

Date 7th May 2016
Customer *****

Reason for Site Attendance

To study and explore the use of vacuum pick and place equipment and processes throughout the Salina facility to help the customer better understand the efficiency improvements that can or cannot be made.

The following pages illustrate in both graphical and descriptive terms each machine station that was viewed by Vacuforce and IBT personnel.

KEY

- BOLD RED** Immediate attention required
- BOLD GREEN** Significant energy saving recommendation
- BOLD BLUE** Machine reliability improvement due to less maintenance or machine downtime
- BOLD ORANGE** Better product recommendation resulting in longer life and annual savings

Sincerely



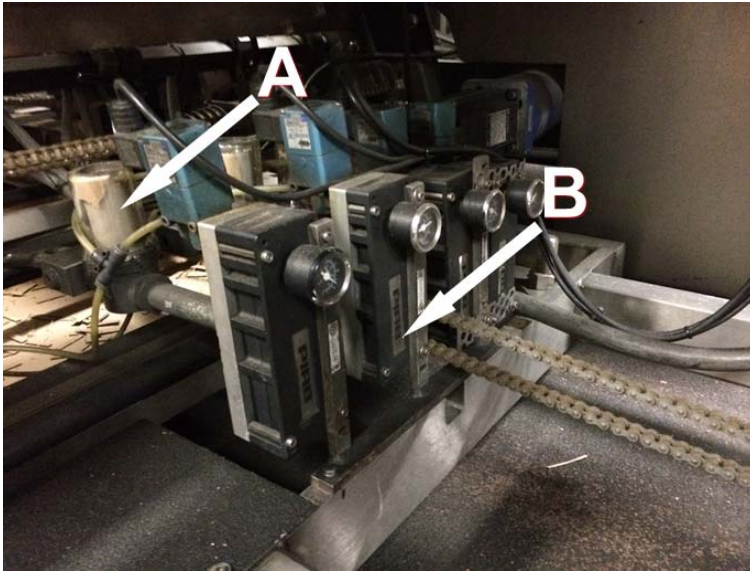
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Machine Case Packer TOR200

Description FOUR Multi stage Piab venturi are being used for a case pull down operation. Each venturi is connected to TWO Ø3” Vicas vacuum cups.

A – Filter UPSIDE DOWN

This will create maintenance issues as when the filter bowl is removed by unscrewing in a CCW direction, the trapped direct will now fall into the vacuum line to the venturi.
Recommendation Below.



B – Replace Venturi

This operation does NOT require such large venturi for this operation. Recommendation below.

A – Filter UPSIDE DOWN

Turn the filter connection through 180°

Replacement model PVF.75-PE

Replacement element PE75

B – Replace Venturi

We suggest the following set up to allow significant compressed air savings, much higher reliability and easier single filter maintenance. This venturi will ONLY operate when required. This is fully automatic. Vacuum will be turned on and off to each arm using a vacuum valve. This will offer instant vacuum *grab* of the cardboard box.

The current system requires the venturi to *ramp* up to vacuum each time which uses constant compressed air consumption throughout the vacuum *ON* part of the cycle. Using vacuum valves to turn vacuum on and off will allow the venturi to maintain full vacuum at all times. Vacuum will be instantaneous when the vacuum valves are fired. These vacuum valves will use the same signal that the MAC valves use for turning on and off the vanturi.

Please review this private video link [here](#) showing the venturi “ramp”

PART NUMBER	DESCRIPTION	QTY PER MACHINE
AM100L-B-N-A	Multi Stage Serviceable Venturi	1
ESK100	Energy Savings Kit	1
PVF.75-PE	Vacuum Inlet Filter	1
VFDAVV1/2	Vacuum Control Valve	4
SB486-24VDC	Valve Coil 24VDC	4

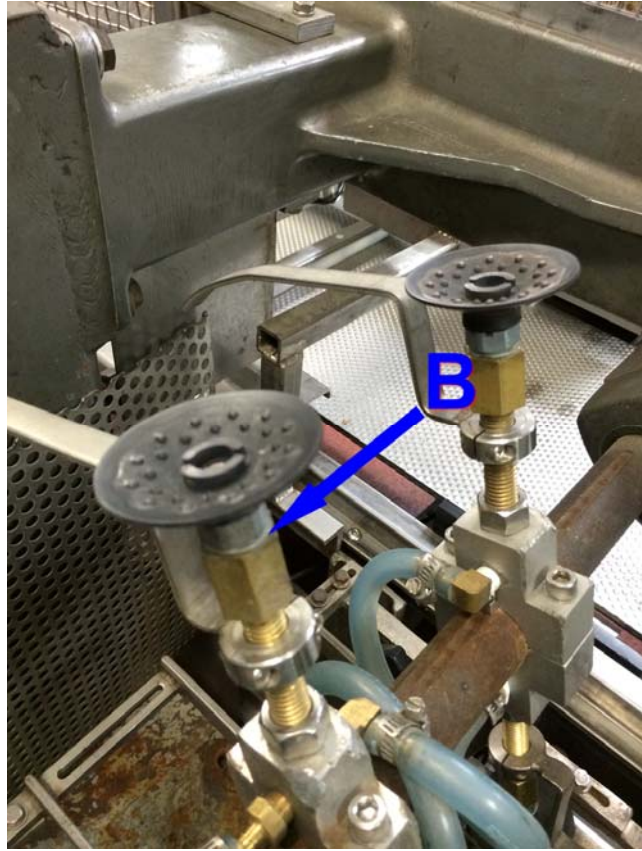
Program Improvement Times

A <1hr

B 1-2hrs

Machine Wrapper

Description Vacuum belt machine utilizing a vacuum belt for product conveyance in horizontal plane. Two Festo vacuum cups being used for card pull down.



A – Filter Missing

This regenerative blower (vacuum pump) is being used for the vacuum belt shown below. This pump must have a vacuum filter installed to extend life of the blower considerably and minimize machine downtime and maintenance costs.

Recommended Filter

F series as per Vacuforce data sheet. Please match to port size. Paper element model.

B – Vacuum Cup Alternative

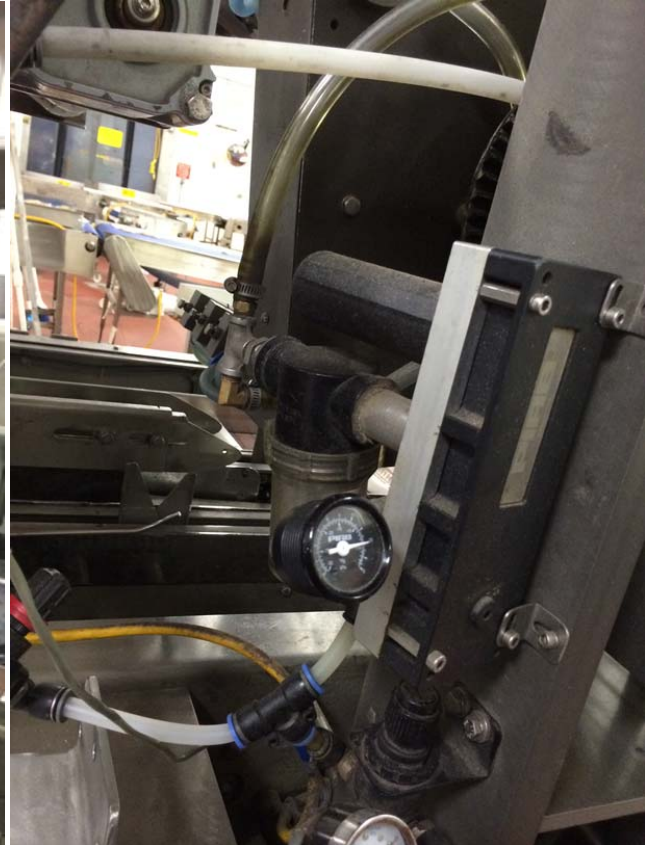
This vacuum cup is a one piece rubber and aluminum fitting. We suggest changing this two a two piece unit so that in future ONLY the rubber cup has to be changed. This will save time and money.

Part Number VFCF50-U02 (male 1/4" fitting)
Part Number VFF50-2N (NBR Ø50mm cup)



Machine
Description

ADCO Cartoner
Rotating tumbler Cartoner using Vacuforce VFF30-2N vacuum cups on 4 head rotator.





Replace Venturi

This machine uses as shown above a double venturi on a manifold. This should be changed to a much smaller model and in turn save considerable compressed air. Expected savings in excess of 20-30CFM.

Recommended Replacement

AM100L-B-N + PVF.75-PE Filter – Use the same MAC control valve.

Filter Element Missing

This venturi (ML50) has a filter attached to it but no filter element. This should be installed immediately to prevent further damage to the venturi.

Part Number PE75

Replacement Venturi if required AM50L-B-N

Machine
Description

Tray Machines

These machines have not been used much recently but will be used again in the future more frequently.

Replace Venturi and add filter

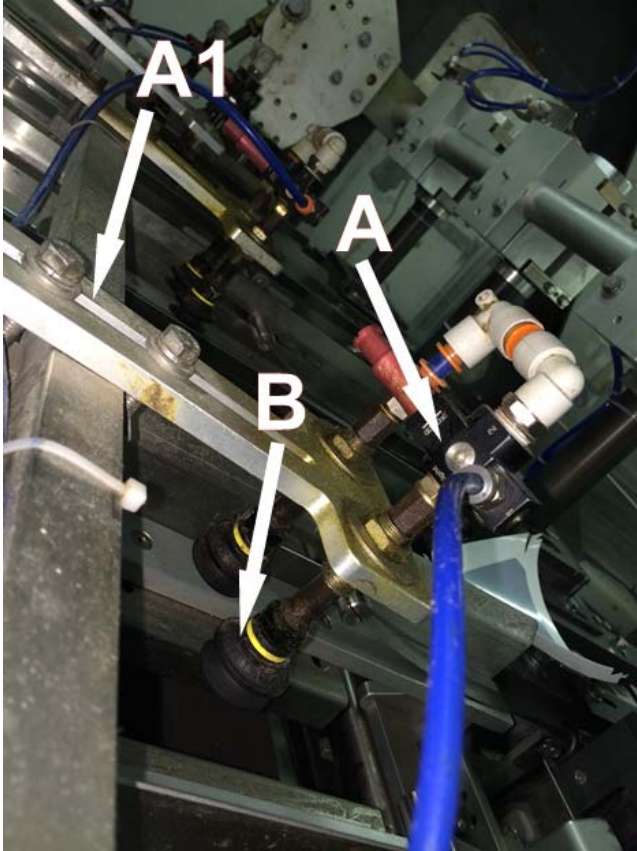
This machine uses various “point of use” venturi (A) without filtration. These venturi are \$150+ to replace and therefore a better vacuum generation system should be employed and installed on machine frame indicated by A1 in image shown on left.

Recommendation below.

Venturi CV20H
Filter PVF.375-PE

Recommended Cup Replacement (B)

Replacement rubber cup only VFB30-2N



Machine
Description

Robot Palletizers

These automated palletizers utilize an end of arm tool that uses many single stage venturi without filtration each attached to a single cup. The reason for this is because there are undoubtedly various size boxes to be handled.



Replace Individual Venturi

We recommend a Squid™ to replace the complete head. Approximate air savings in excess of 70%.

Budgetary Price US\$10K per robot.

Similar multiple case Squid™ shown [here](#) on video link.

Filter Installation

The above recommendation is a costly exercise and for replacing what is currently essentially working. However we would suggest installing vacuum filters on each venturi to promote machine reliability and dramatically reduced maintenance cost compared to venturi replacement. **Part Number of filter AZFC200-08B**

Store Room Survey

The following products were inspected and our alternative recommendations are shown below.

Schwan's Number	Basic Description	Manufacturer Ref	Vacuforce Alternative
126031	Ø63mm Flat Cup 1/4NPT Female Fitting	Vicas VC204A-1	VFCF50-U02 (one time purchase) + VFF50-2N
127291	Ø87mm Flat Cup 3/8NPT Female Fitting	Vicas VC15	SFF80N-60-G3/8F
174933	Ø63mm Flat Cup 1/4 Female Fitting	Vicas VC322B	VFCF50-U02 (one time purchase) + VFB50-2N
175584	Vacuum Filter Element (many in use)	Piab PPX35RE3	PE75 (single unit)
176612	Ø52mm Double Bellows Cup 1/8 Female Fitting	Piab BX52P3060.NS18F.02	VFCF50-U02 (one time purchase) + VFB50-2N
173614	Ø52mm Flat Cup NBR	Piab F50-2.30	VFF50-2N
145864	Ø30mm Single Bellows Cup	Piab B30-2	VFB30-2N
111367	Ø40mm flat cup and 1/4NPT fitting	Piab F40-2N	VFCF40-U02 (one time purchase) + VFF40-2N
	Ø52mm Double Bellows Cup 1/8 Female Fitting	Piab BX52P3060.NS18F.02	VFCF50-U02 (one time purchase) + VFB50-2N
111166	Ø110mm Single Bellows Cup	B110.20.W	VFB110N
110870	Ø75mm Single Bellows Cup	B75-2.30 + 1/8NPT Fitting	VFCF75-1/8 + VFB75WN
118669	110mm Cup Fitting Only	11UA	VFCF110-1/2
143757	Ø40mm Flat Cup TPU	Piab F40MFTPU	VFF40-2N
unknown	M25L	Piab Venturi	AM25L-B-N
unknown	M50L	Piab Venturi	AM50L-B-N
unknown	M100L	Piab Venturi	AM100L-B-N