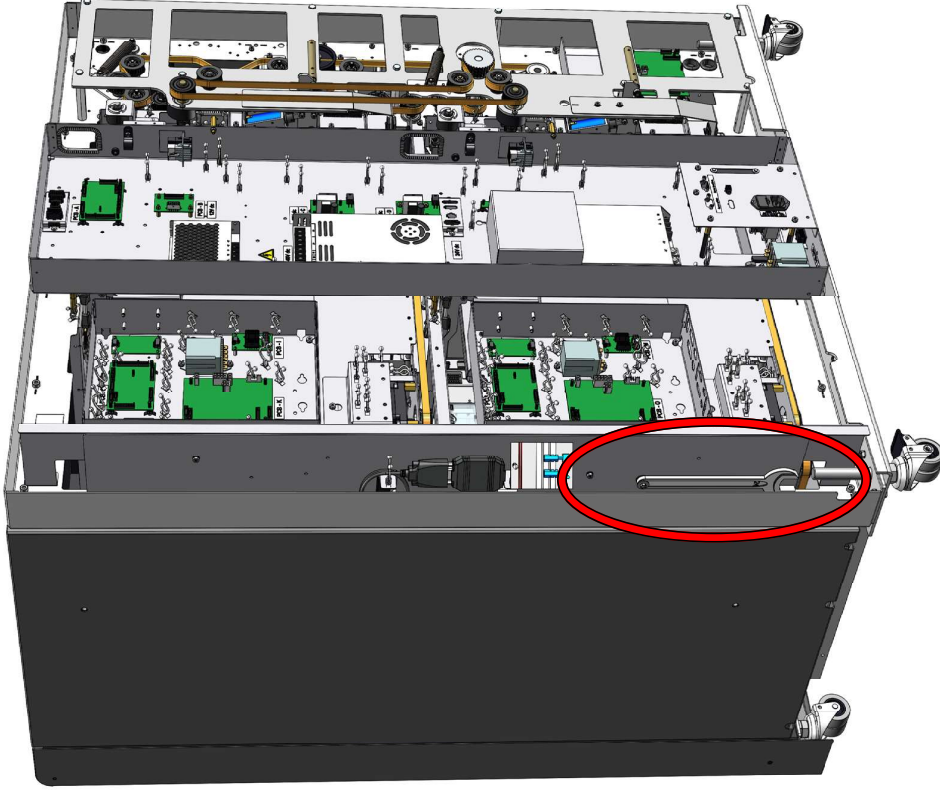
11. Open the front door of the machine [I];
12. Lift and remove front cover [J];



13. Place ramp supports [A] (2x) as shown in the picture above;



14. Place the ramp [K] on the ramp supports;

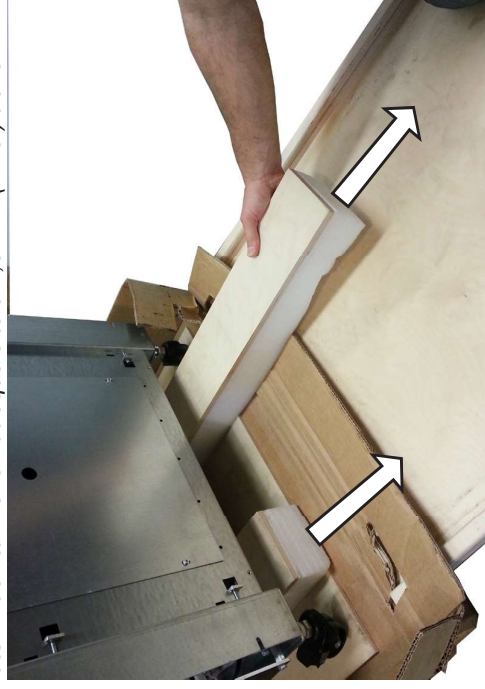


15. Locate the casters' wrench in the rear of the machine



16. Lower wheels on the module until they touch the pallet.

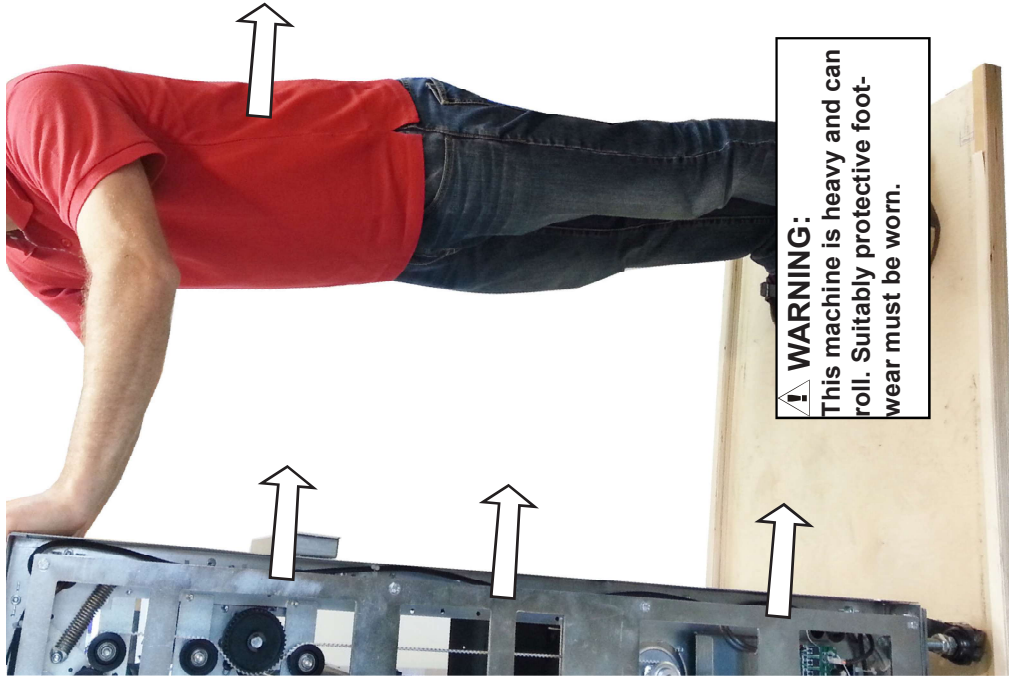
NOTE: Do not turn each nut more than 2 full revolutions before adjusting the other nuts. Each turn of a nut equals to a 1,5 mm (1/16") travel.



17. Remove the foam blocks from underneath the machine.

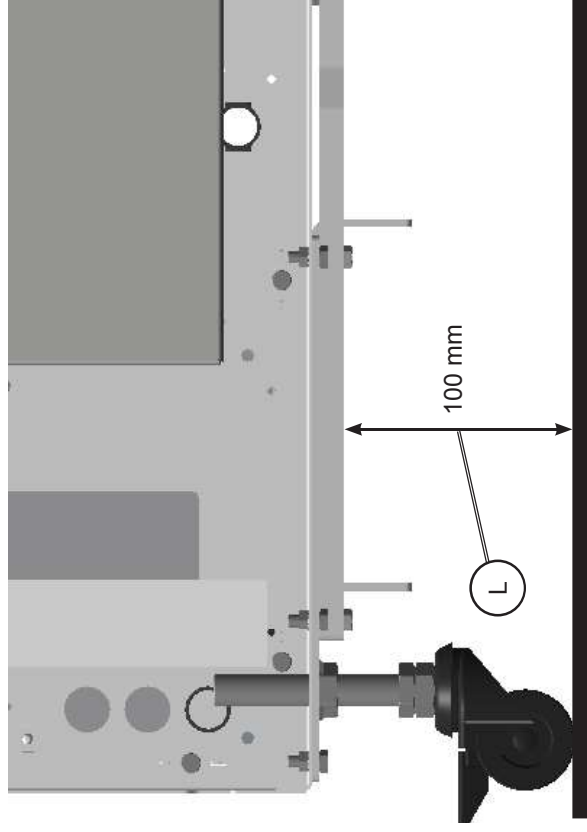
⚠ WARNING:

As the foam blocks prevent the machine from rolling, two people are required to remove the foam blocks.



18. Carefully roll the module down the pallet.

⚠ WARNING:
Two people are required to carefully roll the module down the pallet.



19. Once the machine is standing on the ground, raise the casters so that the distance between the floor and the machine's frame [L] is equal to 100mm. **NOTE:** Do not turn each nut more than 2 full revolutions before adjusting the other nuts. Each turn of a nut equals to a 1,5 mm (1/16") travel.

20. Replace the casters' wrench.

21. Mount the front and rear cover back on the machine.

1.2 Installation Requirements

1.2.1 Minimum Space Requirements

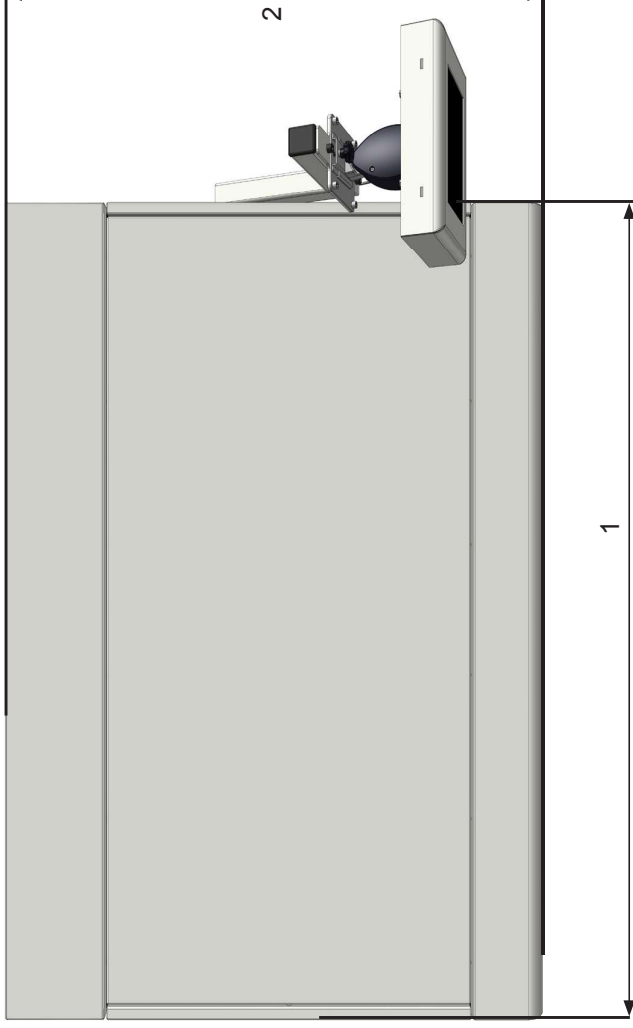
Approximate floor space requirements / configuration

Ensure that the minimum required floor space is available for the system that you are about to install: place the machine near a power source and provide clearance as follows:

- Rear: 600 mm / 24" or more;
- Front: 600 mm / 24" or more.

Measurements:

1. **VFX length:** 1250 mm / 50"
2. **VFX width:** 1050 mm / 42"
VFX height: 705 mm / 28"



WARNING:

1.2.2 Power Requirements

1. Ensure that a power outlet is available nearby the system, fused to withstand the system's combined rated current. The current consumption can be seen on the machine labels. For example: if the machine label says "100-240 V, 4-2 A" then the rated current is 4 A at 100V and 2 A at 230V.
2. Make sure to route power cords to avoid people from tripping on them and do not place anything on them.
3. Avoid using excessively long extension cords.
4. The machine must be grounded.

1.2.3 Environmental Requirements

- Temperature: constant and within 10 °C / 50 °F and 30 °C / 86 °F
- Humidity: constant and within 20-80% RH

1.3 Installation Precautions

⚠ CAUTION:

ESD Hazard! ESD (Electrostatic Discharge) can cause hardware crashes, data and/or communications problems. Failure to use proper ESD procedures will cause damage to electronic components (example: PCBs). ESD problems can be minimized by maintaining all machine ground connections, ensuring the proper handling of circuit boards/ sensors. Use ESD protection when working near PCBs. Failure to use ESD protection is likely to result in a PCB failure.

⚠ WARNING:

If installation/s to be performed are additions to an existing, already installed system, turn off the Main Power Switch/es and disconnect the Main Power Cord/s before disconnecting, removing or replacing any electrical components. Do not connect power cord/s unless instructed.

⚠ WARNING:

To avoid hazardous situations like for instance electric shock or danger while exposed to moving, rotating or cutting devices, exercise extreme care when operating modules with covers, guards or protection removed or when electrical or mechanical interlock devices are overridden or bypassed.

⚠ WARNING:

The procedures described in this manual must be carried out by trained personnel only.

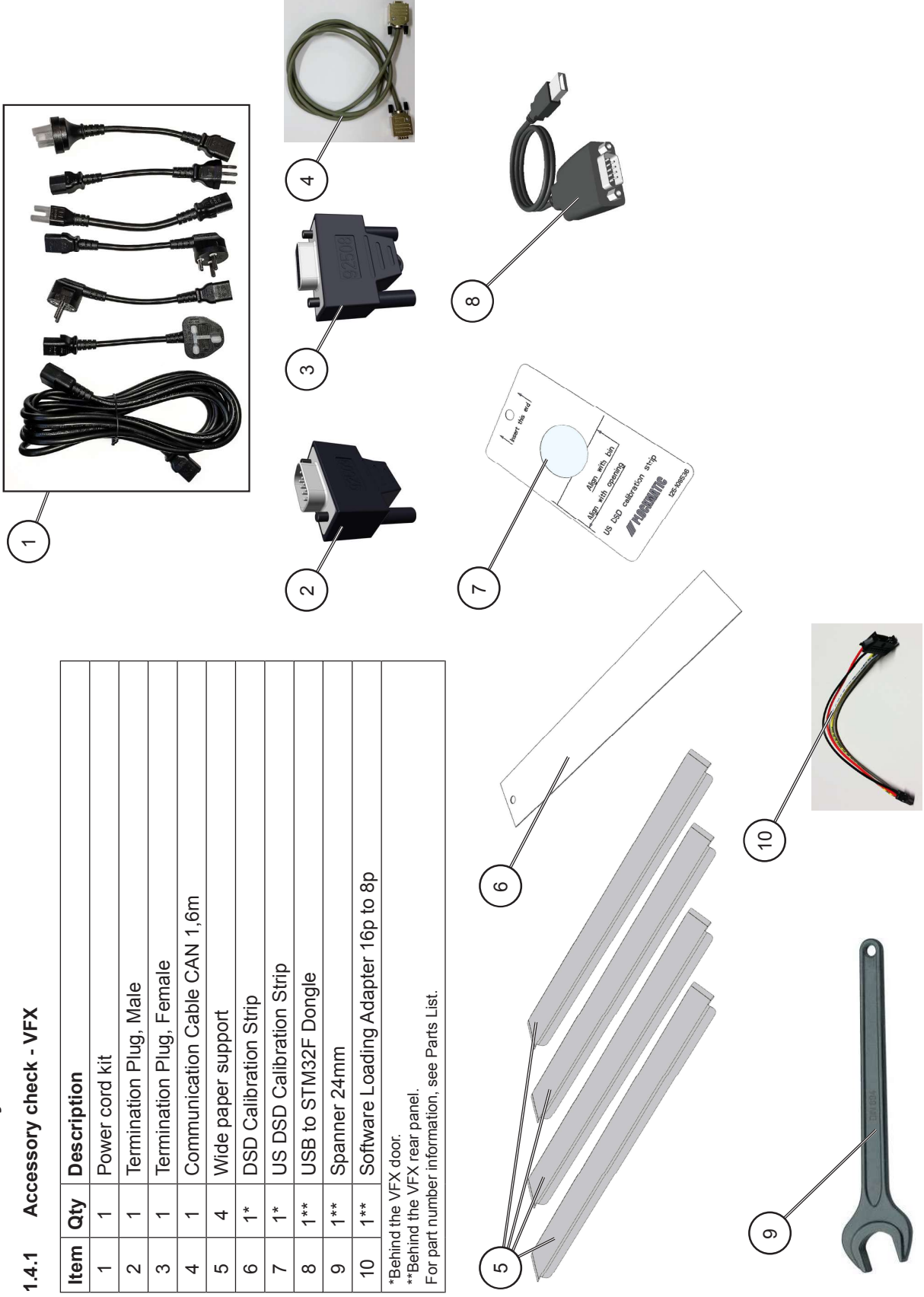


1.4 Accessory Check

1.4.1 Accessory check - VFX

Item	Qty	Description
1	1	Power cord kit
2	1	Termination Plug, Male
3	1	Termination Plug, Female
4	1	Communication Cable CAN 1,6m
5	4	Wide paper support
6	1*	DSD Calibration Strip
7	1*	US DSD Calibration Strip
8	1**	USB to STM32F Dongle
9	1**	Spanner 24mm
10	1**	Software Loading Adapter 16p to 8p

*Behind the VFX door.
 **Behind the VFX rear panel.
 For part number information, see Parts List.



1.4.2 Accessory check - User Interface

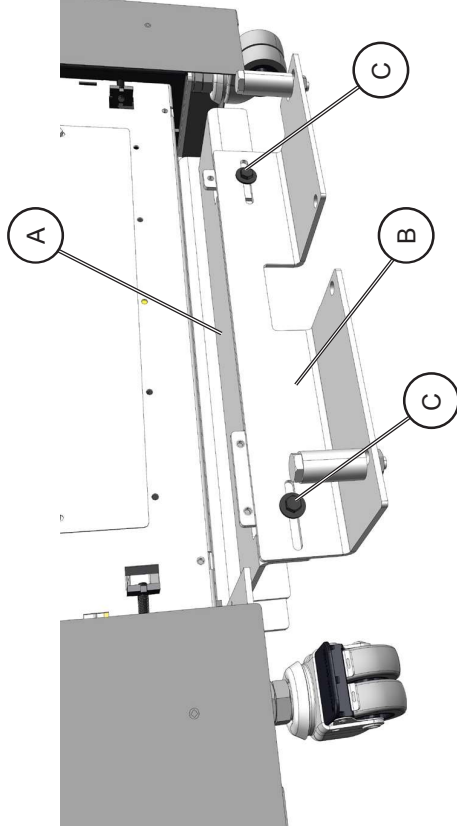
1	1*	Docking bracket VFX to PSQ224
2	1*	Docking bracket VFX to PSQ160
3	1	Arm display rod
4	1	UI arm upper
5	1	UI arm lower
6	1	UI cable
7	1	Communication box
8	1	User Interface with mounting support
9	3	Spacer
10	2	Cap
11	2	Cable strain relief

*Please refer to the PSQ224/160 installation instructions for how to mount these brackets.

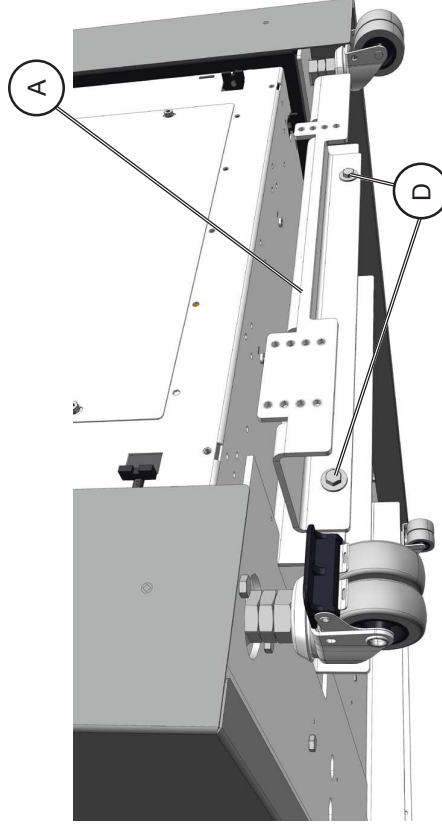


1.5 Docking procedures

1.5.1 VFX to Streampunch / eWire Binder Docking Installation

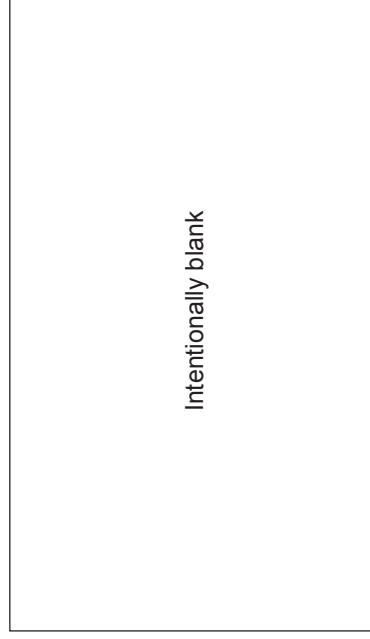


1. Retrieve the Docking Bracket from the installation kit. The Docking bracket is composed of two separate parts [A] and [B] and they get shipped mounted to each other using screws [C] (2X);
2. Remove screws [C] (2x) to separate the two parts [A], [B];

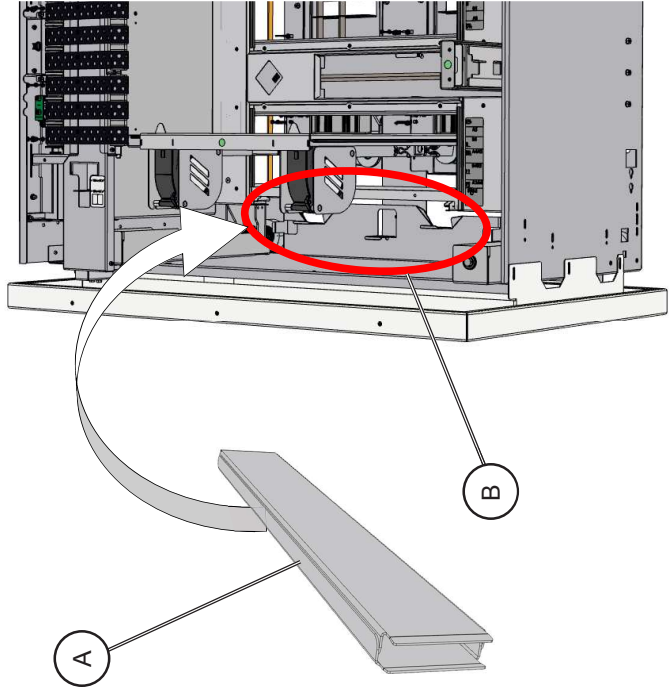


3. Install the first part [A] of the Docking Bracket on the VFX using screws [D] (2x);

4. Install the second part of the Docking Bracket [B] on the first part of the Docking Bracket [A] by using the screws [C] (2x).
5. Dock the VFX to the downstream device.



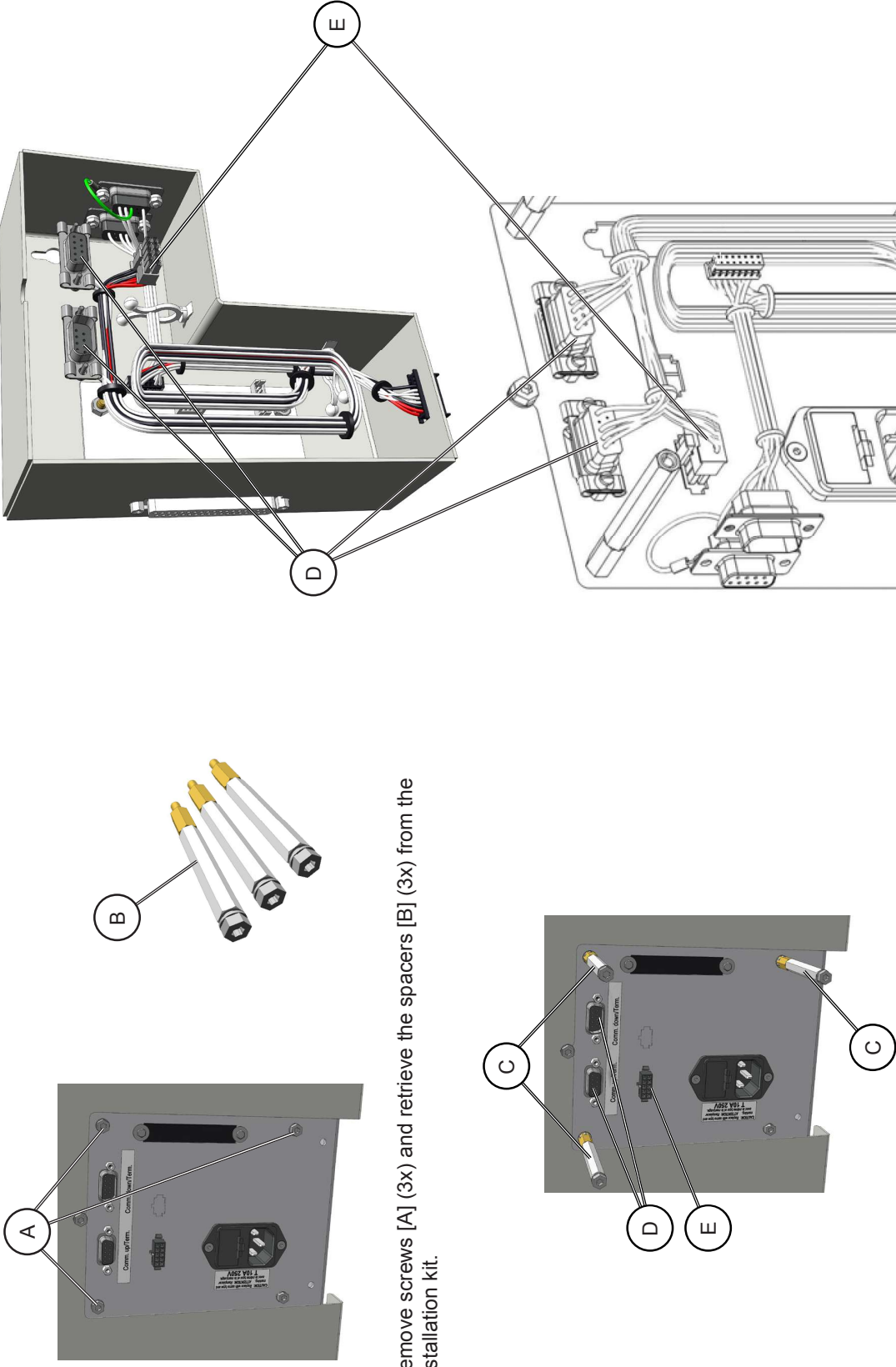
1.6 Wide paper supports



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1. Open up upper tray;
2. Push the side guide in to gain access to the Paper Support Holder [A];
3. Place the Paper Supports [B] in the Paper Support Holder;
4. Repeat the procedure for the lower tray.

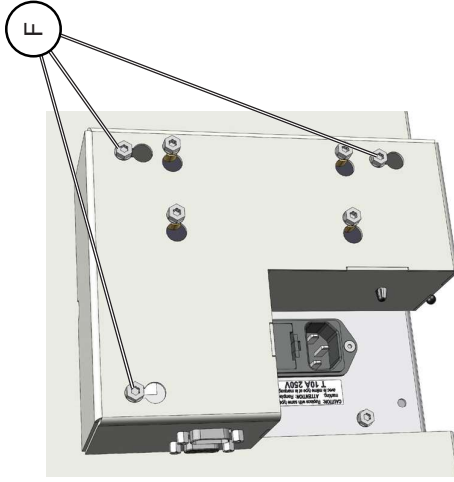
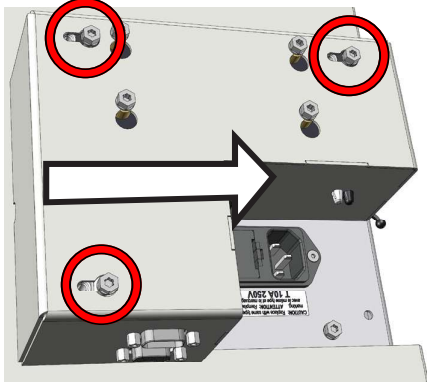
1.7 DFA Communication Box



1. Remove screws [A] (3x) and retrieve the spacers [B] (3x) from the installation kit.

2. Install the 3 spacers where the screws were located [C].

3. Take the DFA box and plug in connectors [D] (2x) and connector [E] to the back of the machine.

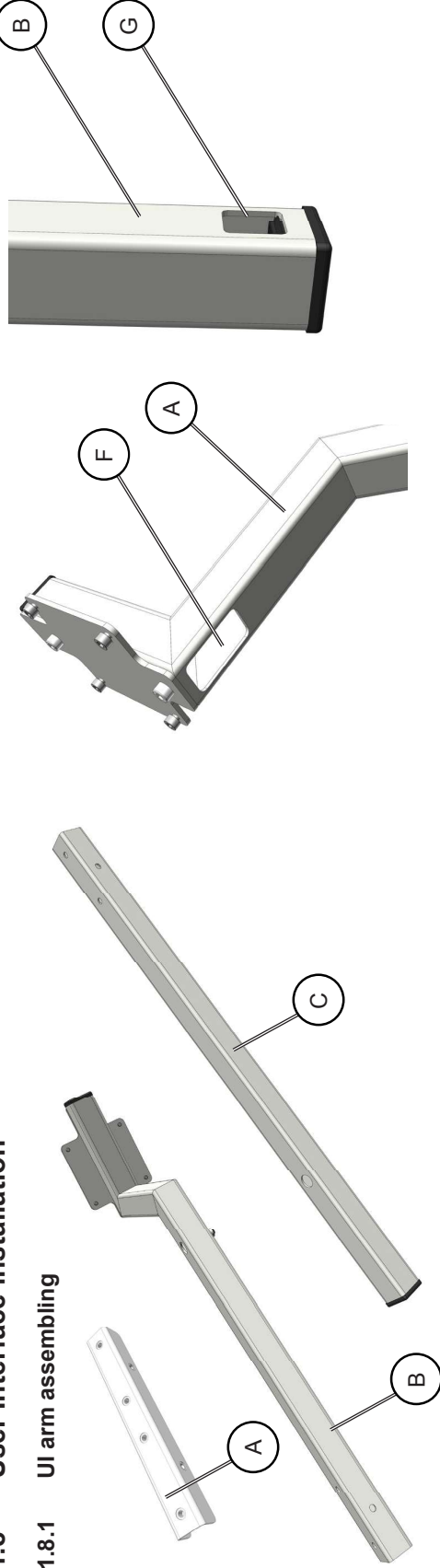


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4. Fit the slots of the DFA box to the screws mounted to the end of the spacers [C], then push the DFA box down to lock it in place.
5. Secure the DFA box with the three screws on the spacers [F].

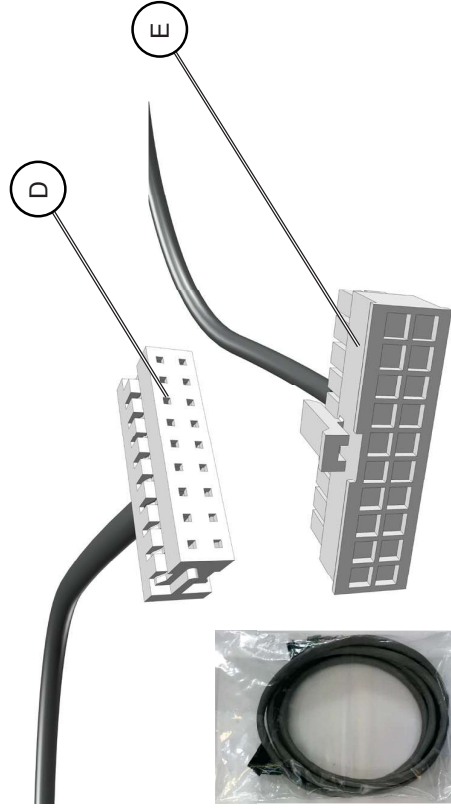
1.8 User Interface installation

1.8.1 UI arm assembling

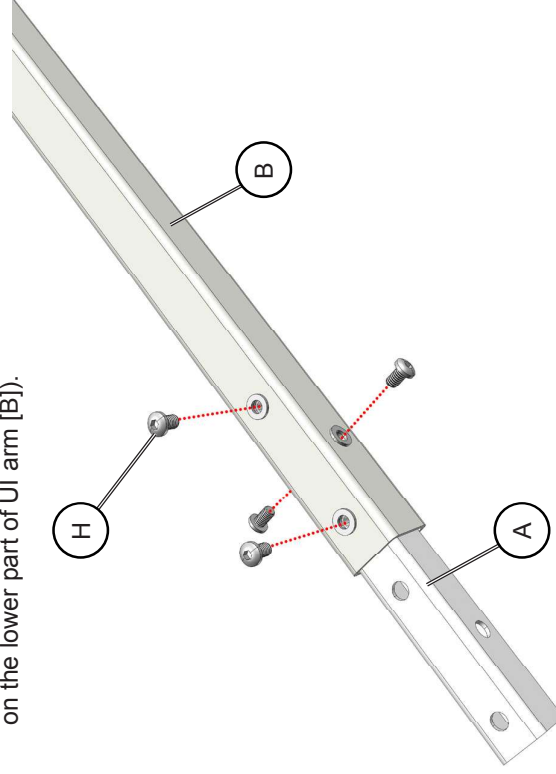


1. Retrieve the UI arm parts from the installation kit: middle part [A], upper part [B] and lower part [C].

3. Route the cable through holes [F] - on the upper part of the UI arm [A] - and [G] - on the lower part of the UI arm - (insert the DFA connector [D] through hole [F] and pull it all the way down and out from hole [G] on the lower part of UI arm [B]).

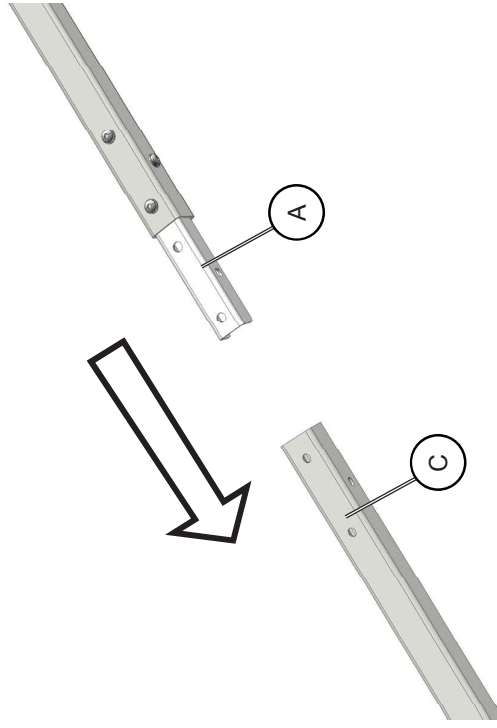


2. Note the ends of the cable that will connect the UI to the DFA box on the machine: connector [D] will be plugged to the DFA box, connector [E] will be plugged to the VFX screen.

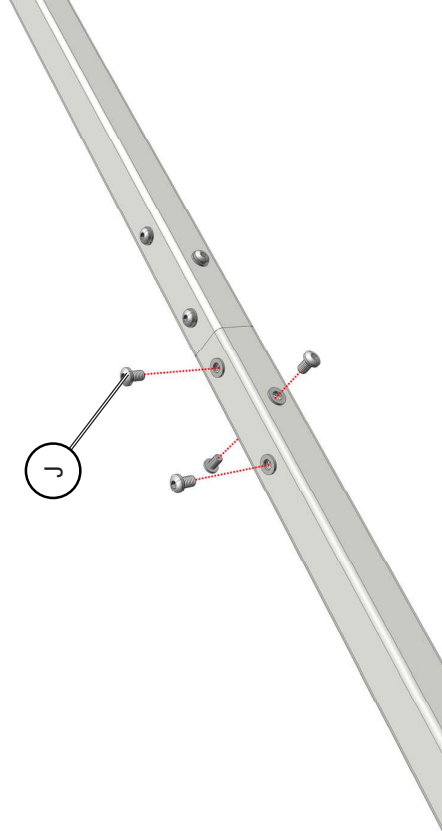


4. Insert the middle part [A] in the upper part [B] and secure them together with 4x screws [H].

1.8.1 UI arm assembling (continued)



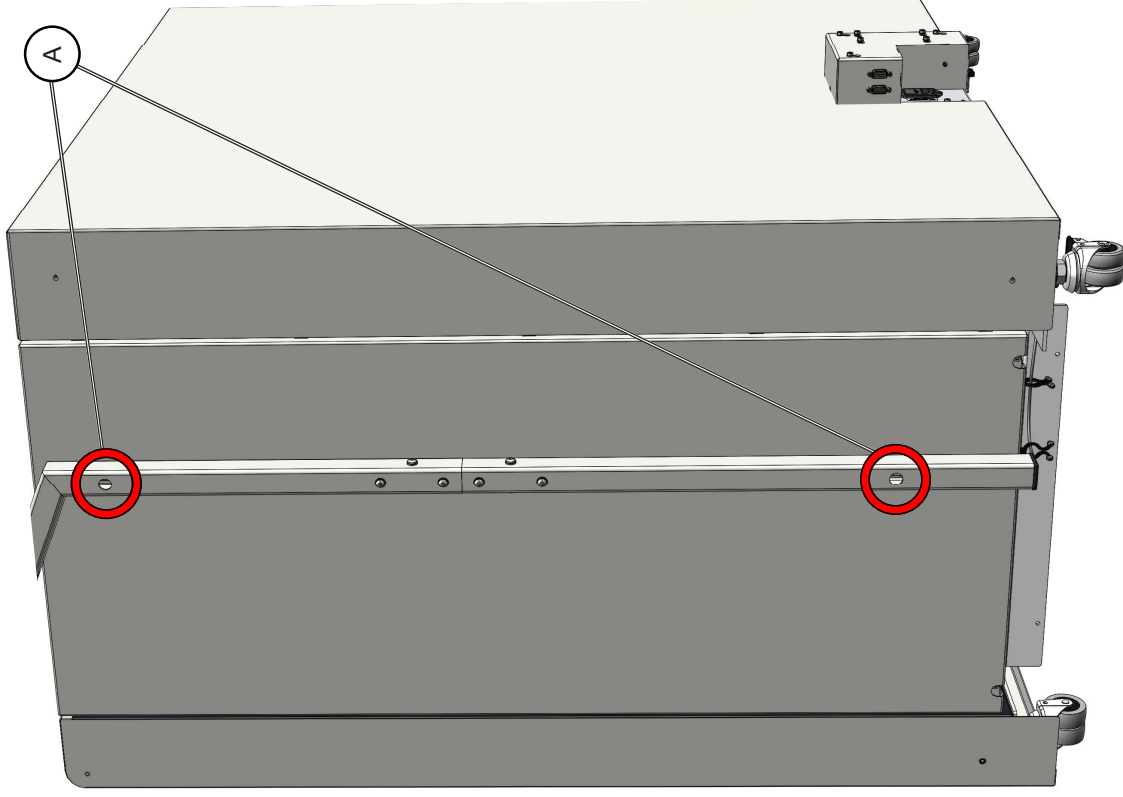
5. Insert the middle part [A] in the lower part [C].



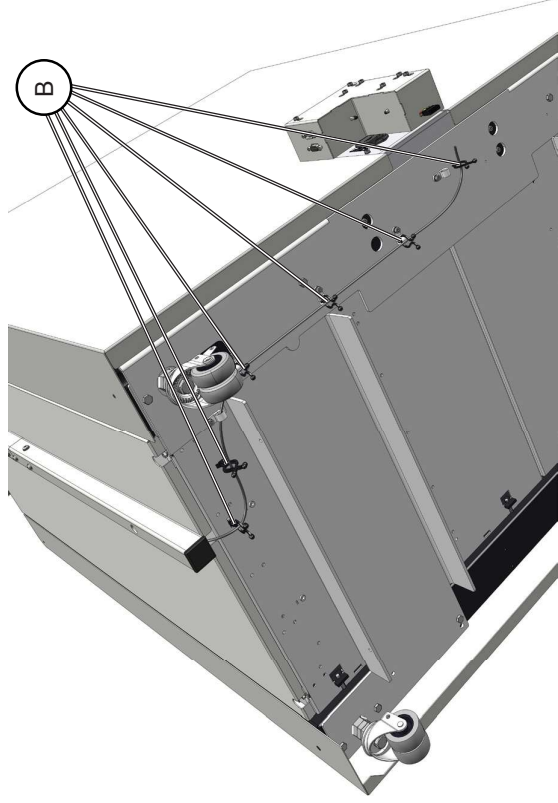
6. Secure parts together with 4x screws [J].

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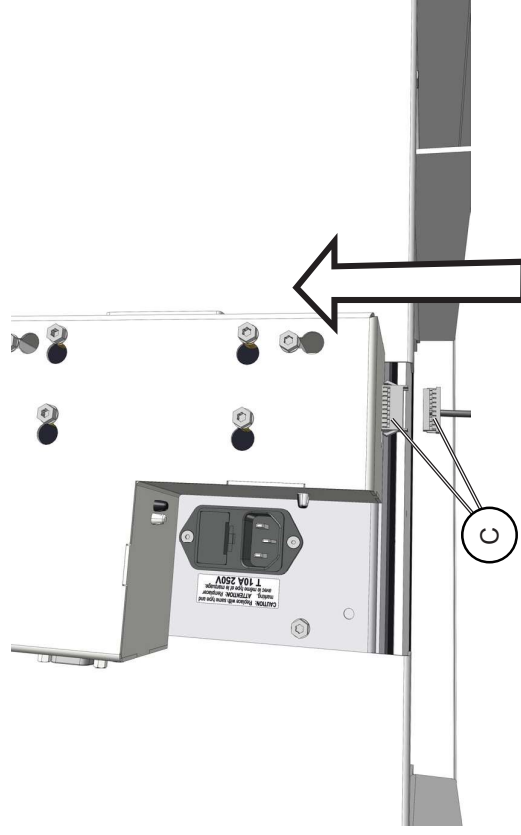
1.8.2 UI arm installation



1. Install screws [A] (2x) to keep UI arm in place.

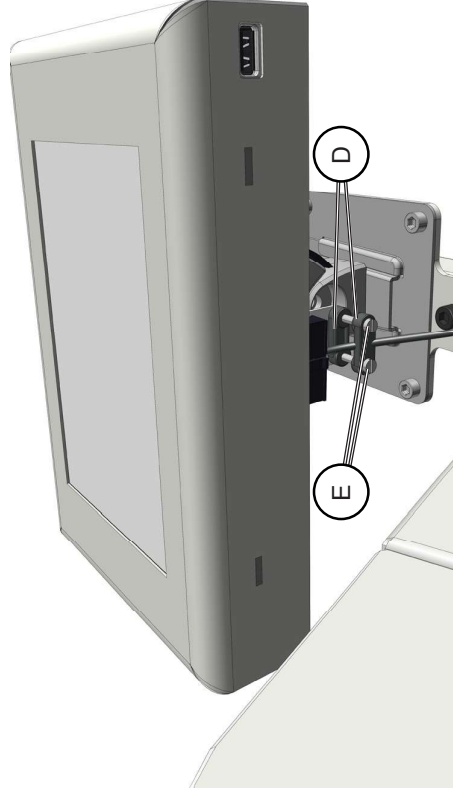
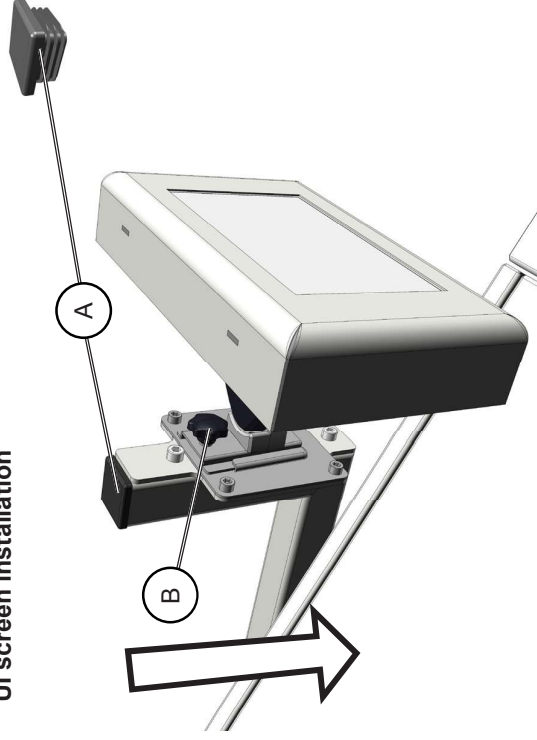


2. Install cable holders [B].

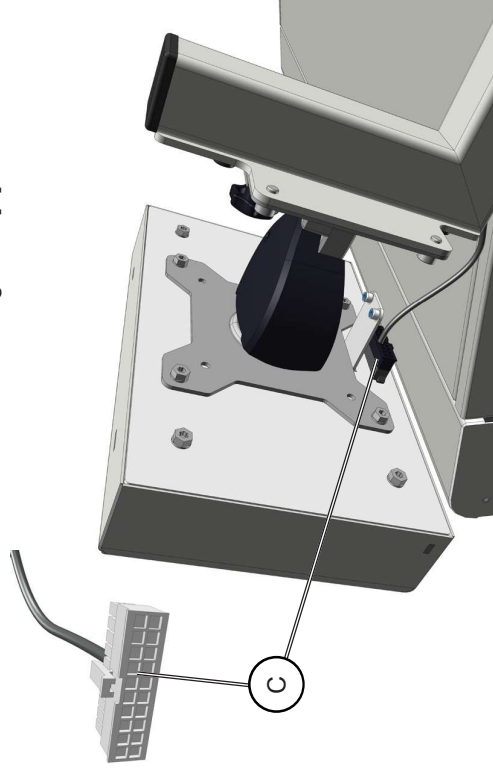


3. Connect cable DFA connector [C].

1.8.3 UI screen installation

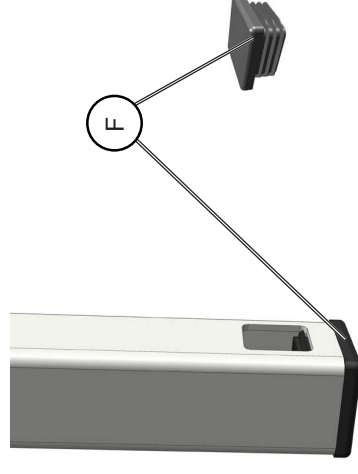


1. Install the black end cap [A] on the upper part of the UI arm.
2. Install the UI on the UI arm and secure using knob [B].



3. Use UI connector [C] and connect cable to User Interface.

4. Install cable strain reliefs [D] (2x) with screws [E] (2x).



5. Install the black end cap [F] on the lower part of the UI arm.

1.9 Cables, plugs, jumpers and switches

This section describes schematically how to connect communication cables, power cords, terminator plugs, interlock jumpers and set switches on all possible system configurations.

⚠ WARNING:

Before connecting the machines to the power supply, make sure that each cover on each module has been replaced and that any part of the machine that was disassembled during installation was put back in place. Do not connect the machines to the power supply if covers are off or if any module is (even partially) disassembled.

1. Connect the termination plugs (2x);
2. Connect the COM-cable to the downstream socket and to the downstream device;

⚠ WARNING:

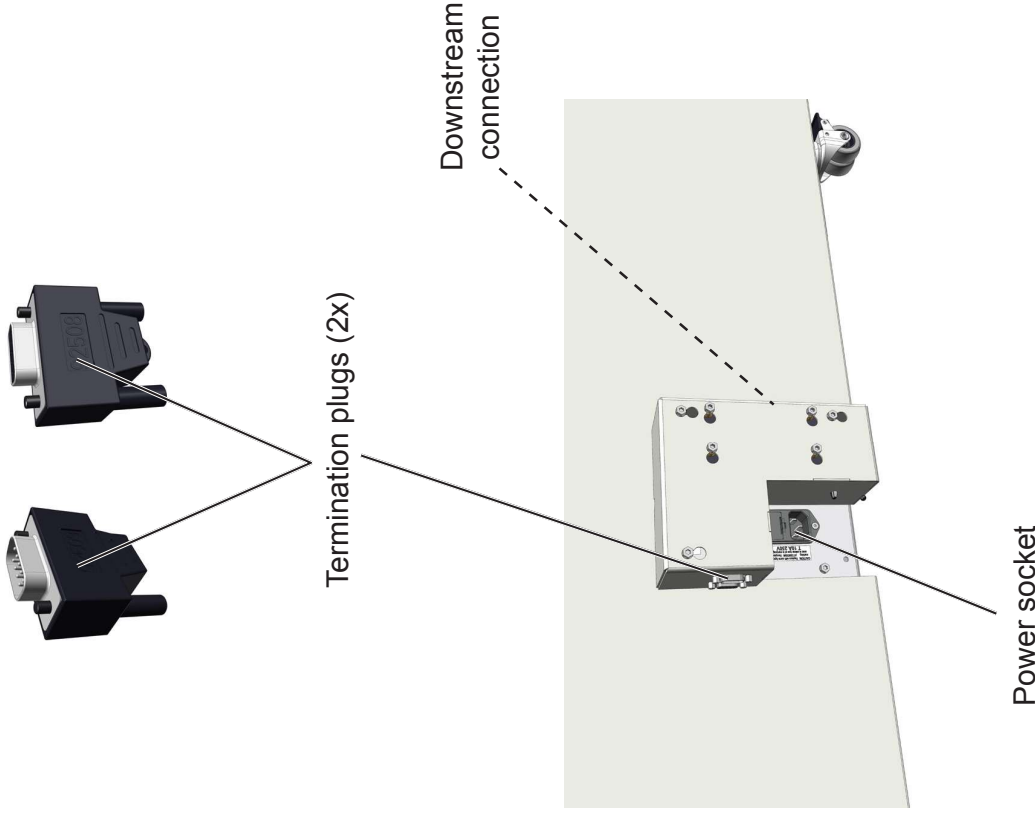
For Denmark the max allowed leakage current is 3.5mA. Make sure you use a proper polarized grounding plug in the wall outlet and use only the power cord with Plug DK2-1a. When using a non-polarized plug, touch current may reach 4.5 mA but does not exceed 5 mA.



Description: Denmark type plug			
Yung-Li ref.:	YP-26	YP-26A	YP-26H
standard:	Denmark SB 107-2-D1 DK 2-5a	Denmark SB 107-2-D1 DK 2-1a	Denmark SB 107-2-D1 DK 2-8a
approvals:	UL DEMKO	UL DEMKO	UL DEMKO

3. Connect the power cord to the power socket.

⚠ WARNING: The machine must be grounded!



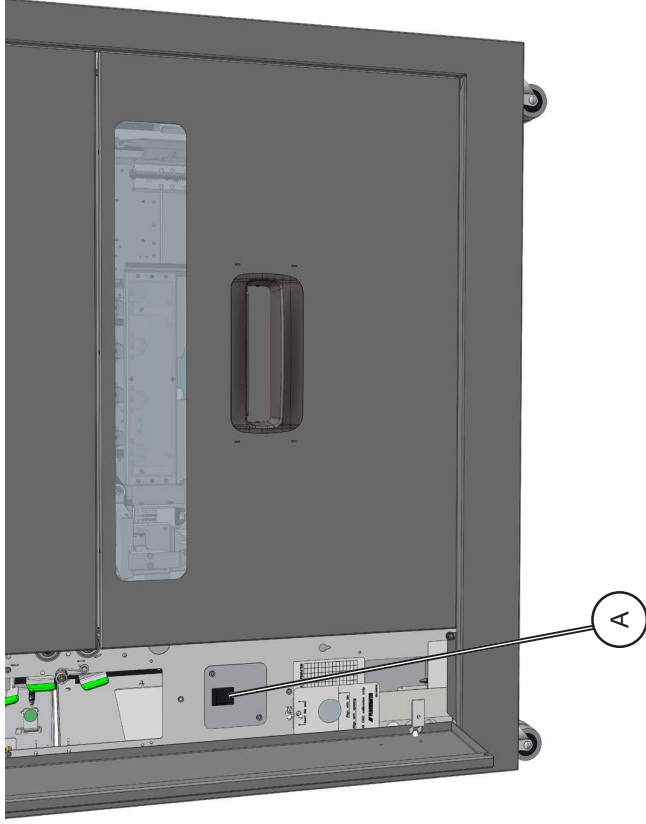
1.10 Powering on the machine

This section describes how to switch the system on and how to perform the initial configurations.

⚠ WARNING:

Before turning on the machines, make sure that each cover on each module has been replaced and that any part of the machine that was disassembled during installation was put back in place.

Do not turn the machines on if covers are off or if any module is (even partially) disassembled.



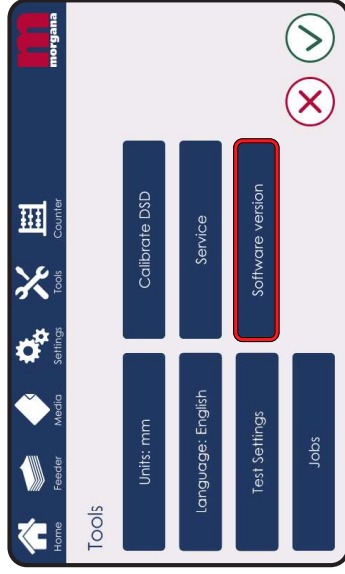
1. Turn on the VFX switch [C].

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1.10.1 Checking the software



1. Select the Tools button from the Main Menu.

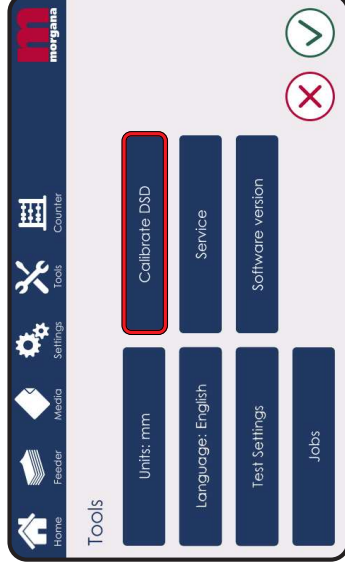


2. Select [Software Version].
3. Go to Plockmatic's partner center, check the latest software release and compare it with the software version installed on the VFX. If the software is outdated, download the latest revision from the website.
4. Run the downloaded file and follow the procedure described.
Note! Ensure all software versions are updated to the latest version!

1.10.2 Calibrations

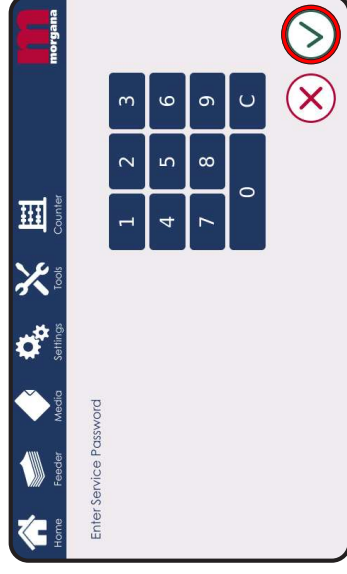


1. Select the Tools button from the Main Menu.

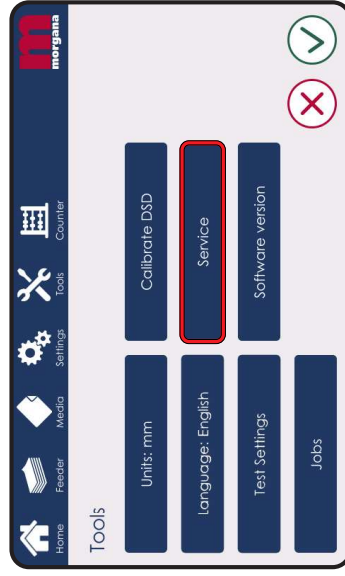


2. Select [Calibrate DSD].
3. Refer to the operator manual for full calibration instructions.

1.10.3 Selecting the right configuration

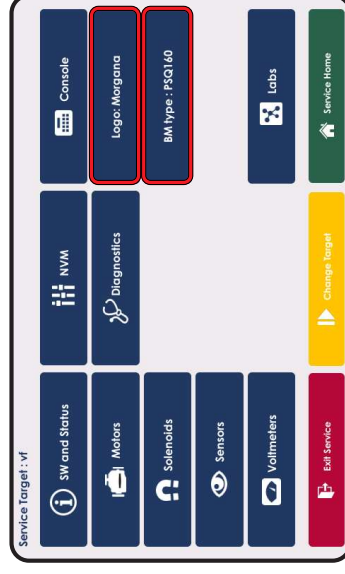


1. Select the Tools button from the Main Menu.



2. Select the Service button from the Tools Menu.

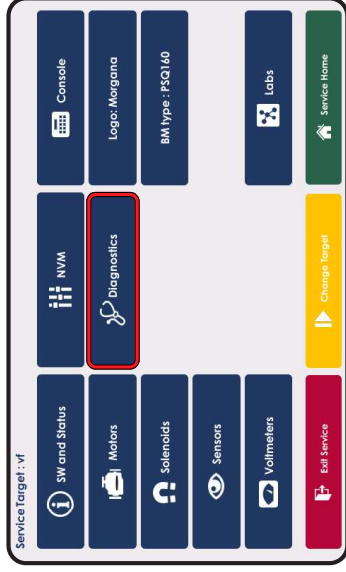
3. Key in password: **107** and select the green check mark to enter Service Mode.



4. Select [Logo] to change logo to either Plockmatic or Morgana;
5. Select [BM Type] to set the downstream device to which the VFX is installed to.

1.10.4 Performing a self diagnostic

1. Remove any sheet present in the system.
2. Access the Service Menu as described earlier in procedure.
3. Press [Diagnostics].
4. You should get the message: "Complete! 0 errors found".
5. Should you get a fault code after performing a Detailed self diagnostic, a service manual and trained technician are required to solve the problem.



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1.10.5 Running the first jobs

⚠ CAUTION

There is a risk of tilting the machine with the back cover off and paper in the trays. Make sure that there is no paper in the trays before fully sliding them out.

Please refer to the Operator manual for how to run a job. Run a few jobs to check the output quality. If adjustment is needed, a service manual and trained technician are required to solve the problem.

2 Preventive Maintenance (PM)

Procedure

1. Turn off the power on all the modules.
2. Disconnect the power cords from all the modules.

Purpose

This section contains the activities that are to be performed at certain intervals.



Caution!

If any of the checkpoints or other parts show indication of wear at any point, replace the part. When lubricating, clean the surface before applying new lubricant.

Check Point	Instruction	Parts List	Service Manual	Qty	Maintenance Interval
Paper path etc	Use compressed air, towel and brushes to clean the machine from paper dust.	N/A	N/A	N/A	0.5 M
Exit feed sensor (Q303)	Use compressed air to clean sensor.	PL3.1a	REP 3.5.1	1	0.5 M
Optical DSD sensors (Q101/201)	Clean with moist cloth and calibrate sensor.	PL2.3	REP 3.4.12 REP 3.4.13	2	0.5 M
Ultrasonic DSD sensors (Q102/Q202)	Clean with moist cloth and calibrate sensor.	PL2.3	REP 3.4.14	2	0.5 M
Separator pads	Use rubber reactivator alcohol fluid to clean separator pads. Always replace both separator pads.	PL2.4	REP 3.4.18	4	0.5 M
Drive shaft	Use rubber reactivator alcohol fluid to clean feed rollers. Replace if worn.	PL3.0	REP 3.5.3		0.5 M
Drive shaft, exit area	Use rubber reactivator alcohol fluid to clean feed rollers. Replace if worn.	PL3.1a	REP 3.5.4		0.5 M
Timing belt 10T5/1800 (M301)	Replace	PL4.0	REP 3.4.16	1	3 M
Timing belt 10T5/1315 (M301)	Replace	PL4.0	REP 3.4.16	1	3 M
Timing belt 10T5/2500 (M201)	Replace	PL2.0	REP 3.4.1	1	3 M
Timing belt 10T5/2500 (M101)	Replace	PL2.0	REP 3.4.1	1	3 M
Clutch 24v (SOL101/201)	Replace	PL2.3	REP 3.4.20 (steps 1-6)	2	3 M

Continued on next page

Check Point	Instruction	Parts List	Service Manual	Qty	Maintenance Interval
Clutch 24v (SOL104/204)	Replace	PL2.3	REP 3.4.20 (steps 1-6)	2	3 M
Timing belt 10T5/330, Tray, Feeder	Replace	PL2.3	REP 3.4.20 (steps 1-8)	2	3 M
Solenoid Bin Lock (SOL102/SOL202)	Replace	PL2.3	REP 3.4.3	2	6 M
Interlock switches	Replace	PL2.0, and PL3.0	REP 3.7.7 and REP 3.7.8	3	6 M
Blower Fans	Replace	PL2.1, PL2.3	REP 3.4.5 REP 3.4.6 REP 3.4.7 REP 3.5.8	12	6 M
Coupling shafts	Replace	PL4.0	REP 3.6.1	2	6 M
Solenoid Vacuum Release (SOL103/203)	Replace	PL2.3	REP 3.4.4	2	3 M
Vacuum Belts (Feeder Assembly)	Use rubber reactivator alcohol fluid to clean suction belts. Replace if worn.	PL2.3	REP 3.4.20	12	3 M

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3 Repairs and Adjustments

3.1 General Cautions

⚠ WARNING:

Unless instructed otherwise, turn off the main power and unplug the machine before attempting any of the procedures in this section. To avoid hazardous situations like for instance electric shock or danger while exposed to moving or rotating devices, exercise extreme care when operating modules with covers, guards or protection removed or when electrical or mechanical interlock devices are overridden or bypassed.

⚠ CAUTION:

ESD Hazard! ESD (Electrostatic Discharge) can cause hardware crashes, data and/or communications problems. Failure to use proper ESD procedures will cause damage to electronic components (example: PCBs). ESD problems can be minimized by maintaining all machine ground connections, ensuring the proper handling of circuit boards/ sensors. Use ESD protection when working near PCBs. Failure to use ESD protection is likely to result in a PCB failure.

Using the ESD Ground Strap

Purpose

The purpose of the ESD (Electrostatic Discharge) ground strap is to preserve the inherent reliability and quality of electronic components handled by the Service Representative. The strap should be used whenever handling the circuit boards or any other ESD sensitive components.

Procedure

NOTE:

All procedures requiring use of the ESD ground strap will contain a caution referring to this procedure.

1. Switch off the main power switch.
2. Make sure the power cord connects the machine to the wall outlet. The power cord and wall outlet must have ground.

3. Connect the claw end of the grounding cord to a chassis ground, such as earth wires screwed to chassis ground, unpainted frame or an unpainted bracket secured to the frame.
4. Connect the snap end of the blue cord to the snap on the adjustable wrist strap.
5. Place the adjustable wrist strap securely on the wrist. Wait for one minute to let the electrostatic be discharged from your body.
6. ESD sensitive components can now be handled without causing any ESD related damage.
7. New replacement PCBs and ESD sensitive components, as well as old defective PCBs should be handled during unpacking and repacking using the ESD ground strap. During the transfer from or to the packaging material, the PCB should be placed on the ESD bag the replacement PCB came in.

3.2 Tools

3.2.1 Special Tools








Software Loading Adapter 16p to 8p

These tools are provided with machine

3.2.2 Recommended Standard Tools

Plockmatic Recommended tools

Use	Size	Qty	Tool
Hex Screw/nut M3	5,5	2	 <p>Spanner/box or open end wrench</p> <p>Hex nut driver is helpful at smaller sizes. Try to find thin wall type.</p>
Hex Screw/nut M4	7	2	
Hex Screw/nut M5	8	2	
Hex Screw/nut M6	10	2	
Hex Screw/nut M8	13	1	
Hex Screw/nut M10	16	1	
Hex Screw/nut M12	18	1	
Hex Screw/nut M16	24	1	
Insex/tap screw*	2	1	 <p>Allen wrench</p>
Insex/tap screw*	2,5	1	
Insex/tap screw*	3	1	
Insex/tap screw*	4	1	
Insex/tap screw*	5	1	
Slotted screw*	4,7x0,6	1	 <p>Screwdriver</p>
Slotted screw*	5,5x0,8	1	
Slotted screw*	7,5x1	1	
Slotted screw*	9,2x1,2	1	
Slotted screw*	10x1,6	1	
Pozidriv screw*	No. 1	1	 <p>Pozidriv®</p> <p>Screwdriver Pozidriv</p> <p>Phillips</p>
Pozidriv screw*	No. 2	1	
Torx Screw*	T10	1	 <p>Torx driver</p>
Torx Screw*	T20	1	
Torx Screw*	T30	1	

Plockmatic Recommended tools

Use	Qty	Tool
Measuring**	1	Ruler min. 30cm
Measuring**	1	Caliper
Handling of PCB's	1	ESD protection set
Measuring	1	Feeler gauge, set of 10, 0,1mm - 1mm
General repair	1	Plier (Alligator type) medium size
General repair	1	Plier (small, flat grip)
General repair	1	Wire cutter
Problem solving	1	Multimeter >250Volts, Amps & Ohms
Installation	1	Water level

* Thread size varies depending on type of screw

** For measuring, a millimeter scale is recommended as all adjustable NWM / EEPROM-values are in 1/10 of a mm.

3.3 Covers and Exterior

REP 3.3.1 Cover, Rear

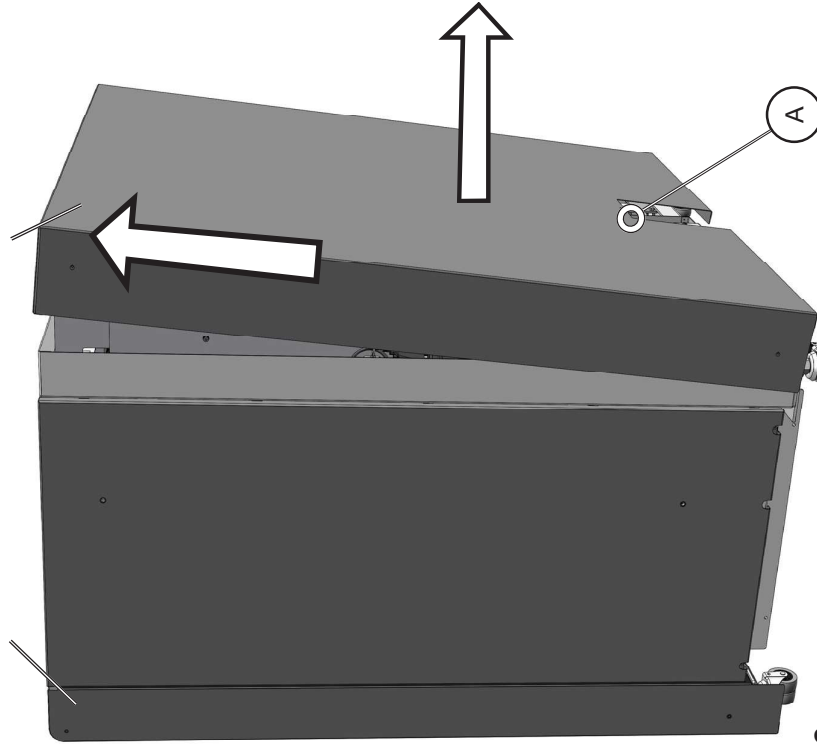
(Spare PL1.0)



CAUTION
There is a risk of tilting the machine with the back cover off and paper in the trays.
Make sure that there is no paper in the trays before fully sliding them out.

FRONT COVER

REAR COVER



Rear Cover

1. Turn off the main power and disconnect the power cord
2. Loosen screw [A]
3. Lift up cover, tilt its top out and remove it

Replacement

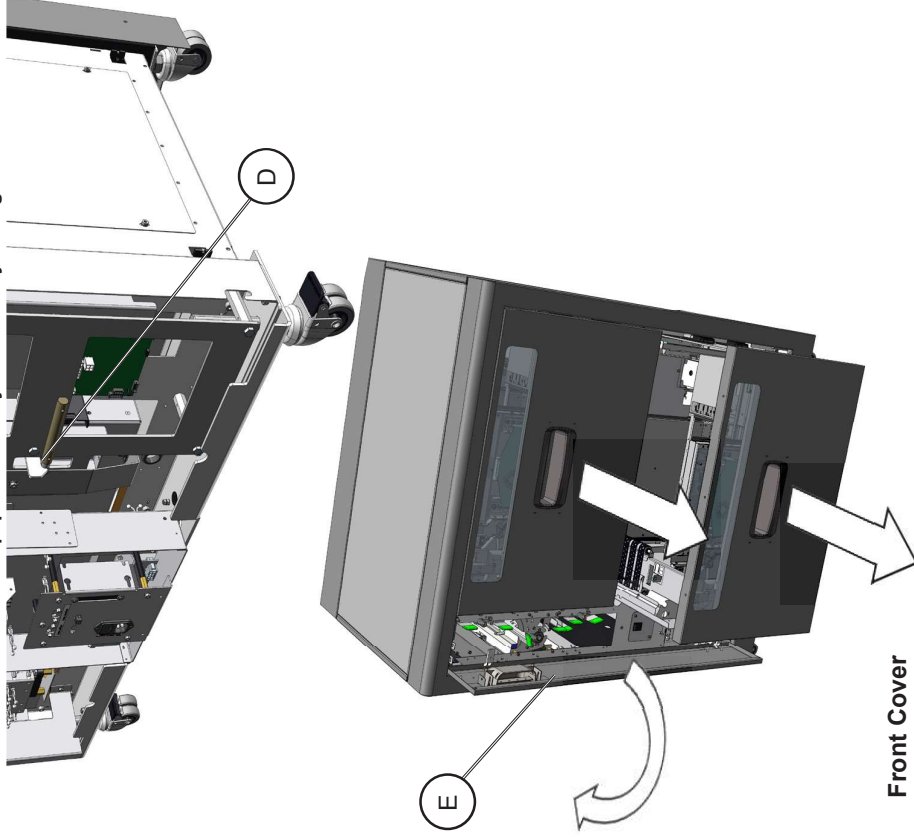
Reverse removal procedure

REP 3.3.2 Cover, Front

(Spare PL1.0)



CAUTION
There is a risk of tilting the machine with the back cover off and paper in the trays.
Make sure that there is no paper in the trays before fully sliding them out.



Front Cover

1. Turn off the main power and disconnect the power cord.
2. Lift the latch [D] (x2) and push in the trays
3. Open the front door [E]
4. Lift and remove front cover

Replacement

Reverse removal procedure

16 March 2021

3-4

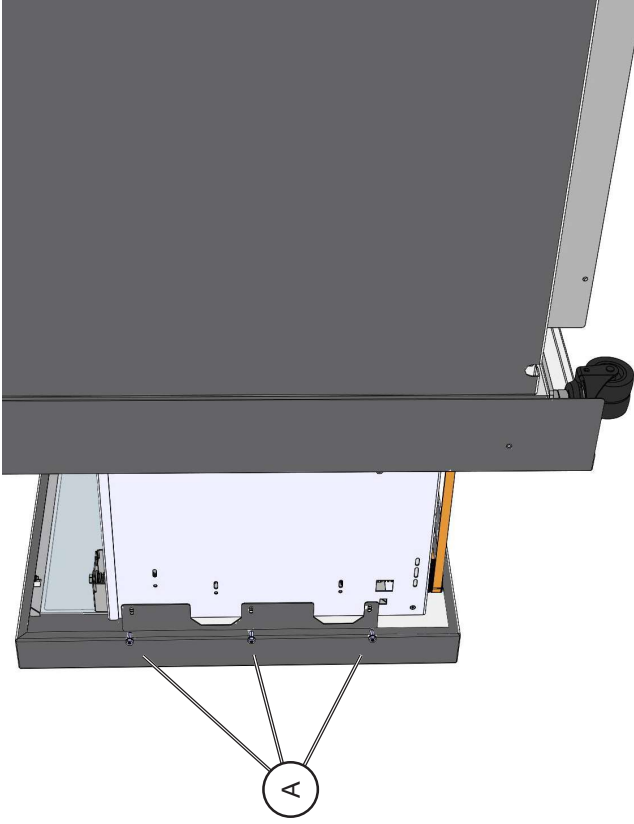
Morgana VFX

Repairs and Adjustments (REP & ADJ)

REP 3.3.3 Cover, Tray

(Spare PL1.0)

1. Turn off the main power and disconnect the power cord
2. Remove screws, [A] (x6 total, x3 on either side)
3. Remove cover



Replacement

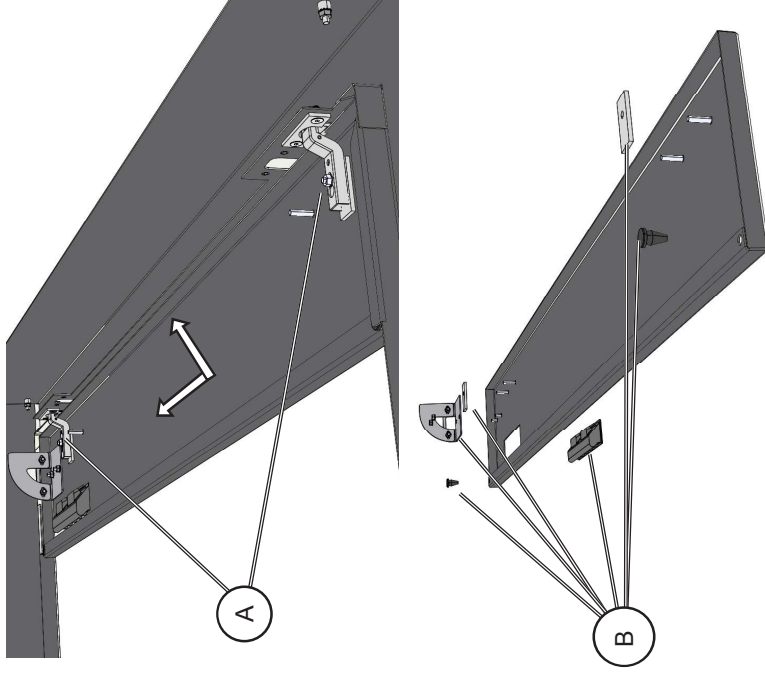
Reverse removal procedure:

1. Mount cover but do not tighten screws
2. Close tray
3. Adjust position of cover to flush with front cover
4. Open tray and tighten screws

REP 3.3.4 Door

(Spare PL1.0)

1. Turn off the main power and disconnect the power cord
2. Lift off Front Cover (REP 3.3.2) and place it on a flat surface
3. Remove nuts [A] (x2) and remove door
4. Remove the remaining parts [B] from the door if needed



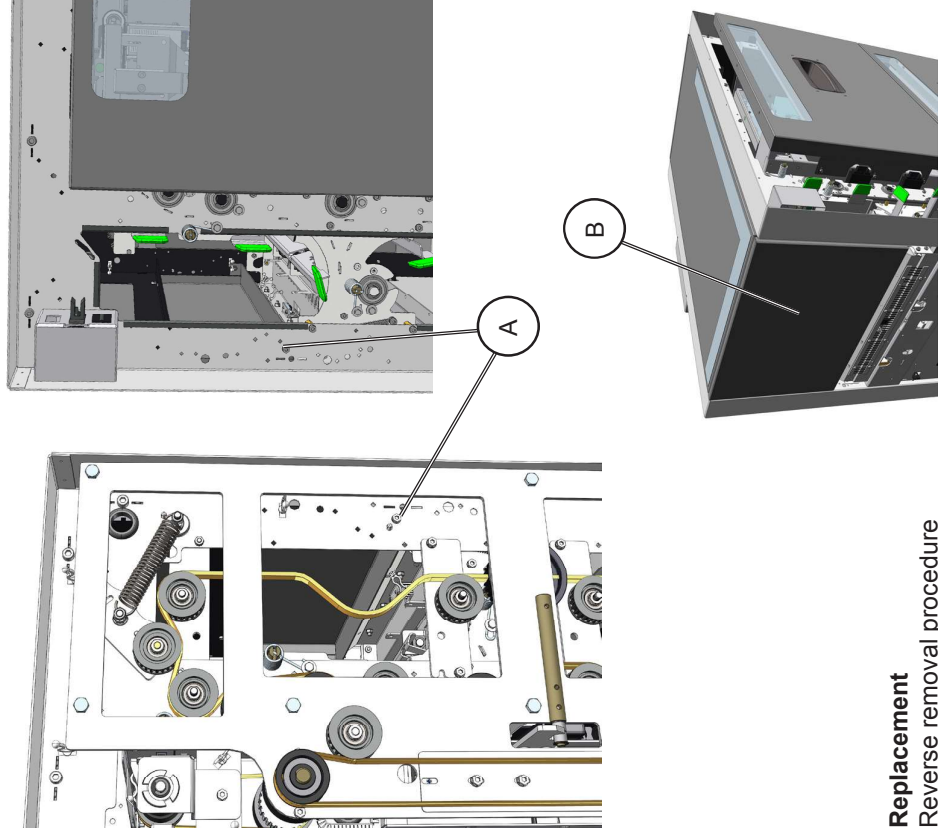
Replacement

Reverse removal procedure.

When tightening nuts for door, push door in the direction shown. Ensure that the door closes properly and has even gaps around the edges.

REP 3.3.5 Cover, Upper Exit
(Spare PL1.0)

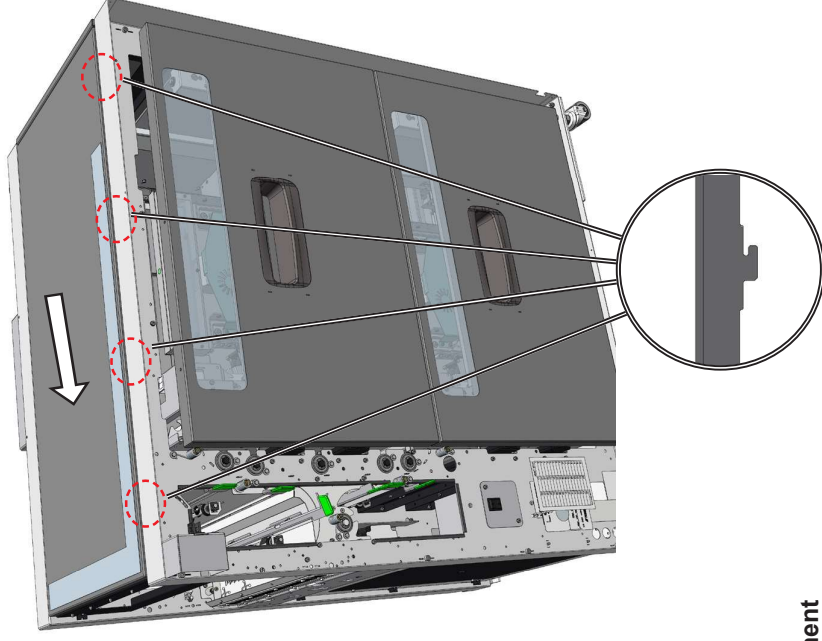
1. Turn off the main power and disconnect the power cord
2. Remove front and rear covers (see REP 3.3.2 and REP 3.3.1)
3. Remove screws [A] (x2)
4. Slide cover [B] upwards



Replacement
Reverse removal procedure

REP 3.3.6 Cover, Top
(Spare PL1.0)

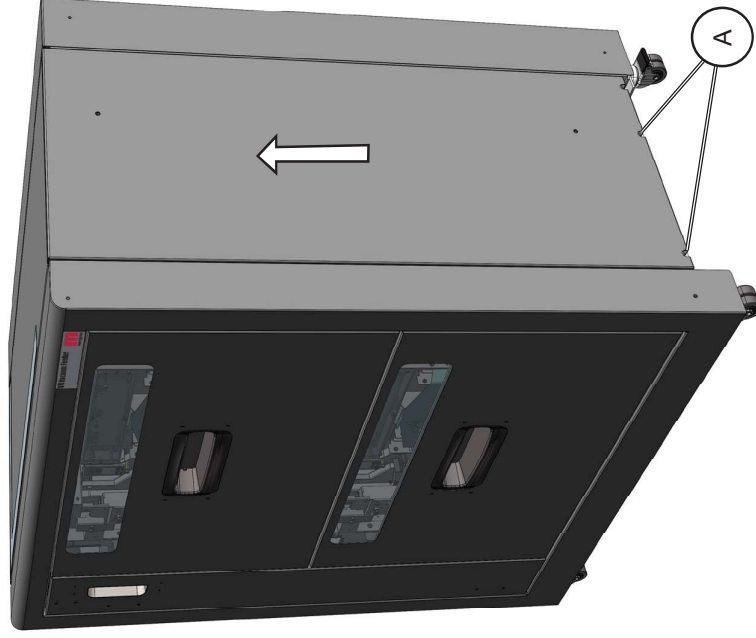
1. Turn off the main power and disconnect the power cord
2. Remove Cover, Upper Exit (REP 3.3.5)
3. Press Cover, Top in arrow direction and remove



Replacement
Reverse removal procedure

REP 3.3.7 Cover, Side
(Spare PL1.0)

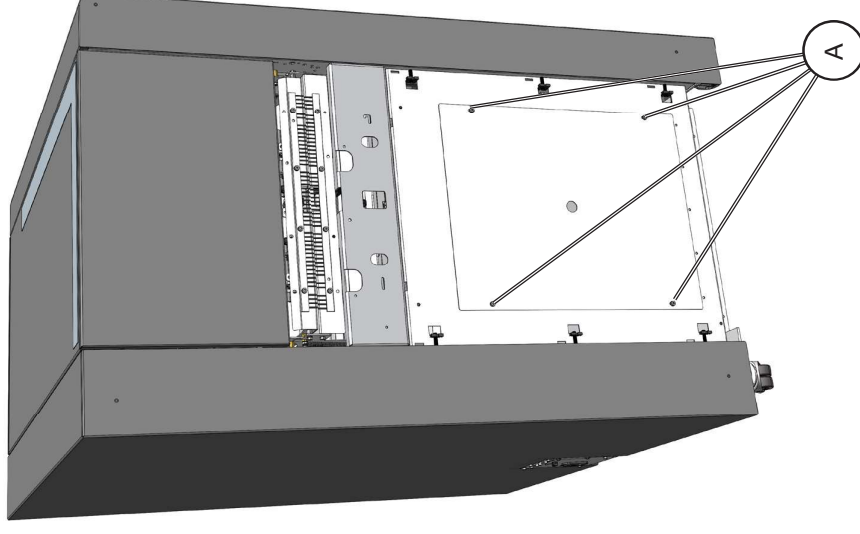
1. Turn off the main power and disconnect the power cord
2. Remove User Interface with support (see REP 3.3.10)
3. Loosen screws [A] (x2)
4. Lift cover up and out



Replacement
Reverse removal procedure

REP 3.3.8 Cover, Lower Exit
(Spare PL1.0)

1. Turn off the main power and disconnect the power cord
2. Remove screws [A] (x4)
3. Remove cover

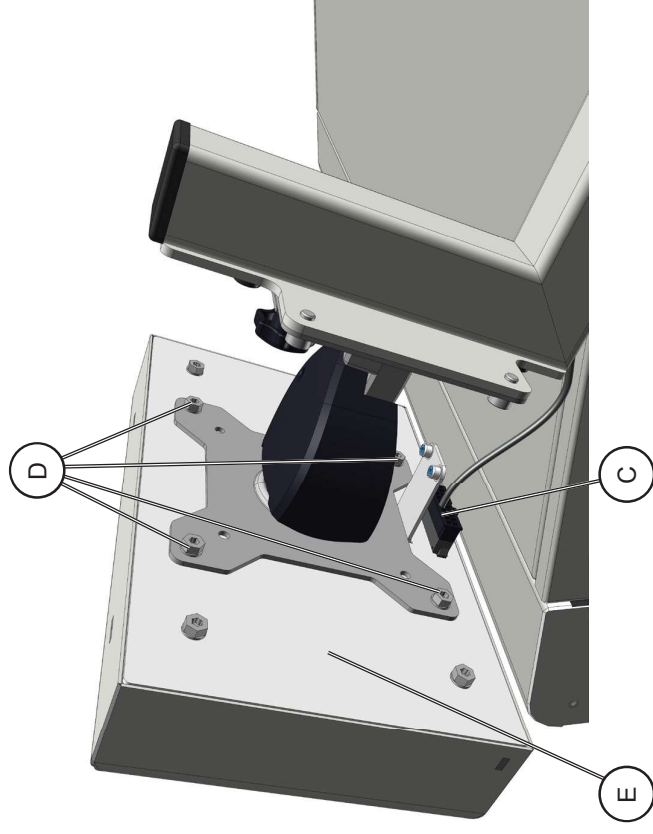
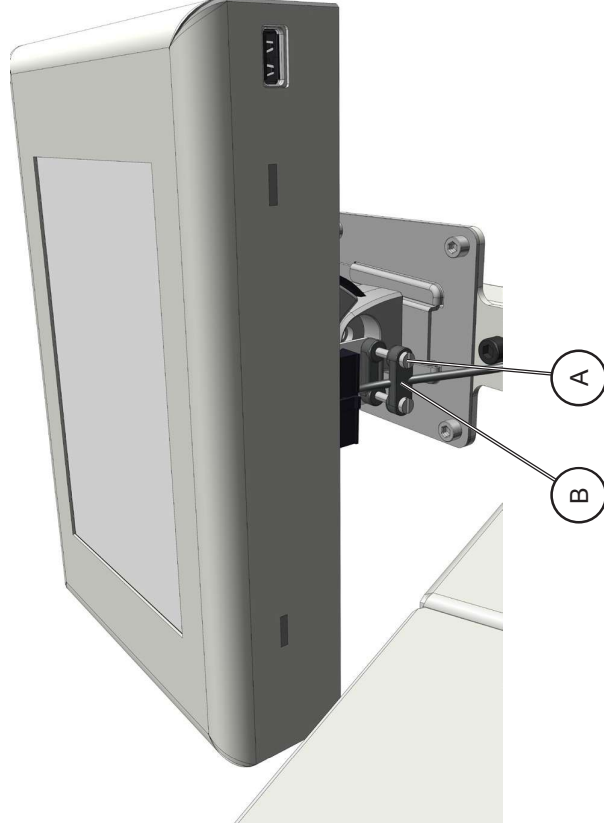


Replacement
Reverse removal procedure

REP 3.3.9 User Interface

(Spare PL1.1)

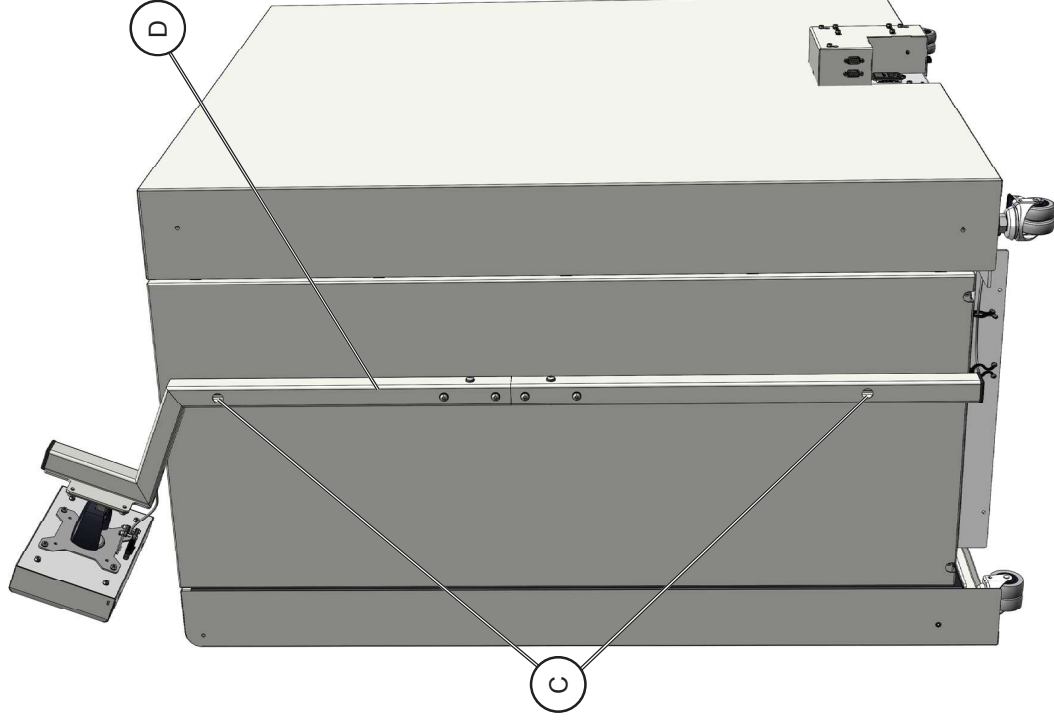
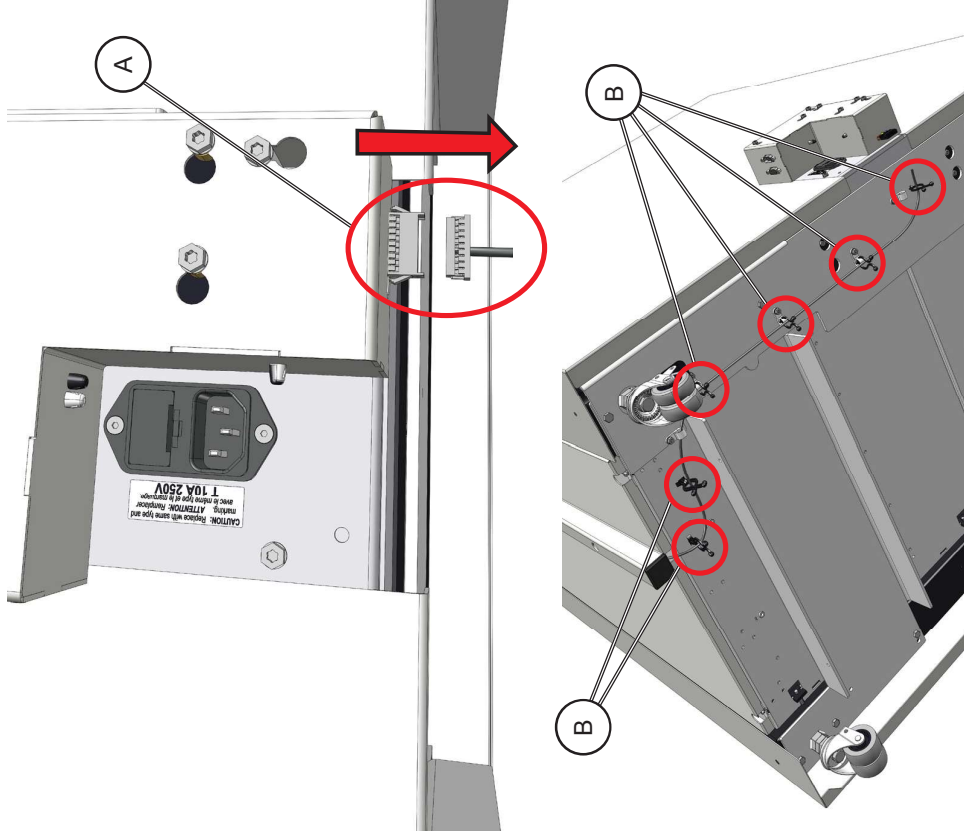
1. Turn off the main power and disconnect the power cord
2. Remove screw [A] to free wire from the Cable Strain Relief [B]
3. Disconnect UI connector [C]
4. Remove screws [D] (4x)
5. Remove UI [E]



Replacement
Reverse removal procedure

REP 3.3.10 User Interface with support
(Spare PL1.1)

1. Turn off the main power and disconnect the power cord
2. Disconnect UI connector from the rear of the machine [A]
3. Free wire from cable ties [B] below the machine
4. Remove screws [C] (2x)
5. Remove User Interface with support [D]



Replacement
Reverse removal procedure

3.4 Interior

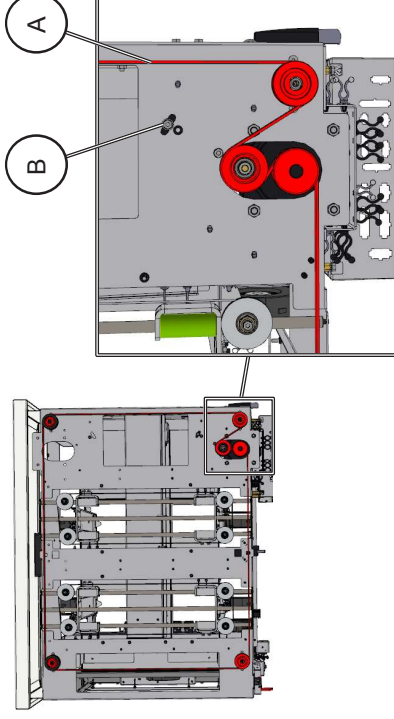
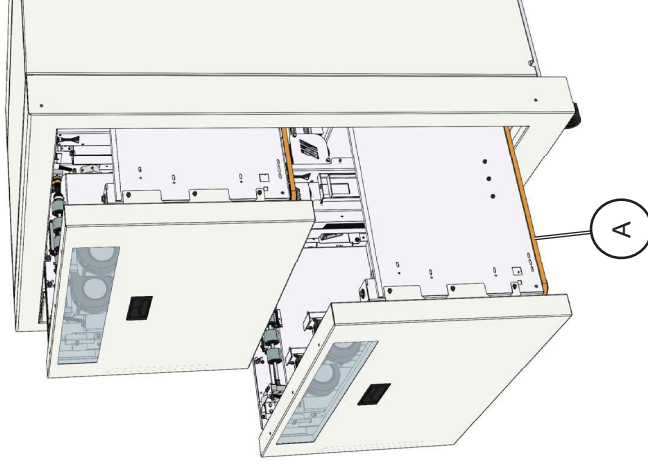
REP 3.4.1 Timing Belt

(Spare PL2.0)

⚠ CAUTION

There is a risk of tilting the machine with the back cover off and paper in the trays. Make sure that there is no paper in the trays before fully sliding them out.

1. Turn off system and disconnect power
2. Remove Cover, Rear (REP 3.3.1)
3. Lift the locking latch and push out tray
4. Remove Cover, Tray (REP 3.3.3)
5. Loosen screw [B] to release belt tension
6. Remove the belt [A]

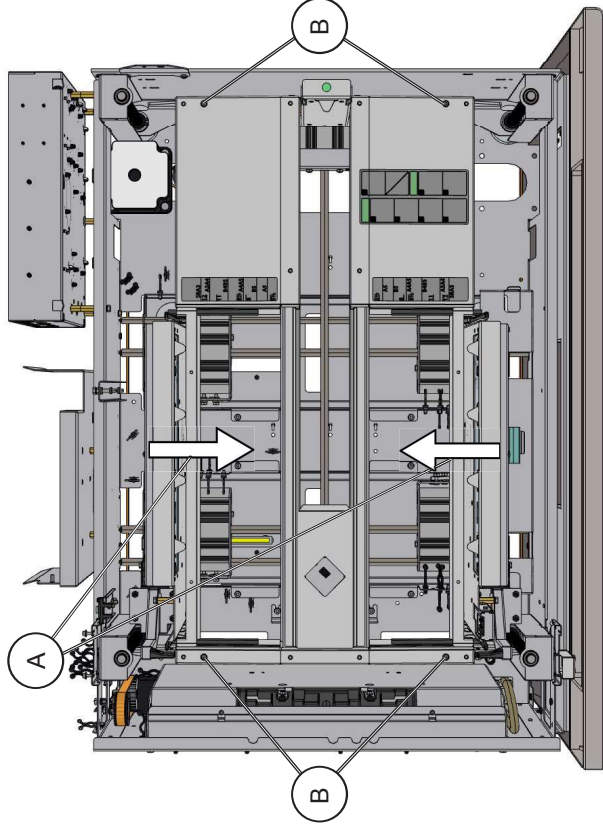


Replacement

Reverse removal procedure. After replacing the belt, ensure that the tray table is level (REP 3.4.2 Replacement Section). Make sure that the belt tensioner is tensioning the belt correctly and then torque the screw [B].

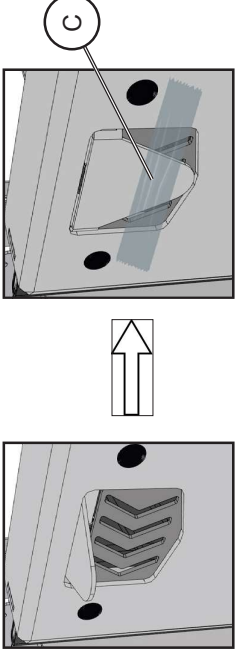
REP 3.4.2 Tray Table (Spare PL2.0)

1. Turn off the main power and disconnect the power cord
2. Remove Vacuum Chamber (See REP 3.4.20 Vacuum Belt)
3. Move the paper guides [A] inwards and position them around 1 cm away from the middle of the tray
4. Remove the countersunk screws [B] (4x)



*Feeder Assembly hidden for clarity

5. Put a piece of duct tape on the paper stop of each fan to keep it down when lifting tray table up, see picture [C]
6. Lift out the tray table



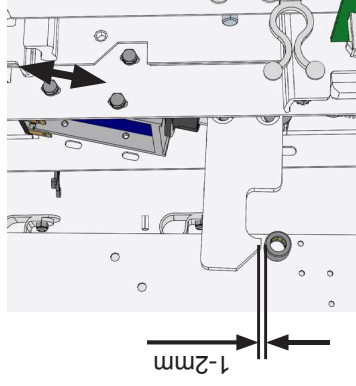
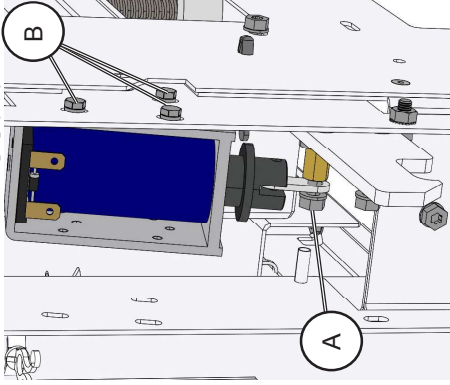
Replacement

Reverse removal procedure. Ensure that the tray table is level (with respect to the tray).

REP 3.4.3 Solenoid SOL 102/202 (Tray lock solenoid)

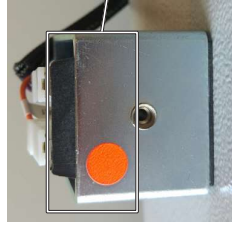
(Spare PL2.0)

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Lift the locking latch and push out tray half way to gain access to solenoid from the back.
4. Disconnect connectors from solenoid
5. Remove screw [A]
6. Remove screw [B] (x3) and remove solenoid assembly

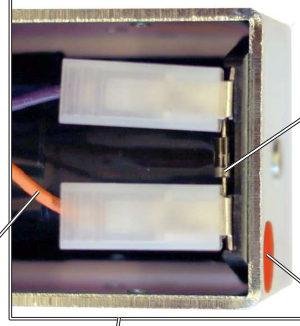


Replacement

Replace solenoid in reverse order. Adjust position of solenoid so that the tray locking latch engagement distance is 1-2mm when the solenoid is activated.



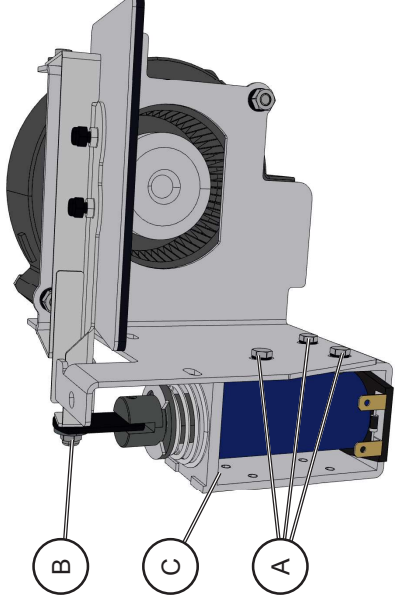
Ensure the orange connector is mounted on the indicated side. Same side as line on the Diode.



REP 3.4.4 Solenoid SOL 103/203 (Vacuum Feed Solenoid)

(Spare PL2.3)

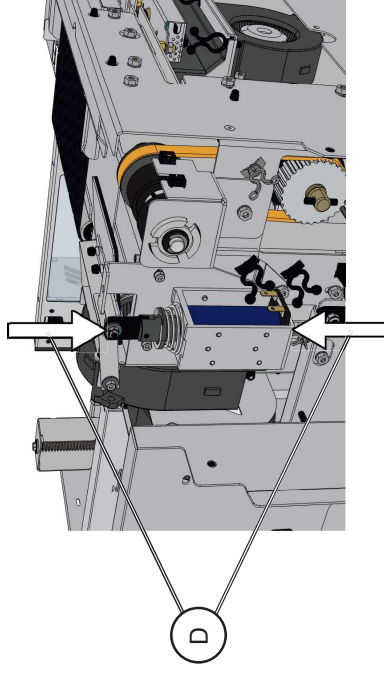
1. Turn off the main power and disconnect the power cord
2. Remove Vacuum fan assembly (REP 3.4.24)
3. Remove screws [A] (3x) and nut [B]
4. Remove solenoid assembly [C]



Replacement

1. Replace solenoid in reverse order
2. The screws [A] mate to slotted holes. These screws must be tightened with the solenoid in proper position:

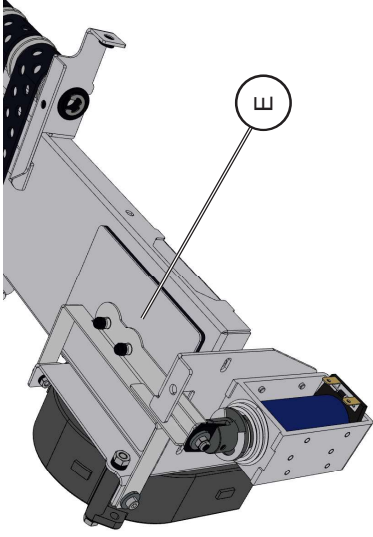
 - Loosely attach the vacuum fan assembly in place
 - Hold the solenoid in place and push down the link arm [D]



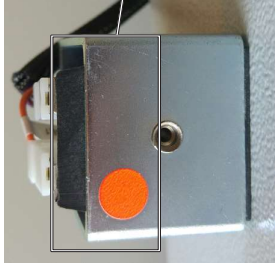
REP 3.4.4 Solenoid SOL 103/203 (Vacuum Feed Solenoid) (continued)



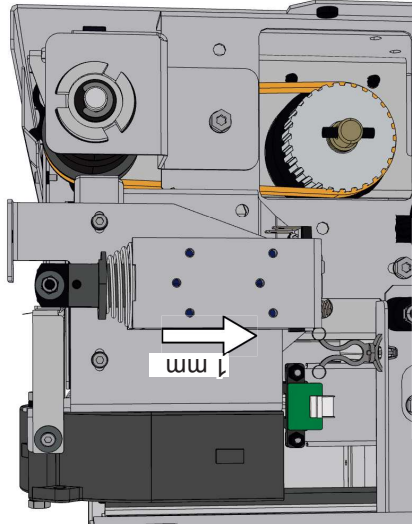
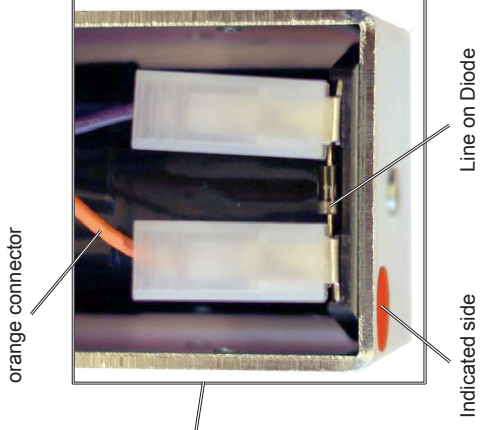
Ensure that **Orange lead** is connected to terminal marked with orange dot.



- Make sure the vacuum plate (plate with gasket) fully closes when pushed down [E], otherwise move the solenoid up or down



Ensure the orange connector is mounted on the indicated side. Same side as line on the Diode.



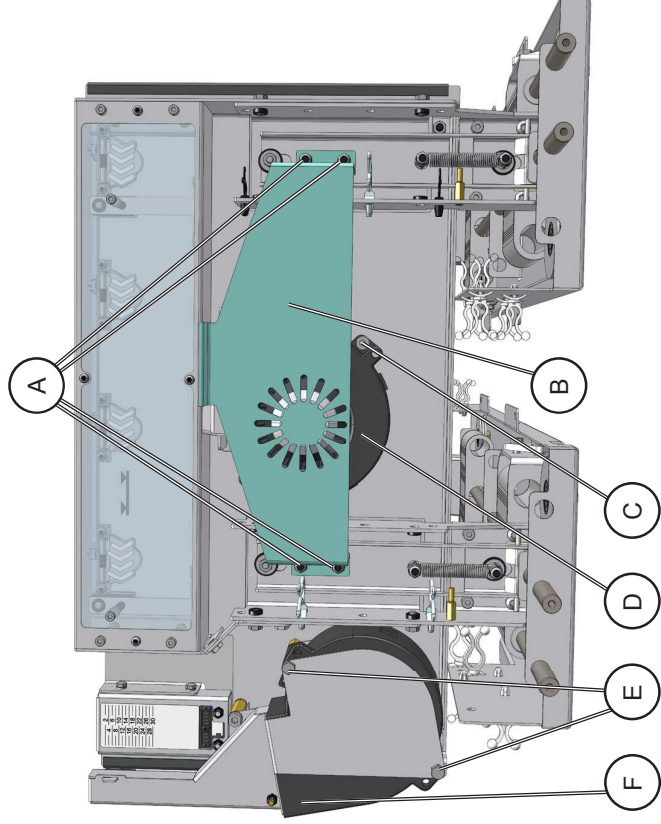
- After having adjusted the solenoid position, move the solenoid 1 mm down
 - Note location of solenoid with respect to slotted holes
 - Remove vacuum fan assembly to access screws [A], torque screws [A] to secure the solenoid in noted location
3. Re-attach vacuum fan assembly to tray

REP 3.4.5 Tray Blower Fans

(Spare PL2.1)

Front Fans Replacement

1. Turn off the main power and disconnect the power cord;
2. Disconnect fan connector and unhook harness from cable holders;
3. Remove nuts [A] (4x) to remove lever lock release [B];
4. Remove screw [C] to remove fan [D];
5. Remove screws [E] (2x);
6. Remove fan [F].



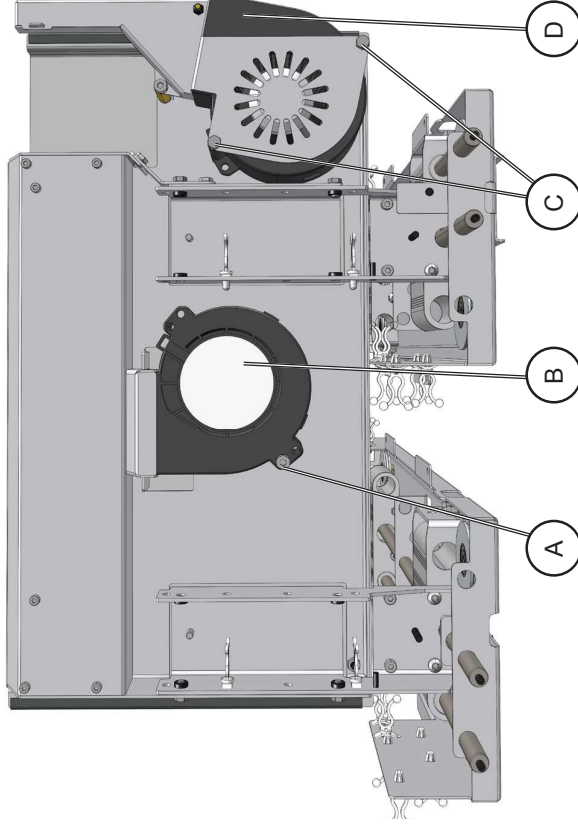
Replacement

Reverse removal procedure

Rear Fans Replacement

(Spare PL2.1)

1. Turn off the main power and disconnect the power cord;
2. Disconnect fan connector and unhook harness from cable holders;
3. Remove screw [A] to remove fan [B];
4. Remove screws [C] (2x);
5. Remove fan [D].

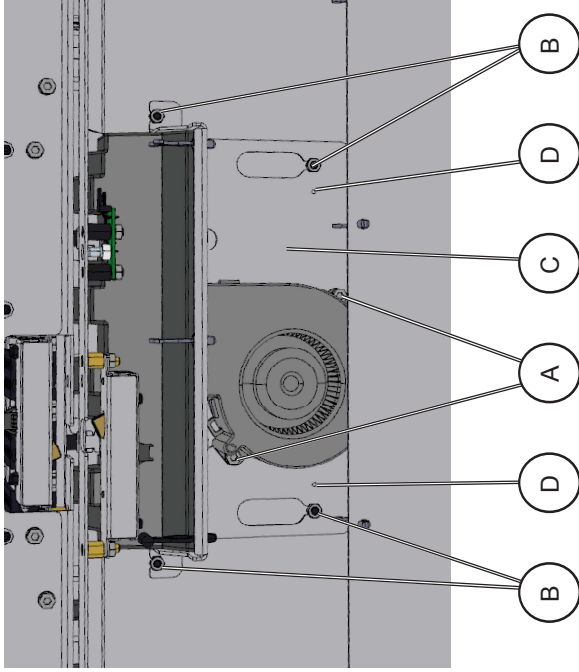


Replacement

Reverse removal procedure

REP 3.4.6 Separation Fan (FAN105, FAN205)
(Spare PL2.1)

1. Turn off the main power and disconnect the power cord
2. Disconnect connector
3. Remove screws/washers [A] (x2)
4. Remove fan



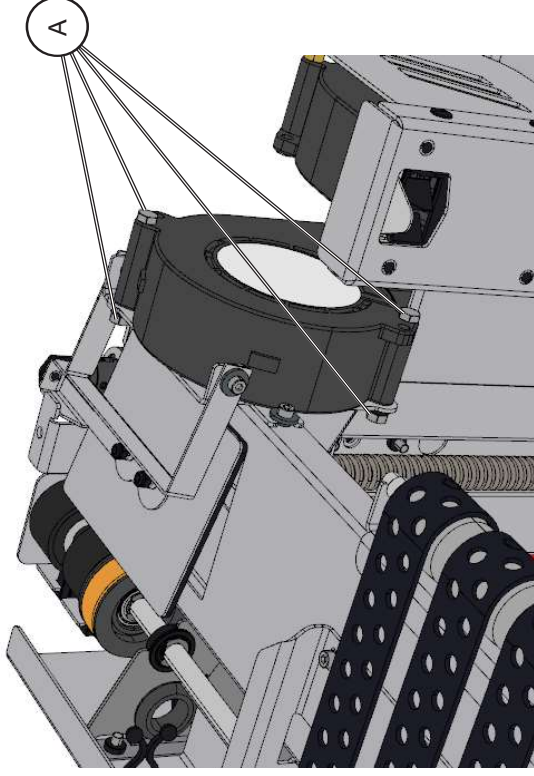
Replacement

Reverse removal procedure.

If Air Knife Fan Bracket [C] requires adjustment, loosen [B] (x4) screws and align the bracket in position. The nominal position of the bracket (and hence separation fan) is when holes [D] are perfectly aligned with the holes in the separation frame.

REP 3.4.7 Vacuum Fan (FAN106, FAN206)
(Spare PL2.3)

1. Turn off the main power and disconnect the power cord
2. Disconnect connector
3. Unhook harness from cable holders
4. Remove screws/nuts [A] (x2)
5. Remove fan



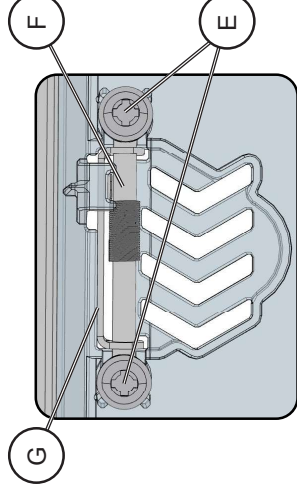
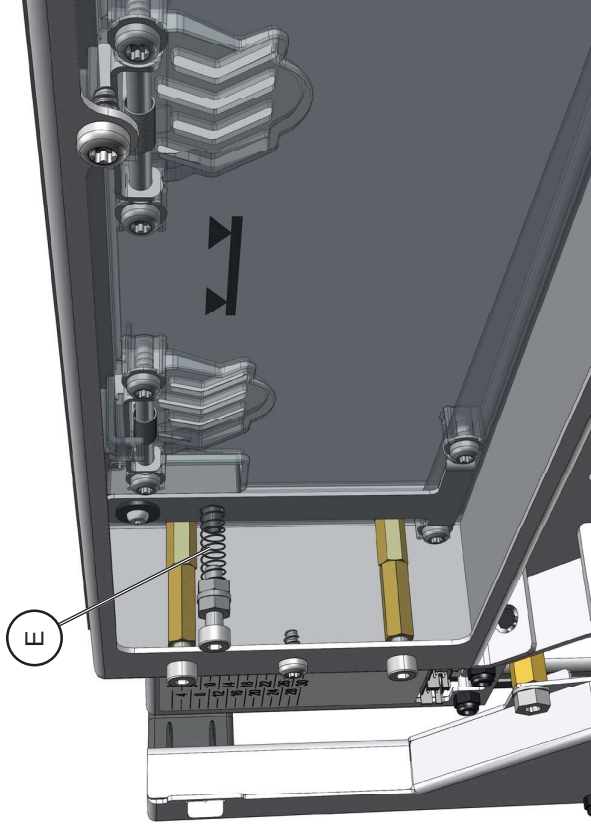
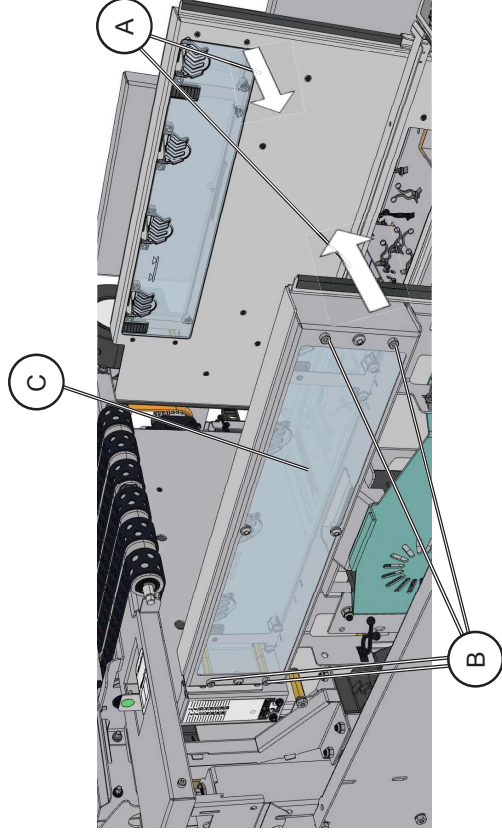
Replacement

Reverse removal procedure

REP 3.4.8 Air Chambers: torsion springs, paper stops
(Spare PL2.1)

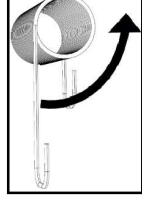
This procedure applies to both front and rear air chambers.

1. Turn off the main power and disconnect the power cord;
2. Open relevant tray;
3. Move side guides inwards [A] to gain access to screws [B] (4x) and remove them;
4. Remove air chamber cover [C]. Note that springs [D] (2x) might fall: make sure not to lose them and to put them back in place when reassembling air chamber;
5. Remove screws and washers [E] (2x) on relevant paper stopper;
6. Pull out pin [F] and paper stopper [G] to remove spring.



Replacement

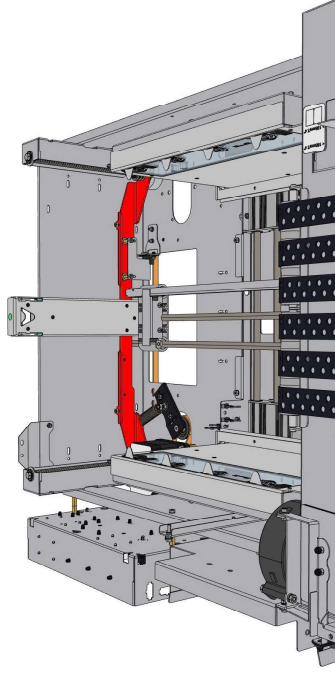
Reverse removal procedure.
Apply pre-tension of 70° - 120°
to spring before mounting.



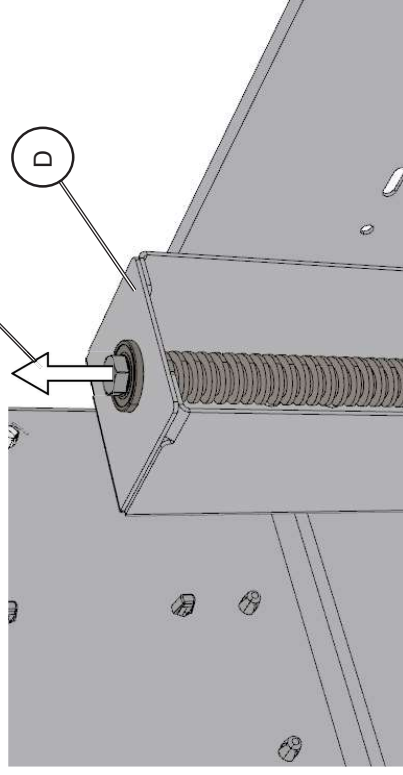
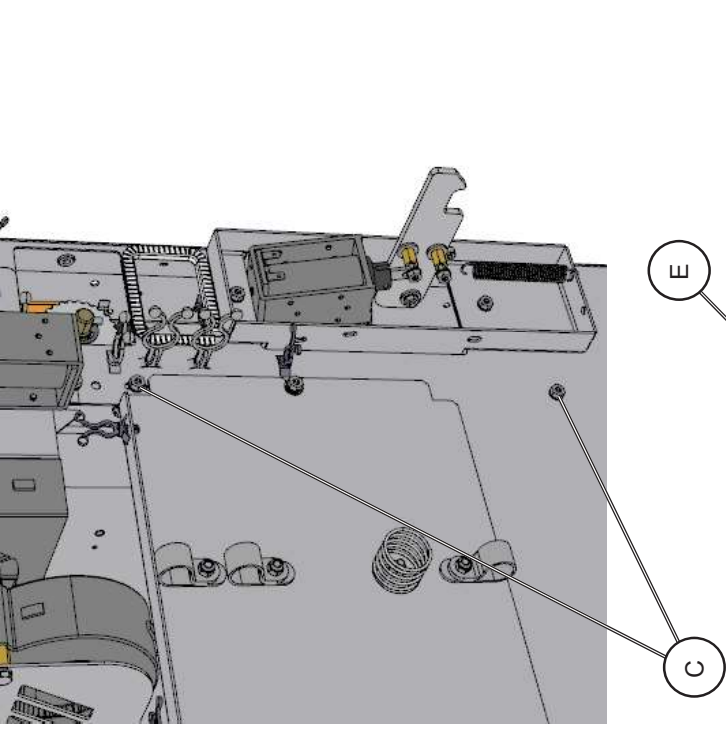
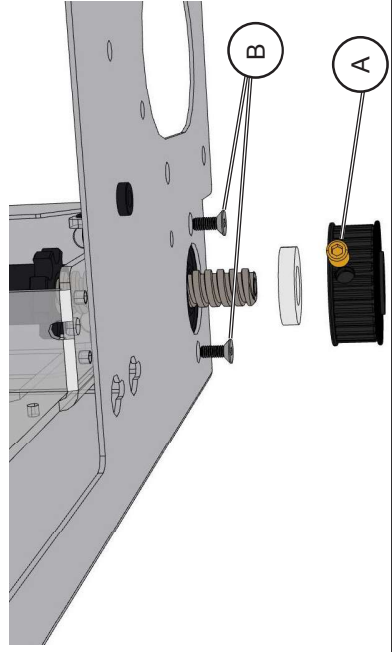
REP 3.4.9 Lead Screw Assembly

(Spare PL2.2)

Before starting, find something to keep Elevator Yoke [red] in place after disassembly (ex. a piece of string or some tape)



1. Move tray table to its lower position, either in service menu or by hand
2. Turn off the main power and disconnect the power cord
3. Remove Tray Table (REP 3.4.2)
4. If lead screw is on front side, remove Cover, Tray (REP 3.3.3)
5. Remove Timing Belt (REP 3.4.1)
6. Loosen set screw [A] and remove timing wheel and spacer
7. Remove screws [B]
8. Remove screws [C] and screw cover [D] (on relevant screw assy)
9. Remove Lead Screw Assembly [E]



Replacement

Reverse removal procedure. Adjust/reinstall timing belt using REP 3.4.1. Level Tray Table.

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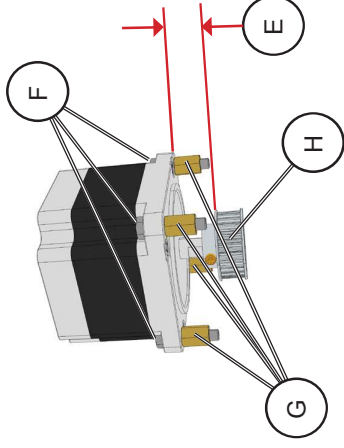
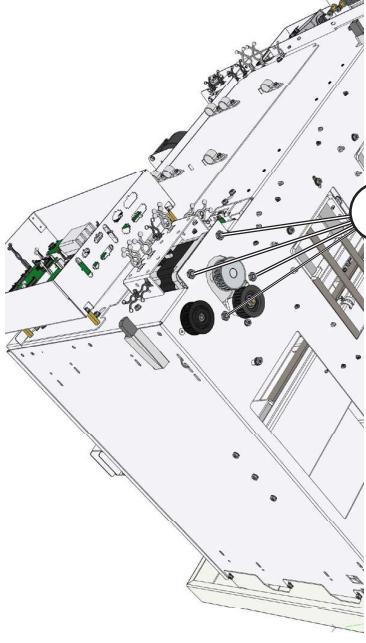
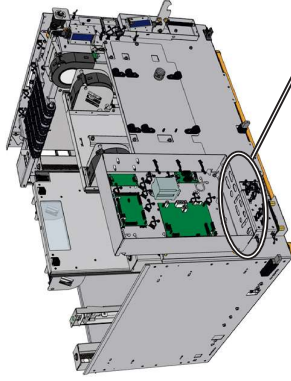
REP 3.4.10 Stepper Motor M101 / M201 (Spare PL2.2)

Check Motor

1. Enter service mode and run motor between end positions.
2. Check that set screw is firmly torqued in sprocket and against the D-surface of the shaft.

Replace motor

1. Turn off the main power and disconnect the power cord
2. Remove Tray Table (REP 3.4.3)
3. Remove Timing Belt (REP 3.4.1)
4. Disconnect connector M101/M201 [B]
5. Unhook harness from cable holders [C]
6. Remove nuts [D] (x4) and remove motor
7. Measure position of pulley for later replacement [E]
8. Move screws [F], spacers [G] and timing pulley (H) over to new motor.

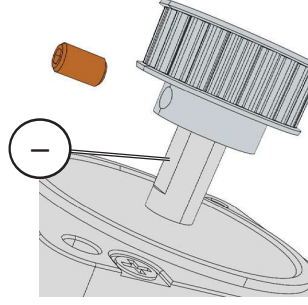
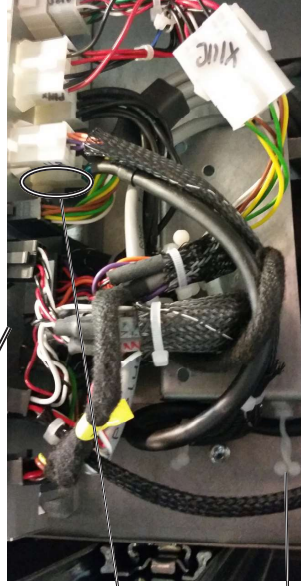


Replacement

Reverse removal procedure
Make sure to mount timing pulley using measured position [E]

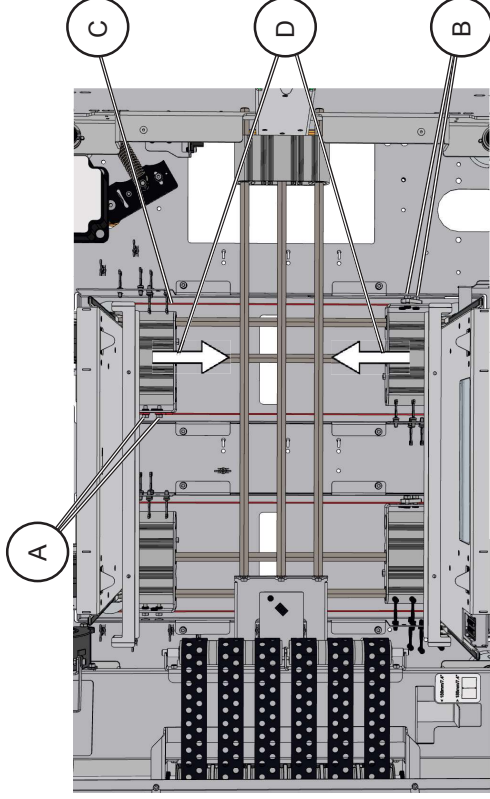
Note!

Torque the set screw against flat surface [I] on motor shaft.



REP 3.4.11 Side Guide Adjustment Cable (Spare PL2.2)

1. Turn off the main power and disconnect the power cord
2. Remove Tray Table (REP 3.4.3)
3. Remove screws [A]
4. Loosen screws [B]
5. Remove cable [C]



Relevant parts are painted red.

Replacement

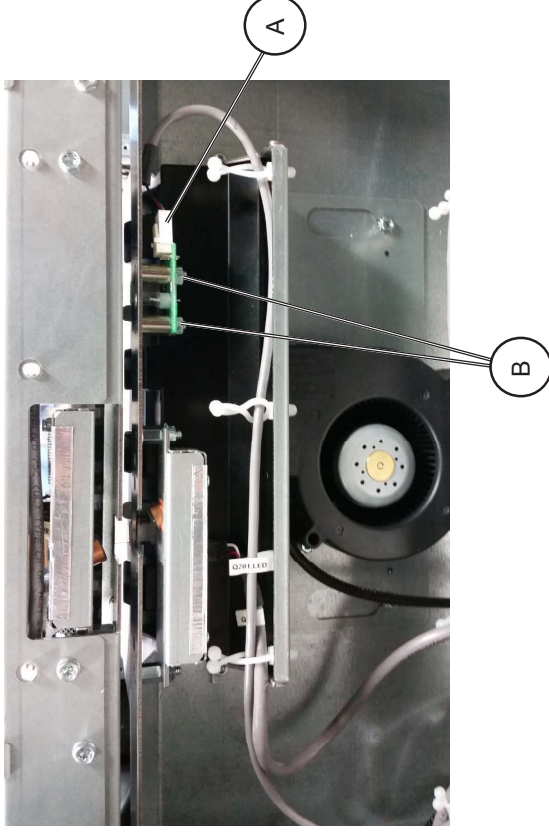
Reverse removal procedure

Note!

Before torquing screws [B], move the sleds [D] as far in as possible

REP 3.4.12 PCB LED (Q101LED, Q201LED) (Optical DSD) (Spare PL2.3)

1. Turn off the main power and disconnect the power cord
2. Open tray
3. Disconnect connector [A]
4. Remove screws [B]
5. Remove PCB LED

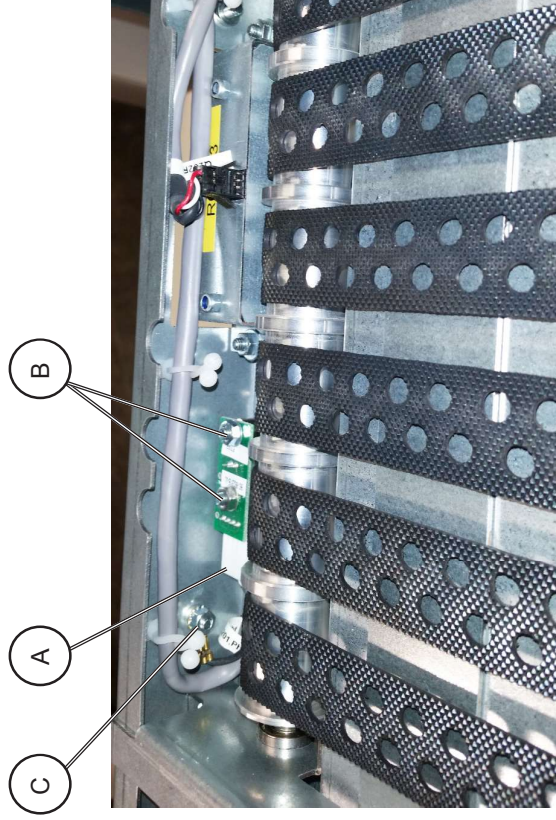


Replacement

1. Reverse removal procedure
2. Perform Calibration Optical DSD according to the procedure described in the operator manual.

REP 3.4.13 PCB Sensor (Q101PHT, Q201PHT) (Optical DSD)
(Spare PL2.3)

1. Turn off the main power and disconnect the power cord
2. Open tray
3. Disconnect connector [A]
4. Remove nuts [B] and hook off the grounding cable [C]
5. Remove PCB photo transistor

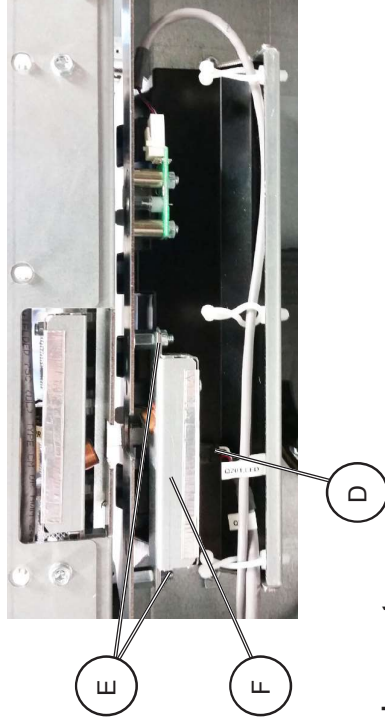
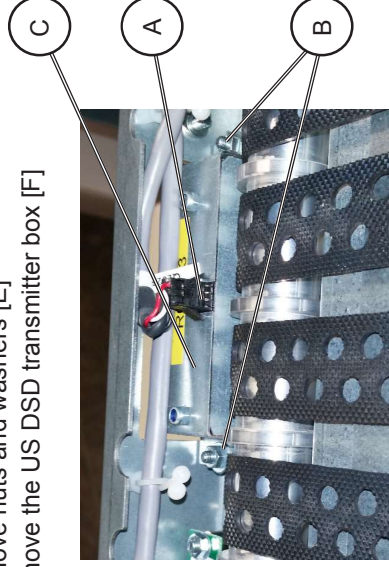


Replacement

1. Reverse removal procedure
2. Perform Calibration Optical DSD according to the procedure described in the operator manual.

REP 3.4.14 Ultrasound DSD Sensor Q102/Q202 (Matched Pair)
(Spare PL2.3)

1. Turn off the main power and disconnect the power cord
2. Open tray
3. Disconnect connector [A]
4. Remove nuts and washers [B]
5. Remove the US DSD receiver box [C]
6. Disconnect connector [D]
7. Remove nuts and washers [E]
8. Remove the US DSD transmitter box [F]

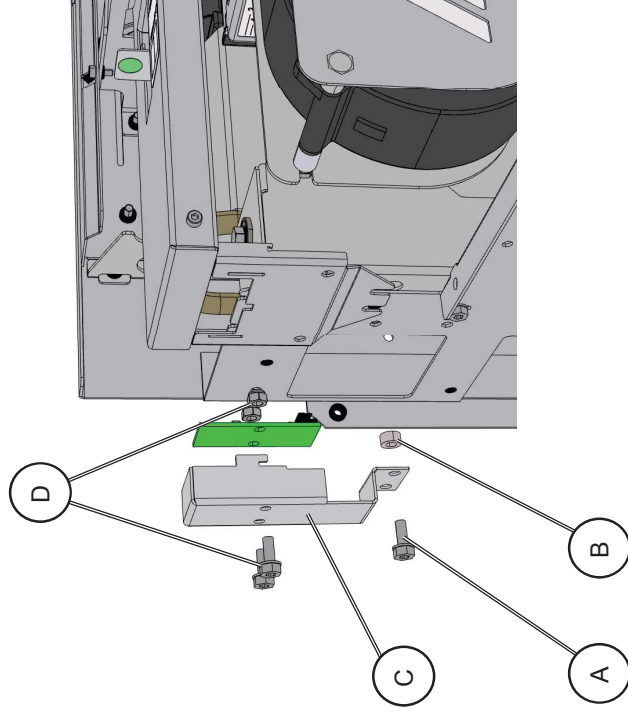


Replacement

1. Reverse removal procedure
2. Perform Calibration Optical DSD according to the procedure described in the operator manual.

REP 3.4.15 PCB White LED Lamp (LAMP101, LAMP201)
(Spare PL2.3)

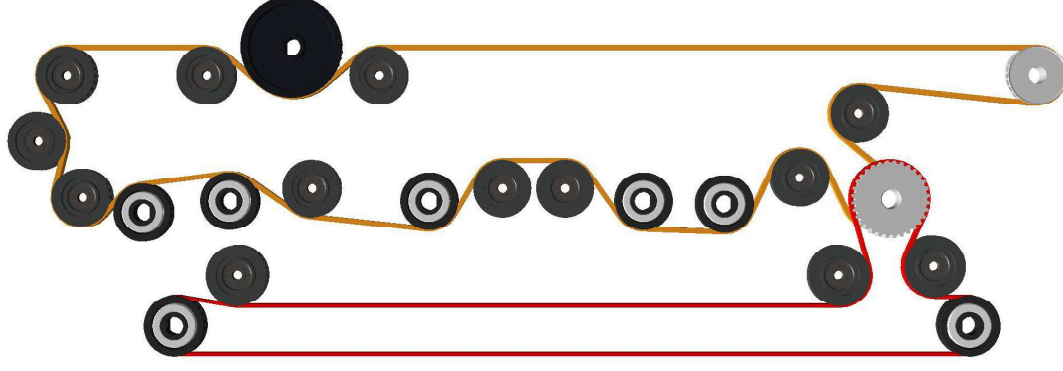
1. Turn off the main power and disconnect the power cord
2. Remove Cover Tray (REP 3.3.3)
3. Remove screw [A] and make sure to hold spacer [B] not to drop it into the machine.
4. Unhook LED cover [C]
5. Unscrew screws and nuts [D] (2x)
6. Disconnect connector and remove PCB



Replacement
Reverse removal procedure

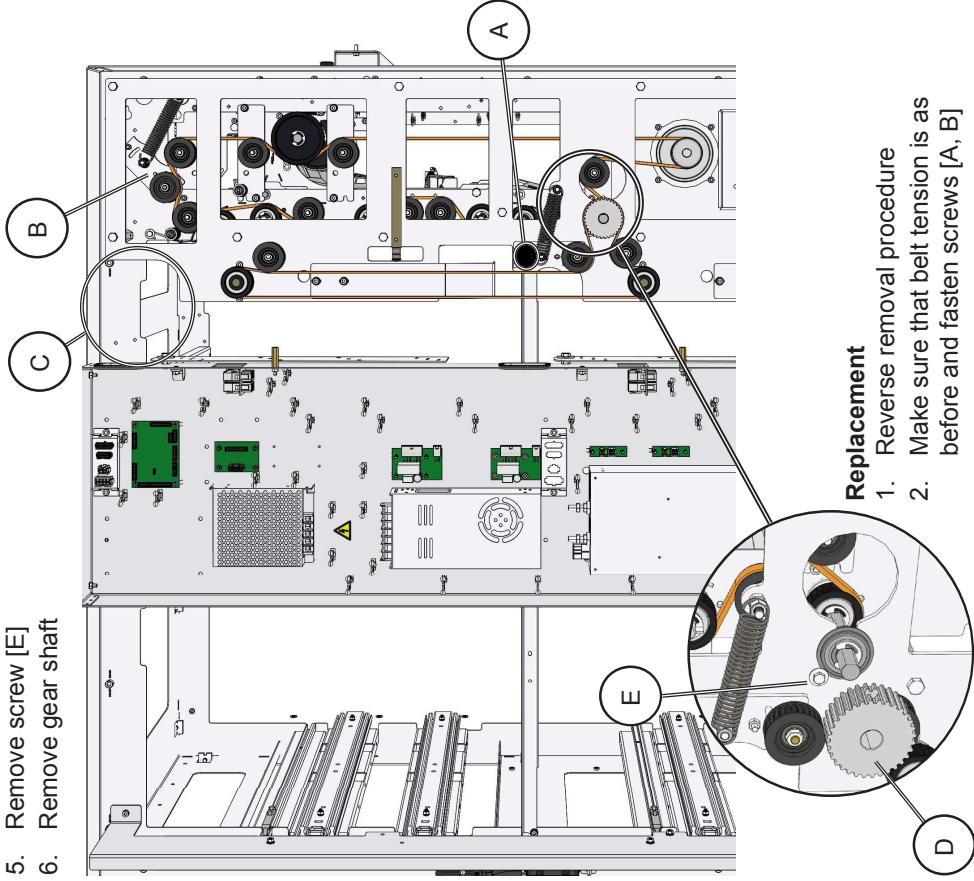
REP 3.4.16 Timing Belts, Routing
(Spare PL4.0)

This image shows how the timing belt should be routed



REP 3.4.17 Gear Shaft Timing Wheel
(Spare PL4.0)

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Loosen tension on both timing belts by loosening screws [A, B]. Screw [B] is from the inside and is possible to access through the opening labeled [C], or by removing Cover, Top (REP 3.3.6)
4. Loosen set screw and remove the timing wheel [D]
5. Remove screw [E]
6. Remove gear shaft

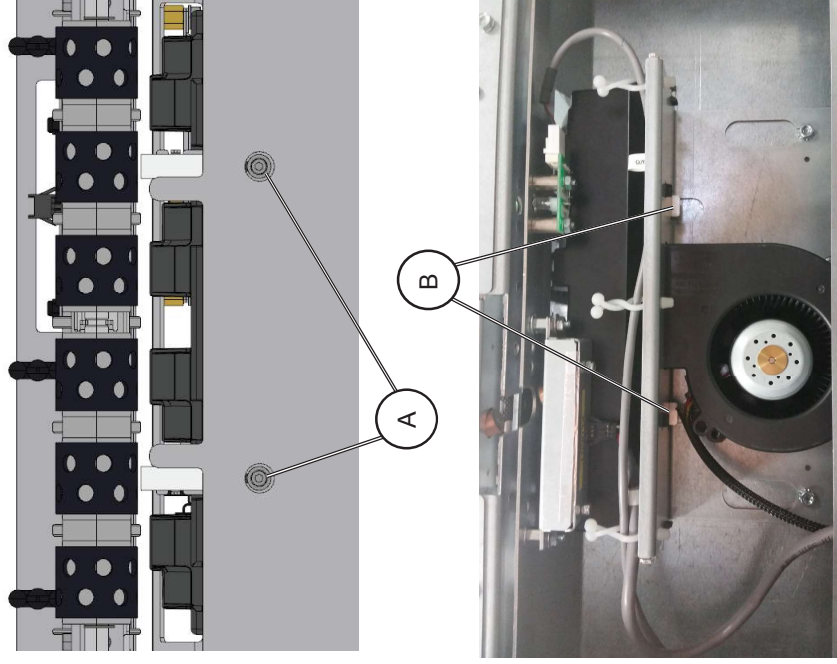


Replacement

1. Reverse removal procedure
2. Make sure that belt tension is as before and fasten screws [A, B]

REP 3.4.18 Separation Pads
(Spare PL2.4)

1. Turn off the main power and disconnect the power cord
2. Open the tray
3. Peel off existing separation pads
4. Clean mounting surface
5. Mount new separation pads (self-adhering)
6. Adjust position of each separator pad such that the top of each pad is 1 mm from the bottom of the vacuum belt. Position may be adjusted by loosening screws [A] and sliding the separator pad [B] up/down (from outside the tray)

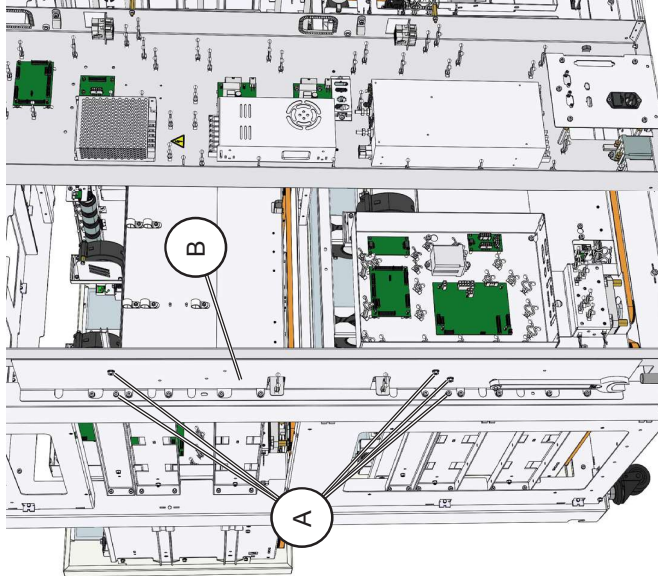


REP 3.4.19 Chain (Spare PL4.1)

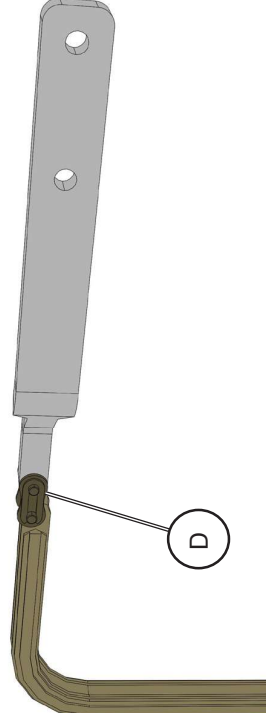
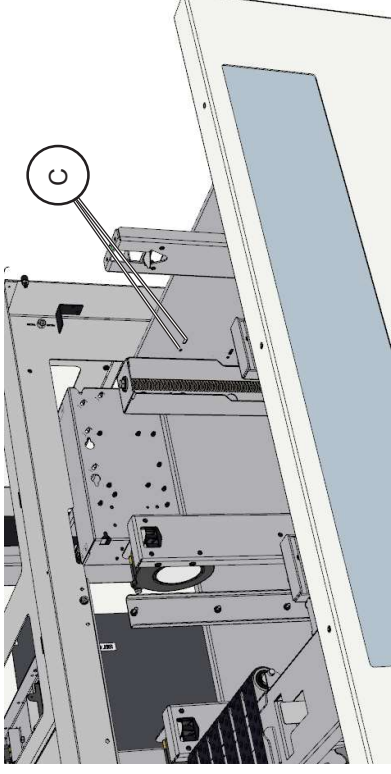
⚠ CAUTION

There is a risk of tilting the machine with the back cover off and paper in the trays. Make sure that there is no paper in the trays before fully sliding them out.

1. Turn off the main power and disconnect the power cord
2. Ensure that both tray tables are below chain fastening level
3. This job is easiest to perform with all covers off (REP 3.3.1 - REP 3.3.7). At a minimum, remove Cover, Rear (REP 3.3.1)
4. Remove screws and washers [A]; remove chain frame [B]
5. Move out the upper tray



6. Remove screws and nuts [C] and slide out this end of the chain
7. Move out the lower tray and repeat removal procedure
8. Disconnect chain brackets from chain by opening the chain master link [D]

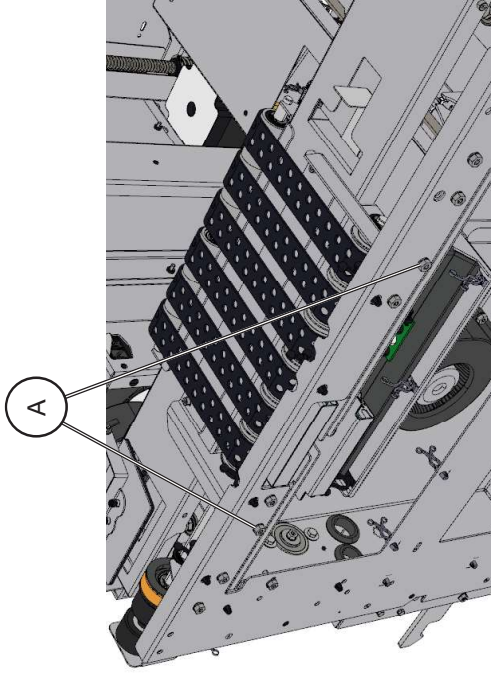


Replacement
Reverse removal procedure

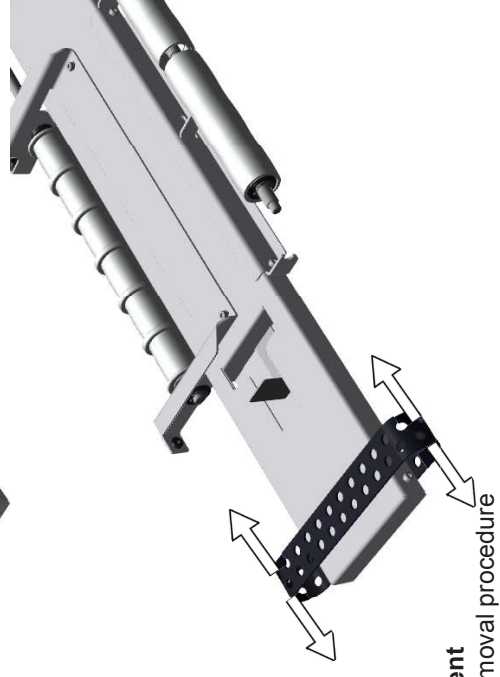
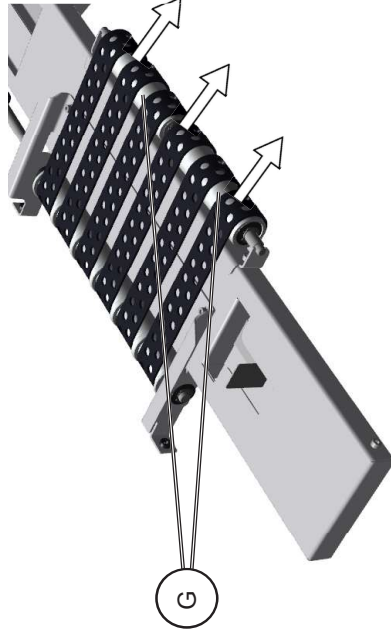
REP 3.4.20 Vacuum Belt

(Spare PL2.3)

1. Turn off the main power and disconnect the power cord
2. Disconnect connectors from vacuum solenoid and vacuum fan
3. Remove screws [A] (x2) to loosen vacuum chamber
4. Remove screws [B] (x2) and remove entire vacuum fan assembly
5. Remove screw [C] to loosen the vacuum brake bracket
6. Remove clutch/stop clutch connectors

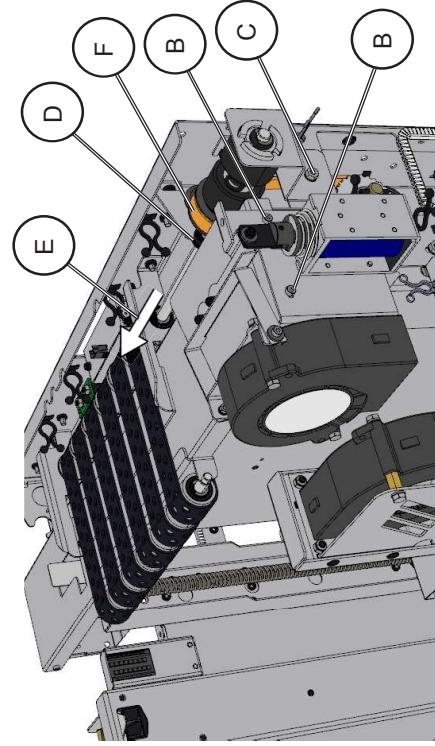


7. Bearing [D] needs to be pushed out of its mating bracket. Push the entire vacuum assembly in the direction shown [E]. The entire vacuum chamber assembly is now loose
8. Unhook the timing belt [F] and pull the vacuum chamber assembly towards the inside of the tray and upwards.
9. Shafts [G] are held in by the tension of the vacuum belts. Pull them in the direction shown in order to remove them.
10. With the [G] shafts loose, remove/replace vacuum belts by pulling them over the support bracket in the direction shown. After belts are in place, re-mount [G] shafts.



Replacement

Reverse removal procedure



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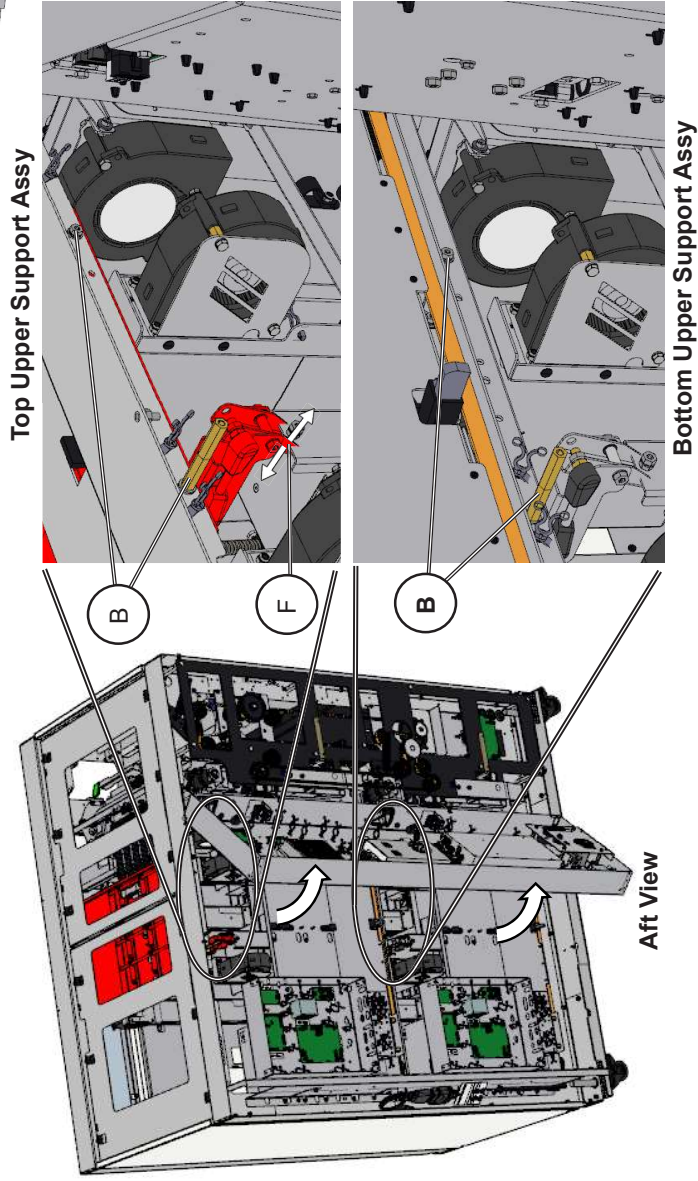
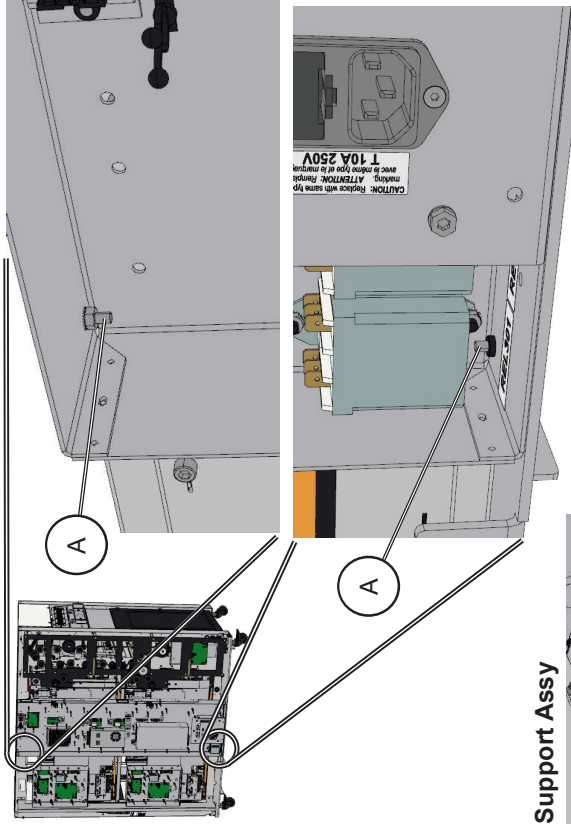
Morgana VFX

Repairs and Adjustments (REP & ADJ)

REP 3.4.21 Upper support assy (Spare PL5.0)

Morgana recommends replacing the entire upper support assembly when any of the components in the assembly malfunctions. For advanced technicians, Individual Paper Stops are available.

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1) and Cover, Front (REP 3.3.2)
3. Remove nuts and screws [A] from electrical box and rotate electrical box out 45 degrees (to access upper support assy mounting screws)
4. Remove [B] screws/spacer/nuts (x2)
5. Continued on next page...

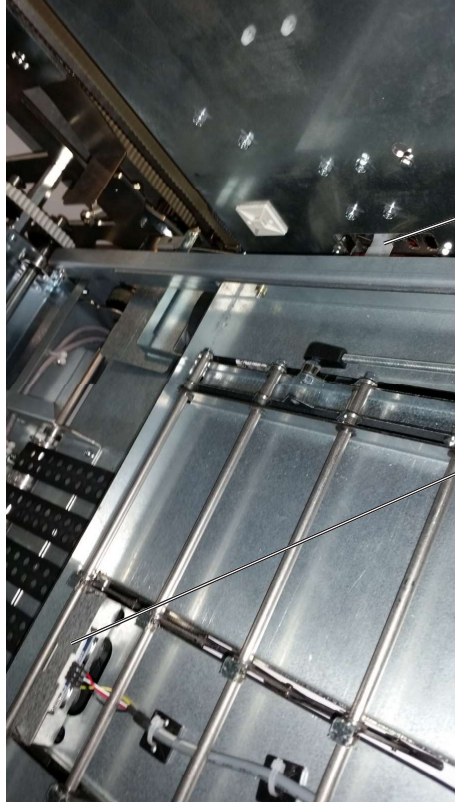


REP 3.4.21 Upper support assy (continued)

6. Remove [D] screws/nuts (x2)
7. Disconnect the Optical Distance Sensor connector [E] and loosen the harness from cable ties.
 - For the top upper support assy: remove Cover, Top (REP 3.3.6) for access.
 - For the bottom upper support assy: open up the top tray and access the connectors from the back of the machine.
8. Pull out upper support assembly

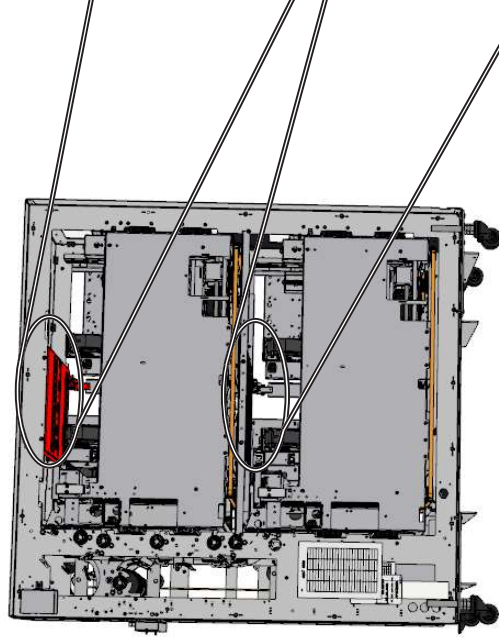
Replacement

Reverse removal procedure. Shift lever [F] back and forth in direction shown and make sure that assembly moves freely.



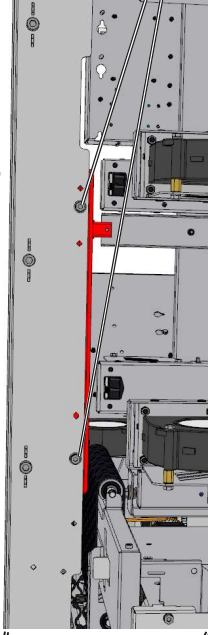
E

Optical Distance Sensor



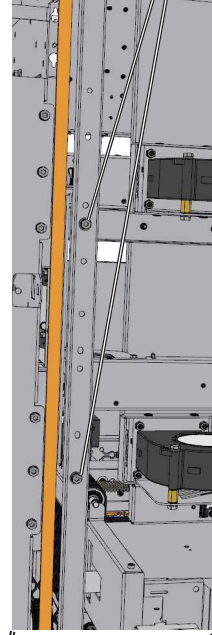
Front View
(tray covers hidden for clarity)

Top Upper Support Assy



D

Bottom Upper Support Assy

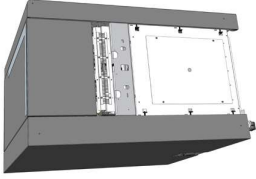


D

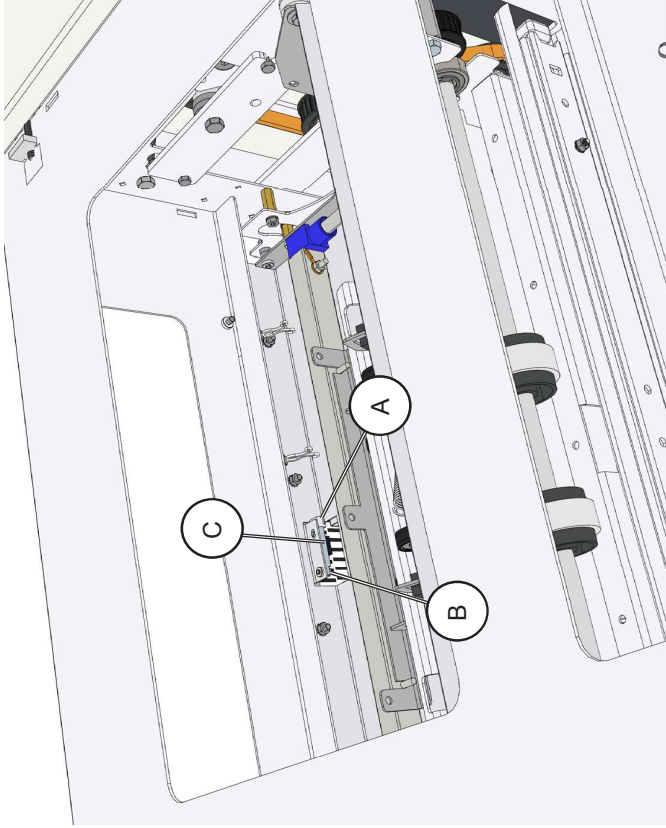
3.5 Exit Side

REP 3.5.1 Exit Sensor (Q303)

(Spare PL3.1a)



1. Turn off the main power and disconnect the power cord
2. Remove Cover, Top (REP 3.3.6)
3. Disconnect connector [A]
4. Remove screw [B] and remove sensor [C]



Replacement

Reverse removal procedure

REP 3.5.2 Exit Feed Stepper Motor (M301)

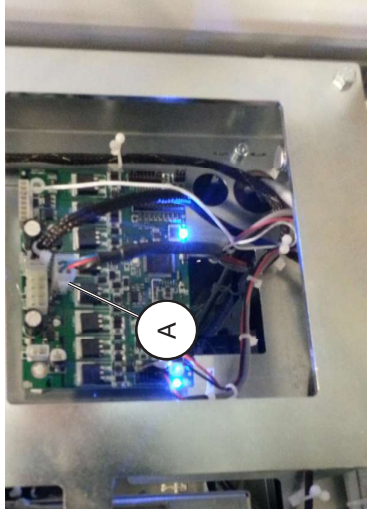
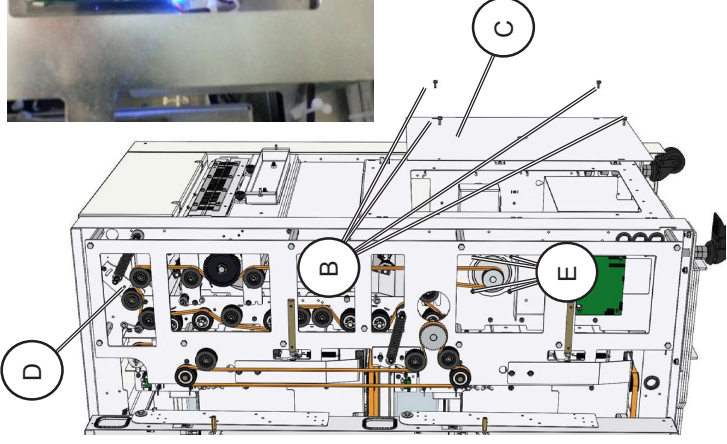
(Spare PL3.1a)

Check

1. Enter service mode and run motor
2. Check that set screw is firmly torqued in sprocket and against the D-surface of the shaft

Replace

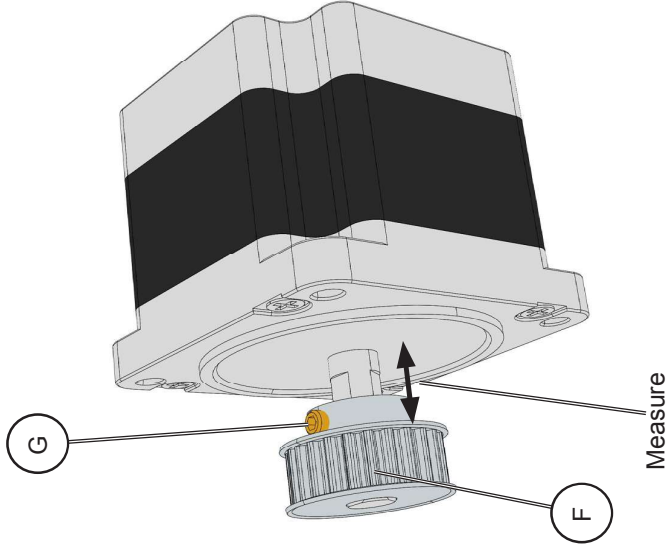
1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Remove Cover, Top (REP 3.3.6)
4. Disconnect connector [A]
5. Remove screws [B] and remove cover frame [C] to gain access to motor
6. Loosen screw [D] on belt tensioner
7. Loosen tension on belt and unhook belt from motor



Continued on next page...

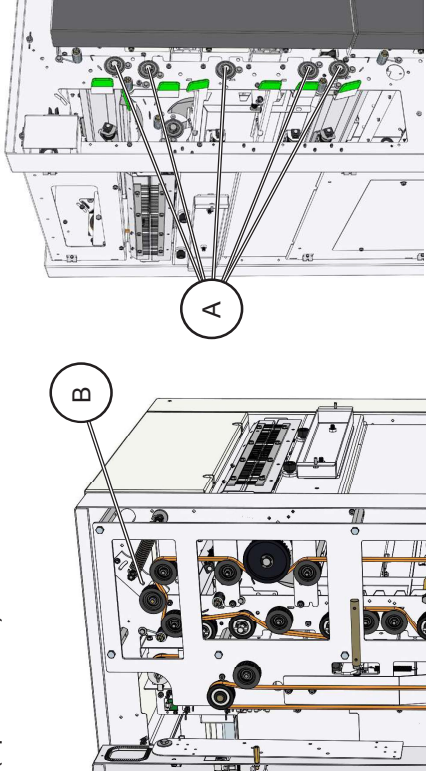
REP 3.5.2 Exit Feed Stepper Motor (M301) (continued)

8. Remove screws [E] and remove motor
9. Measure placement of timing pulley [F] (for later replacement)
10. Remove timing pulley by loosening set screw [G]

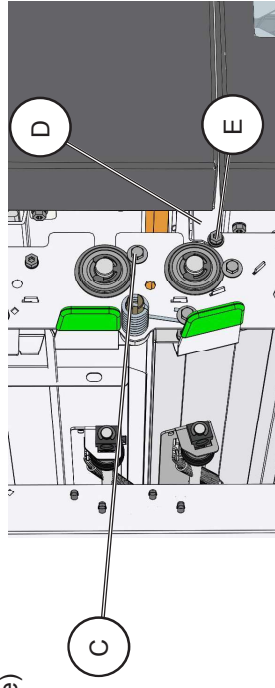


Replacement
Reverse removal procedure

REP 3.5.3 Drive Shaft, Paper Path
(Spare PL3.0)



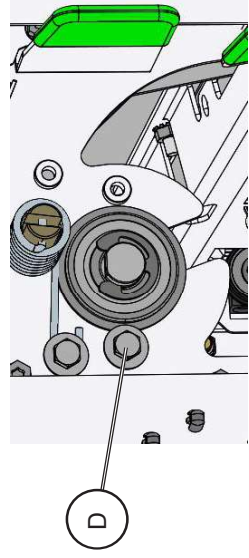
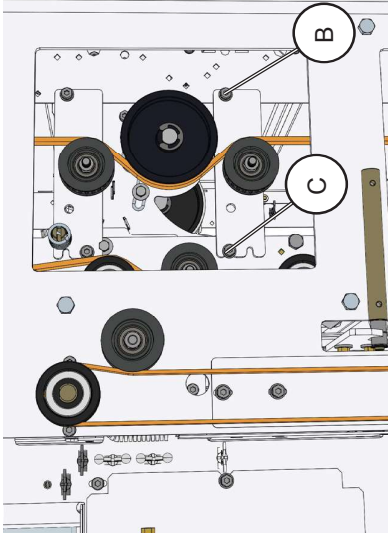
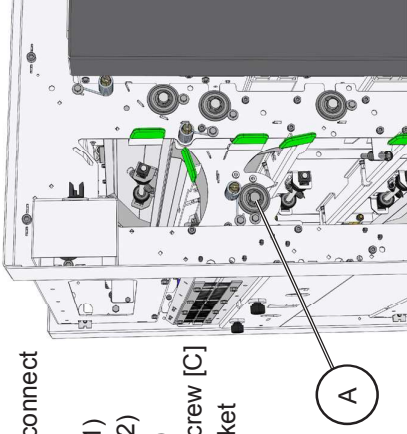
1. Turn off the main power and disconnect the power cord
2. Drive shafts [A] (5x)
3. Remove Cover, Rear (REP 3.3.1)
4. Remove Cover, Front (REP 3.3.2)
5. Remove Cover, Top (REP 3.3.6)
6. Loosen screw [B] on belt tensioner
7. Loosen tension on belt and unhook belt from shaft
8. Remove screw, axial lock [C]
9. Open upper tray and remove drive shaft.
For the bottom shaft you need to move away two beams on front and back [D] loosen screw [E] and gently push down the beam (same on back side)



Replacement
Reverse removal procedure

REP 3.5.4 Drive Shaft, Exit Feed
(Spare PL3.1a)

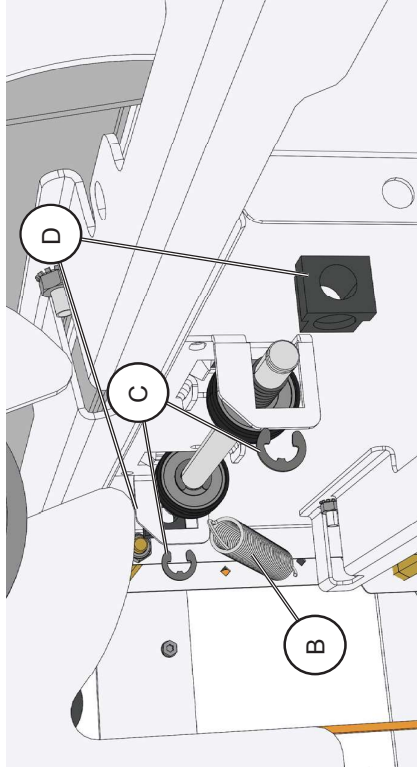
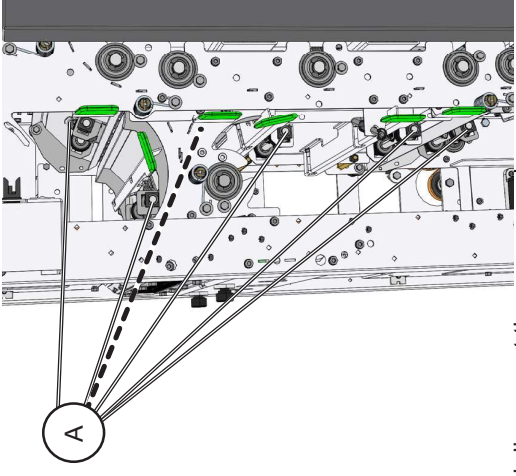
1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Remove Cover, Front (REP 3.3.2)
4. Remove Cover, Top (REP 3.3.6)
5. Remove screw [B] and loosen screw [C]
6. Fold down the guide pulley bracket
7. Remove screw, axial lock [D]
8. Remove drive shaft [A]



Replacement
Reverse removal procedure

REP 3.5.5 Idler Shaft, Exit
(Spare PL3.1a)

1. Turn off the main power and disconnect the power cord
2. Idler shafts [A] (dotted line = not visible)
3. Remove Cover, Front (REP 3.3.2)
4. Remove spring [B]
5. Remove retaining rings [C]
6. Remove bearing blocks [D] and idler shaft.



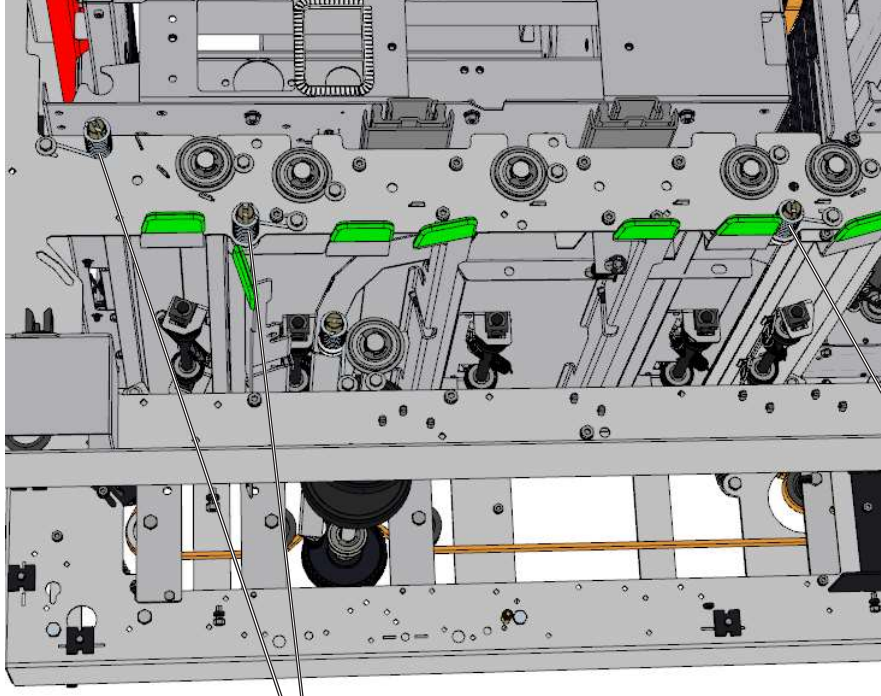
Replacement
Reverse removal procedure

REP 3.5.6 Baffle Hardware

(Spare PL3.1)

If baffles require adjustment, refer to this section for critical hardware details.

- Lower Baffle Tension Spring [A] requires 180-270 degrees pre-tension
- Other Baffle Tension Springs [B] require 70-120 degrees pre-tension
- Leave a 1-2mm gap between locking nut [C] and standoff [D] to allow for middle baffle to rotate freely



B

A

D

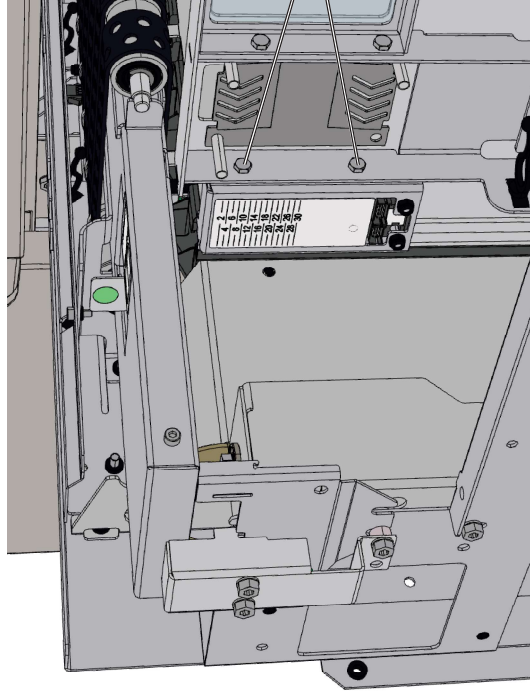
C



REP 3.5.7 SP Sensor

(Spare PL2.1)

1. Turn off the main power and disconnect the power cord
2. Remove relevant tray's Cover (REP 3.3.3)
3. Remove Fan and Fan Bracket (REP 3.4.5)
4. Disconnect SP sensor connector
5. Remove screws [A] (2x)
6. Remove the SP sensor



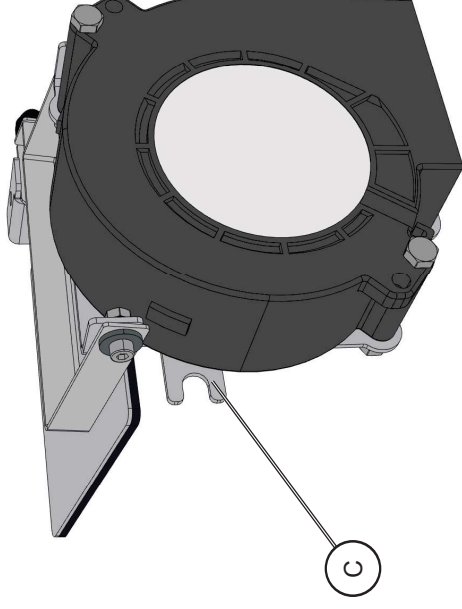
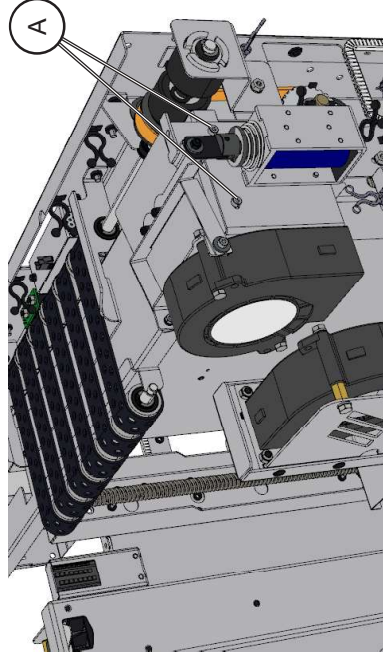
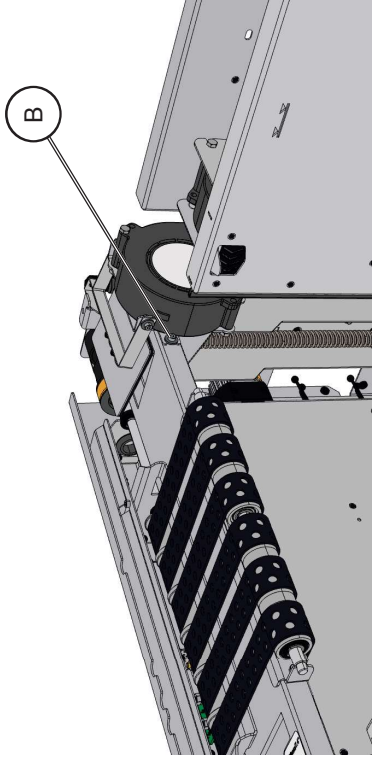
Intentionally blank.

Replacement
Reverse removal procedure

REP 3.5.8 Vacuum Fan Assembly

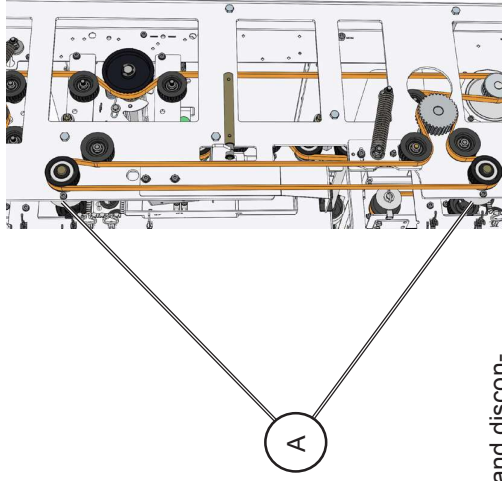
(Spare PL2.3)

1. Turn off the main power and disconnect the power cord
2. Open relevant tray
3. Remove Rear Cover (REP 15.0)
4. Disconnect connectors from vacuum solenoid and vacuum fan
5. Note position of screws [A] (2x) in slotted holes and remove them
6. Remove entire vacuum fan assembly

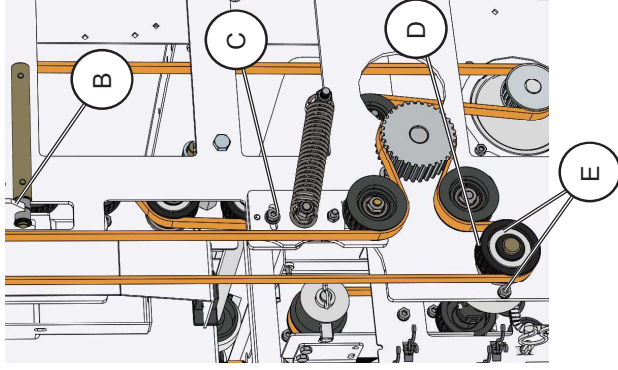


3.6 Rear Side

REP 3.6.1 Coupling Shaft (Spare PL4.0)



1. Turn off the main power and disconnect the power cord
2. Coupling shafts [A]
3. Remove Cover, Rear (REP 3.3.1)
4. Push up the tray lock [B] and push the tray in slightly
5. Loosen screw [C] on belt tensioner and unhook belt from timing wheels
6. Loosen set screw [D] and remove timing wheel
7. Remove screws [E] and remove the coupling shaft



Replacement

Reverse removal procedure.

3.7 Electronics

REP 3.7.1 Power Supply RS-75-12 (PSU1) (Spare PL6.0)

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Disconnect wires
4. Loosen screws (x2) on backside of PSU and remove PSU



Replacement

Reverse removal procedure.

Check voltage levels by performing applicable part of RAP018 12/24/48V Low or High (section 4)

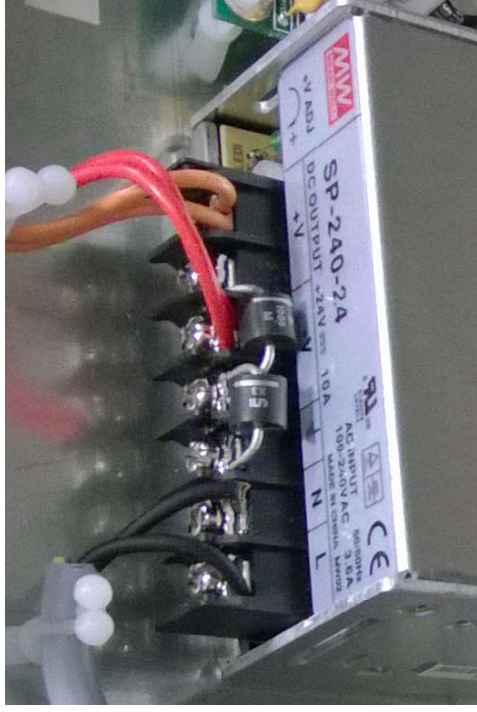
REP 3.7.2 Power Supply SP-320-24 (PSU2)

(Spare PL6.0)

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Disconnect wires
4. Remove diodes
5. Loosen screws (x2) on backside of PSU and remove PSU



Replacement

Reverse removal procedure.

Check voltage levels by performing applicable part of RAP018 12/24/48V Low or High (section 4)

REP 3.7.3 Power Supply SP-750-27 (PSU3)

(Spare PL6.0)

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Disconnect wires
4. Remove protective cover (remove screws (2x) to the sides of PSU)
5. Loosen screws (x2) on backside of PSU and remove PSU

Top



Bottom



Replacement

Reverse removal procedure.

Check voltage levels by performing applicable part of RAP018 12/24/48V Low or High (section 4)

16 March 2021

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Morgana VFX

Repairs and Adjustments (REP & ADJ)

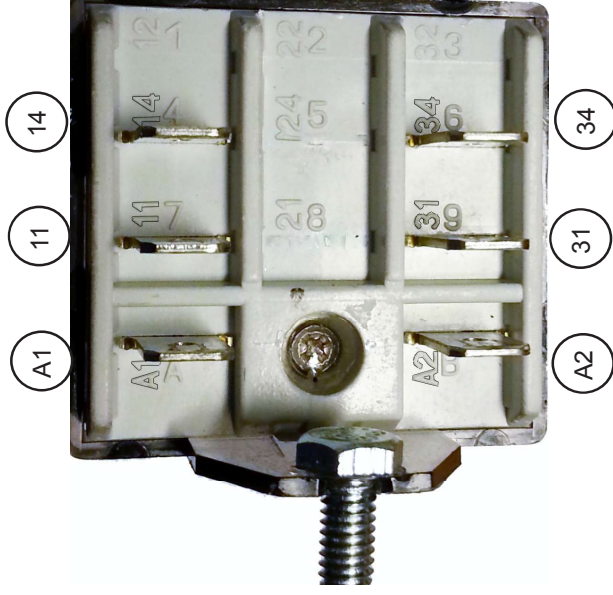
REP 3.7.4 Relay DPNO 16A/250V

(Spare PL6.0)

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Disconnect connectors
4. Remove screws (x2) and nuts (x2) and remove relay



Replacement

Reverse removal procedure.

Connect according to marking on connectors and relay

REP 3.7.5 Main PCBs

(Spare PL6.0)

⚠ CAUTION

ESD Hazard! ESD (Electrostatic Discharge) can cause software crashes, data and/or communications problems. Failure to use proper ESD procedures will cause damage to electronic components (example: PCBs). ESD problems can be minimized by maintaining all machine ground connections, ensuring the proper handling of circuit boards/ sensors, refer to the general caution description at the beginning of section 3. -Use ESD protection when working near PCBs. Failure to use ESD protection is likely to result in a PCB failure.

General:

1. Turn off the main power and disconnect the power cord
2. Remove connectors
3. Remove PCB
4. Mount new PCB
5. Replace connectors, see figure on next page
6. Make sure the DIP switches are in the correct position (see either section 4 or section 8 of the Service Manual)
7. Load software according to procedure in Section 5 of this manual

PCB CPU APP 32 (PCB "A") Main Board

Perform NVM reset according to procedure in section 5 of this manual

PCB CPU APP 32 (PCB "H") Upper tray

1. Perform NVM reset according to procedure in section 5 of this manual
2. Calibrate US DSD sensor (Q102) according to the procedure described in the operator manual of this machine.
3. Calibrate Optical DSD sensor (Q101) according to the procedure described in the operator manual of this machine.

PCB CPU APP 32 (PCB "L") Lower tray

1. Perform NVM reset according to procedure described in section 5 of this manual
2. Calibrate US DSD sensor (Q202) according to the procedure described in the operator manual of this machine.
3. Calibrate Optical DSD sensor (Q201) according to the procedure described in the operator manual of this machine.

Continued on next page...

REP 3.7.5 Main PCBs (continued)

PCB M21H (PCB "G") M301 Feed Motor

1. Perform NVM reset according to procedure described in section 5 of this manual

PCB M21H (PCB "K") M101 Lift Motor Upper Tray

1. Perform NVM reset according to procedure described in section 5 of this manual

PCB M21H (PCB "O") M201 Lift Motor Upper Tray

1. Perform NVM reset according to procedure described in section 5 of this manual

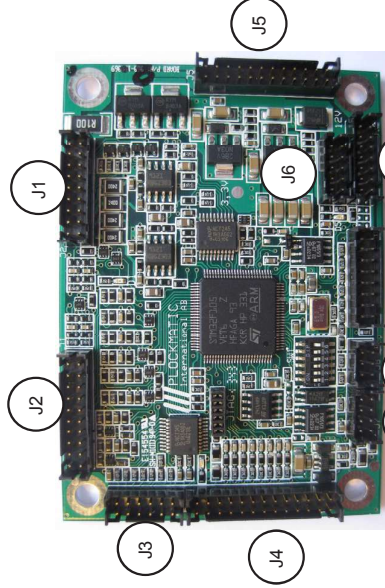


fig.
PCB CPU APP 32

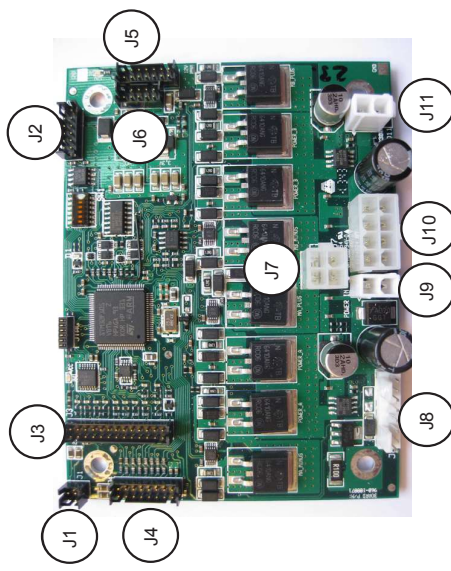


fig.
PCB M21H

REP 3.7.6 Support PCBs

(Spare PL6.0)



ESD Hazard! ESD (Electrostatic Discharge) can cause software crashes, data and/or communications problems. Failure to use proper ESD procedures will cause damage to electronic components (example: PCBs). ESD problems can be minimized by maintaining all machine ground connections, ensuring the proper handling of circuit boards/ sensors, refer to the general caution description at the beginning of section 3. - Use ESD protection when working near PCBs. Failure to use ESD protection is likely to result in a PCB failure.

General:

1. Turn off the main power and disconnect the power cord
2. Remove connectors
3. Remove PCB
4. Mount new PCB
5. Replace connectors
6. Make sure the DIP switches are in the correct position (see either section 4 or section 8 of the Service Manual)

REP 3.7.7 Tray Interlock Switch

(Spare PL2.0)

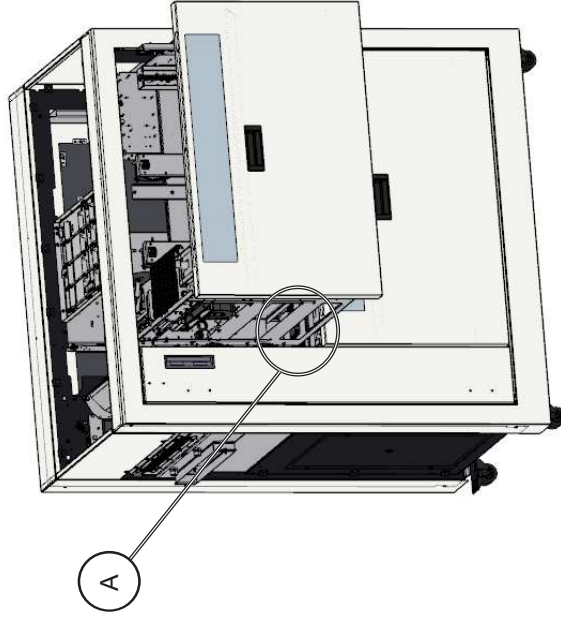
⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

⚠ CAUTION

There is a risk of tilting the machine with the back cover off and paper in the trays. Make sure that there is no paper in the trays before fully sliding them out.

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Rear (REP 3.3.1)
3. Lift tray locking latch and fully push out tray (after removing paper)
4. The interlock switch is located in the bottom left, aft corner of the tray. Access the switch from area [A] and disconnect the connectors
5. Pinch locking tabs on switch and remove the interlock switch



Replacement

Reverse removal procedure

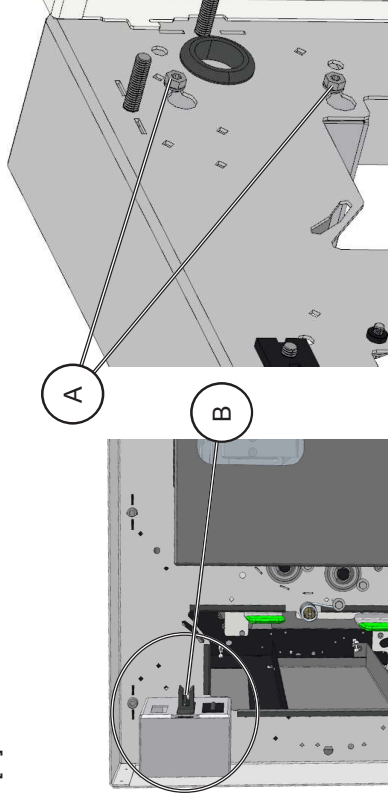
REP 3.7.8 Door Interlock Switch

(Spare PL3.0)

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Top (REP 3.3.6)
3. Remove Cover, Rear (REP 3.3.2)
4. The electrical box containing the door interlock switch must be re-moved. Reach in from the top of the machine and loosen two screws [A] in order to slide out the electrical box



5. Disconnect connectors from interlock switch
6. Pinch locking tabs on switch and remove the interlock switch [B]

Replacement

Reverse removal procedure

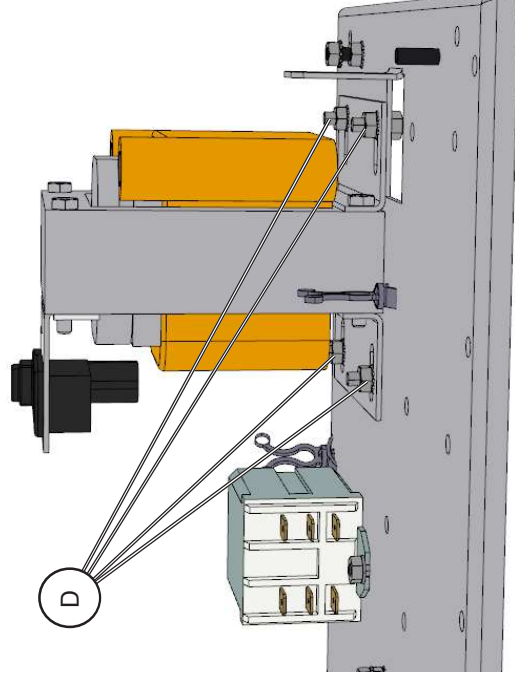
REP 3.7.9 Transformer (TR1)

(Spare PL3.1a)

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

1. Turn off the main power and disconnect the power cord
2. Remove Cover, Lower Exit (REP 3.3.8)
3. Disconnect antistatic bars [A]
4. Disconnect harness [B], remove screws [C] (x2) and slide out the high voltage PSU
5. Disconnect connector between TR1 and REL303
6. Remove screws/nuts [D] (x4) and remove TR1



Replacement

Reverse removal procedure

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

VFX RAPS

RAP VFX- 100/200 Misfeed Bin A/B

Misfeed is a paper flow error detection. Misfeed checks if a sheet is moved correctly from paper pile to optical DSD sensor. Time is measured from the start of the drive roller (used to feed and separate a sheet from the paper pile) until the optical DSD sensor can see the leading paper edge. A Misfeed condition is generated if this measured time is too long.

Initial Actions

- Ensure that all connectors to the optical DSD sensor are properly connected
- Ensure that DSD sensor Q101/201 is clean
- Check that there are no obstructions in the paper path
- Ensure that DSD sensor Q101/201 is calibrated (See section 5 of this manual, Sensor Calibration Section)

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

- Enter the Service Mode (GP 1)
- Check optical DSD sensor Q101/201 (GP 4)

DSD Sensor (Q101/201) works

Y N

| Perform RAP VFX-001 Optical DSD sensor

Check drive clutch, roller and vacuum bands according to RAP VFX-012

Drive clutch and roller works

Y N

| Perform RAP VFX-012 Drive clutch and roller

Check M1 Drive Motor (15.30)

M1 Drive motor works

Y N

| Perform RAP VFX-013 M301 Drive Motor

Check M2/M3 Elevator Motor according to (15.17)

M2/M3 Elevator motor works

Y N

| Perform RAP VFX-014 M101/M201 Elevator Motor

Check Empty Sensor according to GP 4

Empty Sensor works

Y N

| Perform RAP VFX-107/207 Empty Sensor

Perform RAP VFX-044 Vacuum Solenoid and Brake Clutch

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-101/201 Jam, Too Long, Bin A/B

Jam is a paper flow error detection. Jam checks if a sheet is moved past the optical DSD sensor correctly. Time is measured from when the optical DSD sensor sees the leading paper edge until the optical DSD sensor sees the trailing paper edge. A Jam condition is generated if this measured time is too long.

Actions: See 100/200 RAP

RAP VFX-102/202 Too Long, Bin A/B

Too Long is a paper length error detection. Too long checks if a sheet is too long when it passes the optical DSD sensor Q101/201. Time is measured from when the optical DSD sensor sees the leading paper edge until the optical DSD sensor sees the trailing paper edge. A Too Long condition is generated if the measured time is too long, but not long enough to generate a Jam.

Actions: See RAP VFX-100/200

RAP VFX-103/203 Too Short, Bin A/B

Too Short is a paper length error detection. Too Short checks if a sheet is too short when it passes the optical DSD sensor Q101/201. Time is measured from the situation when the optical DSD sensor sees the leading paper edge until the optical DSD sensor sees the trailing paper edge. A Too Short condition is generated if the measured time is too short.

Actions: See RAP VFX-100/200

RAP VFX-104/204 Too Thick, Bin A/B

Too Thick is a paper thickness error detection. Too Thick checks if a sheet is too thick when it passes the optical DSD sensor Q101/201. When the optical DSD sensor sees the leading paper edge, thickness is measured. A Too Thick condition is generated if the measured thickness on a sheet is too thick compared to the calibration sheet.

Initial Actions

- Ensure that all connectors to the optical DSD sensor are properly connected
- Ensure that DSD sensor is clean
- Check that there are no obstructions in the paper path
- Ensure that DSD sensor is calibrated (See section 5 of this manual, VFX Sensor Calibration Section)

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Enter the Service Mode (Service tables)

Check optical DSD sensor Q101/201 according to GP 4

DSD Sensor Q101/201 works OK

Y | N

| Perform RAP VFX-001 Optical DSD sensor

Exit

RAP VFX-105/205 DSD Functionality Uncertain, Bin A/B

DSD functionality uncertain is a warning that can be generated at calibration. DSD functionality uncertain checks if the sheet thickness is within reading range for the optical DSD sensor.

Actions: See RAP VFX-104/204

RAP VFX-106/206 Too Thick US DSD, Bin A/B

Too thick US DSD is a paper thickness error detection. Too thick US DSD checks if a sheet is too thick when it passes the ultrasonic DSD sensor Q102/202. When the ultrasonic DSD sensor sees the leading paper edge, thickness is measured. A Too Thick condition is generated if the measured thickness on a sheet is too thick.

Initial Actions

- Enter service mode (GP 1)
- Check sensor according to GP 4
- Ensure that sensor is clean
- Ensure that all connectors at the sensor are properly connected
- Ensure that all connectors at PCB CPU (H/L) are properly connected.

NOTE!

For measuring references see BSD (next page)

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Swap the faulty USDS sensor with the one in the other bin.

Does the sensor work at new location

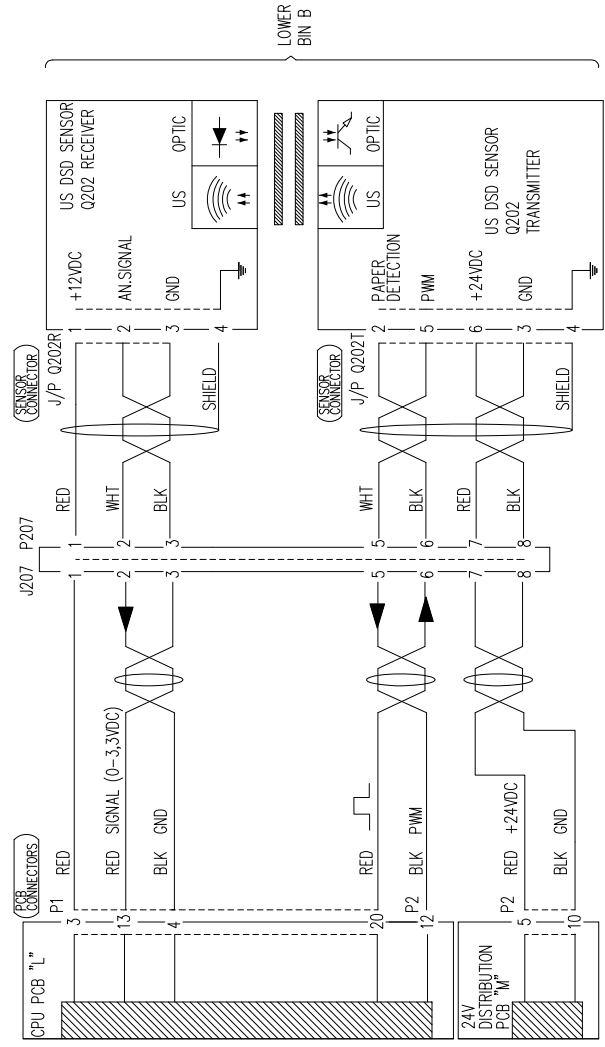
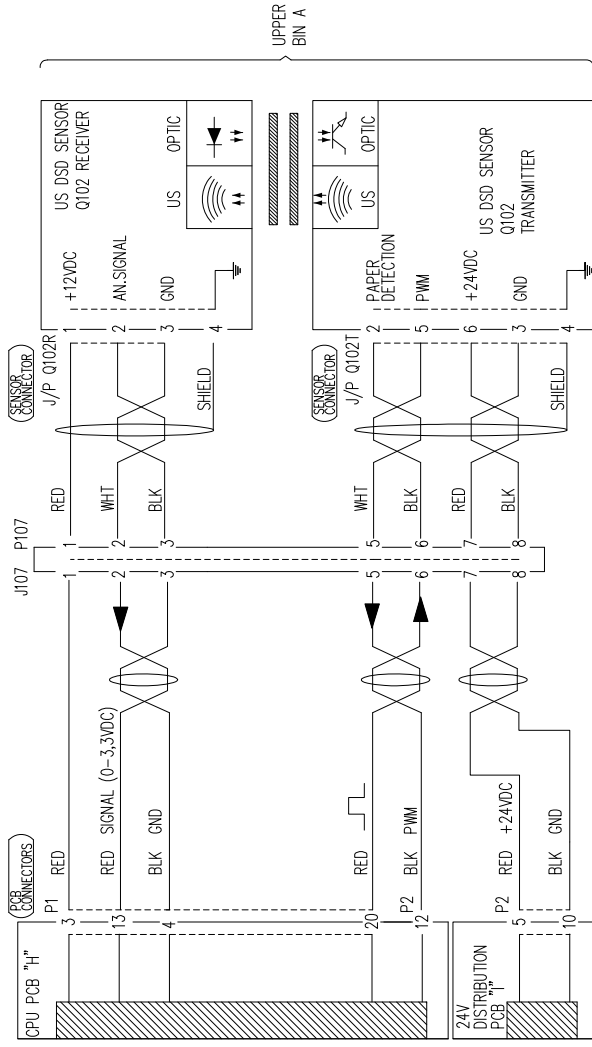
Y | N

| Perform RAP VFX-002 Ultrasonic DSD (Double Sheet Detection)

Exit

➔ BSD on next page

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-107/207 Bin Empty, Bin A/B

Bin Empty is a paper present detection. Bin Empty checks if sheets are present in the activated bin during process. A Bin Empty condition is generated if sensor Q105/205 cannot see any paper.

Initial Actions

- Enter service mode
- Check sensor according to GP.4
- Ensure that sensor is clean
- Ensure that all connectors at the sensor are properly connected
- Ensure that all connectors at PCB CPU App 32 (L / H) are properly connected.

NOTE!

For measuring references see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Swap the faulty sensor with the sensor in the other bin. After swapping the sensors check the Empty sensor functionality.

Sensor works at the new location

Y N

| Replace the sensor

At the faulty location, disconnect sensor wire both from PCB and sensor. Check all wires (red, white, black) for short circuit and continuity.

There is continuity and no short circuit

Y N

| Repair/replace harness

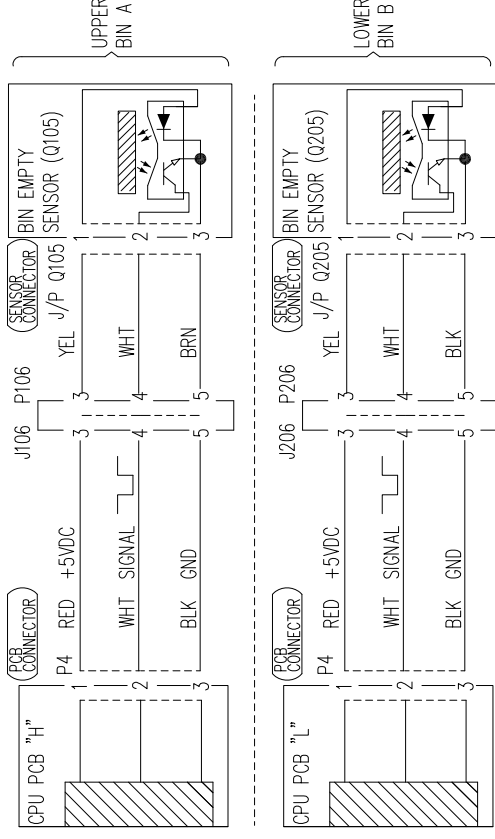
Swap PCB (that the faulty Empty sensor is connected to) with the PCB in the other bin. After swapping the PCB, set the address DIP switches to the settings shown in the circuit diagram.

Empty sensor works at new PCB location

Y N

| Replace the PCB

Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-108/208 Too Thin, Bin A/B

Too Thin is a paper thickness error detection. Too Thin checks if a sheet is too thin when it passes the optical DSD sensor Q101/201. When the optical DSD sensor sees the leading paper edge, thickness is measured. A Too Thin condition is generated if the measured thickness on a sheet is too thin compared to the calibration sheet.

Initial Actions

- Ensure that all connectors to the optical DSD sensor are properly connected
- Ensure that DSD sensor is clean
- Check that there are no obstructions in the paper path
- Ensure that DSD sensor is calibrated (See section 5 of this manual, VFX Sensor Calibration Section)

Procedure

⚠ WARNING!

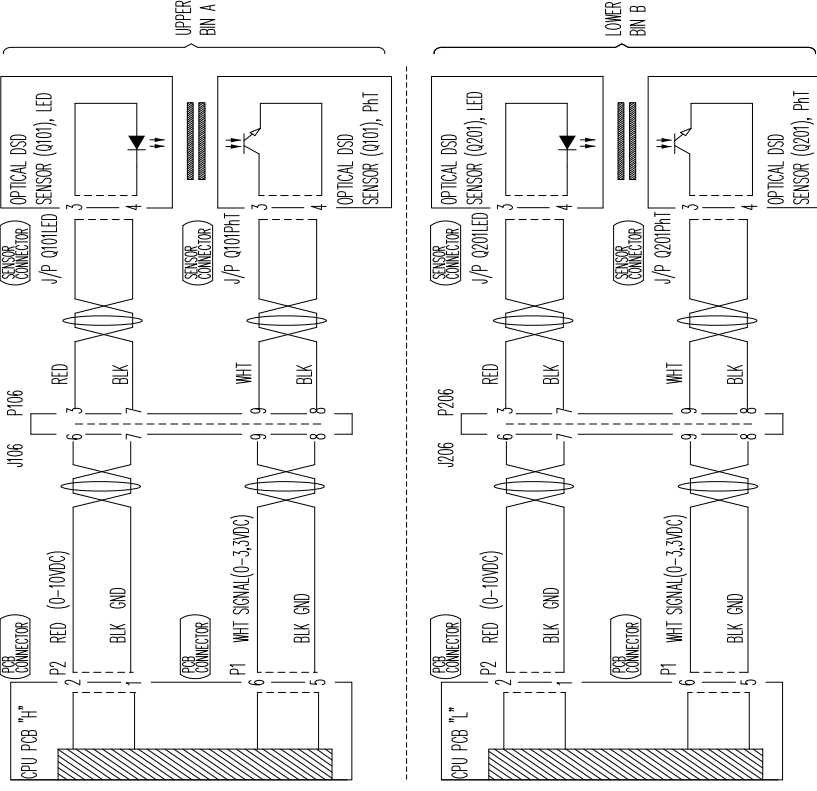
Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Enter the Service Mode (GP 1)

Check optical DSD sensor Q101/201 according to GP 4

DSD Sensor Q101/201 works OK

- Y N Perform RAP VFX-001 Optical DSD sensor
Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-300 Exit Miss

Exit Miss is a paper flow error detection. Exit Miss checks if a sheet gets stuck between optical DSD sensor Q101/201 and Exit sensor Q303. Time is measured from when the optical DSD sensor sees the trailing paper edge until the Exit sensor sees the trailing paper edge. An Exit Miss condition is generated if this measured time is too long.

Initial Actions

- Enter service mode according to GP 1
- Check sensors according to GP 4
- Ensure that Exit sensor is clean
- Ensure that the Exit sensor is properly connected
- Ensure that all connectors at PCB CPU "A" are properly connected.

NOTE!

For measuring references see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Swap the faulty sensor with one Empty sensor. After swapping, check the sensor functionality.

Does the sensor work at new location

Y |

N | Replace the sensor

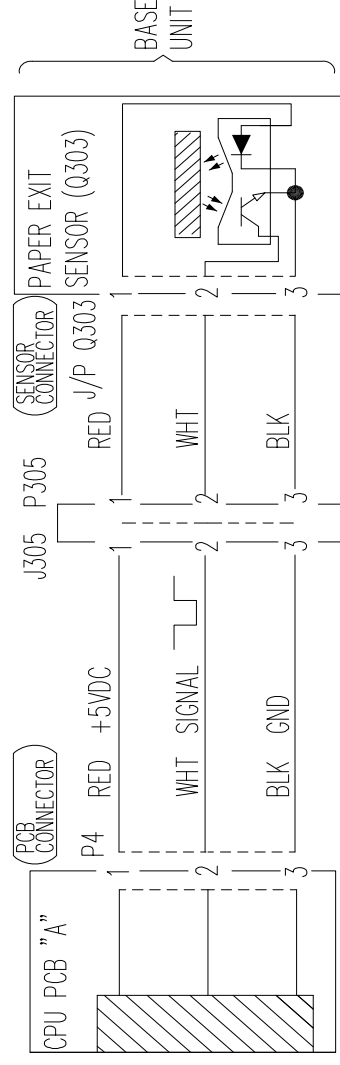
At the faulty location, disconnect sensor wire both from PCB and sensor. Check all wires (red, white, black) for short circuit and continuity.

There is continuity and no short circuit

Y |

N | Repair/replace harness

Replace PCB "A"



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-301 Exit Error

Exit Error is a paper flow error detection. Exit Error checks if a sheet has moved past the Exit sensor Q303 correctly. Time is measured from when the Exit sensor sees the leading paper edge until the Exit sensor sees the trailing paper edge. An Exit Error is generated if this measured time is too long.

Initial Actions

- Ensure that the Exit sensor is properly connected
- Ensure that the Exit sensor is clean
- Check that there are no obstructions in the paper path

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Enter service mode
Check exit sensor according to GP 4

Sensor works OK

Y N

- └ Perform RAP VFX-300 Exit miss
- Check M301 Drive Motor according to GP 4

Drive Motor (M1) works OK

Y N

- └ Perform RAP VFX-039 Stepper Motor Driver M301 PCB "G"
- Check that transportation drive and idler rollers are in good working order

Drive and idler rollers are OK

Y N

- └ Fix problem

Ensure that VFX is correctly installed. Check first for paper path misalignment and interface cables

Installation is OK

Y N

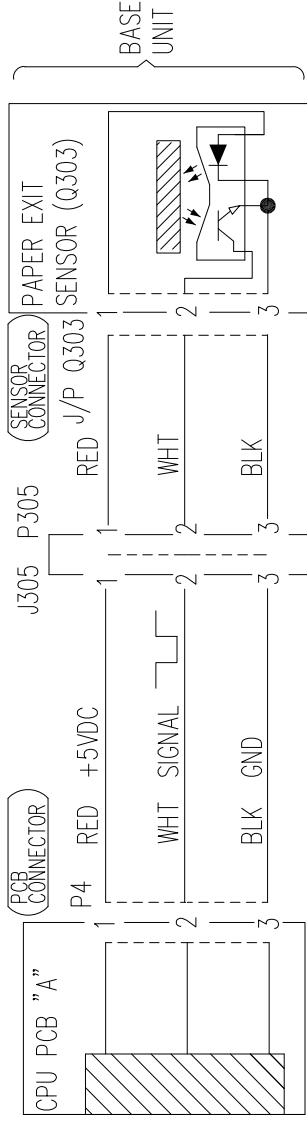
- └ Re-install VFX

Exit

RAP VFX-302 No Feed Sequence

No Feed Sequence is a startup error detection. No Feed Sequence checks if a feeding sequence has been programmed. No Feed Sequence is generated if the machine is started without a programmed feeding sequence.

This is caused by an operator error. Nothing else can cause this.



 **WARNING!** Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-401 No Answer on PAC (Propose, Accept, Confirm)

When the Feeder wants to start feeding it asks for status from the downstream device (BM or CST). If no response is received within a specified time, fault 401 is displayed.

Initial Actions

- Make sure that the communication cable is properly connected
- See Service Manual BM5000-3 Section 4 BM-158 or Service Manual CST Section 4 CST-150

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-001 Optical DSD Sensor

Initial Actions

- Enter service mode according to GP 1
- Check sensor according to GP 4
- Ensure that optical DSD LED and DSD PhT is clean
- Ensure that all connectors at the DSD LED and sensor are properly connected
- Ensure that all connectors at PCB 'H' and 'L' are properly connected.
- Ensure that DSD sensor is calibrated (See section 5 of this manual, VFX Sensor Calibration Section)

NOTE!

For measuring references see BSD

A DSD sensor includes one DSD LED (transmitter) and one DSD PhT (receiver)

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Swap the faulty optical DSD PhT with one in the other bin.

Sensor works at new location

Y | N

| Replace DSD PhT

Swap the faulty optical DSD LED with one in the other bin

LED works at new location

Y | N

| Replace DSD LED

At the faulty location, disconnect DSD PhT and DSD LED wires from PCB, DSD LED and DSD PhT. Check all wires (white, black) to DSD PhT and (red, black) to DSD LED for short circuits and continuity. Also check for short circuits between wires and chassis.

There is continuity and no short circuit

Y | N

| Repair/replace harness

Swap PCB that faulty optical DSD sensor is connected to with the one in the other bin.

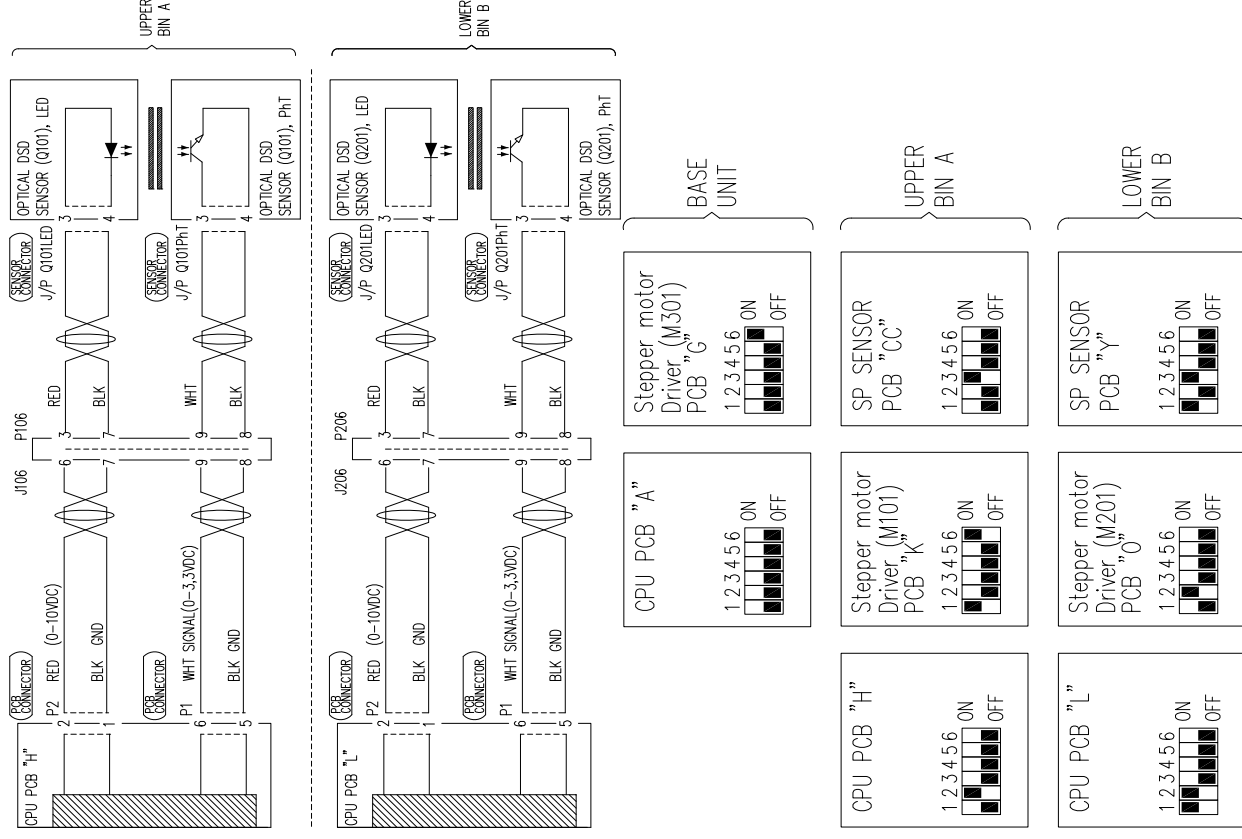
After swapping the PCB, set the address DIP switches to the settings shown in the circuit diagram. Check sensor functionality.

The optical DSD sensor at new PCB location works

Y | N

| Replace the original CPU PCB (The one that causes the failure)

Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-002 Ultrasonic DSD (Double Sheet Detection)

This RAP is for troubleshooting the US (Ultrasonic) DSD sensor. The primary objective is to determine if the failure is related to the PCB, sensor or harness.

Initial Actions

- Make sure that plugs/jacks J/P112, J/P211, J/P311, J/P212, P310/J310, J/P107, J/P207, J/P11X, J/P211X and P312/J312 are properly connected
- Make sure that all connectors connecting to the US (Ultrasonic) DSD sensor (both transmitter and receiver) are properly connected
- Ensure that all connectors to "H", "L" and "M" PCBs are properly connected.
- Recalibrate the sensor and check functionality (calibrate sensor according to calibration procedure in section 5)

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, disconnect CPU PCB connector [P1], 24V Distribution PCB connector [P2] and Sensor connectors at US DSD sensor transmitter and receiver. Measure continuity between all wires from PCB connectors to Sensor connectors.

There is continuity

Y | **N**

Repair/replace harness

Check short circuits between all wires at CPU connectors and between all wires at CPU connectors to chassis.

There is no short circuit

Y | **N**

Repair/replace harness

Reconnect all connectors, power on and close the door (activate door switch).

LED D1 at the 24V Distribution PCB I or M activates

Y | **N**

Go to RAP 022 / RAP VFX-023 BIN A / B 24V very low

Power off, swap the US DSD sensor receiver between the two BINs, power on, recalibrate the sensor and check functionality.

Still no functionality at the original location (BIN)

Y | **N**

Replace the original US DSD sensor transmitter/receiver package (The one that causes the failure)

Power off and swap the US DSD sensor transmitter between the two BINs. After both the transmitter and receiver have been moved to the other bin: power on, recalibrate the sensor and check functionality.

Still no functionality at the original location (BIN)

Y | **N**

Replace the original US DSD sensor transmitter/receiver package (The one that causes the failure).

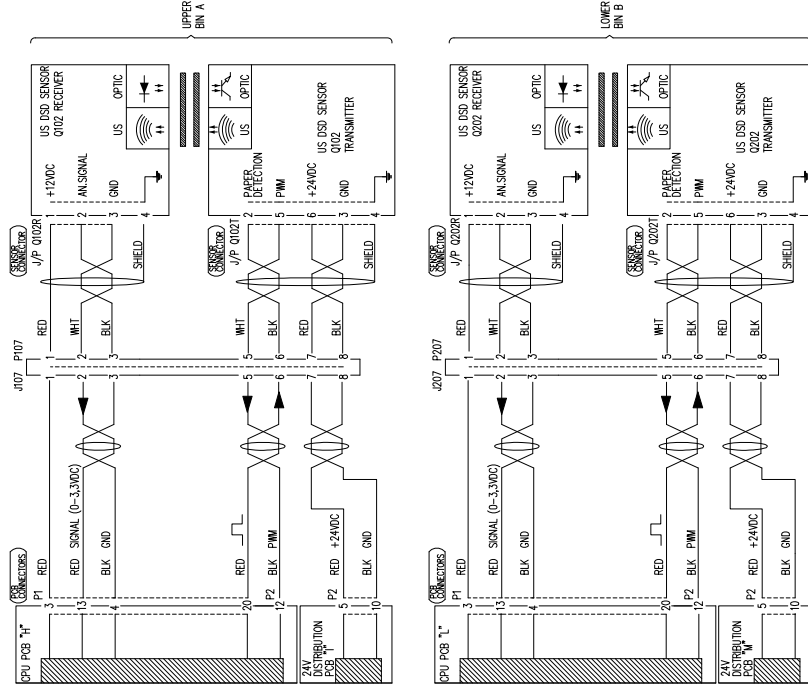
Power off, swap the CPU PCB (set DIP switches correctly between the two BINs. After the transmitter, receiver and CPU have been moved to the other bin: power on, recalibrate the sensor and check functionality.

Still no functionality at the original location (BIN)

Y | **N**

Replace the original CPU PCB (The one that causes the failure).

Exit



DIP settings on previous page **⬆**

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-003 Ultrasonic DS (Distance Sensor) Q301 / Q302

This RAP is for troubleshooting the US (Ultrasonic) DS sensor. The primary objective is to determine if the failure is related to the PCB, sensor or harness.

Initial Actions

- Make sure that plugs/jacks A/P2, A/P3, A/P4, A/P5, A/P6 and A/P10 are properly connected.
- Make sure that the connector connecting to the USDS sensor is properly connected.
- Ensure that all connectors to PCB 'A' are properly connected.
- Enter service mode according to GP 1 and check functionality of sensor (GP 4)

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Swap the faulty USDS sensor with the sensor in the other bin. After swapping the sensors, check USDS sensor functionality.

Does sensor work at new location?

- Y
- N Replace sensor

At the faulty location, disconnect sensor wire booth from PCB and sensor (J/P303] or [J/P304]). Check all wires (red, white, black, grey) for short circuits and continuity. Also check for short circuits between all wires to chassis.

There is continuity and no short circuit?

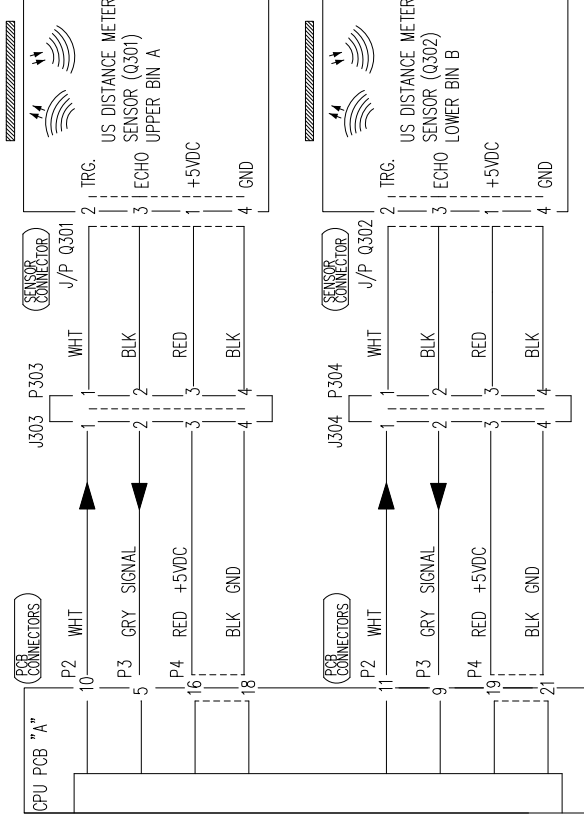
- Y
- N Repair Harness

Reconnect all connectors and Power on, measure VDC on sensor between pin 1 (red) and pin 4 (black)

The voltage is 5VDC±10%

- Y
- N Replace PCB "A"

Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-004 No ICAN Communication Entry

This RAP is for troubleshooting a failed ICAN circuit. The RAP checks wires and PCBs for short/open circuits and if the ICAN termination is OK.

Initial Actions

- Make sure that plugs/jacks J/P309, J/P312, J/P111, J/P111X, J/P211X and J/P211 are properly connected (reference Master Wiring Diagram)
- Make sure that all DIP switch settings on CPU PCBs and Stepper Motor Driver PCBs are correct (See GPs)
- Ensure that all connectors to "A", "B", "G", "H", "K", "L", "O", "CC", and "Y" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

There are multiple codes related to ICAN communication failure

Y N
Perform the PCB "x" RAP for the PCB "x" mentioned in the failure code

PCB 'x' RAP solved the problem

Y N

Perform RAP VFX-006 ICAN Circuit

ICAN Circuit RAP solved the problem

Y N

Replace the PCB "x"

Exit

Exit

Check D5 Blue LED on PCBs "A", "H" and "L", D20 LED on PCBs "CC" and "Y", and D2 Blue LED on PCBs "G", "K" and "O". If diode is not activated there is no 12V to the PCB.

All diodes are activated

Y N

Perform the PCB "x" RAP for the PCB "x" with the deactivated LED.

PCB 'x' RAP solved the problem

Y N

Perform RAP VFX-006 ICAN Circuit

ICAN Circuit RAP solved the problem

Y N

Replace the PCB "x"

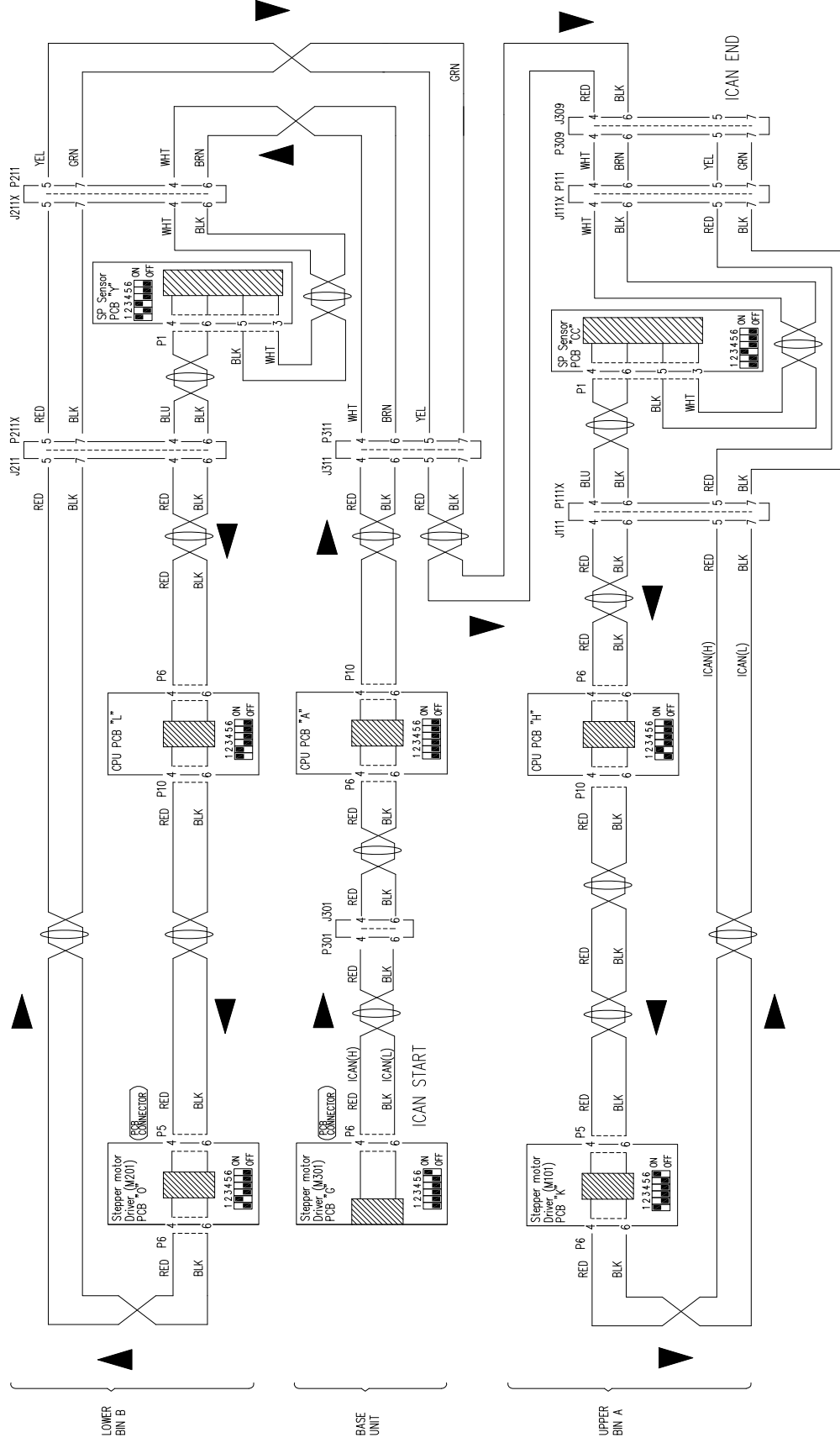
Exit

Exit

Perform RAP VFX-006 ICAN Circuit

➔ BSD on next page

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-005 No XCAN (External) Communication

This RAP is for troubleshooting XCAN communication failure (no communication between machines in the system).
The primary objective of this RAP is to determine the source of failure.

Initial Actions

- Ensure that plugs/jacks J/P309, J/P312, J/P111, J/P311, J/P23, J/P24, J/P111X, J/P211X and J/P211 are properly connected (reference Master Wiring Diagram)
- Ensure that all DIP switch settings on PCBs "A," "G," "H," "L," "K" and "O" are correct (See GP's)
- Ensure that all connectors to SW1, PSU (12V) and "A," "B," "G," "H," "K," "L," "O," "CC", and "Y" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

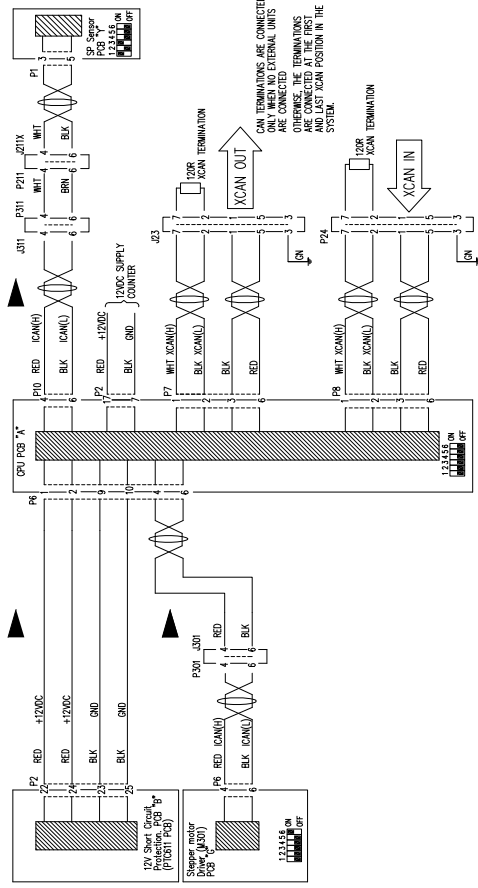
⚠ WARNING!

Use caution when making the voltage measurements and always disconnect the Power Cord when it is necessary to work inside the Power Module. AC Power is present in the Line Module whenever the Power Cord is plugged into the Wall Outlet.

Power on the machine. Measure between [B, P1-6] to [B, P1-1]

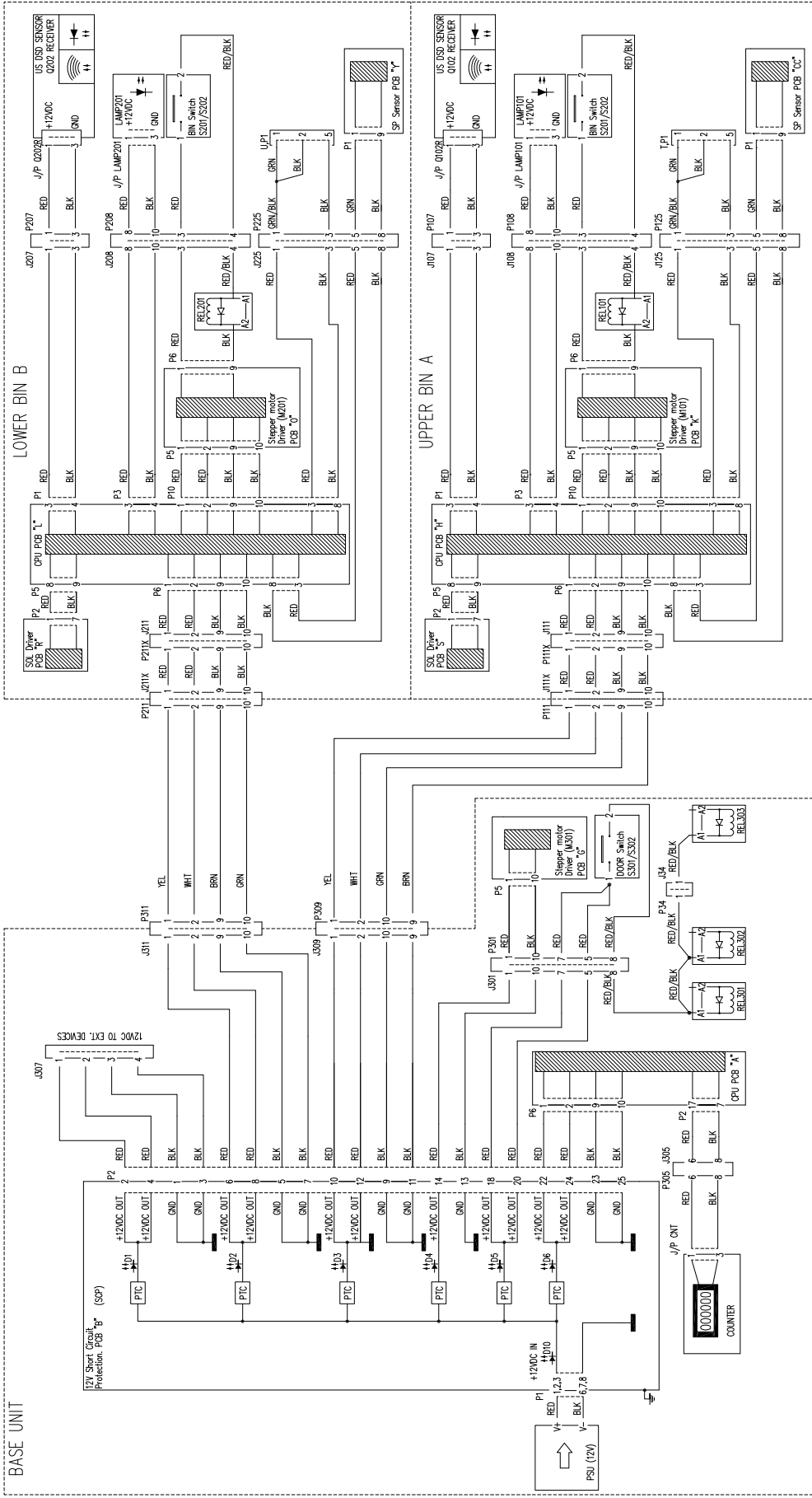
The voltage is 12VDC±10%

Y	N	Power off and disconnect the Power Cord, check status of fuse F1 located in the power inlet.
	N	F1 is blown
	Y	Go to RAP VFX-031 F1 Blown Fuse
		Go to RAP VFX-034 PSU (12V)
		Go to RAP VFX-026 CPU PCB "A"



➔ BSDs on next to next pages

WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-006 ICAN Circuit

This RAP is for troubleshooting a failed ICAN circuit related to multiple PCBs. The primary objective is to check wires and PCBs for short/open circuits and check if the ICAN termination is OK.

Initial Actions

- Make sure that plugs/jacks J/P309, J/P312, J/P111, J/P111X, J/P211X and J/P211 are properly connected
- Make sure that all DIP switch settings on CPU PCBs and Stepper Motor Driver PCBs are correct (See GPs)
- Ensure all connectors to "A", "B", "C", "H", "K", "L", "O", "CC", and "Y" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, check continuity between wire from [P309-5] to [G, P6-4] and wire from [P309-7] to [G, P6-4]. (ICAN Start to ICAN End continuity check).

There is continuity

Y |

N

Locate the open circuit by performing following steps:

Harness check:

1. Disconnect all [P6] and [P10] connectors on PCBs "A", "H" and "L".
2. Disconnect all [P5] and [P6] connectors on PCBs "G", "K" and "O".
3. Disconnect all [P1] connectors on PCBs "CC", and "Y".
4. Check continuity for all wires included in the ICAN circuit, check BSD.

PCBs check:

1. Check continuity between [J6-4] to [J10-4] and [J6-6] to [J10-6] on PCBs "A", "H" and "L".
2. Check continuity between [J5-4] to [J6-4] and [J5-6] to [J6-6] on PCBs "G", "K" and "O".
3. Check continuity between [J1-4] to [J1-3] and [J1-6] to [J1-5] on PCBs "CC" and "Y".

Repair/replace harness or replace PCB depending on the source of open circuit.

Measure resistance between [P309-5] to [P309-7]

The resistance is 50-70 ohms

Y |

N

The resistance is lower than 50 ohms (short circuit)

Y |

N

Disconnect [P5] and [P6] on PCB "G" and "K".

Check DIP switch settings for PCB "G" and "K" (See GPs)

DIP switch settings are OK

Y |

N

Set correctly and exit

Locate the open circuit by performing following steps:

Check open circuit between (CAN termination check) [J5-4] to [J5-6] on PCBs "G" and "K". Replace the failed PCB

Locate the short circuit by performing the following steps:

Harness check:

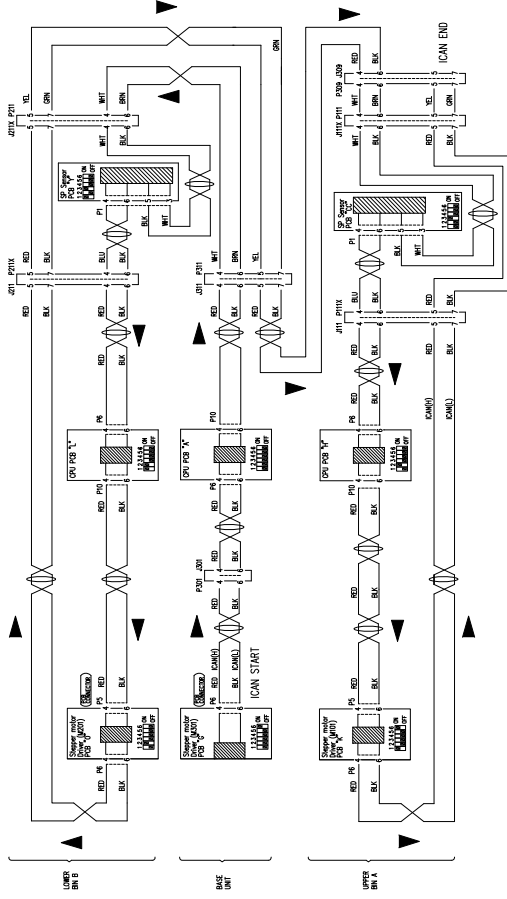
1. Disconnect all [P6] and [P10] connectors on PCBs "A", "H" and "L".
2. Disconnect all [P5] and [P6] connectors on PCBs "G", "K" and "O".
3. Disconnect all [P1] connectors on PCBs "CC", and "Y".
4. Check short circuits between all Red and Black wires, between all White and Brown wires, all Yellow and Green wires and all wires to chassis included in the ICAN circuit, check BSD.

PCBs check:

1. Check short circuit between [J6-4] to [J6-6] and [J10-4] to [J10-6] on PCBs "A", "H" and "L".
2. Check short circuit between [J5-4] to [J5-6] and [J6-4] to [J6-6] on PCBs "G", "K" and "O".
3. Check for short circuit between [J1-4] to [J1-6] and [J1-5] to [J1-1] on PCBs "CC" and "Y".

Repair/replace harness or replace PCB depending on the source of short circuit.

Go to RAP VFX-026 CPU PCB A



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-007 EEPROM

This RAP determines if there is corrupted software or if the PCB needs to be replaced.

Initial Actions

No initial action required

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Perform NVM reset according to Service Manual System BM5000
Re-load SW according to Service Manual System BM5000
Replace PCB controller

RAP VFX-008 M101/M201 Lower Home Position Sensor Not Activated In Time/Activated Too Long

Initial Actions

- Ensure that all connectors at the home position sensor are properly connected
- Verify that there are no obstructions in the elevator path

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components.

Enter service mode according to GP 1
Check Home Position Sensor according to GP 4

Sensor works OK

Y N

| Go to RAP VFX-010 Bin Elevator Upper and Lower Home Position Sensor
Go to RAP VFX-014 M101/M201 Elevator Motor

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-010 Bin Elevator Lower Home Position Sensor

Initial Actions

- Enter service mode (GP 1)
- Check sensors according to GP 4
- Ensure that sensor is clean
- Ensure that all connectors at the sensor are properly connected
- Ensure that all connectors at PCB 'O' and PCB 'K' are properly connected

NOTE!

For measuring references see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Swap the faulty sensor with the sensor in the other bin. After swapping the sensors check the sensor functionality. Does sensor work at new location

Sensor works OK.

- Y N Replace sensor

At the faulty location, disconnect sensor wire both from PCB and sensor. Check all wires (red, white, black) for short circuit and continuity

There is continuity and no short circuit

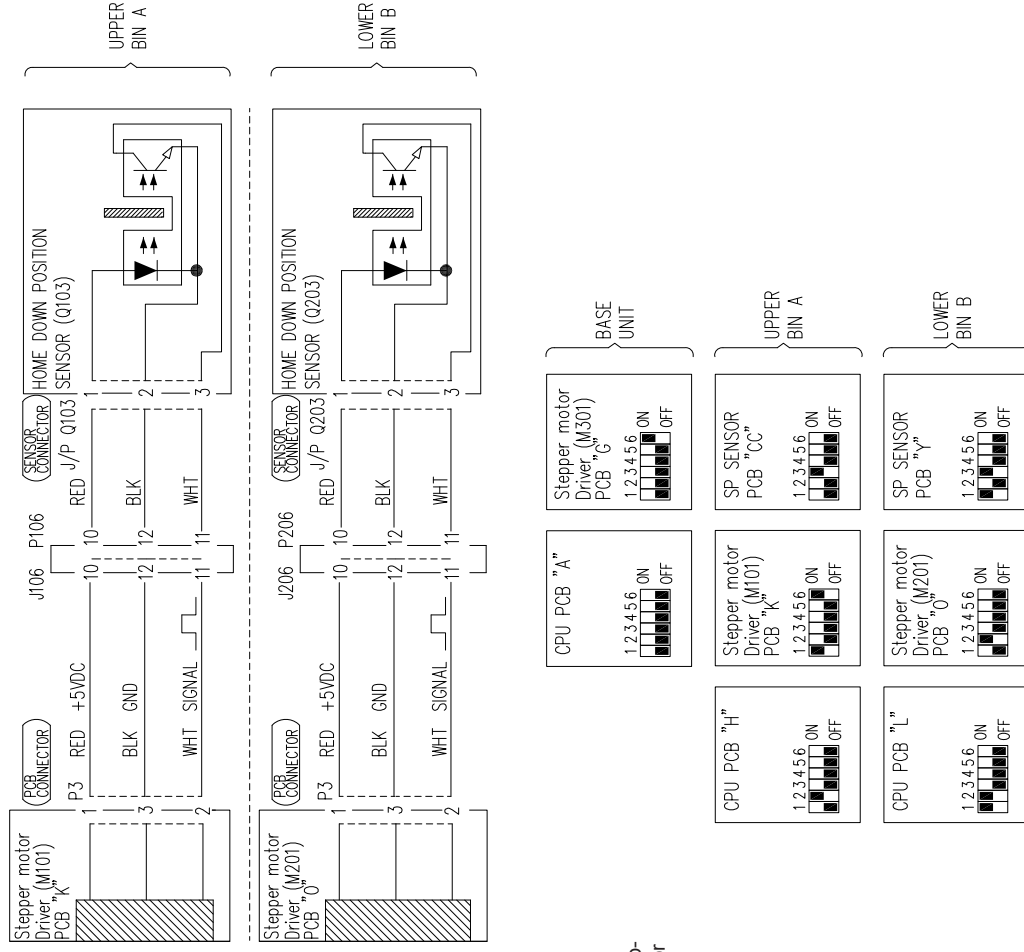
- Y N Repair/replace harness

Swap PCB, that the faulty sensor is connected to, with the PCB in the other bin. After swapping the PCB, set the address DIP switches to settings in the circuit diagram. Check sensor functionality

Does home/outer sensor at new PCB location work

- Y N Replace PCB

Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-011 Fan X Pulse Time Out

Refer to this RAP if any fan in the machine FAN101-FAN106 (upper bin) or FAN201-FAN206 (lower bin) does not give a pulse.

Initial Actions

- Enter service mode according to GP 1
- Check fan according to GP 4
- Ensure that plug / jack at the side guide are properly connected
- Ensure that all connectors at PCB are properly connected

NOTE!

For measuring references see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Swap the faulty fan with one of the five other fans in bin. After swapping the fan, check fan functionality.

Fan works at new location

Y N

Replace Fan

At the faulty location, disconnect fan wire both from fan and PCB. Check all wires between fan and PCB for short circuit and continuity

There is continuity and no short circuit

Y N

Repair/replace harness

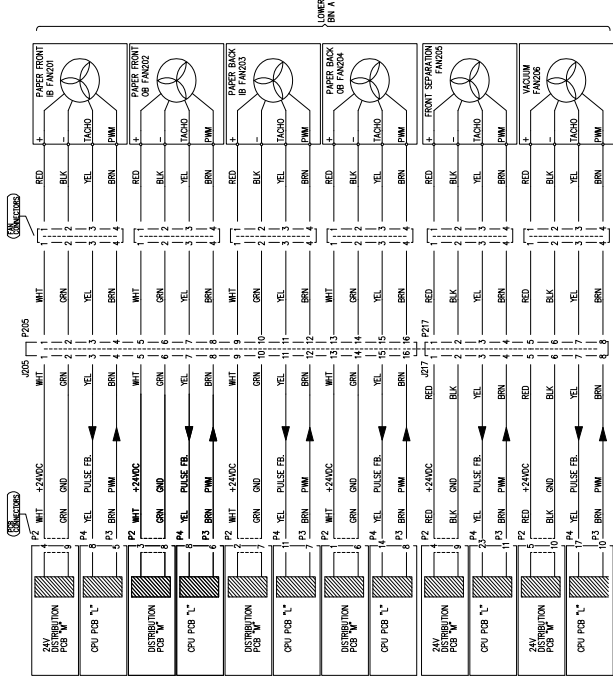
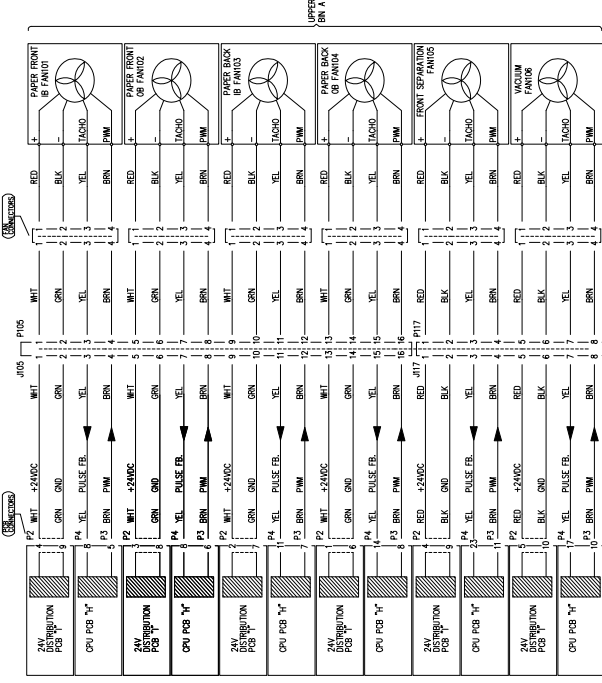
Measure 24 volts at Fan location

There are 24 volts at Fan location

Y N

Replace the PCB

Perform RAP VFX-020 24/48 voltage very low entry RAP



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-012 Drive Clutch and Roller

Initial Actions

- Enter service mode (GP 1)
- Ensure that all connectors at the clutch are properly connected
- Ensure that all connectors at PCB 'K' and PCB 'O' are properly connected

NOTE!

For measuring references see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Rotate drive roller manually and check that all drive clutch transmission components are moving freely.

Transmission works

Y N

| Fix problem

Swap the Stepper Motor PCB that the faulty clutch is connected to with the Stepper Motor PCB in the other bin. After swapping the PCB, set the address DIP switches to the settings shown in the circuit diagram. Check clutch functionality.

Does the clutch at new PCB location work

Y N

| Replace PCB

At the faulty location, disconnect the clutch wire from PCB and clutch. Check all wires (orange, violet) for short circuits and continuity.

There is continuity and no short circuit

Y N

| Replace harness

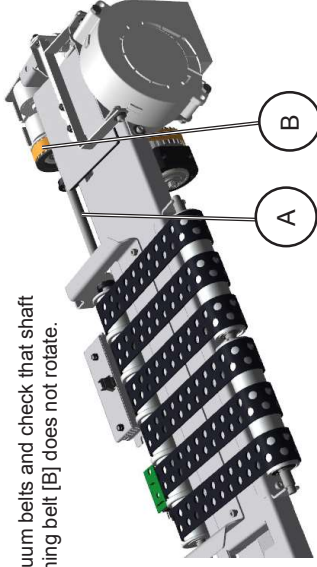
Swap the faulty clutch with the one in the other bin. Check clutch functionality.

Does clutch at new location work

Y N

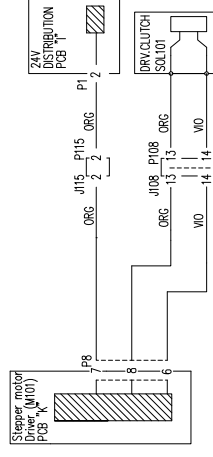
| Replace clutch

Go to RAP VFX-020 24/48 voltage very low entry RAP

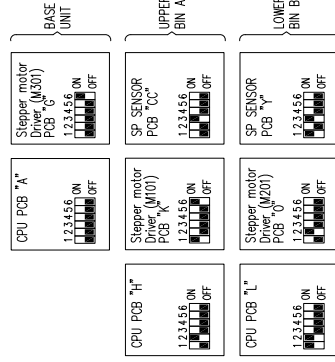
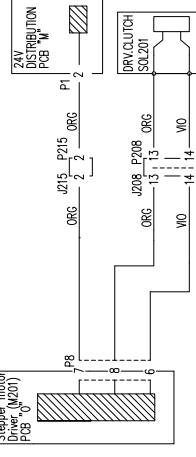


Rotate rollers/vacuum belts and check that shaft [A] rotates and timing belt [B] does not rotate.

UPPER BIN A



LOWER BIN B



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-013 M301 Drive Motor

Initial Actions

- Enter service mode according to GP 1
 - Check motor functionality according to GP 4
 - Ensure that all connectors are properly connected to stepper motor PCB
- NOTE!
For measuring references see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Disconnect motor harness from PCB and rotate drive motor M1 manually and check that all M1 drive motor transmission components are moving. Does transmission work OK

Transmission works

- Y | N
- Fix problem

Swap the stepper motor PCB that the faulty motor is connected to with one of the two bin stepper motor PCB's. After swapping the PCB, set the address DIP switches to the settings shown in the circuit diagram. Check motor functionality.

Does the motor at new PCB location work

- Y | N
- Replace PCB

At the faulty location, disconnect motor wire from PCB. Check for short circuits between all wires and chassis.

There are no short circuits

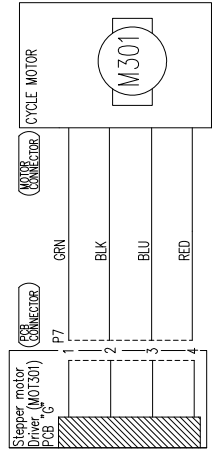
- Y | N
- Repair/replace harness

Swap the faulty stepper motor with one of the two bin stepper motors. Check motor functionality.

Does motor at new location work

- Y | N
- Replace motor

Go to RAP VFX-020 24/48 voltage very low entry RAP



RAP VFX-014 M101/M201 Elevator Motor

Initial Actions

- Enter service mode according to GP 1
 - Check motor functionality according to GP 4
 - Ensure that all connectors are properly connected to the stepper motor PCB
- NOTE!
For measuring references see BSD on next page

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Check Bin Interlock according to GP See GP's.

Bin Interlock works

- Y | N
- Go to RAP VFX-033 Motor Relay

Disconnect motor harness from PCB and rotate elevator belts manually. Check that all M2/M3 elevator motor transmission components are moving properly.

Transmission works

- Y | N
- Fix problem

Swap the stepper motor PCB that the faulty motor is connected to with the one in the other bin. After swapping the PCB, set the address DIP switches to settings in the circuit diagram. Check motor functionality.

Motor works at new location

- Y | N
- Replace PCB

At the faulty location, disconnect motor wire from PCB. Check for short circuits between all wires and chassis.

There are no short circuits

- Y | N
- Repair/replace Harness

Swap the faulty stepper motor with one of the two bin stepper motors. Check motor functionality.

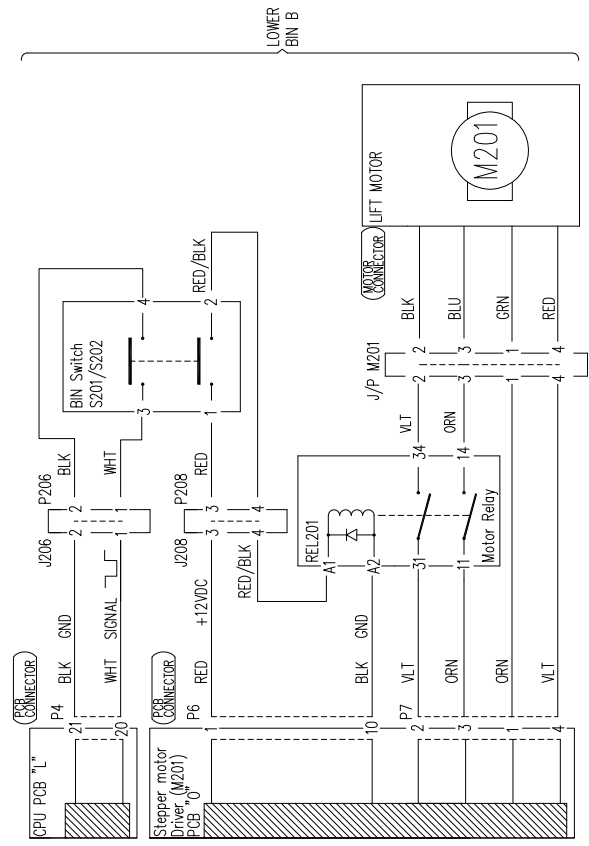
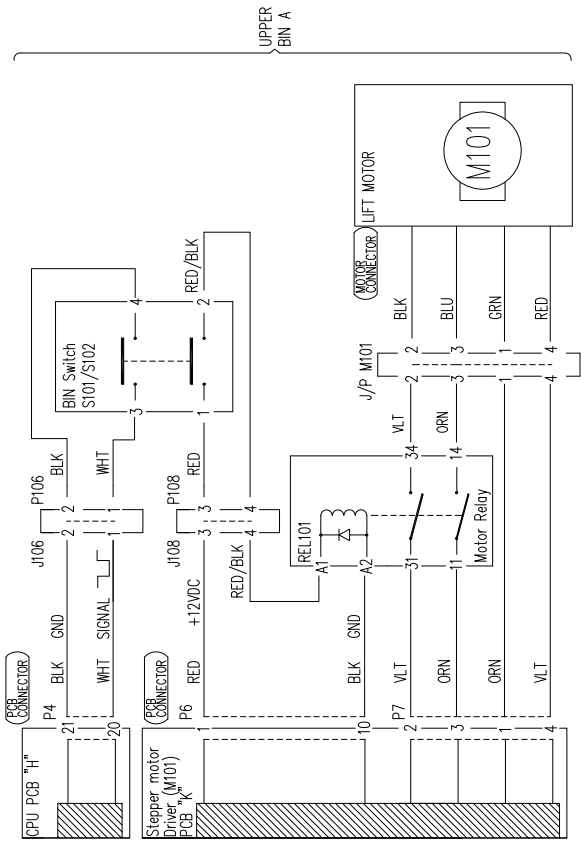
Motor works at new location

- Y | N
- Replace motor

Go to RAP VFX-020 24/48 voltage very low entry RAP

➔ BSD on next page

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-015 Bin A/B Opening

Utilize this RAP when the open bin function does not work for the upper or lower bin

Initial Actions

- Check if bin has actually opened
- Enter service mode (GP 1)
- Check solenoid functionality (GP 4)
- Check bin switch functionality (See GP's)
- Ensure that all connectors at the solenoid are properly connected
- Ensure that all connectors at PCB 'I', 'H', 'M' and 'L' are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Manually check that the Damper is strong enough to push the bin out

The damper is strong enough

Y N

Replace damper

Manually check that all solenoid A/B transmission components are easy to move. Also check that bin moves in and out easily.

Does transmission work OK

Y N

Fix the problem

Swap the faulty solenoid with the one in the other bin. After swapping the solenoids check the solenoid functionality.

Does solenoid work at new location

Y N

Replace solenoid

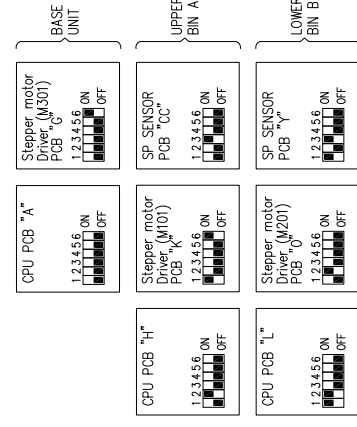
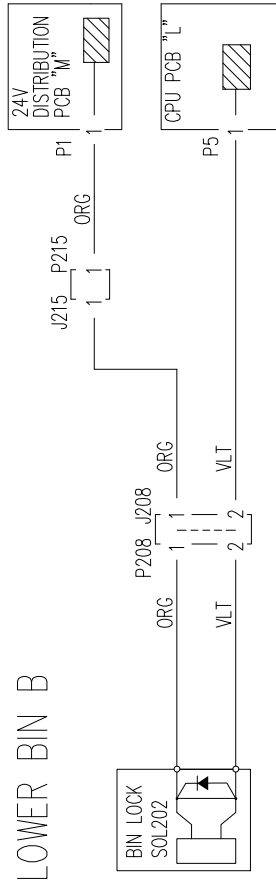
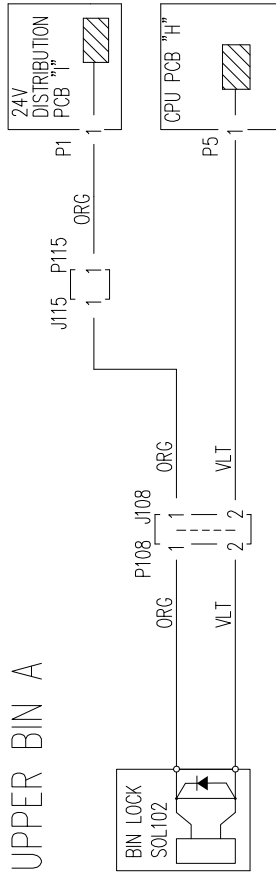
Swap PCB that faulty solenoid is connected to with the PCB in the other bin. After swapping the PCB, set the address DIP switches to settings in the circuit diagram. Check solenoid functionality.

Does solenoid at new PCB location work

Y N

Replace PCB

Go to RAP VFX-022 / RAP VFX-023 Bin A / B 24V very low



16 March 2021

4-25

Morgana VFX

4 Troubleshooting

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-016 Lamp RAP

Initial Actions

Check lamp functionality according to GP See GP's
 Ensure that lamp is clean
 Ensure that all connectors at the lamp are properly connected
 Ensure that all connectors at PCB 'H' and PCB 'L' are properly connected.

NOTE:

For measuring references see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Swap the faulty lamp with the lamp in the other bin. After swapping the lamps, check lamp functionality.

Lamp works at new location

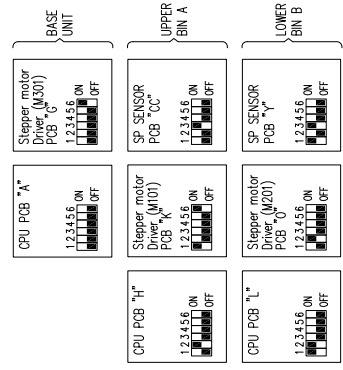
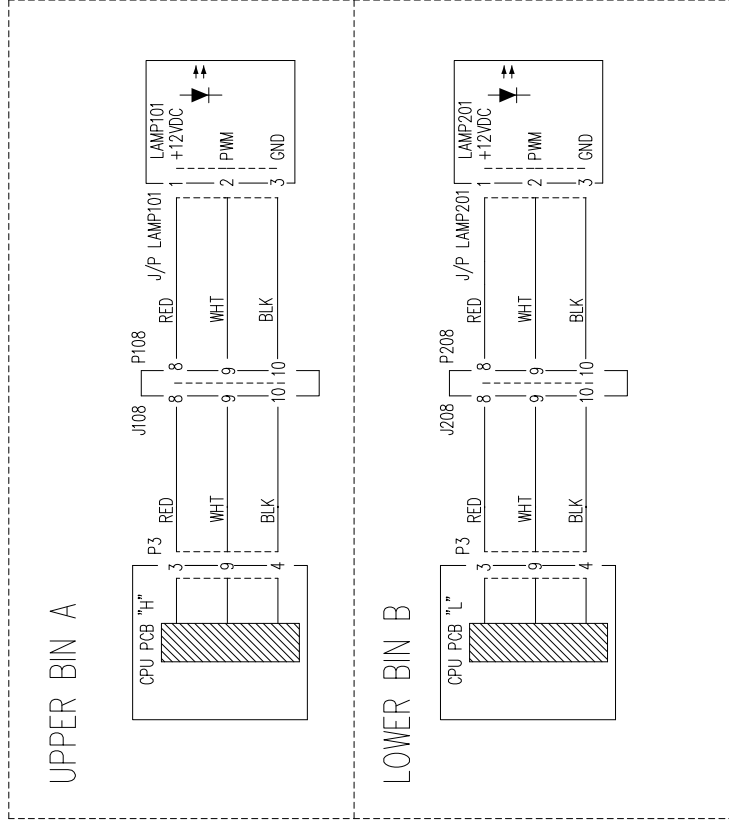
Y N
 | Replace lamp (REP 15.22)
 At the faulty location, disconnect lamp wires both from PCB and lamp. Check all wires (red, white, black) to lamp for short circuits and continuity.

There is continuity and no short circuit

Y N
 | Repair/replace harness
 Swap PCB that the faulty lamp is connected to with the one in the other bin. After swapping the PCB, set the address DIP switches to settings in the circuit diagram. Check lamp functionality.

Does lamp at new PCB location work

Y N
 | Replace PCB
 Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-017 Counter

Initial Actions

Ensure that all connectors at the counter are properly connected.
Ensure that all connectors at PCB 'A' are properly connected.

NOTE!

For measuring references see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Disconnect Counter and PCB connectors. Check all wires (red, white, black) for short circuits and continuity. Also check for short circuits between all wires and chassis.

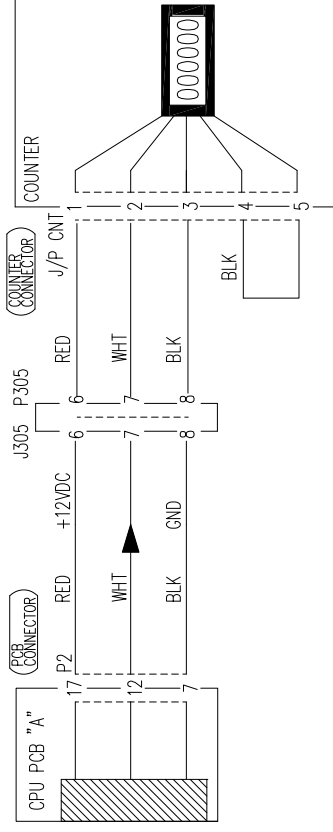
There is continuity and no short circuit

Y N

— Repair/replace harness

— Replace Counter

— Replace PCB



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-018 12/24/48V Low or High

This RAP is for troubleshooting a low or high 12V, 24V or 48V

Initial Actions

None

Procedure

⚠ WARNING!

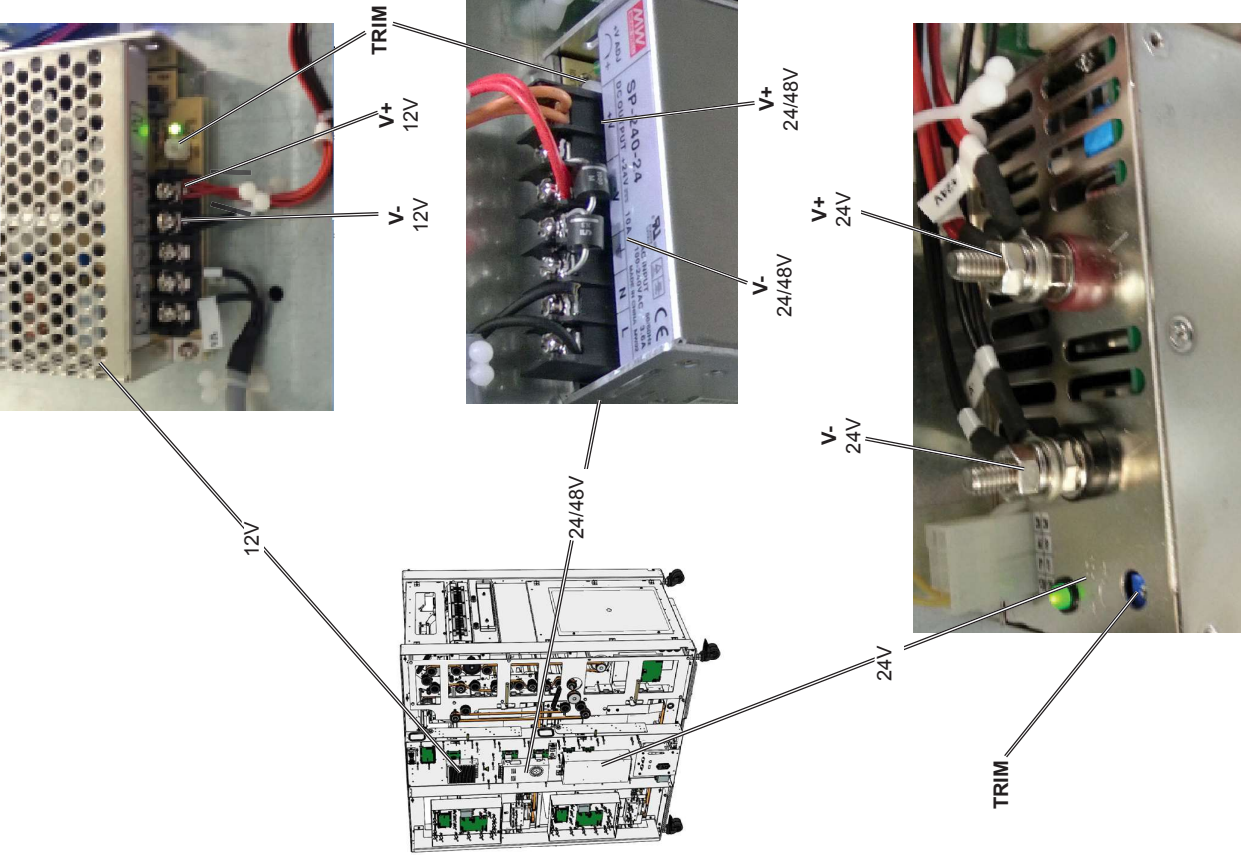
Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Adjust to the correct level according to the table below, if there is 48V low, start by checking and adjusting the 24V level at PSU (24V) before continuing with the PSU (24/48V) adjustment.

NOTE!

Turn the TRIM knob clockwise to increase and counter clockwise to decrease the output voltage. Note that 1/4 turn is approximately 3,0 VDC.

PSU	Ideal level [VDC]	Code alert levels		Adjust to [VDC]	Measure between
		LOW [VDC]	HIGH [VDC]		
(12V)	12V	<11.5V	>12.5V	11.8-12.3 V	V- to V+ at PSU(12V)
(24V)	24V	20.0-22.9V	25.1-27.8V	23.8-24.3 V	V- to V+ at PSU(24V)
(24/48V)	48V	43.6-46.9 V	49.1-66.0 V	47.8-48.3 V	V- at PSU(24V) to V+ at PSU(24/48V)



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-019 24/48V Secondary Circuit

This RAP is for troubleshooting a very low 24V and/or 48V. The primary objective is to check the harness between PSUs ↔ Short Circuit Protection (SCP) PCBs and the functionality of the SCP PCBs.

Initial Actions

- Make sure that plugs/jacks J/P301, P310/J310 and P312/J312 are properly connected (see Master Wiring Diagram)
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "I", "K", "L", "M", "O", "S" and "R" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

NOTE!

For safety reasons - in case of a "very low/high 24V and/or 48V," there is a limited time when voltages are applied to PSU (24V) and PSU (24/48V). This affects the voltage measurements. Please see "24/48 Vdc Interlock/PSU procedure" for further information.

This RAP assumes that "24V and/or 48V very low entry RAP" has been performed.

Power off the machine, disconnect [P1] at SCP PCBs "D", "E" and "F".

Measure continuity between wires from PSU (24V) to [P1] for all three PCBs and check for short circuits between black and red wires. Also, check for short circuits from red wires to chassis.

There is continuity and no short circuit

Y N

- └ Repair/replace harness

Disconnect [C, P1]. Measure continuity between wires from PSU (24/48V) to [C, P1], check for short circuits between Orange and Red wires. Also, check for short circuits from Red and Orange wires to chassis

There is continuity and no short circuit

Y N

- └ Repair/replace harness

Reconnect all connectors, disconnect [P2] at SCP PCBs "C", "D", "E" and "F". Measure continuity between wires from [C, P2-7] to [D, P2-1]

There is continuity

Y N

- └ Repair/replace harness

Leave connectors from previous step disconnected and disconnect [P9] at Stepper Motor Driver PCBs "G", "K" and "O", check for short circuits between all wires on [C, P2] to chassis and continuity between position [C, P2-5] to [C, P2-12]. Also check for short circuit between all Orange wires at [C, P2] to all Black wires at [D, P2].

There is continuity and no short circuit

Y N

- └ Repair/replace harness

Leave connectors from previous step disconnected.

Check continuity between [D, P2-5] to [D, P2-12].

There is continuity

Y N

- └ Repair/replace harness

Reconnect [P2] at PCBs "C" and "D." Leave [P2] at "E", "F" and [P9] at Stepper Motor Driver PCBs "G", "K" and "O" disconnected. Disconnect [P1] at SCP PCBs "E" and "F". Power on the machine and close the door.

Relay at SCP PCB "C" and "D" activates (connectors shorted away from coil) a period of time after power on/door closed.

Y N

- └ Replace PCB "C" and/or "D" depending on which relay that failed.

Reconnect [P1] at PCBs "E" and "F", leave the rest disconnected. Power on the machine and close the door. Measure voltage (VDC) between [E, J2-1] and [E, J2-3]

The voltage is 24VDC±10% for at least a short period of time (measure during a period of at least 10 seconds after Power ON). "N" means no reaction at all on the output.

Y N

- └ Replace PCB "E"

Power off the machine, keep [P2] at "E" and "F" disconnected. Power on the machine and close the door. Measure voltage (VDC) between [F, J2-1] and [F, J2-3].

The voltage is 24VDC±10% for at least a short period of time (measure during a period of at least 10 seconds after Power ON). "N" means no reaction at all on the output.

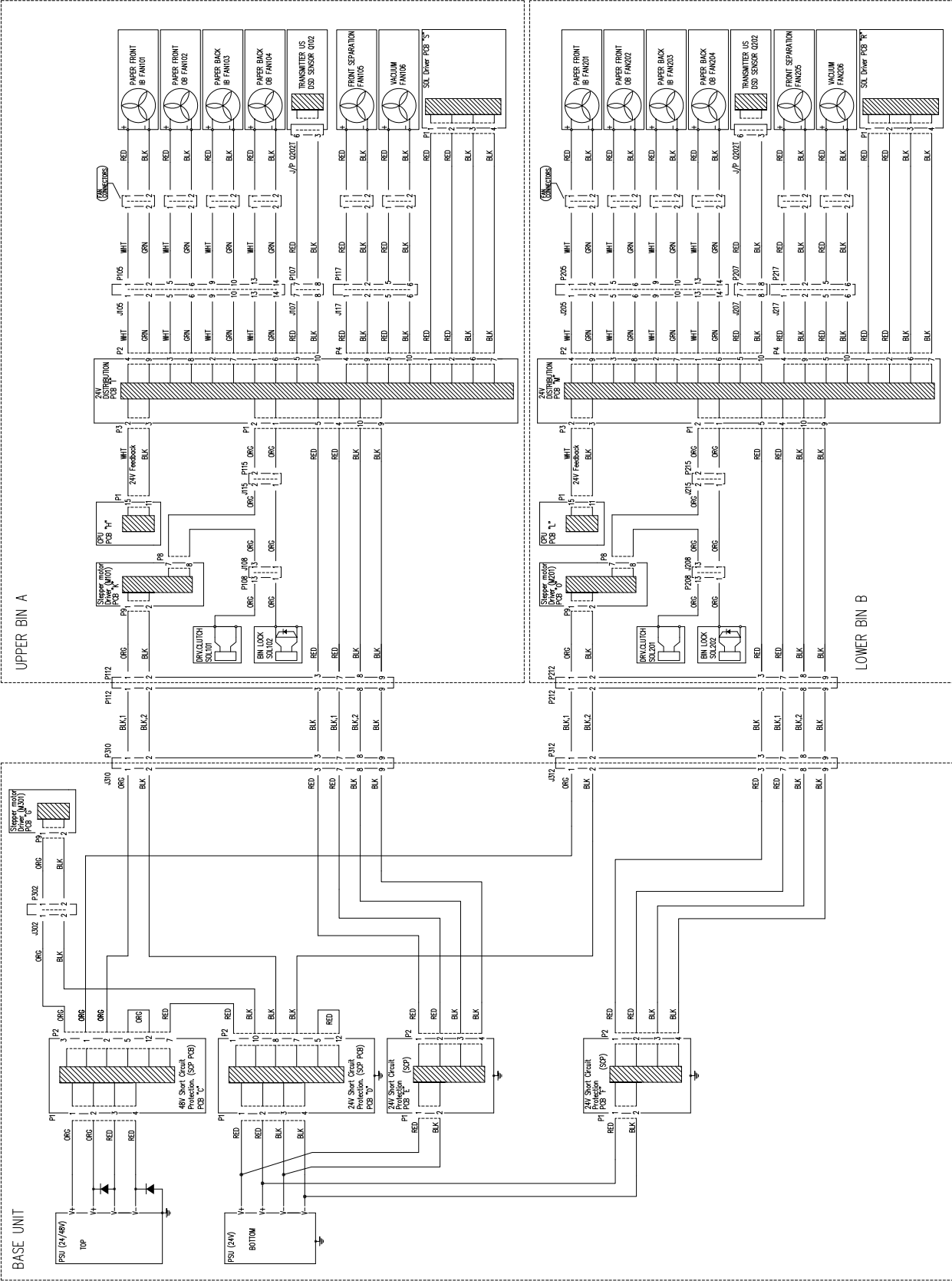
Y N

- └ Replace PCB "F"

Exit

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WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-020 24V/48V Very Low Entry RAP

This RAP gives directions to correct RAP in the case of multiple or single codes

Initial Actions

- Make sure that plugs/jacks J/P310, J/P312, J/P112 and J/P212 are properly connected (reference Master Wiring Diagram)
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "O", "S" and "R" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Check service codes

Code is a single code very low 24V at BIN "x" (A or B)

Y	N
Code is a single very low 48V at PCB "x"	
Y	N
Go to RAP VFX-021 24V/48V very low	
24V/48V very low RAP solved the problem	
Y	N
Perform RAPs in following order:	
1. RAP VFX-042 Stepper Motor M301 PCB 48V very low	
2. RAP VFX-041 Stepper Motor M201 PCB 48V very low	
3. RAP VFX-040 Stepper Motor M101 PCB 48V very low	
4. RAP VFX-022 BIN A 24V very low	
5. RAP VFX-023 BIN B 24V very low	
If no success, replace PCBs in same order. (BINs: replace both CPU and 24V Distribution PCBs)	
Exit	
Perform RAP VFX-040, 041, or 042 Stepper Mot. (M101, M201 or M301) PCB 48V very low	
Perform RAP VFX-022 or 023 BIN A or B 24V very low	
BIN x 24V very low RAP solved the problem	
Y	N
Go to RAP VFX-021 24V/48V very low RAP	
24V/48V very low RAP solved the problem	
Y	N
Replace CPU and 24V Distribution PCBs	
Exit	
Exit	

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RAP VFX-021 24V/48V Very Low

This RAP is for troubleshooting a very low 24V and/or 48V. The primary objective is to determine if the source of failure is related to the primary or secondary circuit of the PSUs or if one of the PSUs is broken.

Initial Actions

- Make sure that plugs/jacks J/P310, J/P312, J/P112 and J/P212 are properly connected (reference Master Wiring Diagram)
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "O", "S" and "R" PCBs are properly connected

Procedure

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⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

NOTE!

For safety reasons - in case of a "very low/high 24V and/or 48V," there is a limited time when voltages are applied to PSU (24V) and PSU (24/48V). This affects the voltage measurements. Please see "24/48 Vdc Interlock/PSU procedure" for further information.

WARNING!

Use caution when making the voltage measurements and always disconnect the Power Cord when it is necessary to work inside the Power Module. AC Power is present in the Line Module whenever the Power Cord is plugged into the Wall Outlet.

Power on the machine and close the door. Measure voltage (VAC) between L and N on the PSU (24V) input

The voltage is 90-264VAC

Y N

Go to RAP VFX-035 REL301

Power off the machine, wait 5 seconds, Power on the machine and close the door. Measure voltage (VAC) between L and N on the PSU (24/48V) input

The voltage is between 90-264VAC

Y N

Go to RAP VFX-036 REL302

Power off the machine, wait 5 seconds, disconnect V+ and V- from both PSU (24V) and PSU (24/48V). Disconnect diodes, power on the machine and close the door. Measure voltage (VDC) between V+ and V- on the PSU (24V) output

The voltage is 24VDC±10% for at least a short period of time (measure during a period of at least 10 seconds after Power ON). "N" means no reaction at all on the output

Y N

Replace PSU (24V) (REP 3.7.2)

Power off the machine. Keep V+ and V- disconnected, wait 5 seconds, Power on the machine and close the door. Measure voltage (VDC) between V+ and V- on the PSU (24/48V) output

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

The voltage is $24VDC \pm 10\%$ for at least a short period of time (measure during a period of at least 10 seconds after Power ON). "N" means no reaction at all on the output

- Y | Power off the machine, measure resistance for the two diodes when disconnected from PSU
 N | One or both diodes are shorted (resistance < 1000 Ohms)
 Y | Replace PSU (24/48V)
 N | Replace diode/diodes
 Go to RAP VFX-019 24/48V secondary circuit

RAP VFX-022 BIN A 24V Very Low

This RAP is for troubleshooting a very low 24V related to BIN A

Initial Actions

- Make sure that plugs/jacks J/P310 and J/P112 are properly connected.
- Ensure that all connectors to "E", "H", "I", "K" and "S" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, disconnect [E, P1] and [E, P2], measure continuity between PCB connectors [E, J2-1] and [E, J1-1] (Checking blown fuse at PCB "E").

There is continuity

- Y | Replace PCB "E"
 N | The fuse at PCB "E" blows up again at Power on
 Y | Exit
 N | Proceed to the next step in this RAP

Leave [E, P1] and [E, P2] disconnected and disconnect [I, P1], [I, P3], [I, P4] and [H, P1]. Measure continuity for all wires between [E, P2] and [I, P1], check continuity for all wires between [I, P3] and [H, P1].

There is continuity

- Y | Repair/replace harness
 N |

Reconnect all connectors except [E, P1]. Disconnect SOL101/SOL102 connectors and check for short circuits between [I, P1] Red and Black wires.

There is no short circuit

- Y | Disconnect [E, P2], check for short circuits between [I, P1] Red and Black wires
 N | There is no short circuit
 Y | Replace PCB "E"
 N | Disconnect all FAN connectors and Q102 connector. Check for short circuits between FAN connectors on the FAN side, Black wires to Red wires and between Q102 chassis connector pin 3 to pin 6
 There is no short circuit

Y | Disconnect SOL101 and SOL102 connectors. Measure resistance between connectors on the solenoid for both SOL101 and SOL102.
 N | The resistance is lower than 10 ohms

- N | Y | Replaced the failed solenoid SOL101 or SOL102
 | | Disconnect [S, P1] check for short circuit on PCB connector [S, J1] between pin 1 and pin 3.
 There is no short circuit

Y | N | Replace PCB "S"

Disconnect all connectors to PCB "I", [S, P1], SOL101/SOL102 connectors and leave FAN connectors disconnected. Check for short circuits between following positions:
 [I, P1] all Red to all Black wires, all Orange to all Black wires, all Red and Orange wires to chassis.
 [I, P2] all White to all Green wires, all Red to Black wires, all White and Red wires to chassis.
 [I, P3] White to Black wires, White wire to chassis
 [I, P4] all Red to all Black wires, all Red wires to chassis

There is no short circuit

- Y | N | Repair/replace harness
 | | Disconnect [K, P8] and check for short circuits on PCB connector [K, J8] between pin 7 and pin 8
 There is no short circuit
 Y | N | Replace PCB "K"
 | | Replace PCB "I"

Replace the failed FAN/Q102

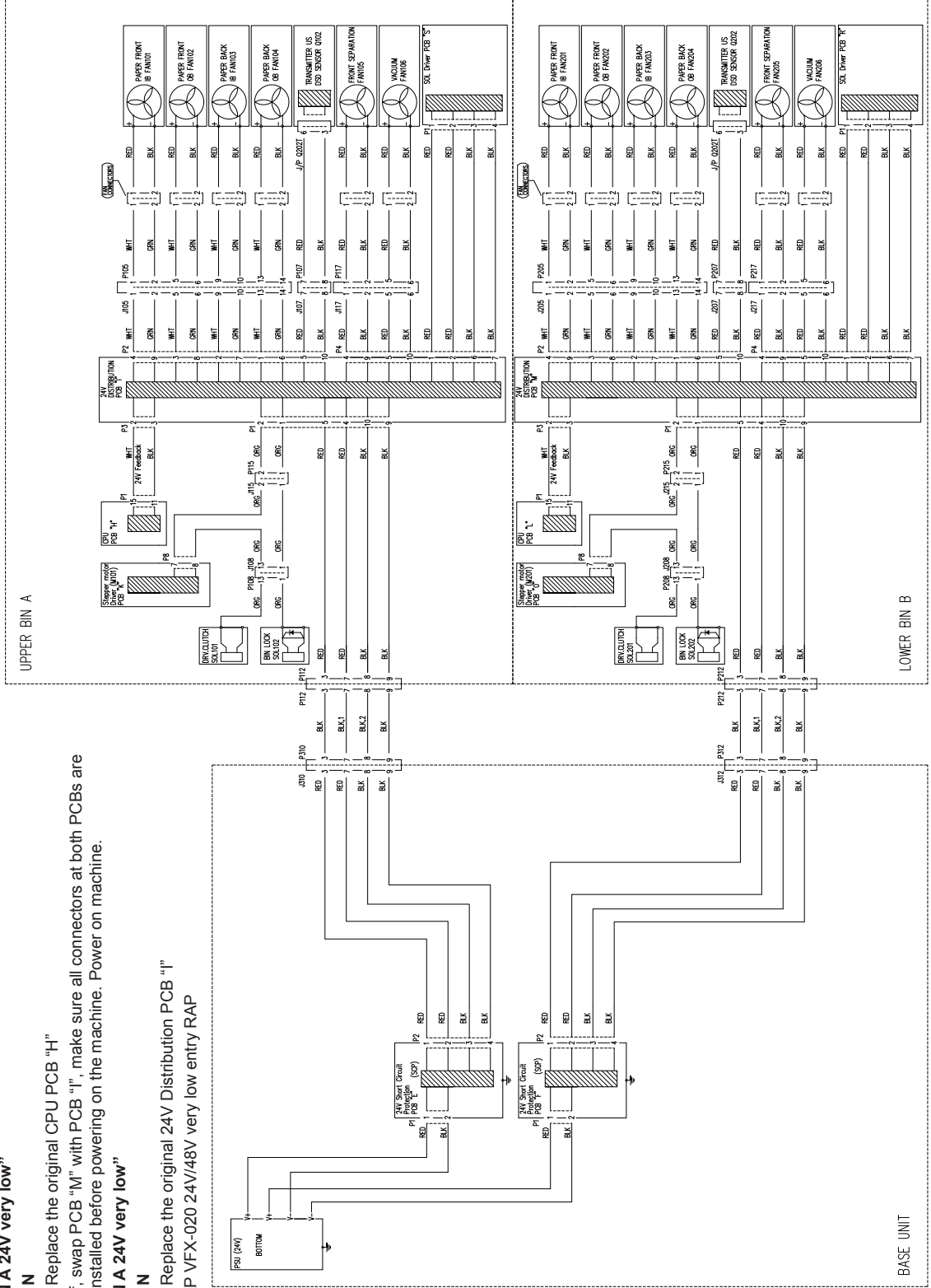
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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

Power off, reconnect [E, P1], swap CPU PCB "H" with CPU PCB "L", make sure to set DIP switches correctly (See GP's) and that all connectors at both PCBs are properly installed before powering on the machine. Power on machine.

Still "BIN A 24V very low"

- Y** | **N** Replace the original CPU PCB "H"
- Power off, swap PCB "M" with PCB "I", make sure all connectors at both PCBs are properly installed before powering on the machine. Power on machine.
- Still "BIN A 24V very low"**
- Y** | **N** Replace the original 24V Distribution PCB "I"
- Go to RAP VFX-020 24V/48V very low entry RAP



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-023 BIN B 24V Very Low

This RAP is for troubleshooting a very low 24V related to BIN B

Initial Actions

- Make sure that plugs/jacks J/P312 and J/P212 are properly connected.
- Ensure that all connectors to "F", "L", "M", "O" and "R" PCBs are properly connected

Procedure



Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, disconnect [F, P1] and [F, P2], measure continuity between PCB connectors [F, J2-1] and [F, J1-1] (Checking blown fuse at PCB "F").

There is continuity

Y |

N | Replace PCB "F"

The fuse at PCB "F" blows up again at Power on

Y |

N | Exit

Proceed to the next step in this RAP

Leave [F, P1] and [F, P2] disconnected and disconnect [M, P1], [M, P3], [M,P4] and [L, P1]. Measure continuity for all wires between [F, P2] and [M, P1], check continuity for all wires between [M, P3] and [L, P1].

There is continuity

Y |

N | Repair/replace harness

Reconnect all connectors except [F, P1], disconnect SOL201/SOL202 connectors and check for short circuits between [M, P1] Red and Black wires.

There is no short circuit

Y |

Disconnect [F, P2], check for short circuits between [M, P1] Red and Black wires

There is no short circuit

N |

Y | Replace PCB "F"

Disconnect all FAN connectors and Q202 connector, check for short circuit between FAN connectors on the FAN side, Black wires to Red wires and between Q202 chassis connector pin 3 to pin 6

There is no short circuit

N |

Y |

|

Disconnect SOL201 and SOL202 connectors. Measure resistance between connectors on the solenoid for both SOL201 and SOL202.

The resistance is lower than 10 ohms

N |

Y | Replaced the failed solenoid SOL201 or SOL202

Disconnect [R, P1] check for short circuits on PCB connector [R, J1] between pin 1 and pin 3.

There is no short circuit

Y |

N | Replace PCB "R"

Disconnect all connectors to PCB "M", [R, P1], SOL201/SOL202 connectors and leave FAN connectors disconnected. Check for short circuits between following positions:

[M, P1] all Red to all Black wires, all Orange to all Black wires, all Red and Orange wires to chassis.

[M P2] all White to all Green wires, all Red to Black wires, all White and Red wires to chassis.

[M, P3] White to Black wires, White wire to chassis

[M, P4] all Red to all Black wires, all Red wires to chassis

There is no short circuit

Y |

N | Repair/replace harness

Disconnect [O, P8] check for short circuits on PCB connector [O, J8] between pin 7 and pin 8

There is no short circuit

Y |

N | Replace PCB "O"

Replace PCB "M"

Replace the failed FAN/Q202

Power off, reconnect [F, P1], swap CPU PCB "L" with CPU PCB "H", make sure to set DIP switches correctly (See GP's) and that all connectors at both PCBs are properly installed before powering on the machine. Power on the machine.

Still "BIN B 24V very low"

Y |

N | Replace the original CPU PCB "L"

Power off, swap PCB "M" with PCB "I", make sure all connectors at both PCBs properly installed before powering on the machine. Power on the machine.

Still "BIN B 24V very low"

Y |

N | Replace the original 24V Distribution PCB "M"

Go to RAP VFX-020 24V/48V very low entry RAP

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-024 Antistatic Bars

This RAP is for troubleshooting the Antistatic Bars. No fault code exists for this RAP. If papers are statically charged after printing, refer to this RAP. The primary objective is to determine why the Antistatic Bars are not functioning properly.

Initial Actions

- Make sure that plugs/jacks J/P27, J/P34 and J/P301 are properly connected
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, REL303, TR1, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B" and "G" PCBs are properly connected
- Check that the voltage selector on TR1 is in correct position
- Ensure that the built in fuse for TR1 has not tripped
- REL303 is activated upon startup (Door Switch must be activated). Listen closely to BAR1 and BAR2. If there is a 50Hz sound when REL303 is activated, BAR1 and BAR2 are working. If there is only sound at one of the BARs, replace the one that does not emit any sound

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

WARNING!

Use caution when making the voltage measurements and always disconnect the Power Cord when it is necessary to work inside the Power Module. AC Power is present in the Line Module whenever the Power Cord is plugged into the Wall Outlet

Power on the machine close the door.

Does REL301 and/or REL302 activate

Y N

| Go to REL301 and/or REL302

Power off the machine, disconnect the Power Cord. Measure continuity between [SW1, 1] to [REL303, 31] and [SW1, 4] to [REL301, 11]

There is continuity

Y N

| Repair/replace harness

Keep machine Powered off and the Power Cord disconnected. Measure continuity between [G, P8-6] to [REL303, A2] and between [REL302, A1] to [REL303, A1].

There is continuity

Y N

| Repair/replace harness

Keep machine Powered off and the Power Cord disconnected. Measure continuity between connector [TR1-1] to [REL303, 14] and between [TR1-2] to [REL303, 34].

There is continuity

Y N

| Repair/replace harness

Power on, close the door and activate REL303 in component control

REL303 activates

Y N

| Measure VDC between [REL303, A1] and [REL303, A2].

The voltage is 12VDC±10%

Y N

| Replace PCB "G"

Replace REL303

Listen to BAR1

There is a 50Hz sound

Y N

| Listen to BAR2

There is a 50Hz sound

Y N

| Replace transformer TR1 (REP 15.44)

Replace BAR1

Listen to BAR2

There is a 50Hz sound

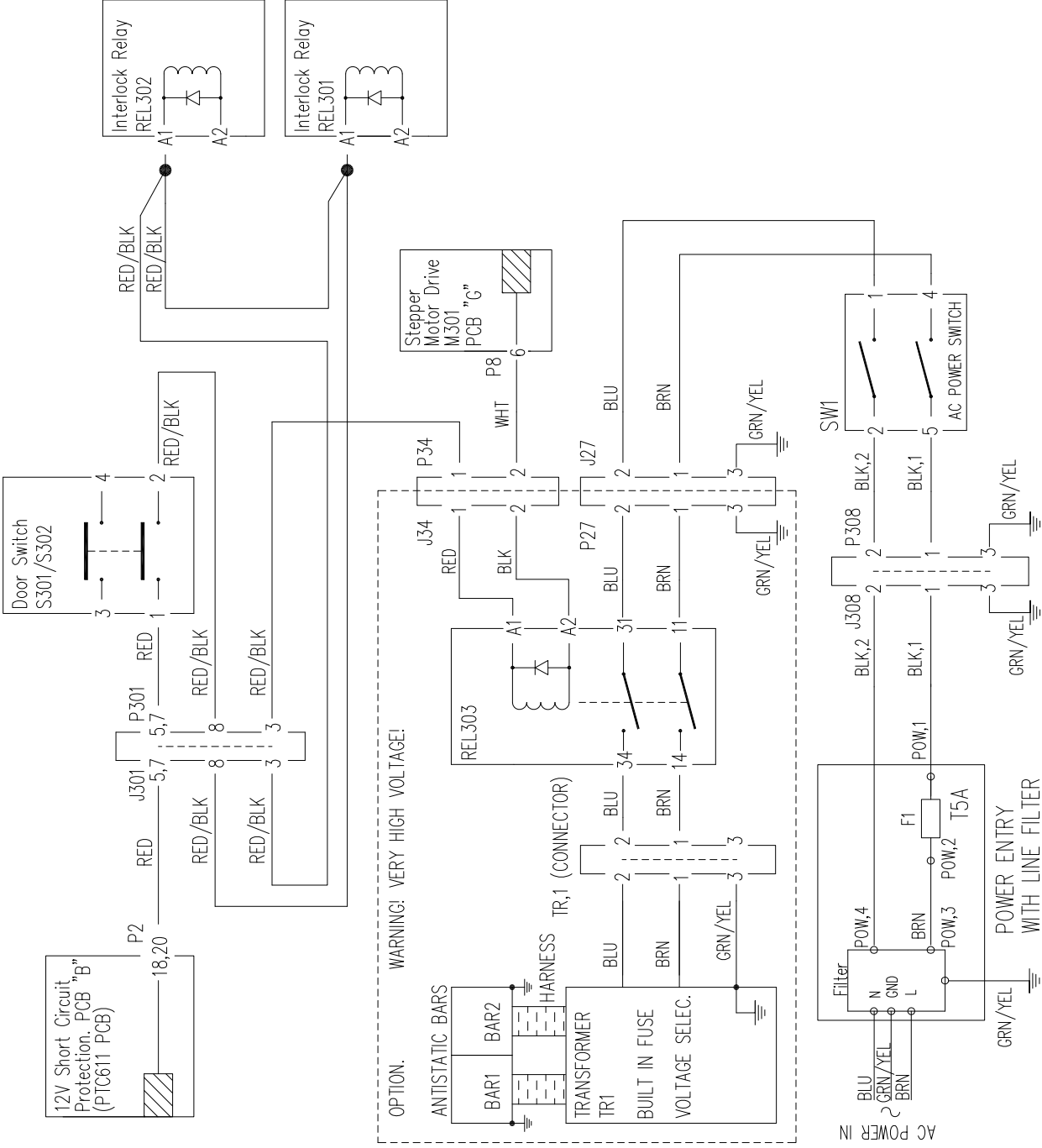
Y N

| Replace BAR2

Exit

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-025 BIN Switch Software Signal

This RAP is for troubleshooting a BIN Switch software signal circuit. The primary objective is to determine if the BIN Switch or CPU PCB has failed. This procedure may be applied on either bin.

Initial Actions

- Make sure that plugs/jacks J/P301, J/P310, J/P312, J/P112, J/P106, J/P206 and J/P212 are properly connected (reference Master Wiring Diagram)
- Make sure that all connectors connecting to the BIN Switch are properly connected
- Ensure that all connectors to CPU PCB H/L are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components.

Power off the machine, disconnect the Power Cord. Leave Door Switch deactivated, measure resistance from BIN Switch pos. 3 to 4.

There is open circuit, resistance > 1 Mohm

Y N

Replace BIN Switch

Activate Door Switch, measure resistance from Door Switch pos. 3 to 4.

There is continuity

Y N

Replace the BIN Switch

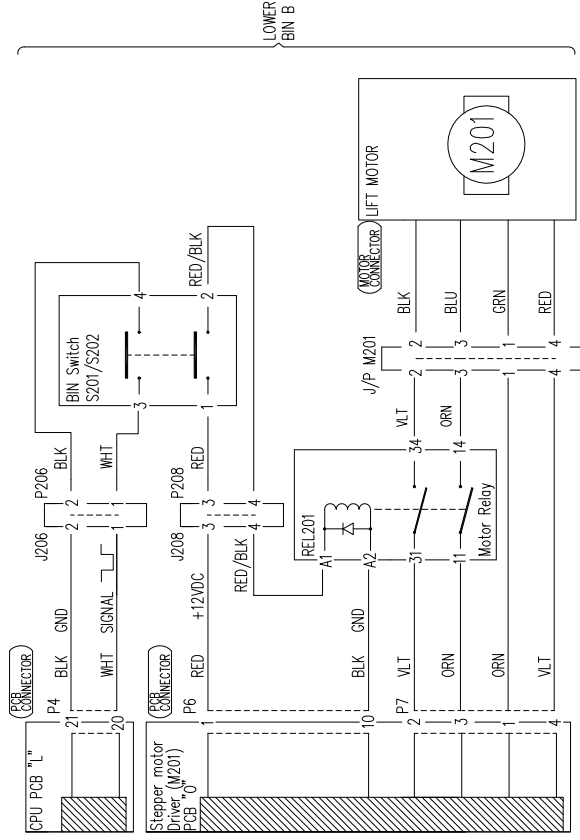
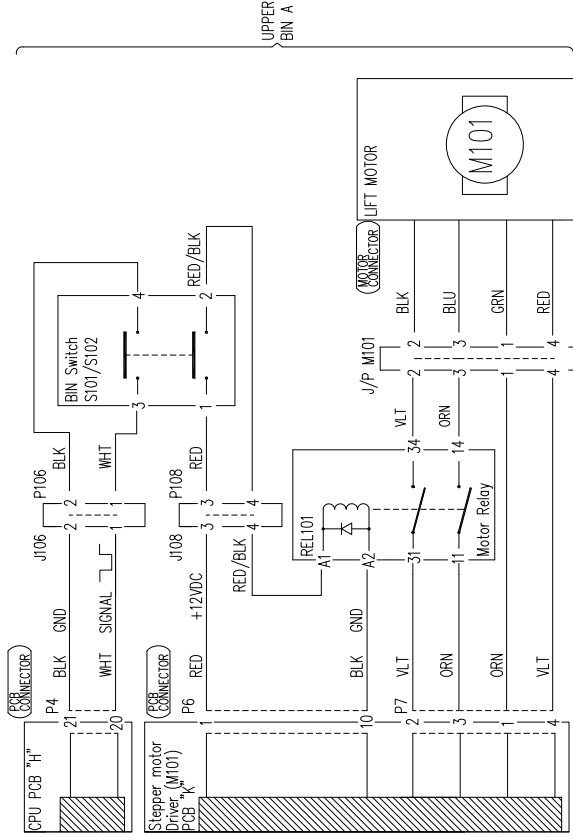
Disconnect CPU PCB H/L connector [P4] and deactivate BIN Switch. Measure continuity from BIN Switch pos. 3 to [P4-20] and BIN Switch pos. 4 to [P4-21]. Check for short circuits between Black and White wire, and between Black/White wires and chassis.

There is continuity and no short circuit

Y N

Repair/replace harness

Replace CPU PCB H/L



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-026 CPU PCB "A"

This RAP is for troubleshooting a failed CPU PCB "A"
The primary objective is to check if the PCB communicates correctly and logic voltages are OK.

Initial Actions

- Ensure that plugs/jacks J/P309, J/P312, J/P111, J/P311, J/P111X, J/P211X and J/P211 are properly connected (reference Master Wiring Diagram)
- Ensure that all DIP switch settings on PCBs "A", "G", "H", "L", "K", "CC", "Y" and "O" are correct (See GP's)
- Ensure that all connectors to "A", "B", "G", "H", "K", "L", "O", "CC", "Y" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power on the machine. If D5 Blue LED on PCB "A" is deactivated, go directly to N (it means no 12VDC). If D5 is activated, measure VDC between [A, P6-1] and [A, P6-10].

The voltage is 12VDC±10%

Y | Power off, disconnect [A, P2], power on.

D5 Blue LED at PCB "A" is activated

N | Go to RAP VFX-017 Counter

Power off, disconnect [A, P6] and [B, P2], check continuity between all wires from [A, P6] to [B, P2], check short circuits between all wires connected to [A, P6], and between all wires from [A, P6] to chassis.

There is continuity and no short circuit

Y | Repair/replace harness

Leave [A, P6] and [B, P2] disconnected, power on. If D6 Blue LED on PCB "B" is deactivated go directly to N, it means no 12VDC. If D6 activated, measure VDC at PCB connector [B, J2] between [B, J2-23] to [B, J2-22].

The voltage is 12VDC±10%

Y | Replace PCB "A"

N | Replace PCB "A"

Measure VDC between GND and VCC (see image on following page).

The voltage is 5VDC±10%

Y | Replace PCB "A"

Measure VDC between GND and 3,3VDC (see image on following page).

The voltage is 3,3VDC±5%

Y | Replace PCB "A"

Previous performed RAP was No XCAN Communication RAP

Y | Go to RAP VFX-004 No ICAN Communication entry RAP

Power off the whole system and VFX, disconnect [A, P7], [A, P8], [J/P23] and [J/P24]. Check continuity for all wires from [A, P7] to [J23] and all wires from [A, P8] to [P24].

There is continuity

Y | Repair/replace harness

Keep the whole system and VFX powered off and [A, P7], [A, P8], [J/P23] and [J/P24] disconnected. Check for short circuits between all wires connected to [J23] and [P24] and all wires from [J23] and [P24] to chassis. Pin 3 for both [J23] and [P24] are connected to chassis

There is no short circuit except for pin 3

Y | Repair/replace harness

Check the XCAN communications cables (one or two) for continuity and short circuits. The positions that need to be checked are pins 1,2,3,5 and 7

There is continuity and no short circuit

Y | Repair /replace harness

Disconnect XCAN terminations (two) connected to the system and check resistance between pin 2 and 7.

The resistance is between 110-130 ohms

Y | Repair /replace termination(s)

Go to and perform XCAN communication RAPs in service manuals for the machines connected to VFX

Success

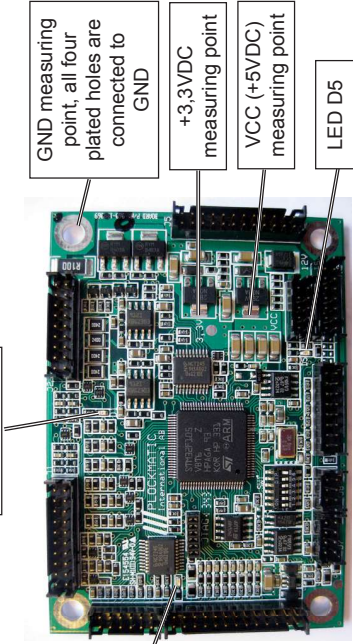
Y | Replace PCB "A"

Exit

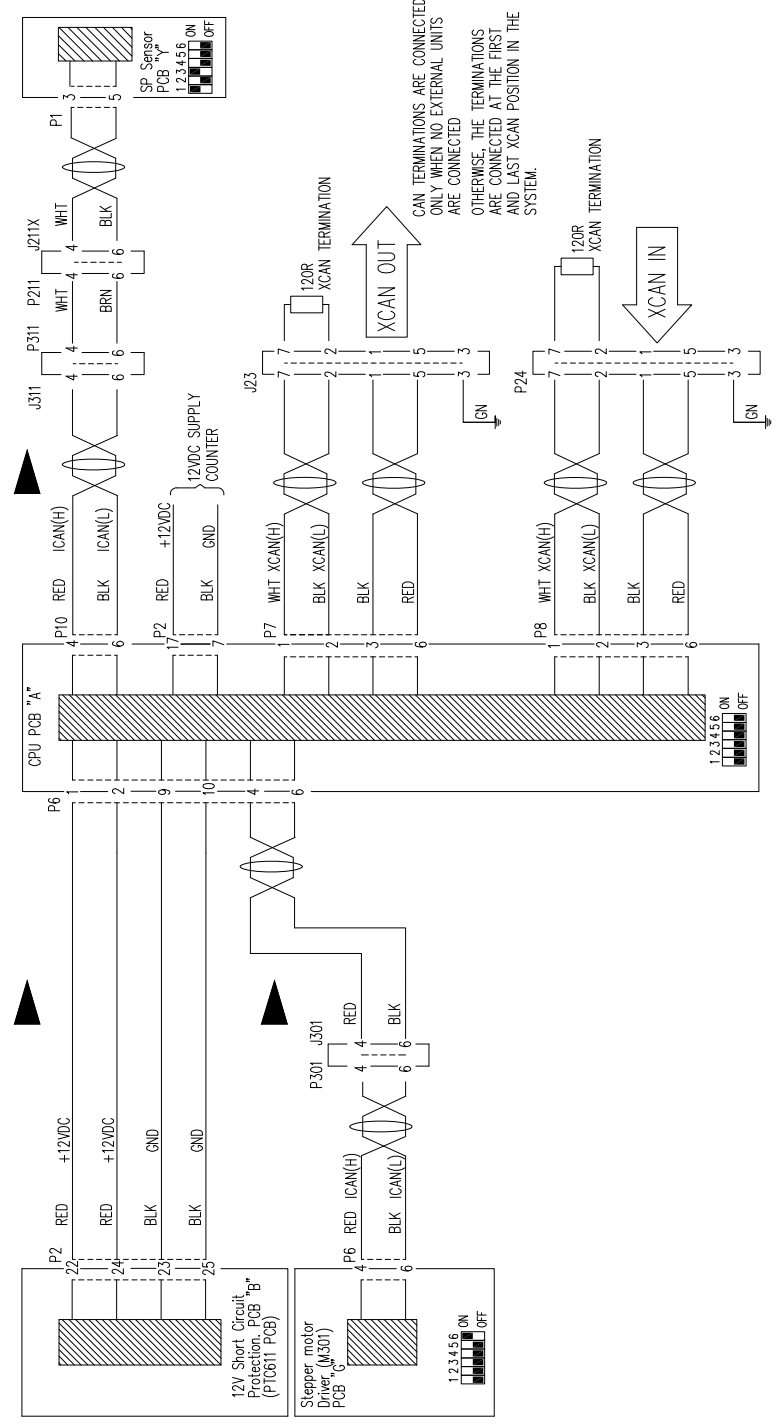
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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

LED D1, CPU controlled LED



LED D10, VCC (+5VDC) Sensors.
Deactivated=no voltage present.
Activated= voltage present, not necessary the correct voltage level.



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Morgana VFX

4 Troubleshooting

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-027 CPU PCB "H"

This RAP is for troubleshooting a failed CPU PCB H. The primary objective is to determine if the PCB communicates correctly and logic voltages are OK.

Initial Actions

- Ensure that plugs/jacks J/P309, J/P312, J/P111, J/P311, J/P111X, J/P211X, J/P125 and J/P211 are properly connected (reference Master Wiring Diagram)
- Ensure that all DIP switch settings on PCBs "A", "G", "H", "L", "K", "CC", "Y" and "O" are correct (See GP's)
- Ensure that all connectors to "A", "B", "G", "H", "K", "L", "O", "CC", "Y" and "S" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power on the machine. If D5 Blue LED on PCB "H" is deactivated, go directly to N (it means no 12VDC). If D5 is activated, measure VDC between [H, P6-1] to [H, P6-10].

The voltage is 12VDC±10%

Y	Power off, disconnect [H, P10], power on.
N	D5 Blue LED at PCB "H" is activated
Y	Power off, disconnect [H, P10], [J/P125] and [B, P2]. Check for short circuits between all wires connected to [H, P10] and between all wires from [H, P10] to chassis.
N	There is no short circuit
Y	Repair/replace harness
N	Go to RAP VFX-037. Stepper Motor Driver M101 PCB "K" RAP
Y	Power off, disconnect [H, P1], power on.
N	D5 Blue LED at PCB "H" is activated
Y	Go to RAP VFX-002 Ultrasonic DSD (pay attention to short circuit measurements).
N	Power off, disconnect [H, P3], keep [H, P1] disconnected, power on.
Y	D5 Blue LED at PCB "H" is activated
N	Go to RAP VFX-016 LAMP (pay attention to short circuit measurements).

N	Power off, disconnect [H, P5], power on
Y	D5 Blue LED at PCB "H" is activated
N	Power off, disconnect [S, P2] and leave [H, P5] disconnected. Check for short circuits between all wires connected to [S, P2] and between all wires to chassis.
Y	There is no short circuit
N	Repair/replace harness
Y	Replace PCB "S"
N	Power off, disconnect [J/P125], power on
Y	D5 Blue LED at PCB "H" is activated
N	Go to RAP VFX-043 SP Sensor (pay attention to short circuit measurements).

Power off, disconnect [H, P6] and [J/P125], check continuity between all wires from [H, P6] to [J/P125], check short circuits between all wires connected to [J/P125], and between all wires from [J/P125] to chassis.

There is continuity and no short circuit

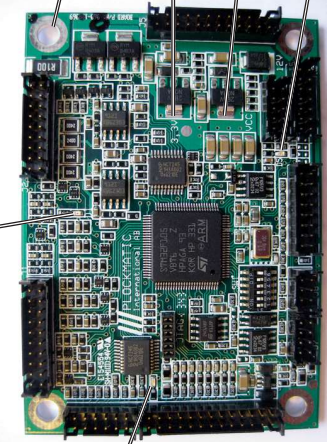
Y	Repair/replace harness
N	Power off, disconnect [H, P6] and [B, P2], and check continuity between all wires from [H, P6] to [B, P2]. Check for short circuits between all wires connected to [H, P6], and between all wires from [H, P6] to chassis.
Y	There is continuity and no short circuit
N	Repair/replace harness
Y	Leave [H, P6] and [B, P2] disconnected, power on. If D3 Blue LED on PCB "B" is deactivated go directly to N, it means no 12VDC. If D3 activated, measure VDC at PCB connector [B, J2] between [B, J2-10] to [B, J2-9].
N	The voltage is 12VDC±10%
Y	Replace PCB "B"
N	Measure VDC between GND and VCC (see image on next page).
Y	The voltage is 5VDC±10%
N	Replace PCB "H"
Y	Measure VDC between GND and 3.3VDC (see image on next page).
N	The voltage is 3.3VDC±5%
Y	Replace PCB "H"
N	Exit

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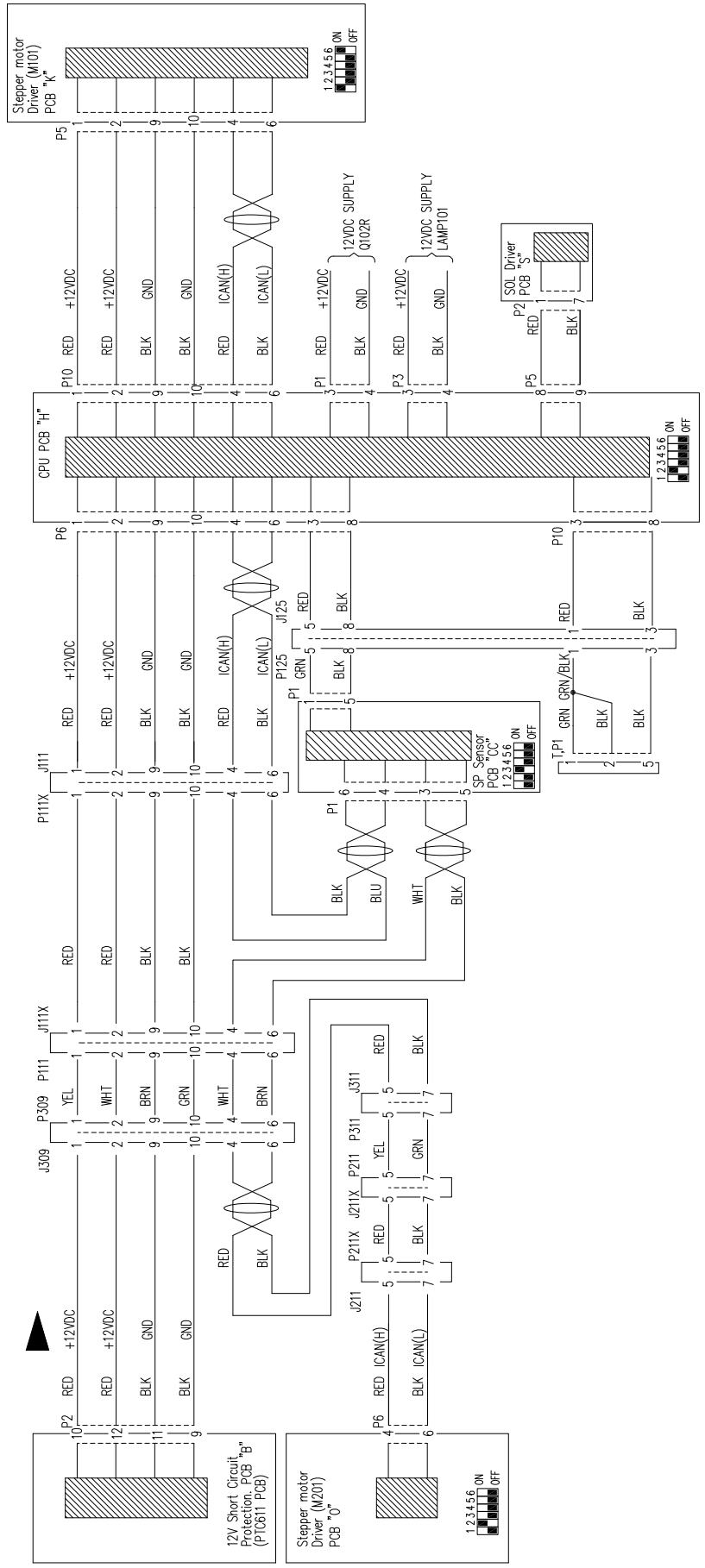
⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

LED D1, CPU controlled LED

LED D10, VCC (+5VDC) Sensors.
Deactivated=no voltage present.
Activated=voltages present, not necessary the correct voltage level.



GND measuring point, all four plated holes are connected to GND
+3,3VDC measuring point
VCC (+5VDC) measuring point
LED D5



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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-028 CPU PCB "L"

This RAP is for troubleshooting a failed CPU PCB H. The primary objective is to determine if the PCB communicates correctly and logic voltages are OK

Initial Actions

- Ensure that plugs/jacks J/P309, J/P312, J/P111, J/P311, J/P111X, J/P211X, J/P125 and J/P211 are properly connected (reference Master Wiring Diagram)
- Ensure that all DIP switch settings on PCBs "A", "G", "H", "L", "K", "CC", "Y" and "O" are correct (See GP's)
- Ensure that all connectors to "A", "B", "G", "H", "K", "L", "O", "CC", "Y" and "R" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power on the machine. If D5 Blue LED on PCB "L" is deactivated, go directly to N (it means no 12VDC). If D5 activated, measure VDC between [L, P6-1] to [L, P6-10].

The voltage is 12VDC±10%

Y	Power off, disconnect [L, P10], power on.
N	D5 Blue LED at PCB "L" is activated
Y	Power off, disconnect [L, P10], [J/P225] and [B, P2]. Check for short circuits between all wires connected to [L, P10] and between all wires from [L, P10] to chassis.
N	There is no short circuit
Y	Repair/replace harness
N	Go to RAP VFX-038. Stepper Motor Driver M201 PCB "O" RAP
Y	Power off, disconnect [L, P1], power on.
N	D5 Blue LED at PCB "L" is activated
Y	Go to RAP VFX-002 Ultrasonic DSD (pay attention to short circuit measurements).
N	Power off, disconnect [L, P3], keep [L, P1] disconnected, power on.
Y	D5 Blue LED at PCB "L" is activated
N	Go to RAP VFX-016 LAMP (pay attention to short circuit measurements).

Y	Power off, disconnect [L, P5], power on
N	D5 Blue LED at PCB "L" is activated
Y	Power off, disconnect [R, P2] and leave [L, P5] disconnected. Check for short circuits between all wires connected to [R, P2] and between all wires to chassis.
N	There is no short circuit
Y	Repair/replace harness
N	Replace PCB "R"
Y	Power off, disconnect [J/P225], power on
N	D5 Blue LED at PCB "L" is activated
Y	Go to RAP VFX-043 SP Sensor (pay attention to short circuit measurements).
N	Power off, disconnect [L, P6] and [J/P225], check continuity between all wires from [L, P6] to [J/P225], check for short circuits between all wires connected to [J/P225], and between all wires from [J/P225] to chassis.
Y	There is continuity and no short circuit
N	Repair/replace harness
Y	Power off, disconnect [L, P6] and [B, P2], check continuity between all wires from [L, P6] to [B, P2], check for short circuits between all wires connected to [L, P6], and between all wires from [L, P6] to chassis.
N	There is continuity and no short circuit
Y	Repair/replace harness
N	Leave [L, P6] and [B, P2] disconnected, power on. If D3 Blue LED on PCB "B" is deactivated, go directly to N (it means no 12VDC). If D3 is activated, measure VDC at PCB connector [B, J2] between [B, J2-10] and [B, J2-9].
Y	The voltage is 12VDC±10%
N	Replace PCB "B"
Y	Replace PCB "L"
N	Measure VDC between GND and VCC (see image on following page).
Y	The voltage is 5VDC±10%
N	Replace PCB "L"
Y	Measure VDC between GND and 3.3VDC (see image on following page).
N	The voltage is 3.3VDC±5%
Y	Replace PCB "L"
N	Exit

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-029 Door Switch Interlock Circuit

This RAP is for troubleshooting when the Door Switch Interlock circuit does not activate REL301 and/or REL302. The primary objective is to determine which part of the Door Switch Interlock circuit fails.

Initial Actions

- Ensure that plugs/jacks J/P301, J/P310, J/P312, J/P112 and J/P212 are properly connected (reference Master Wiring Diagram)
- Make sure that all connectors connecting to the Door Switch (S301/S302), REL301, REL302, REL303 and PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", "O" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Note! If there is no Antistatic BAR Kit installed, skip all measuring related to REL303.

Power off the machine, disconnect the Power Cord and all four wires connected to Door Switch. Leave Door Switch deactivated, measure resistance from Door Switch pos. 1 to 2 (not harness connectors).

There is an open circuit, resistance > 1 Mohm

Y N

Replace Door Switch

Activate Door Switch, measure resistance from Door Switch pos. 1 to 2 (not harness connectors)

There is continuity

Y N

Replace Door Switch

Disconnect [A, P4], [A, P5], [B, P2] and all Relay connectors marked A1 and A2 (six total). Deactivate Door Switch, measure continuity between the following positions:

1. [A, P5-3,4] to [REL302, A2] and [A, P5-1,2] to [REL301, A2]
2. [B, P2-18,20] to Door Switch pos. 1
3. Door Switch pos. 2 to [REL302, A1] and [REL301, A1]

There is continuity

Y N

Repair/replace harness

Leave connectors disconnected, Check for short circuits between the following positions:

1. [A, P4-23,24], [A, P5-1,2,3,4] and [B, P2] to chassis.
2. All Relay wires (six total) marked A1 and A2 to chassis

There are no short circuits

Y N

Repair/replace harness

Leave connectors disconnected, Measure resistance between harness connectors [REL301, A1] to [REL301, A2], [REL302, A1] to [REL302, A2] and [REL303, A1] to [REL303, A2]

Resistance > 200 ohms

Y N

Repair/replace the Harness

Leave connectors disconnected, Measure resistance between relay connectors A1 to A2 at REL301, A1 to A2 at REL302 and A1 to A2 at REL303.

Resistance 30-60 ohms

Y N

Replace the failed Relay

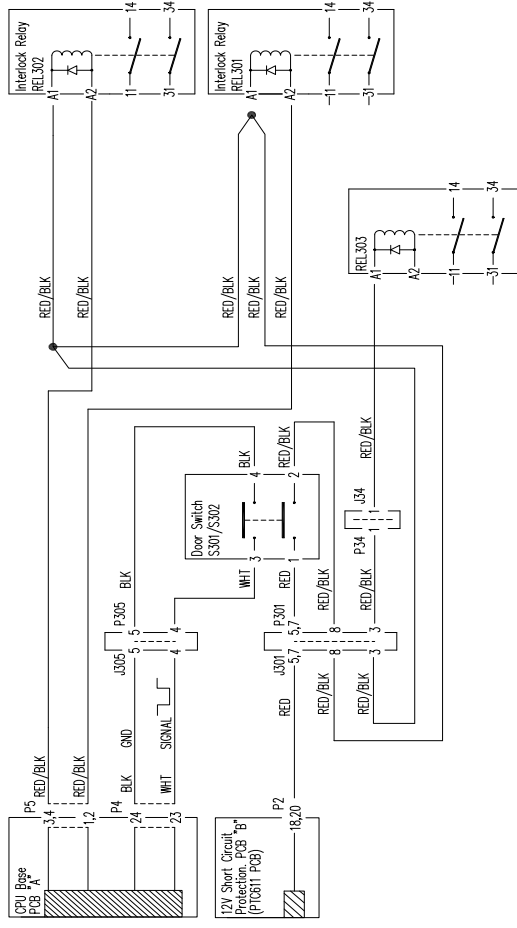
Reconnect all connectors, Power on, measure VDC between [B, P2-18,20] and [B, P1-7].

The voltage is 12VDC±10%

Y N

Replace PCB "B"

Replace PCB "A"



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-030 Door Switch Software Signal

This RAP is for troubleshooting Door Switch software signal circuit. Target is to find the out if the Door Switch or PCB "A" has failed.

Initial Actions

- Make sure that plugs/jacks J/P301, J/P312, J/P112 and J/P212 are properly connected (reference Master Wiring Diagram)
- Make sure that all connectors connecting to the Door Switch(S301/S302) are properly connected
- Ensure that all connectors to "A" PCB are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine and disconnect the Power Cord. Leave Door Switch deactivated and measure resistance from Door Switch pos. 3 to 4.

There are open circuits, resistance > 1 Mohm

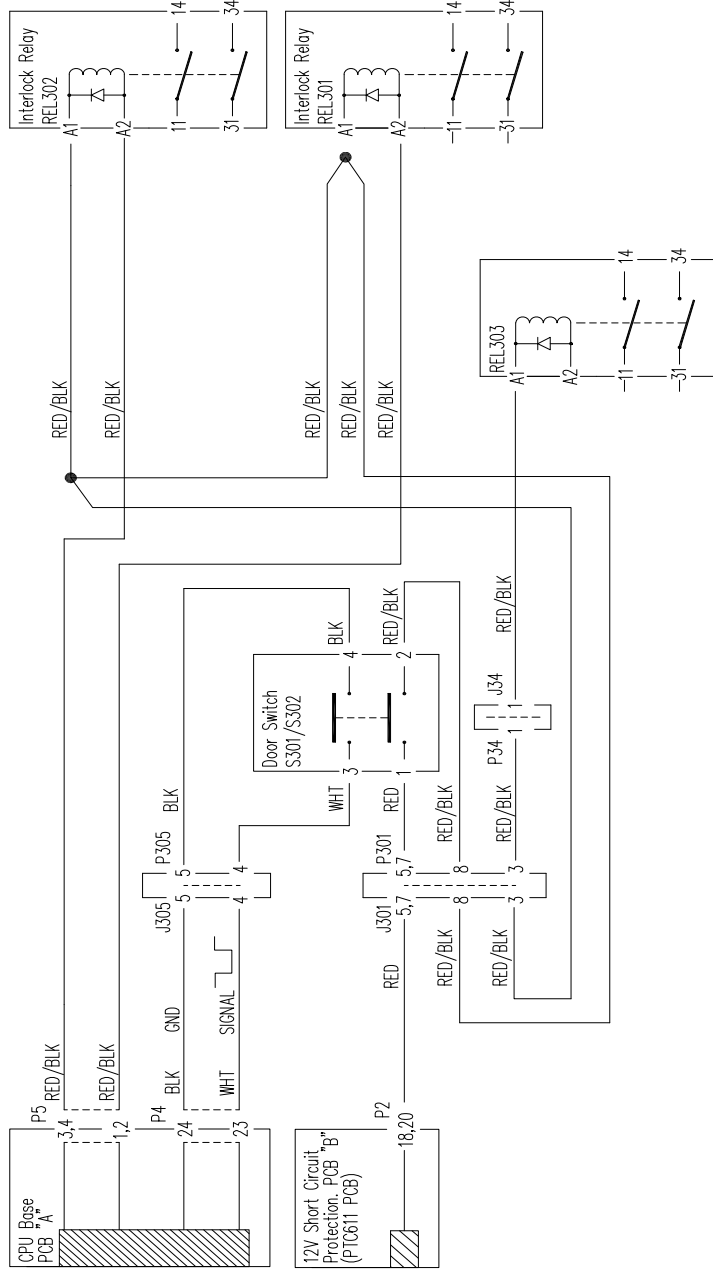
- Y N**
- Replace Door Switch (REP 15.43)
- Activate Door Switch, measure resistance from Door Switch pos. 3 to 4.

There is continuity

- Y N**
- Replace the Door Switch (REP 15.43)
- Disconnect [A, P4], deactivate Door Switch and measure continuity from Door Switch pos. 3 to [A, P4-23] and Door Switch pos. 4 to [A, P4-24]. Check for short circuits from Black to White wire and from Black and White wires to chassis.

There is continuity and no short circuit

- Y N**
- Repair/replace harness
 - Replace PCB "A"



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-031 F1 Blown Fuse

This RAP is for troubleshooting when fuse F1 frequently blows up. The primary objective is to find the source that makes fuse F1 to blow up

Initial Actions

- Ensure that there is proper voltage at the wall outlet
- Check all connectors related to Power Entry, SW1, REL301, REL302, REL303/TR1 (option) and input side of PSU (24V), PSU (24/48V)

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

⚠ WARNING!

Use caution when making the voltage measurements and always disconnect the Power Cord when it is necessary to work inside the Power Module. AC Power is present in the Line Module whenever the Power Cord is plugged into the Wall Outlet.

For the duration of this RAP: power off the machine, disconnect the Power Cord (very important!) and leave Door Switch deactivated. Disconnect [POW.3] and [POW.4] from the Power Entry, check short circuits from positions 3 to 4 and chassis to position 3 and 4 at the Power Entry

There are no short circuits

- Y | N | Replace Power Entry

Leave all connectors in previous step disconnected. Check for short circuits between wires from [SW1.2] to [SW1.5] and between wires from [SW1.2] and [SW1.5] to chassis.

There are no short circuits

- Y | N | Repair/replace harness

Leave all connectors in previous steps disconnected, and disconnect [J/P27]. Check for short circuits between wires from [SW1.1] to [SW1.4] and between wires from [SW1.1] and [SW1.4] to chassis.

There are no short circuits

- Y | N

Leave all connectors in previous steps disconnected. Disconnect L and N from PSU (12V) input. Check for short circuits from L to N, and L/N to chassis at the PSU (12V) input.

There are no short circuits

- Y | N | Replace PSU (12V) (REP 15.36)

- | | Locate and Repair/replace harness between SW1 and REL301/REL302/J27/PSU (12V)

Leave all connectors in previous steps disconnected. Disconnect L and N from PSU (24V), check for short circuits from L to N, and L/N to chassis at the PSU (24V).

There are no short circuits

- Y | N | Replace PSU (24V) (REP 15.37)

Leave all connectors in previous steps disconnected. Check for short circuits between wire from [REL301,14] to wire from [REL301,34] and between wires from [REL301,14] and [REL301,34] to chassis.

There are no short circuits

- Y | N | Repair/replace harness

Leave all connectors in previous steps disconnected, disconnect L and N from PSU (24/48V). Check for short circuits from L to N, and L/N to chassis at the PSU (24/48V).

There are no short circuits

- Y | N | Replace PSU (24/48V) (REP 15.38)

Leave all connectors in previous steps disconnected. Check for short circuits between wire from [REL302,14] to wire from [REL302,34] and between wires from [REL302,14] and [REL302,34] to chassis.

There are no short circuits

- Y | N | Repair/replace harness

There is an Antistatic KIT installed

- Y | N | Exit

Leave all connectors in previous steps disconnected. Check for short circuits between wire from [P27,1] to wire from [P27,2] and between wires from [P27,1] and [P27,2] to chassis

There are no short circuits

- Y | N | Repair/replace harness

Leave all connectors in previous steps disconnected and disconnect TR,1 connector. Check for short circuits between wire from [REL303,14] to wire from [REL303,34] and between wires from [REL303,14] and [REL303,34] to chassis

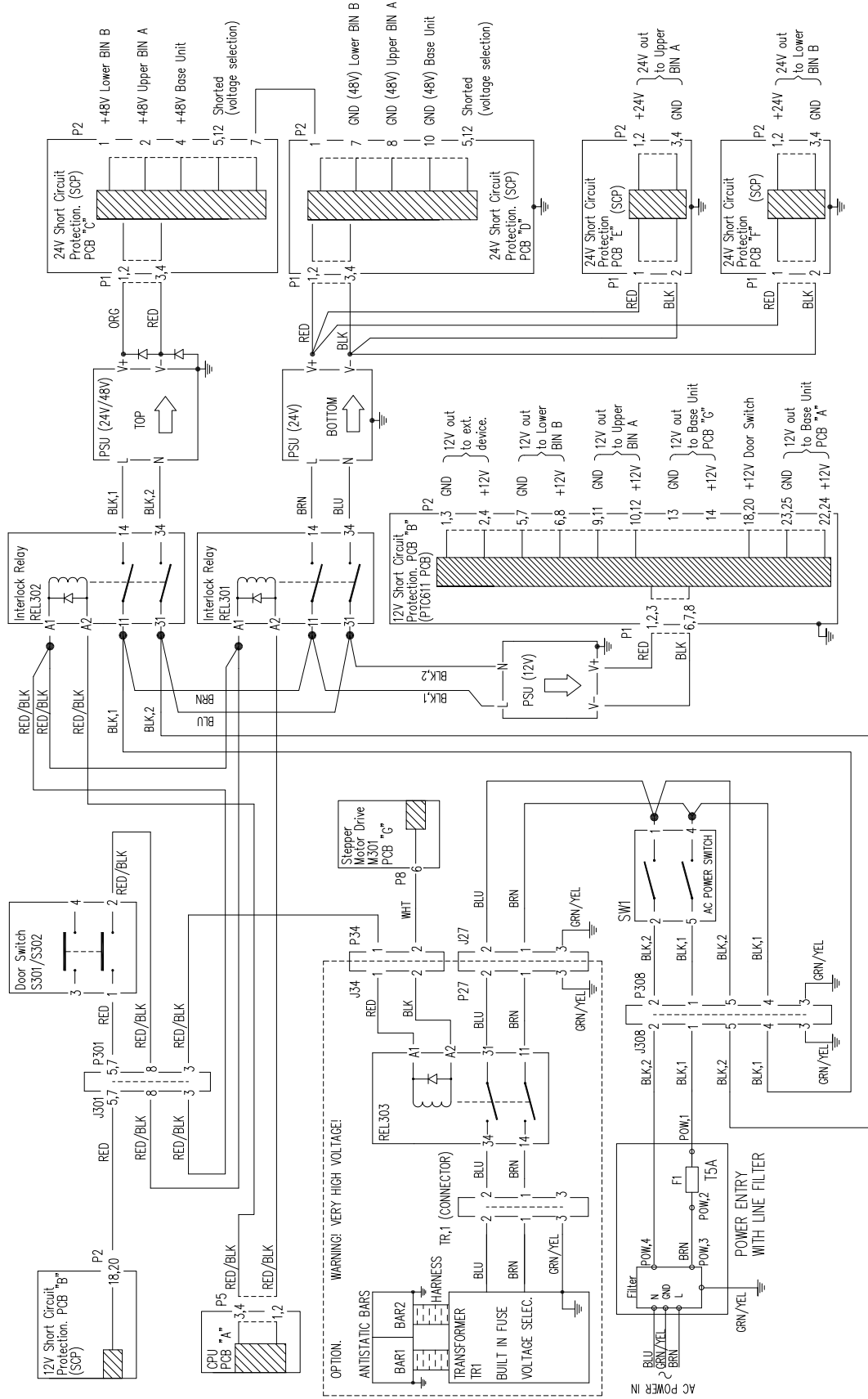
There are no short circuits

- Y | N | Repair/replace harness

Replace TR1 (REP 15.44)

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-032 Interlock Mismatch

This RAP is for troubleshooting a failed Interlock circuit; i.e. voltage is present when the Interlock circuit should be open.
The primary objective is to determine the source of failure: relay, harness or PCB.

Initial Actions

- Make sure that plugs/jacks J/P310, J/P312, J/P112 and J/P212 are properly connected (reference Master Wiring Diagram)
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", "O" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

⚠ WARNING!

Use caution when making the voltage measurements and always disconnect the Power Cord when it is necessary to work inside the Power Module. AC Power is present in the Line Module whenever the Power Cord is plugged into the Wall Outlet.

Power on the machine and leave the Door switch deactivated (door open). Measure voltage (VAC) between L and N on the PSU (24V) input.

The voltage is 90-264VAC.

Y N

Power on the machine and leave the Door Switch deactivated (door open). Measure voltage (VAC) between L and N on the PSU (24/48V) input.

The voltage is 90-264VAC.

Y N

Replace the PCB mentioned in the failure code (REP 15.40 15.41)
Replace REL302 (REP 15.39)

Power on the machine and leave the Door Switch deactivated (door open). Measure voltage (VAC) between L and N on the PSU (24/48V) input.

The voltage is 90-264VAC.

Y N

Replace REL301 (REP 15.39)

Perform RAP VFX-030 Door Switch software signal

Success

Y N

Perform RAP VFX-029 Door Switch Interlock circuit

Success

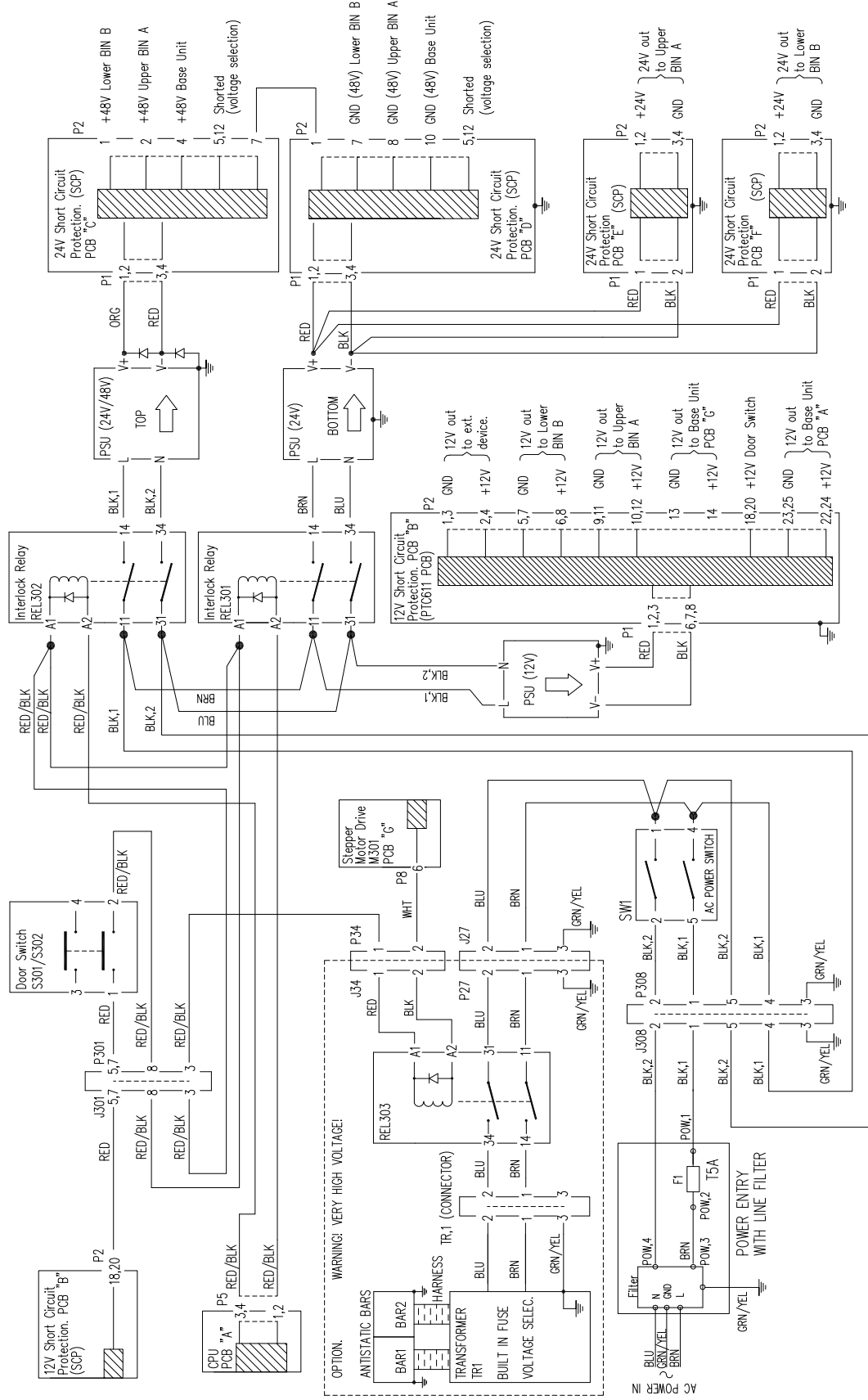
Y N

Replace Door switch

Exit

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-033 Motor Relay

This RAP is for troubleshooting why the Motor Relay does not work.

The primary objective is to determine the cause of failure: PCB, Relay, BIN Switch or harness

Initial Actions

- Make sure that plugs/jacks J/P301, J/P310, J/P312, J/P112 and J/P212 are properly connected.
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected.
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", "O" PCBs are properly connected.

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, disconnect the Power Cord. Disconnect [P6] at the Stepper Motor Driver PCB. Measure continuity between following positions:

1. PCB Connector [P6-1] to BIN Switch pos. 1.
2. PCB Connector [P6-10] to RELAY pos. A2.
3. BIN Switch pos. 2 to RELAY pos. A1.

There is continuity

Y N

Repair/replace harness

Keep [P6] disconnected, disconnect BIN Switch pos. 1, 2 and RELAY pos. A1, A2. Check short circuit between following positions:

1. [P6-1] to [P6-10].
2. [P6-1, 10], RELAY harness connectors A1, A2, BIN Switch pos. 1 and 2 to chassis

There is no short circuit

Y N

Repair/replace harness

Leave connectors disconnected, Measure resistance between RELAY harness connectors A1 to A2.

Resistance > 200 ohms

Y N

Repair/replace the Harness

Leave connectors disconnected, Measure resistance between RELAY connectors (not harness connectors) A1 to A2.

Resistance is 30-60 ohms

Y N

Replace RELAY (REP 15.39)

Keep machine powered off, leave BIN Switch deactivated and leave connectors disconnected. Measure resistance between BIN Switch pos. 1 to 2 (not harness connectors).

There is an open circuit (Resistance > 1 Mohm)

Y N

Replace BIN Switch (REP 15.42)

Activate BIN Switch, measure resistance between BIN Switch pos. 1 to 2 (not harness connectors)

There is continuity

Y N

Replace BIN Switch (REP 15.42)

Disconnect Stepper Motor Driver PCB connector [P7] and Motor connector. Check continuity between all wires from [P7] to RELAY, [P7] to Motor Connector and RELAY to Motor connector.

There is continuity

Y N

Repair/replace harness

Check short circuit between all wires at [P7] and Motor connector (harness connector), between all wires at [P7] to chassis and all wires at Motor connector (harness connector) to chassis.

There is no short circuit

Y N

Repair/replace harness

Reconnect all connectors, activate BIN Switch and power on. Measure VDC between RELAY A1 to A2.

The voltage is 12VDC±10%

Y N

Replace Stepper Motor Driver PCB (REP 15.40)

RELAY activates

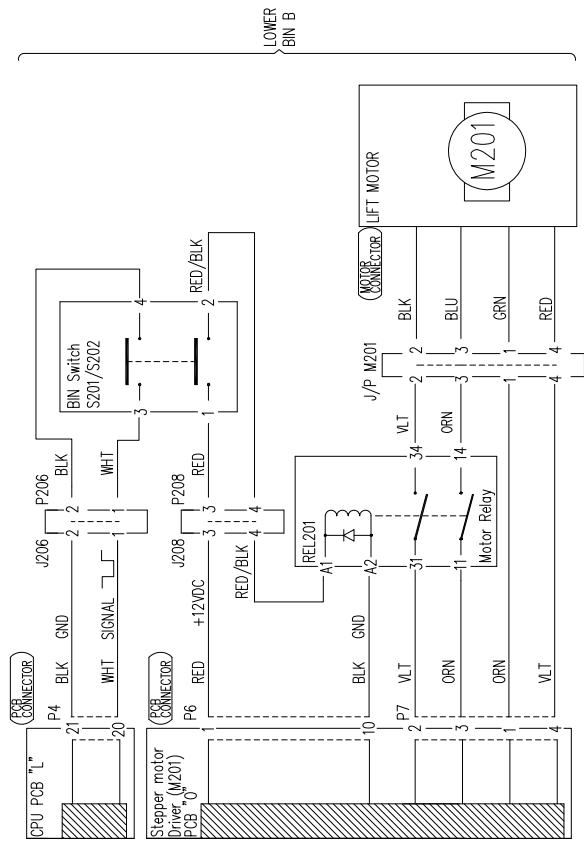
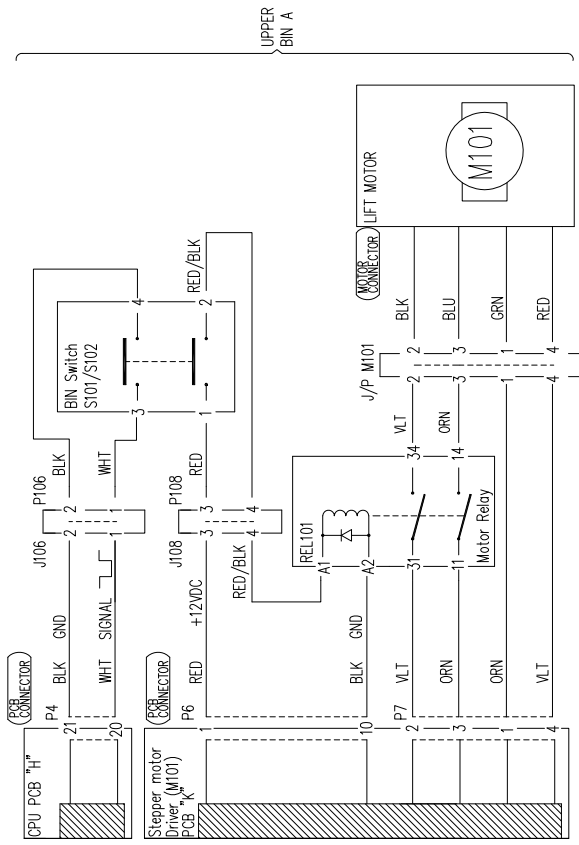
Y N

Replace RELAY (REP 15.39)

Exit

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-034 PSU (12V)

This RAP is for troubleshooting the 12V circuit.
The primary objective is to determine if the failure is related to the primary circuit, PCB "B" or PSU (12V).

Initial Actions

- Ensure that plugs/jacks J/P309, J/P312, J/P111, J/P311, J/P23, J/P24, J/P111X, J/P211X, J/P125 and J/P211 are properly connected
- Ensure that all DIP switch settings on PCBs "A", "G", "H", "L", "K", "CC", "Y" and "O" are correct (See GP's).
- Ensure that all connectors to SW1, PSU (12V) and "A", "B", "G", "H", "K", "L", "O", "CC" and "Y" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

⚠ WARNING!

Use caution when making the voltage measurements and always disconnect the Power Cord when it is necessary to work inside the Power Module. AC Power is present in the Line Module whenever the Power Cord is plugged into the Wall Outlet.

Power on the machine. Measure VAC between L to N on PSU (12V)

The voltage is between 90-264VAC

Y N

Power off and disconnect the Power Cord, check status of F1 located in the power inlet.

F1 is blown

N Y

Go to RAP VFX-031 F1 Blown Fuse

Keep the machine off and Power Cord disconnected. Measure continuity between L Black1 wire to SW1,4 and between N Black2 wire to SW1,1.

There is continuity

Y N

Repair/replace harness

Keep Power Cord disconnected set SW1 to on. Measure continuity between SW1,4 to SW1,5 and SW1,1 to SW1,2.

There is continuity

Y N

Replace SW1

Keep the machine off and Power Cord disconnected. Measure continuity between SW1,5 Black1 wire to POW,1 and SW1,2 Black2 wire to POW,4.

There is continuity

Y N

Repair/replace harness

Replace the Power entry

Power off, disconnect wires from V- and V+ at PSU, power on. Measure VDC between V- to V+ at PSU (12V).

The voltage is 12VDC±10%

Y N

Replace PSU (12V)

Power off, keep wires from V- and V+ at PSU (12V) disconnected and disconnect [B, P1]. Check continuity between all wires from V- and V+ to [B, P1], check short circuits between Black to Red wires and between Black and Red wires to chassis.

There is continuity and no short circuit

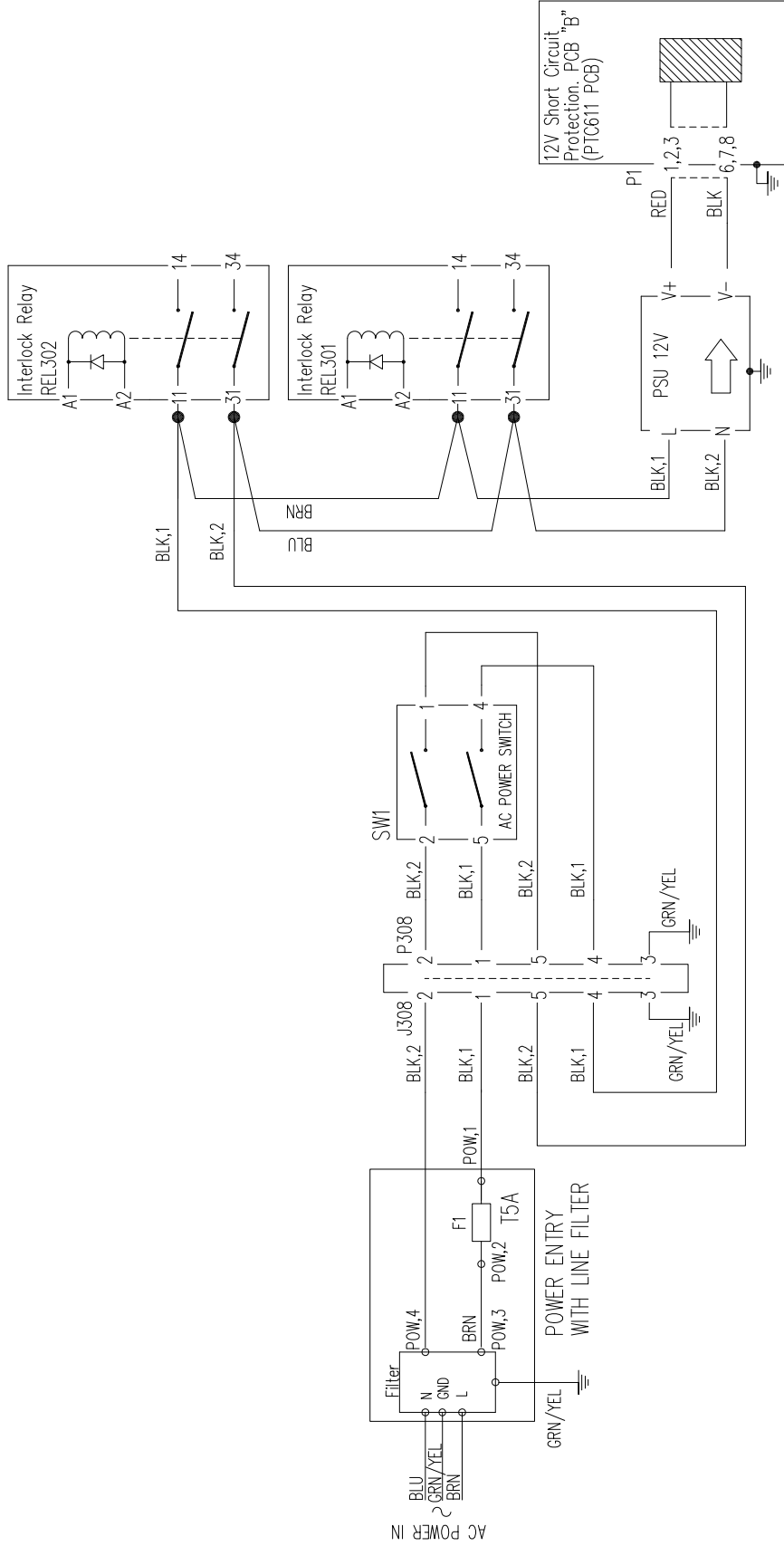
Y N

Repair/replace harness

Replace PCB "B"

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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-035 REL301

This RAP is for troubleshooting the REL301 primary circuit. The primary objective is to determine why there is not 90-240VAC at the PSU (24V) input.

Initial Actions

- Make sure that plugs/jacks J/P301, J/P310, J/P312, J/P112 and J/P212 are properly connected (reference Master Wiring Diagram)
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", and "O" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

NOTE!

For safety reasons in case of a "very low/high 24V and/or 48V" there is a limited time when voltage are applied to PSU (24V) and PSU (24/48V), this affects the voltage measurements, please see "24/48VDC Interlock/PSU procedure" for further information.

⚠ WARNING!

Use caution when making the voltage measurements and always disconnect the Power Cord when it is necessary to work inside the Power Module. AC Power is present in the Line Module whenever the Power Cord is plugged into the Wall Outlet.

Power off the machine and disconnect the Power Cord. Measure continuity between wires from REL301 and PSU (24V) input.

There is continuity

- Y N Repair/replace harness
- Keep machine Powered off and the Power Cord disconnected. Measure continuity all the way between wires from REL301 and SW1.

There is continuity

- Y N Repair/replace harness
- Connect the Power Cord and Power on the machine keep the door open, pay close attention to REL301. Close the door.

The REL301 activates for at least a short period of time.

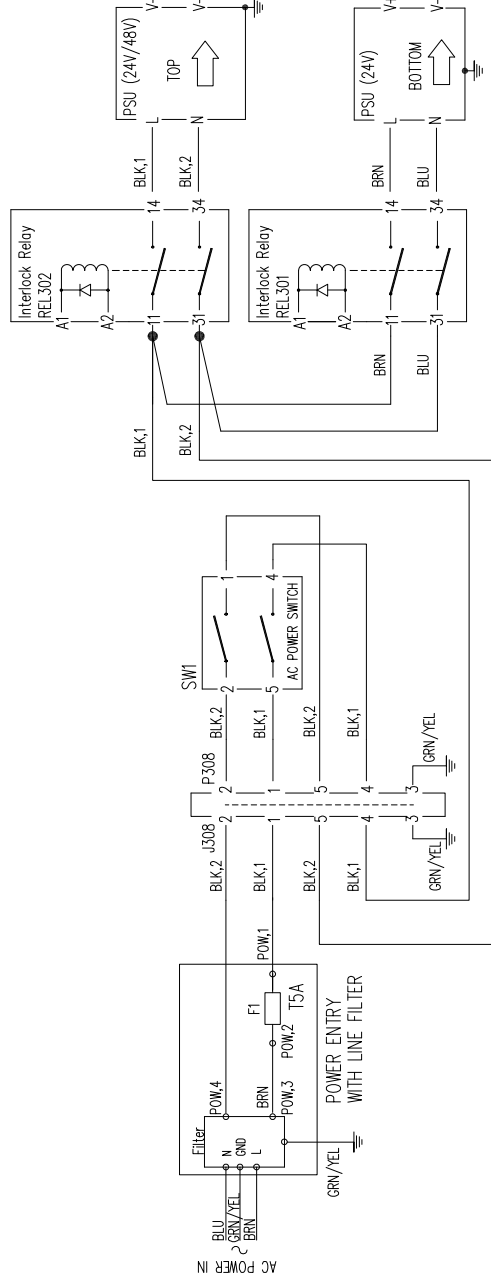
- Y N Power off the machine, wait 5 seconds, Power on the machine and close the door. Measure VDC between [REL301, A1] and [REL301, A2].
- The voltage is 12VDC±10% for at least a short period of time.

- Y N Go to RAP VFX-029 Door Switch Interlock circuit
- Replace REL301

Power off the machine and wait 5 seconds. Power on the machine and close the door. Measure voltage (VAC) between L and N on the PSU (24V) input.

The voltage is 90-264VAC for at least a short period of time.

- Y N Replace REL301 (REP 15.39)
- Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-036 REL302

This RAP is for troubleshooting the REL302 primary circuit. The primary goal is to determine why there is not 90-240VAC at the PSU (24/48V) input.

Initial Actions

- Make sure that plugs/jacks J/P301, J/P310, J/P312, J/P112 and J/P212 are properly connected (reference Master Wiring Diagram)
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL302, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", and "O" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

NOTE!

For safety reasons - in case of a "very low/high 24V and/or 48V," there is a limited time when voltages are applied to PSU (24V) and PSU (24/48V). This affects the voltage measurements - please see "24/48VDC Interlock/PSU procedure" for further information.

⚠ WARNING!

Use caution when making the voltage measurements and always disconnect the Power Cord when it is necessary to work inside the Power Module. AC Power is present in the Line Module whenever the Power Cord is plugged into the Wall Outlet.

Power off the machine and disconnect the Power Cord. Measure continuity between wires from REL302 and PSU (24/48V) input.

There is continuity

- Y N Repair/replace harness
- Keep machine powered off and the Power Cord disconnected. Measure continuity all the way between wires from REL302 and SW1.

There is continuity

- Y N Repair/replace harness
- Connect the Power Cord and Power on the machine. Keep the door open; pay close attention to REL302. Close the door.

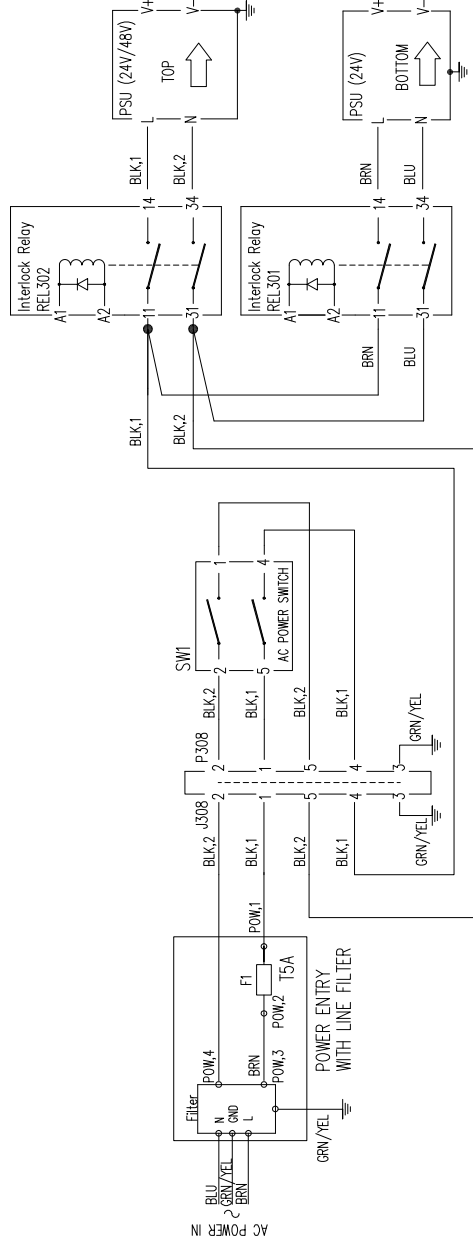
The REL302 activates for at least a short period of time.

- Y N Power off the machine, wait 5 seconds. Power on the machine and close the door. Measure VDC between [REL302, A1] and [REL302, A2].
- The voltage is 12VDC±10% for at least a short period of time.
- Y N Go to RAP VFX-029 Door Switch Interlock circuit
- Replace REL302 (REP 15.39)

Power off the machine, wait 5 seconds, Power on the machine and close the door. Measure voltage (VAC) between L and N on the PSU (24/48V) input.

The voltage is 90-264VAC for at least a short period of time.

- Y N Replace REL302 (REP 15.39)
- Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-037 Stepper Motor Driver M101 PCB "K"

This RAP is for troubleshooting a failed Stepper Motor Driver M101 PCB. The primary objective is to check whether the PCB communicates correctly and logic voltages are OK.

Initial Actions

- Ensure that plugs/jacks J/P309, J/P312, J/P111, J/P311, J/P111X, J/P211X, J/P125 and J/P211 are properly connected (reference Master Wiring Diagram)
- Ensure that all DIP switch settings on PCBs "A", "G", "H", "L", "K", "CC", "Y" and "O" are correct (See GPs)
- Ensure that all connectors to "A", "B", "G", "H", "K", "L", "O", "CC" and "Y" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power on the machine. If D2 Blue LED on PCB "K" is deactivated, go directly to N (it means no 12VDC). If D2 is activated, measure VDC between [K, P5-1] to [K, P5-10].

The voltage is 12VDC±10%

- Y | N
- Power off, disconnect [H, P10]. Power on.
 - D5 Blue LED at PCB "H" is activated**

- Y | N
- Go to RAP VFX-027 CPU PCB "H"

Power off, disconnect [K, P5] and keep [H, P10] disconnected. Check continuity between all wires from [H, P10] to [K, P5]. Check short circuits between all wires connected to [K, P5], and between all wires from [K, P5] to chassis.

There is continuity and no short circuit

- Y | N
- Repair/replace harness
 - Reconnect [H, P10] and [K, P5], disconnect [K, P6], power on.

D2 Blue LED at PCB "K" is activated

- Y | N
- Replace PCB "K" (REP 15.40)

Go to RAP VFX-033 Motor Relay

Measure VDC between GND and VCC (see image on following page).

The voltage is 5VDC±10%

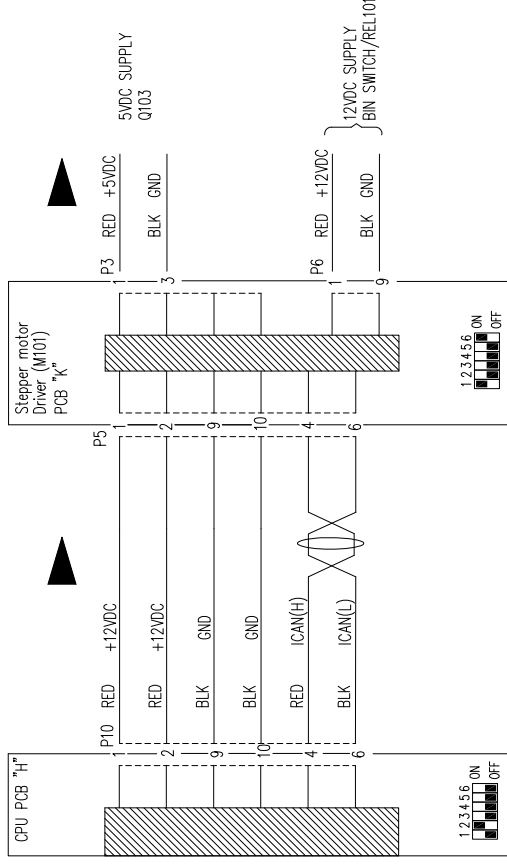
- Y | N
- Power off, disconnect [K, P3], measure VDC between GND and VCC.
 - The voltage is 5VDC±10%
 - Y | N
 - Replace PCB "K" (REP 15.40)

- Go to RAP VFX-008 M101/M201 home position sensor not activated in time/activated too long (pay attention to short circuit measurements).

Measure VDC between GND and 3.3VDC (see image on following page).

The voltage is 3.3VDC±5%

- Y | N
- Replace PCB "K" (REP 15.40)
 - Go to RAP VFX-004 No ICAN Communication entry



➔ Image, measuring points on next page

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

M21H Stepper Motor PCB LEDs and Measuring Points

LED D31, VCC (+5VDC).

Deactivated=no voltage present. Activated= voltage present, not necessary the correct voltage level.

LED D1, CPU controlled LED

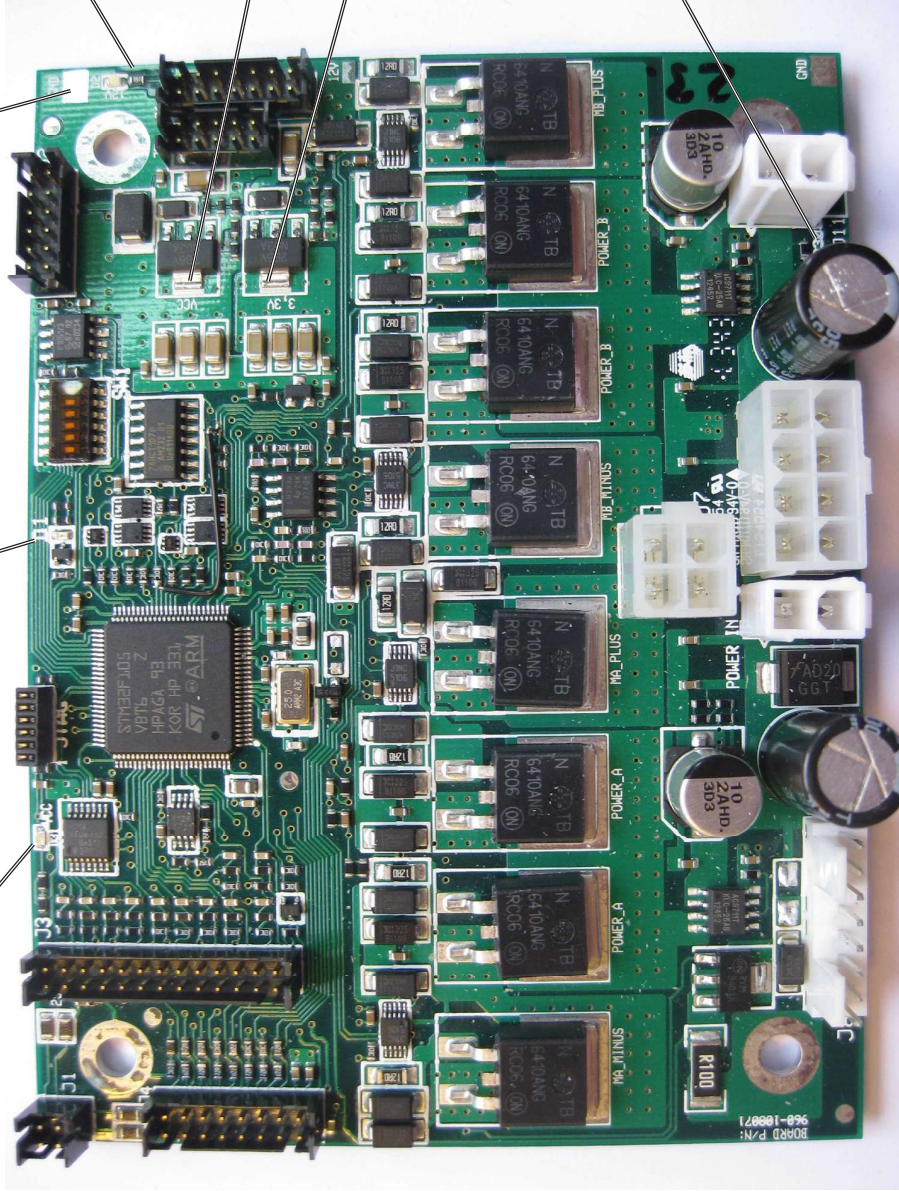
GND measuring point

LED D2, 12V logic Power in.
Deactivated=no voltage present. Activated= voltage present, not necessary the correct voltage level.

VCC (+5VDC) measuring point

+3,3VDC measuring point

LED D30, motor Power in.
Deactivated=no voltage present. Activated= voltage present, not necessary the correct voltage level.



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-038 Stepper Motor Driver M201 PCB "O"

This RAP is for troubleshooting a failed Stepper Motor Driver M201 PCB. The primary objective is to check whether PCB communicates correctly and logic voltages are OK.

Initial Actions

- Ensure that plugs/jacks J/P309, J/P312, J/P111, J/P311, J/P111X, J/P211X, J/P125 and J/P211 are properly connected
- Ensure that all DIP switch settings on PCBs "A," "G," "H," "L," "K," "CC," "Y" and "O" are correct (See GP's)
- Ensure that all connectors to "A," "B," "G," "H," "K," "L," "O," "CC" and "Y" PCBs are properly connected

Procedure

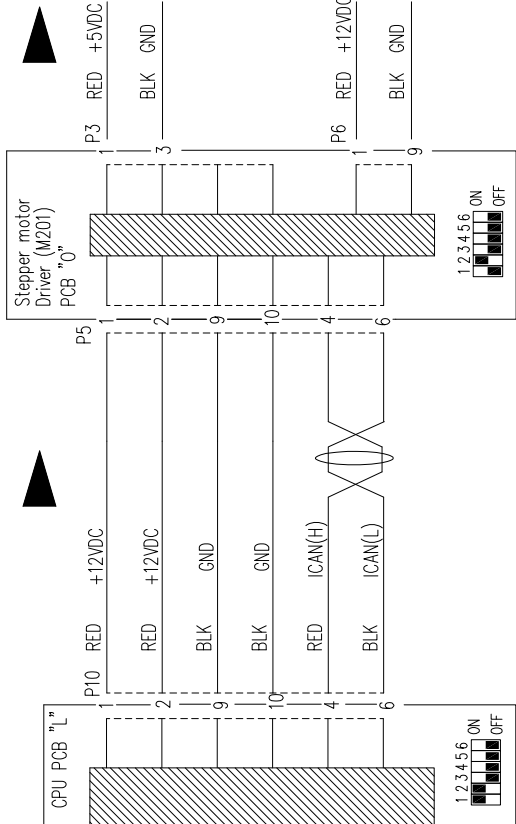
⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power on the machine. If D2 Blue LED on PCB "O" is deactivated, go directly to N (it means no 12VDC). If D2 activated, measure VDC between [O, P5-1] to [O, P5-10].

The voltage is 12VDC±10%

- Y N
- Power off, disconnect [L, P10]. Power on.
 - D5 Blue LED at PCB "L" is activated**
 - Y N
 - Go to RAP VFX-028 CPU PCB "L"



Power off, disconnect [O, P5] and keep [L, P10] disconnected. Check continuity between all wires from [L, P10] to [O, P5]. Check for short circuits between all wires connected to [O, P5], and between all wires from [O, P5] to chassis.

There is continuity and no short circuit

- Y N
- Repair/replace harness
 - Reconnect [L, P10] and [O, P5], disconnect [O, P6], power on.
 - D2 Blue LED at PCB "K" is activated**
 - Y N
 - Replace PCB "O" (REP 15.40)
 - Go to RAP VFX-033 Motor Relay

Measure VDC between GND and VCC (see image on previous page).

The voltage is 5VDC±10%

- Y N
- Power off, disconnect [O, P3], measure VDC between GND and VCC.
 - The voltage is 5VDC±10%
 - Y N
 - Replace PCB "O" (REP 15.40)

Go to RAP VFX-008 M101/M201 home position sensor not activated in time/activated too long (pay attention to short circuit measurements).

Measure VDC between GND and 3.3VDC (see image on previous page).

The voltage is 3.3VDC±5%

- Y N
- Replace PCB "O" (REP 15.40)
 - Go to RAP VFX-004 No ICAN Communication entry RAP

➤ Image measuring points on previous page

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-039 Stepper Motor Driver M301 PCB "G"

This RAP is for troubleshooting a failed Stepper Motor Driver M301 PCB
Target is to check if the PCB communicates correctly and logic voltages are OK.

Initial Actions

- Ensure that plugs/jacks J/P309, J/P312, J/P111, J/P311, J/P111X, J/P211X, J/P125 and J/P211 are properly connected (reference Master Wiring Diagram)
- Ensure that all DIP switch settings on PCBs "A", "G", "H", "L", "K", "CC", "Y" and "O" are correct (See GPs)
- Ensure that all connectors to "A", "B", "G", "H", "K", "L", "O", "CC" and "Y" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

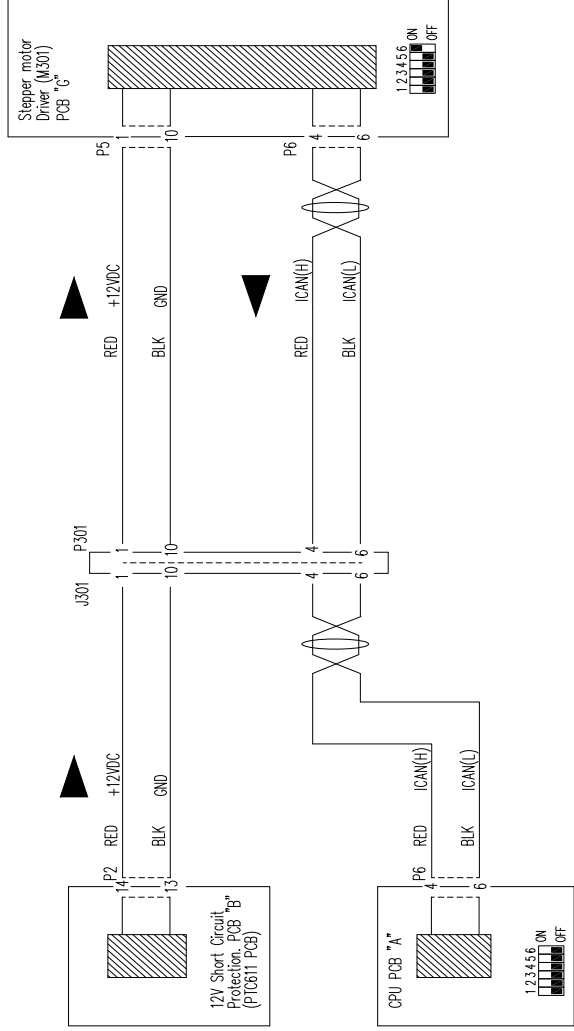
Power on the machine. If D2 Blue LED on PCB "G" is deactivated, go directly to N (it means no 12VDC). If D2 is activated, measure VDC between [G, P5-1] to [G, P5-10]

The voltage is 12VDC±10%

Y

N

- Power off, disconnect [G, P5] and [B, P2], and check continuity between all wires from [G, P5] to [B, P2]. Check for short circuits between all wires connected to [H, P5], and between all wires from [H, P5] to chassis.



There is continuity and no short circuit

Y

N

- Repair/replace harness

Leave [G, P5] and [B, P2] disconnected, power on. If D4 Blue LED on PCB "B" is deactivated, go directly to N (it means no 12VDC). If D4 is activated, measure VDC at PCB connector [B, J2] between [B, J2-14] and [B, J2-13].

The voltage is 12VDC±10%

Y

N

- Replace PCB "B"

Replace PCB "G"

Measure VDC between GND and VCC (see image on page 4-328).

The voltage is 5VDC±10%

Y

N

- Replace PCB "G"

Measure VDC between GND and 3.3VDC (see image on page 4-328).

The voltage is 3.3VDC±5%

Y

N

- Replace PCB "G"

Go to RAP VFX-004 No ICAN Communication entry RAP

➔ Image, measuring points on page 4-59

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-040 Stepper Motor M101 PCB 48V Very Low

This RAP is for troubleshooting a very low 48V related to Stepper Motor M101 PCB "K". The primary objective is to determine if the failure is related to the PCB or the harness.

Initial Actions

- Make sure that plugs/jacks P310/J310 and P312/J312 are properly connected
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", "O" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, disconnect [C, P2], [D, P2] and [K, P9]. Measure continuity between [K, P9] Orange and Black wires to [C, P2] and [D, P2]. Check for short circuits between Black and Orange wires, also check for short circuits from Orange wire to chassis.

There is continuity and no short circuit

- Y N
| Repair/replace harness
Disconnect all connectors connected to PCB "K".
Check short circuit between [J9-1] to [J9-2] (PCB connector).

There is no short circuit

- Y N
| Replace PCB "K"

Keep connectors disconnected and disconnect M101 Motor Connector. Check short circuit between all wires at [P7] and Motor connector (harness connector), between all wires at [P7] to chassis and all wires at Motor connector (harness connector) to chassis.

There is no short circuit

- Y N
| Repair/replace harness

Swap the Stepper Motor M101 PCB "K" with Stepper Motor M201 PCB "O", make sure that DIP-switches are correctly set (See GP's) and all connectors are properly installed at both PCBs before powering on the machine. Power on the machine.

Still "Stepper Motor M101 PCB 48V very low"

- Y N
| Replace the original Stepper Motor M101 PCB "K"

Exit

RAP VFX-041 Stepper Motor M201 PCB 48V Very Low

This RAP is for troubleshooting a very low 48V related to Stepper Motor M201 PCB "O". The primary objective is to determine if the failure is related to the PCB or the harness.

Initial Actions

- Make sure that plugs/jacks P310/J310 and P312/J312 are properly connected
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", "O" PCBs are properly connected

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, disconnect [C, P2], [D, P2] and [O, P9]. Measure continuity between [O, P9] Orange and Black wires to [C, P2] and [D, P2]. Check for short circuits between Black and Orange wires, also check for short circuits from Orange wire to chassis.

There is continuity and no short circuit

- Y N
| Repair/replace harness
Disconnect all connectors connected to PCB "O".
Check short circuit between [J9-1] to [J9-2] (PCB connector).

There is no short circuit

- Y N
| Replace PCB "O"

Keep connectors disconnected and disconnect M201 Motor Connector. Check for short circuits between all wires at [P7] and Motor connector (harness connector), between all wires at [P7] to chassis and all wires at Motor connector (harness connector) to chassis.

There is no short circuit

- Y N
| Repair/replace harness

Swap the Stepper Motor M201 PCB "O" with Stepper Motor M101 PCB "K", make sure SW1 is correctly set and all connectors are properly installed at both PCBs before power on the machine. Power on the machine.

Still "Stepper Motor M201 PCB 48V very low"

- Y N
| Replace the original Stepper Motor M201 PCB "O"

Exit

➡ Image measuring points on page 4-328

➡ BSD's on next page

➡ Image measuring points on page 4-328

➡ BSD's on next page

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⚠️ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-042 Stepper Motor M301 PCB 48V Very Low

This RAP is for troubleshooting a very low 48V related to Stepper Motor M301 PCB "G". The primary objective is to determine if the failure is related to the PCB or the harness.

Initial Actions

- Make sure that plugs/jacks P310/J310 and P312/J312 are properly connected
- Make sure that all connectors connecting to the Door Switch(S301/S302), REL301, REL302, PSU (24V) and PSU (24/48V) are properly connected
- Ensure that all connectors to "A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", and "O" PCBs are properly connected

Procedure

⚠️ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, disconnect [C, P2], [D, P2] and [G, P9]. Measure continuity between [G, P9] Orange and Black wires to [C, P2] and [D, P2]. Check for short circuits between Black and Orange wires, also check for short circuits from Orange wire to chassis.

There is continuity and no short circuit

Y N

| Repair/replace harness

Disconnect all connectors connected to PCB "G".

Check for short circuits between [J9-1] to [J9-2] (PCB connector).

There is no short circuit

Y N

| Replace PCB "G"

Keep connectors disconnected and disconnect M301 Motor Connector. Check for short circuits between all wires at [P7] and Motor connector (harness connector), between all wires at [P7] to chassis and all wires at Motor connector (harness connector) to chassis.

There is no short circuit

Y N

| Repair/replace harness

Swap the Stepper Motor M301 PCB "G" with Stepper Motor M101 PCB "K", make sure SW1 is correctly set and all connectors are properly installed at both PCBs before power on the machine. Power on the machine.

Still "Stepper Motor M301 PCB 48V very low"

Y N

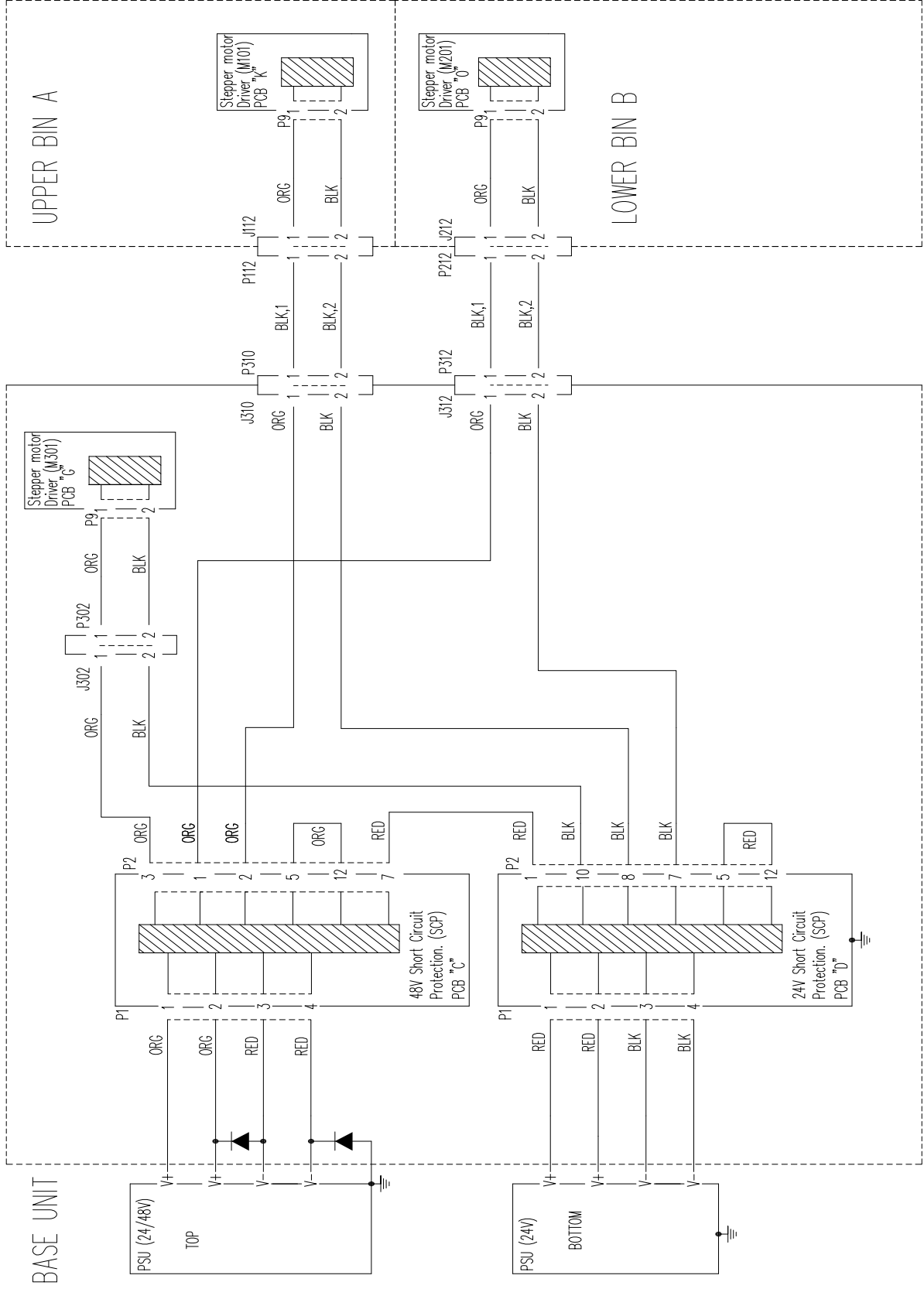
| Replace the original Stepper Motor M301 PCB "G"

Exit

➔ BSD's on next page

➔ Image measuring points on page 4-328

⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.



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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-043 SP Sensor

This RAP is for troubleshooting a non functional SP Sensor. The primary objective is to decide if the failure is related to PCBs, the sensor or harness.

Initial Actions

- Enter service mode according to GP 1
- Check sensor (GP 4)
- Ensure that the sensor is clean
- Ensure that all connectors at the SP Sensor are properly connected
- Ensure that all connectors at PCBs are properly connected
- Ensure that DSD sensor is calibrated (See section 5 of this manual, VFX Sensor Calibration Section) (BM 500 Operators Manual, VFX Sensor Calibration Section)

NOTE!

For measuring references and connectors identification see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Power off the machine, disconnect connectors described in the BSD at both CPU PCBs and at the SP Sensor. Measure continuity for wires between SP Sensor and both CPU PCBs. Check for short circuits between all wires and between all wires to chassis described in the BSD:

There is continuity and no short circuit

Y N

Repair/replace harness

Swap the faulty SP sensor with one in the other bin.

After swapping the sensor, set the address DIP switches to settings in the circuit diagram.

Check sensor functionality

Sensor works at new location

Y N

Replace sensor

Perform RAP VFX-006 ICAN Circuit

Success

N Y

Exit

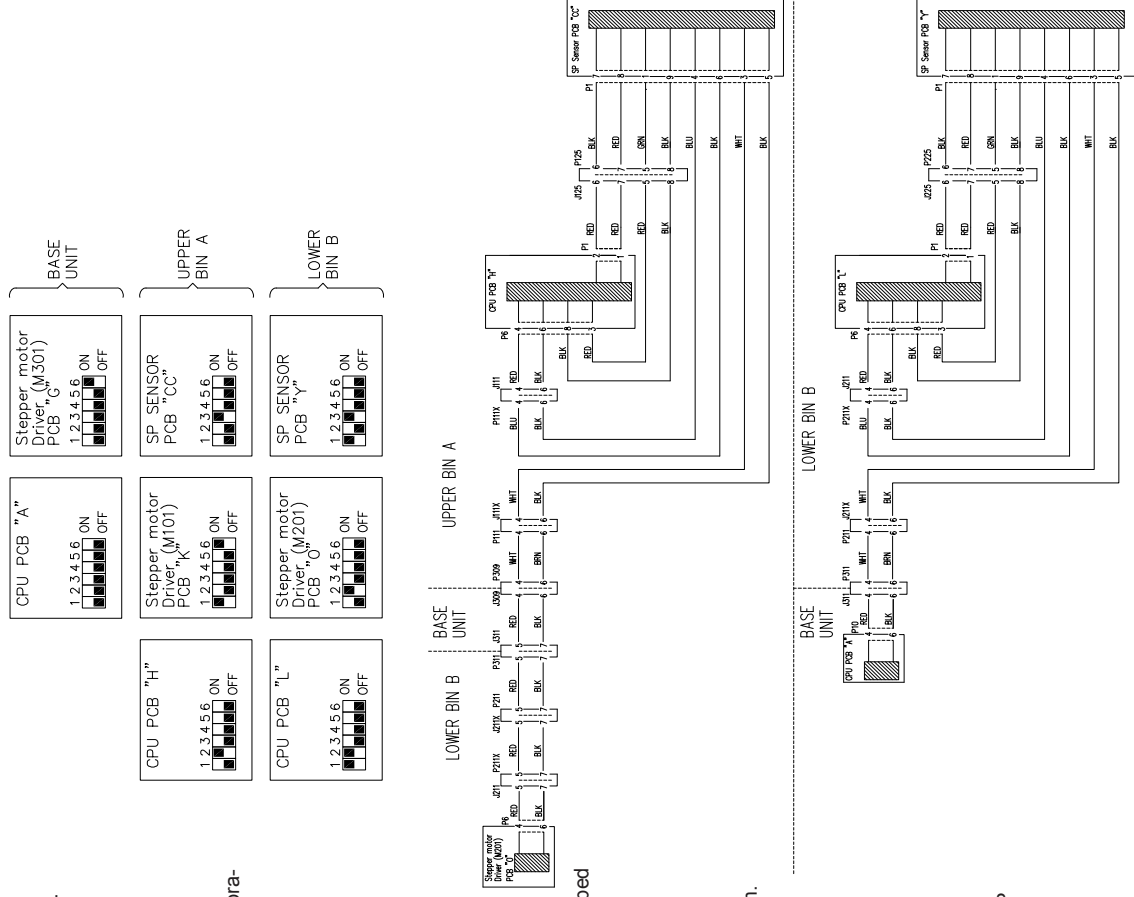
Perform RAPs for both related CPU PCBs (skip the part that guides you back to RAP SP Sensor)

Success

Y N

Replace the SP Sensor (REP 15.35)

Exit



⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

RAP VFX-044 Vacuum Solenoid and Brake Clutch

Initial Actions

- Enter service mode (GP 1) and check solenoid functionality (See GP's)
- Ensure that all connectors at the clutch/solenoid are properly connected
- Ensure that all connectors at PCBs are properly connected

NOTE!

For measuring references and connectors identification see BSD

Procedure

⚠ WARNING!

Turn off the VFX Main Power Switch and disconnect the Main Power Cord before disconnecting, removing or replacing any electrical components or measuring resistance inside the machine.

Check LED D5 on the SOL Driver PCB 'S'

Is it activated

Y N

Go to RAP VFX-020 24/48 voltage very low entry RAP

Power off, swap the SOL Driver PCB with the PCB from the other BIN. Check solenoid functionality

Does the SOL Driver PCB work at the new location

Y N

Replace the faulty SOL Driver PCB

Power off, swap the SOL Driver back to the original location, swap the CPU PCB with the one from the other bin. After swapping the PCB, set the address DIP switches to settings in the circuit diagram. Check solenoid functionality

Does the CPU PCB work at the new location

Y N

Replace the faulty CPU PCB

Power off, swap the CPU PCB back to the original location. After swapping the PCB, set the address DIP switches to settings in the circuit diagram.

Swap the 24V Distributor PCB with the one from the other bin. Check solenoid functionality.

Does the 24V Distribution PCB work at the new location

Y N

Replace the faulty 24V Distribution PCB

Power off, swap the sol/clutch with the one from the other bin. Check solenoid functionality

Does the sol/clutch work at the new location

Y N

Replace the faulty sol/clutch

Harness check:

Power off and disconnect the following:

1. Connectors to CPU PCB, 24V Distribution PCB and SOL Driver PCB.
2. Sol/clutch connector.

Measure continuity between following positions: (see BSD)

1. All wires between CPU PCB and SOL Driver PCB.
2. All wires between 24V Distribution PCB and SOL Driver PCB.
3. All wires between SOL Driver PCB and sol/clutch connector.

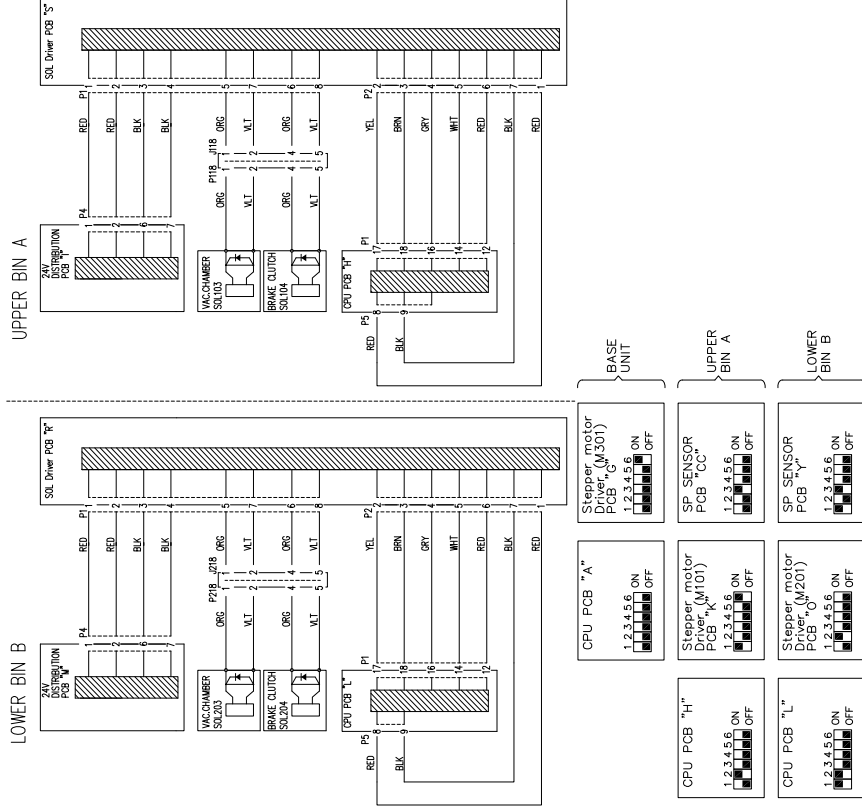
Check for short circuits between all wires above and between all wires above to chassis.

There is continuity and no short circuit

Y N

Repair/replace harness

Check for mechanical problems.



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⚠ WARNING! Turn off main powers and disconnect power cord before disconnecting, removing or replacing any electrical components.

DIP Switch Settings



5 Service Tables And General Procedures

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GP 5.1 Service Mode

CAUTION

Never turn off the main power when motors are cycling. To avoid damaging the circuitry, stop the motor/motors running under the Check Motors menu, and then switch the main power off.

Service Mode Operations

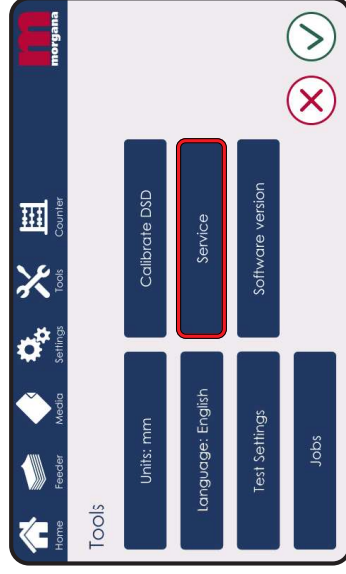
The Service Mode is used to check electrical data, electrical components and adjust values. Service Mode is provided and controlled from the UI (User Interface) of the VFX. Where applicable, a sub-menu appears after a function is selected.

GP 5.1.1 Entering and Exiting Service Mode

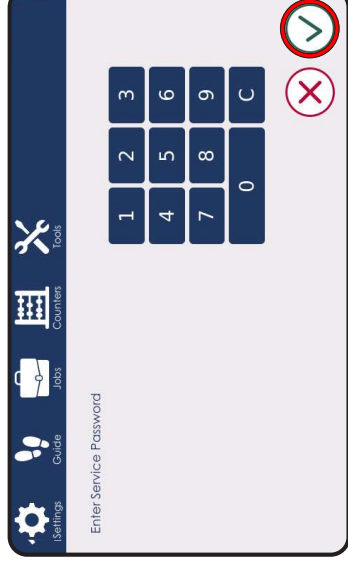
1. Select the Tools button from the Main Menu;



2. Select the Service button from the Tools Menu;



3. Key in password: **107** and select the green check mark to enter Service Mode;



4. The screenshot below shows the home page for the Service. Press [Exit Service] to exit service mode.



GP 5.2 Software Version

1. Go to Plockmatic customer center; use your personal log-in;
2. Check the latest software release bulletin for the products installed or
Go to Off line - software downloads, and download the latest software;
3. Enter service mode (see GP 5.1.1);
4. Select [SW and Status] and compare to online software version.

GP 5.2.1 Software Download

⚠ CAUTION!

ESD Hazard! ESD (Electrostatic Discharge) can cause hardware crashes, data and/or communications problems. Failure to use proper ESD procedures will cause damage to electronic components (example: PCBs). ESD problems can be minimized by maintaining all machine ground connections, ensuring the proper handling of circuit boards and sensors. Use ESD protection when working near PCBs. Failure to use ESD protection is likely to result in a PCB failure.



Procedure: Updating the software

Go to Plockmatic partner center, use your personal log-in,
Download the latest software package.
Follow procedure described in the instructions included in the package.
Note! Ensure all software versions are updated to the latest version. If replacing PCBs, refer to DIP switch settings in Section 4 (RAPS).

Procedure: Loading the software after PCB's replacement.

Go to Plockmatic partner center, use your personal log-in,
Download the software for the PCB that has been changed and follow the procedure described in the instructions included in the package.
Follow procedure: updating the software (see earlier in procedure).

GP 5.3 Checking Motors

1. Enter service mode (see GP 5.1.1);
2. Select [Motors];
3. Go to the motor to be checked;
4. Depending on the selected motor, different buttons will be shown on the screen. Also, different parameters values (e.g. voltage, home position, etc) are displayed and continuously updated.

NOTE:

If the door is open, an interlock cheater needs to be installed in order for the machine to work, see GP5.11 Interlock switch.



⚠ WARNING

Do not expose fingers or other parts of the body to moving, rotating or cutting devices when running the machine with the interlock cheater installed. Do not wear ties, lanyards or other things that might get trapped into the rollers and cause injuries.

Motors/Fans	Normal Reading	Function
M101/M201	48V	Elevator motors. Move the trays up and down.
M301	48V	Transport motor. Runs all the transport belts in the machine.
FAN101-106 FAN201-206	24V	Tray blowers, separation fan and vacuum fan. Air separates the sheets and assists the feeding process.

GP 5.4 Checking Solenoids

1. Enter service mode (see GP 5.1.1);
2. Select [Solenoids];
3. Go to the solenoid to be checked;
4. Select the play/stop buttons to toggle each solenoid.

NOTE:

If the door is open, an interlock cheater needs to be installed in order for the machine to work, see GP5.11 Interlock switch.



⚠ WARNING

Do not expose fingers or other parts of the body to moving, rotating or cutting devices when running the machine with the interlock cheater installed. Do not wear ties, lanyards or other things that might get trapped into the rollers and cause injuries.

Lamps/Solenoids	Function
SOL101, SOL201	Drive clutch. The clutch engages the shaft and rotates the feed rollers when the main transport motor is running.
SOL102, SOL202	Tray lock release. Releases the spring loaded tray lock. Enables operator to slide out tray.
SOL103, SOL203	Vacuum release solenoid. Actuates the vacuum gasket plate open and closed.
SOL104, SOL204	Brake Clutch. Stops the vacuum belts when engaged. This must be tested manually, by rolling the vacuum belts and turning on the clutch.

GP 5.5 Checking Sensors

1. Enter service mode (see GP 5.1.1);
2. Select [Sensors];
3. Select sensor to be checked;

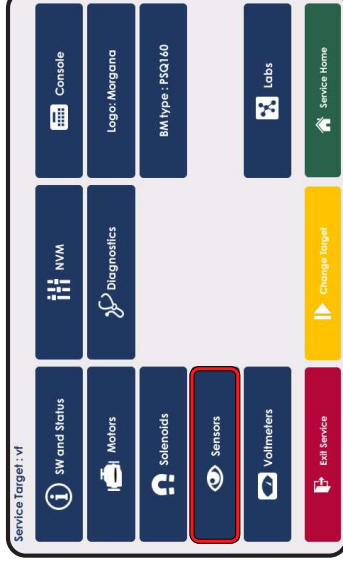
All sensors can individually be checked by blocking/unblocking sensors. While blocking/unblocking, view the display for response.

The display will show either 0 or 1.

The meaning of 0 and 1 varies, depending on the sensor.

NOTE:

If the door is open, an interlock cheater needs to be installed in order for the machine to work, see GP5.11 Interlock switch.



⚠ WARNING

Do not expose fingers or other parts of the body to moving, rotating or cutting devices when running the machine with the interlock cheater installed. Do not wear ties, lanyards or other things that might get trapped into the rollers and cause injuries.

Sensors/Switches	Normal Reading	Function
Q101	0=Unblocked	Upper Tray Optical DSD sensor
Q102	Analogue value	Upper Tray Ultrasonic DSD sensor
Q103	0=Unblocked	Upper Tray Home down position sensor
Q105	0=Unblocked	Upper Tray Empty sensor
Q201	0=Unblocked	Lower Tray Optical DSD sensor
Q202	Analogue value	Lower Tray Ultrasonic DSD sensor
Q203	0=Unblocked	Lower Tray Home down position sensor
Q205	0=Unblocked	Lower Tray Empty sensor
Q301/ Q302	0=Unblocked	Upper and Lower Tray Optical distance sensors
Q303	0=Unblocked	Paper exit sensor
S301/S302	0 = Closed	Interlock Door Switch
S101/S102	0 = Closed	Interlock Upper Tray (A)
S201/S202	0 = Closed	Interlock Lower Tray (B)

GP 5.6 Voltmeters

1. Enter service mode (see GP 5.1.1);
2. Select [Voltmeters];
3. Select electrical component to be checked;
4. Voltage for electrical component is shown.



GP 5.7 NVM (Non Volatile Memory) Values

CAUTION

Changing NVM values can jeopardize the way the machine operates considerably. Be sure that changing the NVM value is the correct solution before doing so. If changes made cause the unit to operate incorrectly, perform the NVM reset procedure.

1. Enter service mode (see GP 5.1.1);
2. Select [NVM];
3. Select index (NVM value) to be changed;
4. To modify, select [+/-] buttons or enter in value manually;
5. Select the green checkmark to confirm.

GP 5.7.1 NVM Reset

Description

Ideally, the NVM Reset procedure should never be performed during the entire life of a machine.

Procedure

NOTE: All data the data stored in the EEPROM will be cleared, this includes jobs, jam history etc.

1. Enter the service menu (GP 5.1.1).
2. Select [NVM].
3. Write down all the NVM values on a piece of paper.
4. Select [Clear all]. Follow on screen instruction.



5. Restart the VFX.
6. Enter the service menu again.
7. Select [NVM].
8. Re-enter all the NVM values.

NOTE:

If it is not possible to see/recover the NVM values on the User Interface of the machine, it will be necessary to perform the Optical and Ultra Sound DSD sensors calibration.

GP 5.7.2 NVM Values

⚠ CAUTION

Changing NVM values can jeopardize the way the machine operates considerably. Be sure that changing the NVM value is the correct solution before doing so. If changes made cause the unit to operate incorrectly, perform the NVM reset procedure.

The table below details the default NVM values for the VFX depending on which system it is attached to: PSQ224, PSQ160, eWire Binder and DigiCoater Pro 400. Please refer to the column that lists the correct NVM values for the system you are working with.

Index	NVM Description	PSQ224	PSQ160	eWire Binder	DigiCoater Pro 400
1	Beltspeed 1	720	720	1000	720
2	Beltspeed 2	1330	1000	1000	1000
3	Min ClutchLen	103	103	103	103
4	Substract ClutchLen	160	160	160	160
5	Dead Cycling SPH	15000	15000	21000	15000
6	Debug value	0	0	0	0
7	Optic DSD LED PWM BIN A	60	60	60	60
8	Optic DSD LED PWM BIN B	60	60	60	60
9	Optic DSD Pullup BIN A	0	0	0	0
10	Optic DSD Pullup BIN B	0	0	0	0
11	Ultra sound DSD PWM BIN A	20	20	20	20
12	Ultra sound DSD PWM BIN B	20	20	20	20
13	US Dist meter compensation A	100	100	100	100
14	US Dist meter compensation B	100	100	100	100
15	Total counter	0	0	0	0
16	Fan Malfunction PWM	10	10	10	10

Continued on next page....

GP 5.7.2 NVM Values (continued)

Index	NVM Description	PSQ224	PSQ160	eWire Binder	DigiCoater Pro 400
17	US Distance Process Position Vacuum A	62	62	62	62
18	US Distance Process Position Vacuum B	62	62	62	62
19	Deadcycle Fan PWM	50	50	50	50
20	BCR installed	0	0	0	0
21	Sheet delay	50	0	300	50
22	Sheet interval	350	950	1000	1500
23	Default set delay	2000	6500	1200	5000
24	Default set interval	7800	5900	1600	7800
25	Optional set delay	1000	4000	1500	5000
26	Optional set interval	4800	5900	1900	990
27	Distance sensor type: 1 optic.	1	1	1	1
28	Downstream unit type	210	220	310	410
29	DFA ENABLE	1	1	1	1
30	Enable quick tray loading	1	1	1	1

GP 5.8 Self-Diagnostic Mode

GP 5.8.1 Run Time Diagnostics

Throughout the operation of the machine, all functions and components are monitored. Should an error occur, a fault code is displayed. Many faults can simply be corrected by the operator. In that case, a picture shows the location of the fault with a text message, such as "Clear Misfeed(s)". If the fault can not be corrected by the operator, the text message "Malfunction" is displayed. All messages, regardless of nature, are always accompanied by a fault code. The operator manual lists the fault codes that the operator can solve. This manual lists all fault codes. To correct the fault, go to Fault Code Descriptions (see section 4).

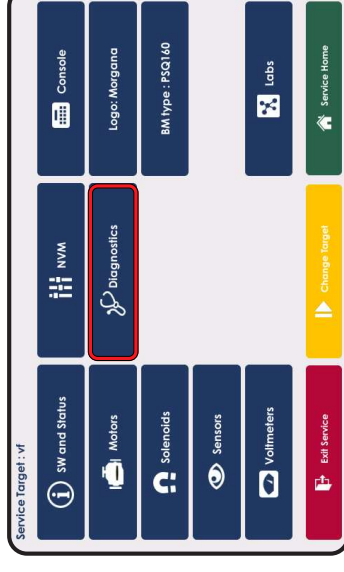
GP 5.8.2 Detailed Self-Diagnostic Mode

The main self-diagnostic mode, Diagnostics, is available from the service mode. Diagnostics checks the voltages, the sensors, solenoids and the motors. If a fault is found it will be displayed as a fault code. To remedy the fault, go to Fault Code Description (see section 4).

NOTE! Reflecting paper path sensors can be faulty although not detected by the diagnostics. If they have a failure state equal to constantly unblocked, it will not be detected as it is the correct home position state. Should this failure occur, it will be detected by the run time diagnostics.

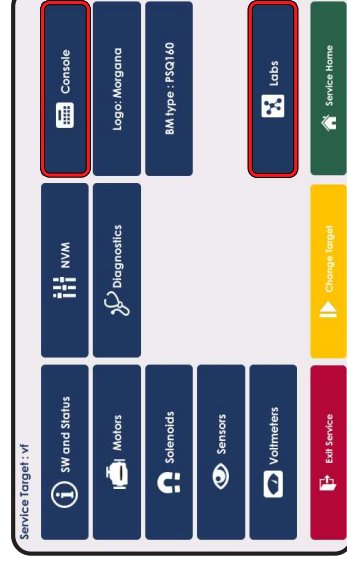
Executing Diagnostics

1. Remove any paper in the system;
2. Enter service mode (see GP 5.1.1);
3. Select [Diagnostics];
4. Press Start.



GP 5.9 Console and Labs

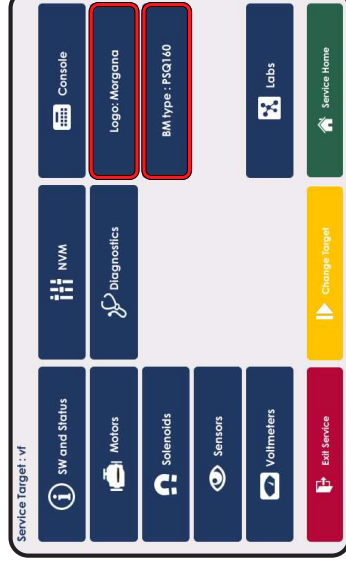
These functions are used in production.



GP 5.10 Logo and BM Type

These two settings are supposed to be set during installation of the machine.

1. Enter service mode (see GP 5.1.1)
2. The User interface of this machine can display two different brands: either Plockmatic or Morgana. Choose the desired logo.
3. BM Type: this machine can be installed to several downstream devices. Select this button to choose the downstream device to which the VFX is installed to.



GP 5.11 Interlock cheater

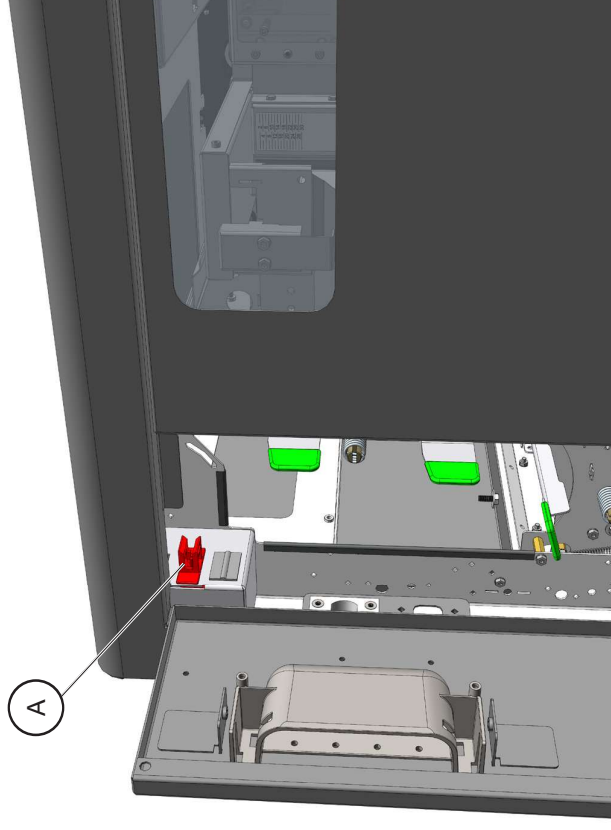
Description:

Interlock cheaters are used to operate the machine with the covers open. Be extremely careful when you operate the machine with interlock cheaters installed.

1. Press the interlock cheater down on the interlock switch;
2. While holding the interlock cheater down rotate in by 90° clockwise and then release it.

WARNING

Do not expose fingers or other parts of the body to moving, rotating or cutting devices when running the machine with the interlock cheater installed. Do not wear ties, lanyards or other things that might get trapped into the rollers and cause injuries.



The interlock switch [A] is located towards the outfeed side of the VFX, close to the upper tray.

6 Detailed Description Section

Contents

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6.1 PARTS COMPONENT LIST

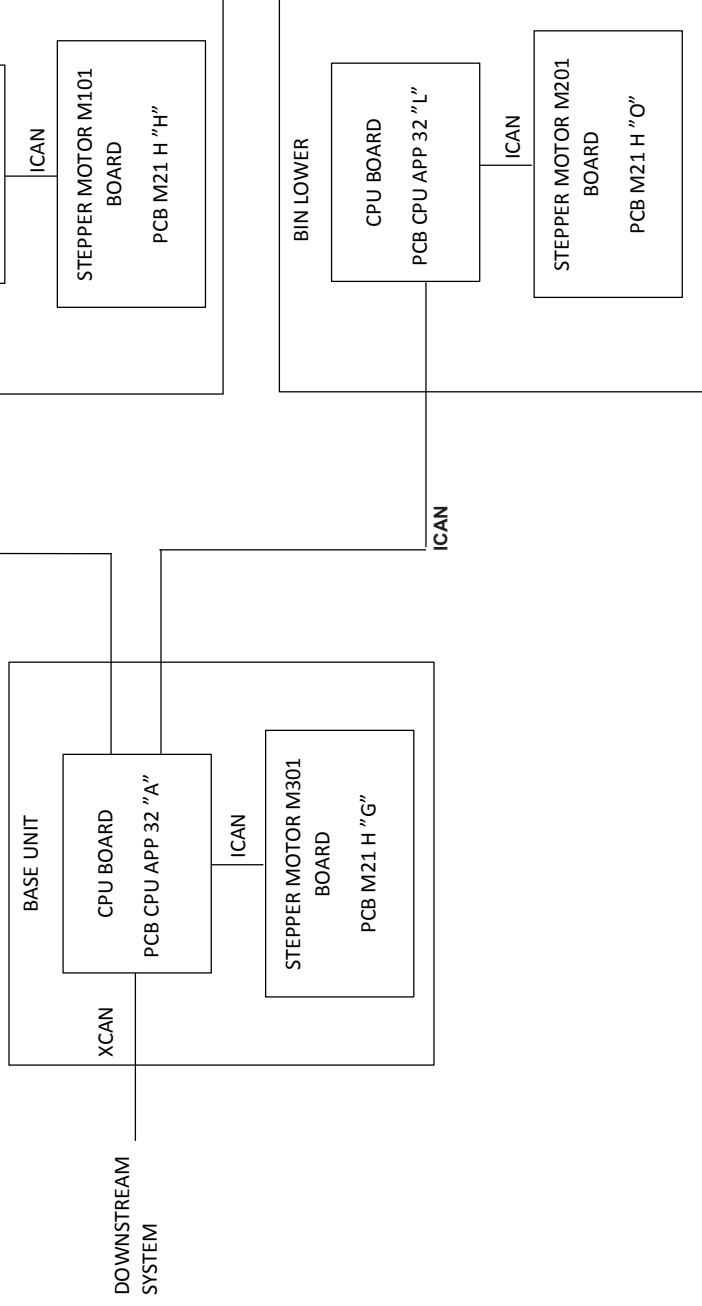
Please refer to section Component Locator in VFX Part List.

6.2 BOARD STRUCTURE VACUUM FEEDER (VFX)

6.2.1 BLOCK DIAGRAM

The electronics in the VFX are distributed and divided into seven different main PCBs, three CPU boards (PCB CPU APP 32 "A", "H", "L") and three motor drive boards (PCB M21 H "G", "K" and "O").

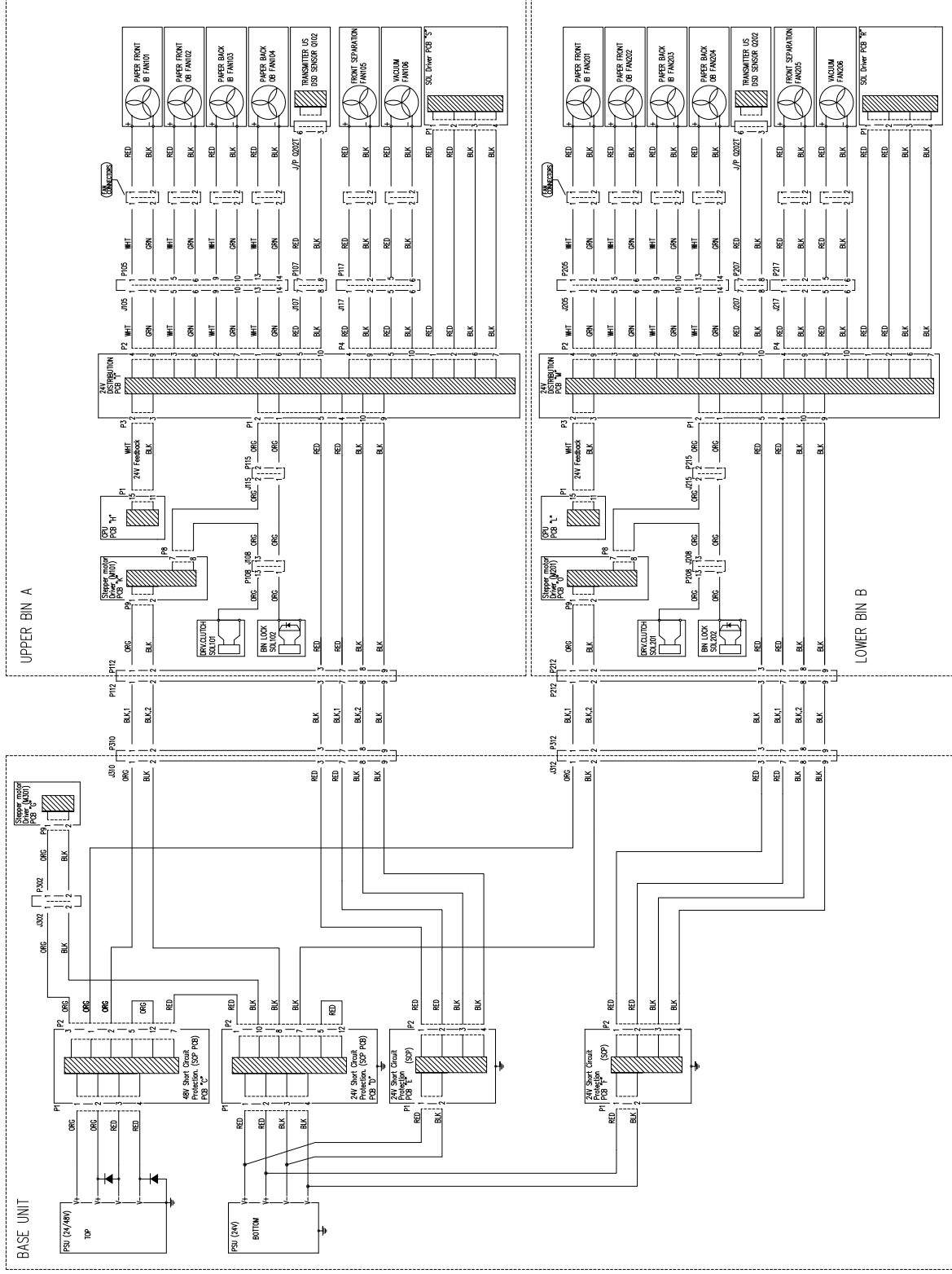
Each PCB has its own processor. The PCB's communicate via an internal CAN (iCAN) bus. The system also has many support PCBs, such as Short Circuit Protection PCB's. The CPU board is equipped with a 32 bit Cortex processor which has two CAN channels, iCAN and xCAN.



iCAN communicates with the motor drive boards and xCAN communicates with other external units such as the Crease Side Trimmer, Bookletmaker, Trimmer and Square Fold.

The VFX is equipped with its own power supply and interlock system.

6.2.2 POWER DISTRIBUTION SCHEMATIC



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6.3 PRINCIPLE OF OPERATION

6.3.1 VACUUM FEEDER MODULE (VFX)

Function After Calibrate is Selected

- Presence of programmed feed sequence is verified
- Tray empty sensor (Q105/205) checks that there is paper in tray
- Lift motor (M101/M201) runs to operating height
- Feed motor (M301) starts
- Tray fans (FAN101-104/FAN201-204) blow 100% for one second and is after that (in auto mode) are regulated by the top sheet height position measured by optical sensor (Q301/302)
- Vacuum fan and separation fan initiate simultaneously with tray fans
- Vacuum Assembly clutch/solenoid activates vacuum and feeds sheet
- Vacuum Assembly clutch/solenoid de-activates when sheet has reached the exit rollers (calculated distance from when DSD sensor is activated)
- Stop clutch activates to stop rollers
- US DSD sensor (Q102/Q202) verifies that only one sheet is fed at a time
- Optical DSD sensor calibrates to sheet density for each sheet and for whole set
- Exit sensor verifies that sheet arrives in time
- Exit sensor verifies that sheet exits in time
- Machine stops after last sheet in set and waits for "go" signal

Function After Start is Selected

- Presence of programmed feed sequence is verified
- Tray empty sensor (Q105/205) checks that there is paper in tray
- Lift motor (M101/M201) runs to operating height.
- Feed motor (M301) starts
- Tray fans (FAN101-104/FAN201-204) blow 100% for one second and is after that (in auto mode) are regulated by the top sheet height position measured by optical distance sensor (Q301/302)
- Vacuum fan and separation fan initiate simultaneously with tray fans
- Vacuum Assembly clutch/solenoid activates vacuum and feeds sheet
- Vacuum Assembly clutch/solenoid de-activates when sheet has reached the exit rollers (calculated time from when DSD sensor is activated)
- Stop clutch activates to stop rollers
- US DSD sensor (Q102/Q202) / Optical DSD sensor verifies that only one sheet is fed at a time and that paper length is the same for all sheets
- Exit sensor verifies that sheet arrives in time
- Exit sensor verifies that sheet exits in time
- Machine continues running until programmed job ends or tray is empty

6.4 ELECTRICAL COMPONENTS INDEX

NOTE: this page is an extract of the Parts List document.

Upper Bin - numbers start with 1 ex: M101

Lower Bin - numbers start with 2 ex: M201

Chassis - numbers start with 3 ex: M301

In case of two of each, 1 is upper, 2 is lower ex: Q301 and Q302

PCB "J" (PCB DC/DC Converter)	PL 6.0
PCB "K" (PCB M21H)	PL 6.0
PCB "L" (PCB CPU APP 32)	PL 6.0
PCB "M" (PCB 2x10P Commoning block)	PL 6.0
PCB "N" (PCB DC/DC Converter)	PL 6.0
PCB "O" (PCB M21H)	PL 6.0
PCB "P" (PCB RS232 Plug In)	PL 6.0
PCB "Q" (PCB RS232 Plug In)	PL 6.0
PCB "R" (PCB SD2H, Lower Tray)	PL 6.0
PCB "S" (PCB SD2H, Upper Tray)	PL 6.0

POWER SUPPLIES

PSU1 Power Supply RS-75-12	PL 6.0
PSU2 Power Supply SP-240-24	PL 6.0
PSU3 Power Supply SP-750-27	PL 6.0

RELAYS

REL101, 201, 301 & 302 Relay	PL 6.0
REL303 Relay	PL 3.1a

SENSORS

Q101, Q201 Optical Double Sheet Detection Sensor LED	PL 2.3
Q101, Q201 Optical Double Sheet Detection Sensor Photoresistor	PL 2.3
Q102, Q202 Ultra Sonic Double Sheet Detection Sensor	PL 2.3
Q103, Q203 (Lower) Home Position Sensor 10mm gap	PL 2.2
Q104, Q204 Safety Sensor 10mm gap	PL 2.3
Q105, Q205 Bin Empty Sensor	PL 2.2
Q301, Q302 Optical Sensor	PL 5.0
Q303 Exit Sensor	PL 3.1a
Stacked Paper Sensor "CC" (Upper), "Y" (Lower)	PL 2.1

SOLENOIDS

SOL101, SOL201, SOL104 & SOL204 Feed Roller Clutch/Solenoid	PL 2.3
SOL102, SOL202 Bin Lock Solenoid	PL 2.0
SOL103, SOL203 Vacuum Chamber Solenoid	PL 2.3

SWITCHES

S101, S102, S201, S202 Interlock Switch	PL 2.0
S301, S302 Interlock Switch	PL 3.0
SW1 Power switch	PL 3.0

BARCODE READER

Barcode Reader	PL 2.5
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COUNTER

CNT	PL 3.0.
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FILTERS

Filter Power Inlet	PL 6.0
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FUSES

F1 Fuse	PL 6.0
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LAMPS

Lamp101, Lamp201 PCB White Lamp	PL 2.3
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MOTORS

FAN101, 102, 103, 104, 105, 201, 202, 203, 204 & 205	PL 2.1
FAN106 & 206	PL 2.3
M101, M201 Lift Motor	PL 2.2
M301 Feed Motor	PL 3.1

PCBs

PCB "A" (PCB CPU APP 32)	PL 6.0
PCB "B" (PCB PTC611)	PL 6.0
PCB "C" (PCB SCP UNIVERSAL)	PL 6.0
PCB "D" (PCB SCP UNIVERSAL)	PL 6.0
PCB "E" (PCB Fuse 10A/125V)	PL 6.0
PCB "F" (PCB Fuse 10A/125V)	PL 6.0
PCB "G" (PCB M21H)	PL 6.0
PCB "H" (PCB CPU APP 32)	PL 6.0
PCB "I" (PCB 2x10P Commoning block)	PL 6.0

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Morgana VFX

6 Detailed Section Description

7 Specifications

Contents

VFX Vacuum Feeder 7-2

VFX Vacuum Feeder

	Specifications	Remarks
Minimum paper size, W&L	1120x210 mm / 4.7x8.3"	
Maximum paper size	356x660 mm / 14x26.5"	
Minimum paper weight	64 gsm / 16 lb Bond uncoated	
Maximum paper weight	400 gsm / 150 lb Cover	
Maximum loading capacity, each tray	270 mm / 10.6"	
Maximum loading weight, each tray	92 kg / 202 lb	
Off-line Use	Possible with Service UI	
Weight	250 kg / 550 lb	
Dimensions (L x H x D)	1050x1250x705 mm / 42x50x28"	
Power Source	100-240 V / 50-60 Hz	+6%, -10%
Power Consumption	4A @ 230V, 8A @ 100V	Continuous operation
Operating temperature	10-30°C	

