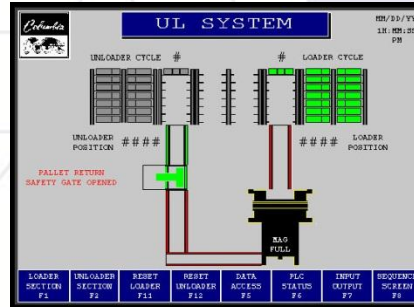
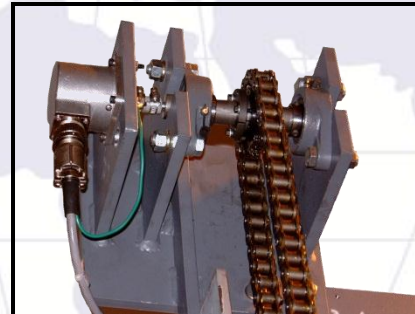


Conversion Kit Training Aid

- ◆ Relay to PLC/Encoder
- ◆ Proportional Valve
- ◆ Drape Hose



October 2009

Rack - Loader/Unloader

Objective:

To give you a basic understanding and tools you'll need to better inform our customers on what these conversion kits have to offer.

Overview:

- Typical Layout
- PLC Conversion
- Proportional Valve Conversion
- Drape Hose Conversion
- Sold / Installation Sites
- Safety Guarding
- Recap / Questions

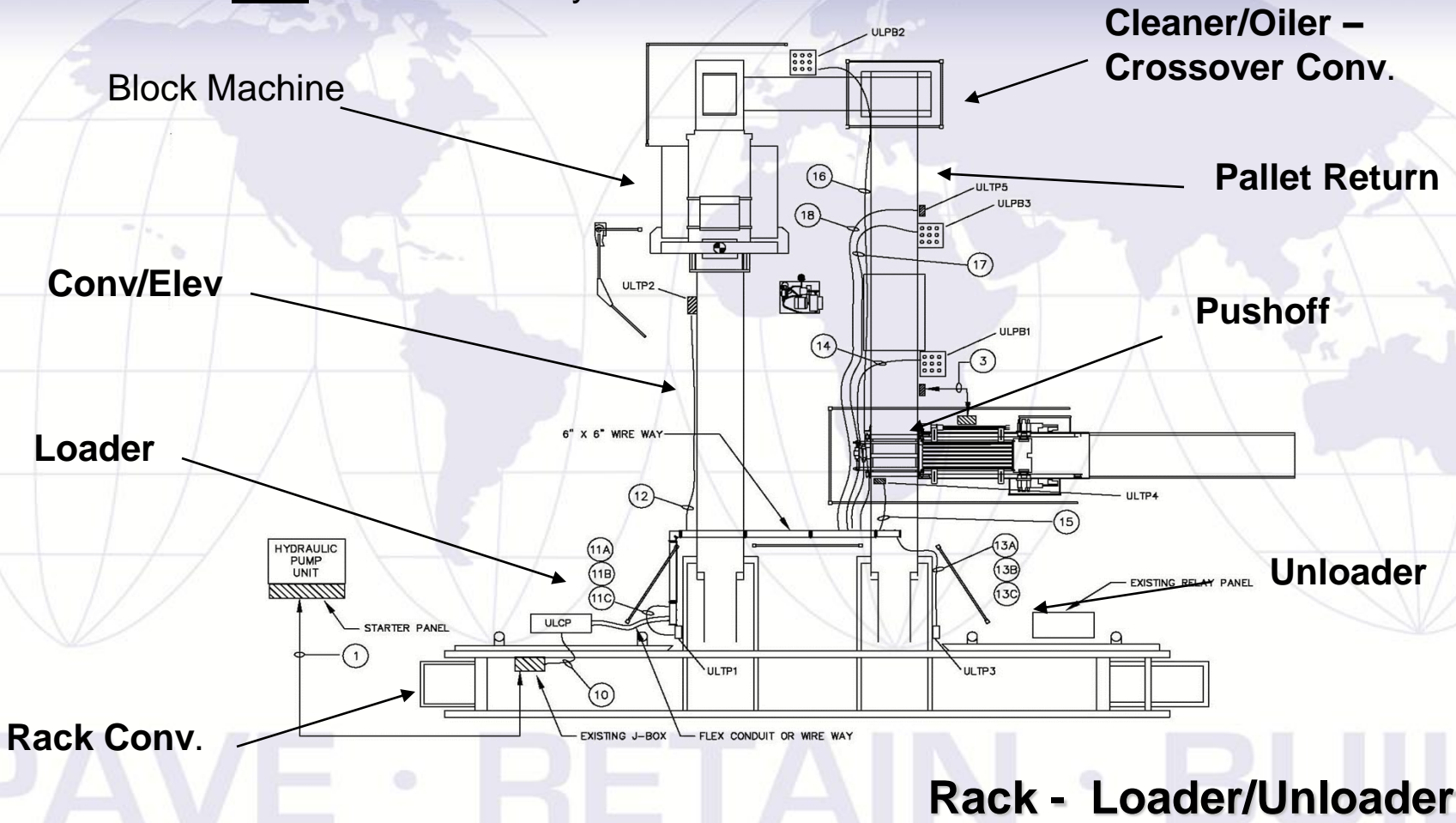
PAVE • RETAIN • BUILD

Rack - Loader/Unloader

Columbia

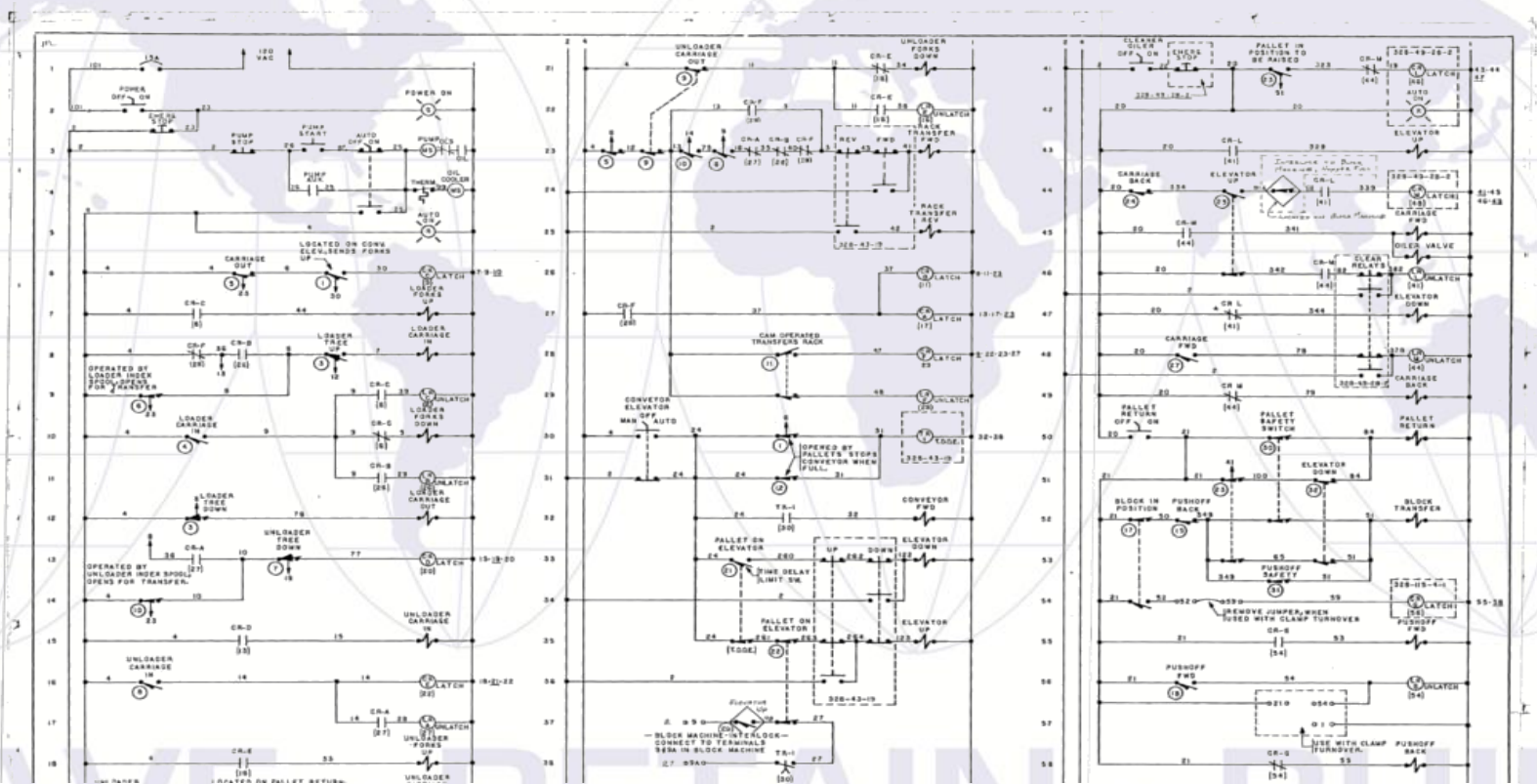
Typical Layout

Items in **bold** are controlled by the PLC conversion



UL Relay to PLC Conversion (Encoder)

The advantage of changing from latch relay to PLC is simplicity of troubleshooting. You no longer have to try to follow the sometimes complicated latch relay hardwiring prints to find an electrical problem, see (figure #1).



(figure #1)

Rack - Loader/Unloader

UL PLC Conversion using encoder; this photo shows the panel door layout (Panelview / operator interface, control pushbuttons, E-Stop, and manual pushbuttons, see (figure #2).



(figure #2)

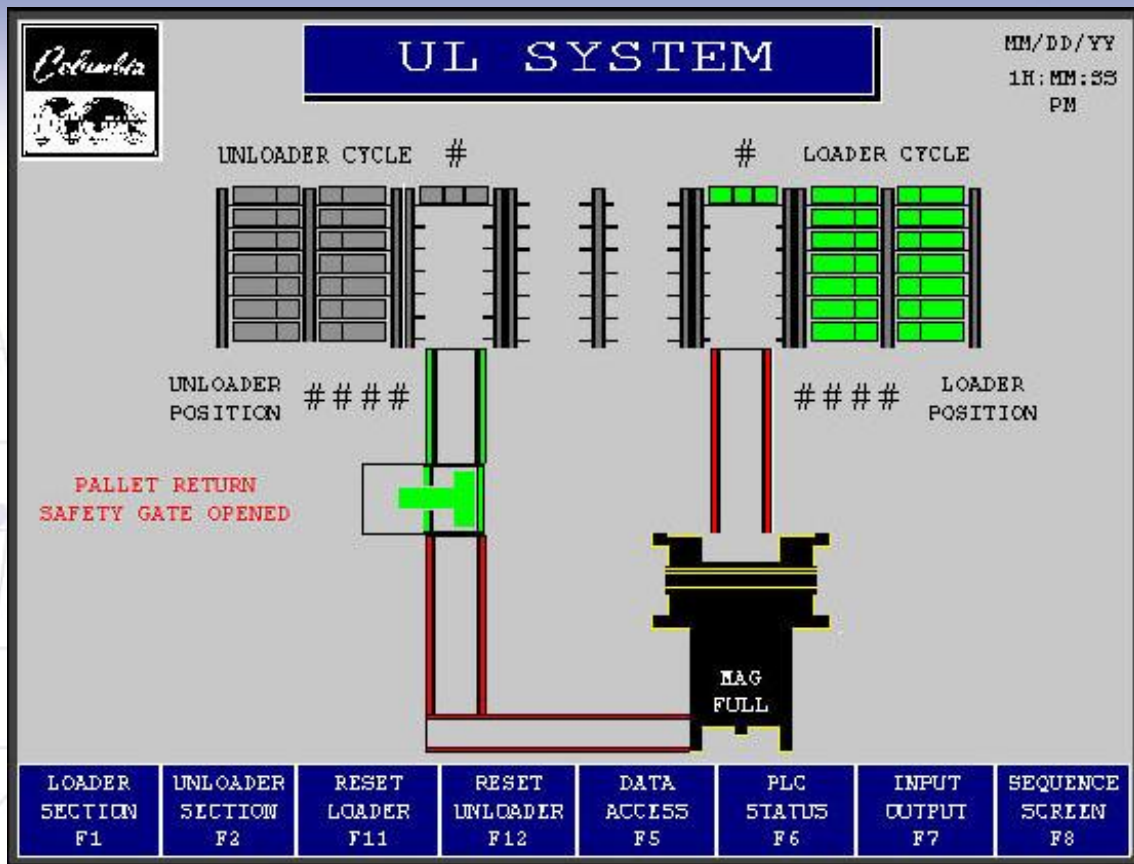
Rack - Loader/Unloader

Columbia

On the **Main screen**, see (figure #3) the graphics show each time pallets are deposited into the Green Rack as well as removal of pallets in the dry rack. This visually gives the operator immediate feedback as to the current tier height.

This screen also shows the current sequence step, as well as, the current encoder positions for Loader and Unloader.

Another great feature is the separate resets for Loader and Unloader sections. This allows personnel to reset Loader and Unloader independently from one another without resetting the main U/L system.

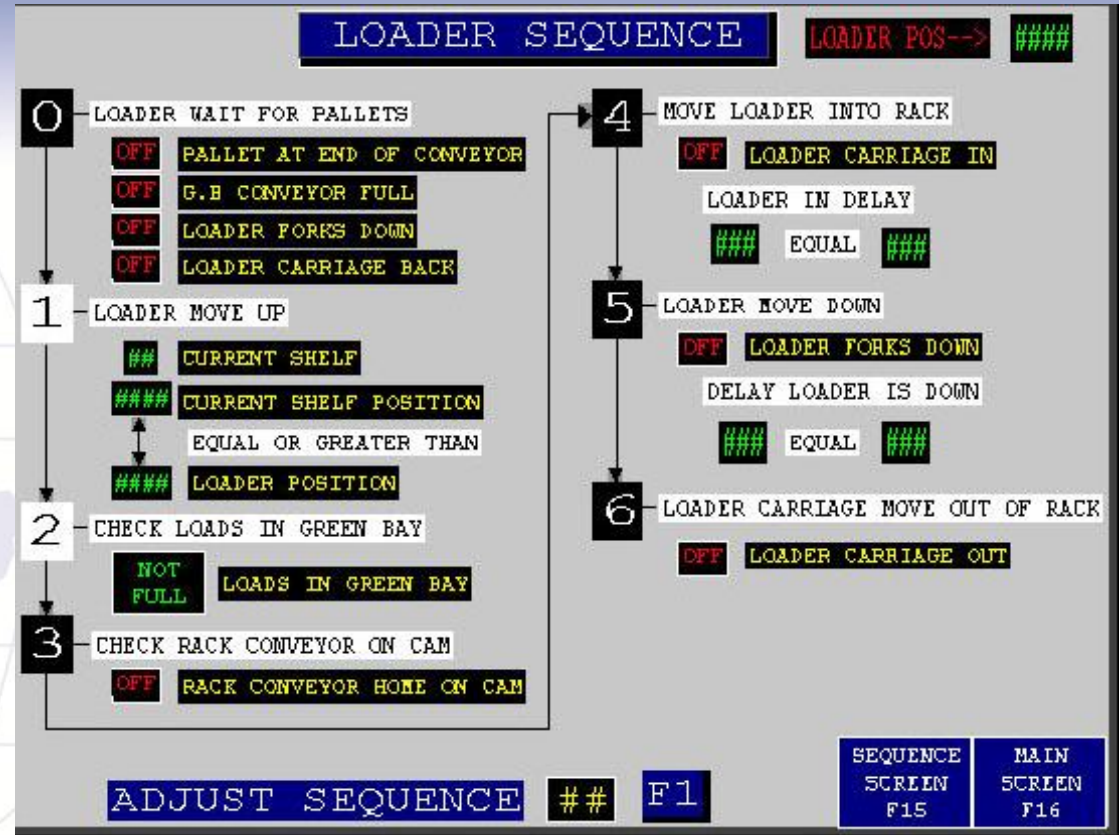


(figure #3)

Rack - Loader/Unloader

Loader/Unloader Sequence screens,

The program is written in a (sequential) format. When accessing the sequence screens, (Loader/Unloader), you are able to see what step the process is in, see (figure #4).



(figure #4)

Rack - Loader/Unloader

Columbia

Loader/Unloader Shelf position and Speed screens. Another feature of this conversion is it allows personnel to make changes to height locations, see (figure #5) and speed on the fly, see (figure #6). (Personnel really loved this feature). Normally personnel would have to turn off the equipment to make these adjustments which again is loss of production time.

(figure #5)

(figure #6)

Rack - Loader/Unloader

I/O Status screens, this screen gives you a quick reference on the “on/off” status of the inputs and outputs, the PLC reference address, and wire number description, see (figure #7).

(PLC ref. address)

(Off/On status)

(Wire #)

(Description)

INPUT SLOT 1			ADDRESS DESCRIPTION
PLC ADDRESS	WIRE #		
I:1/0	OFF	400	LOADER IN AUTOMATIC
I:1/1	OFF	401	UNLOADER IN AUTOMATIC
I:1/2	ON	402	RESET PALLET HANDLING
I:1/3	ON	403	INTERLOCK WITH BLOCK MACHINE
I:1/4	OFF	404	INTERLOCK WITH BLOCK TURNOVER
I:1/5	OFF	405	SAFETY RELAY HAS RESET
I:1/6	OFF	406	SPARE
I:1/7	OFF	407	SPARE
I:1/8	OFF	408	SPARE
I:1/9	OFF	409	SPARE
I:1/10	OFF	410	SPARE
I:1/11	OFF	411	SLUMPER ON/OFF (AUTOMATIC)
I:1/12	OFF	412	PALLET IN SLUMPER
I:1/13	OFF	413	PALLET ON DE-ELEVATOR (LS-21)
I:1/14	OFF	414	DE-ELEVATOR UP (PX-26)
I:1/15	OFF	415	PALLET CLAEER OF DE-ELEVATOR (LS-22)

PREVIOUS SCREEN F14	NEXT SCREEN F15	MAIN SCREEN F16
------------------------	--------------------	--------------------

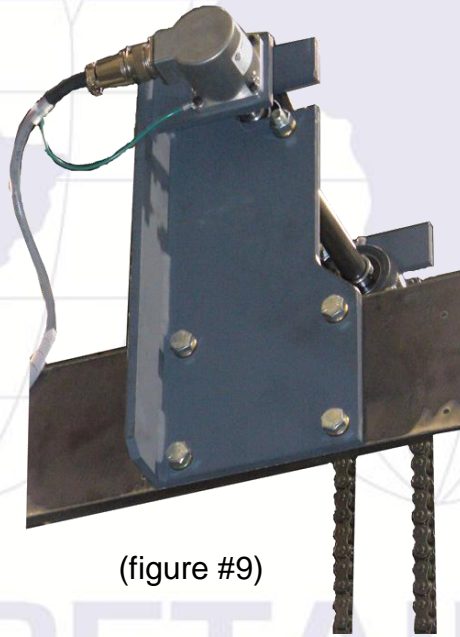
(figure #7)

Rack - Loader/Unloader

Proportional Valve/Encoder Conversion for UL Lift cylinder (Forks)

This conversion is needed when purchasing the PLC Conversion with encoder. This conversion allows the removal of the Loader and Unloader indexing trees and associated components, see (figure #8).

Replacing the index tree eliminates a great deal of maintenance man hours, costly repairs throughout the year, and gives the operator more flexibility in setting height positions, this is done by using an encoder feedback device, see (figure #9).



(figure #9)



(figure #8)

Rack - Loader/Unloader

Drape Hose Conversion

If you have had the pleasure of replacing one of these control cables during a production shift, I can guarantee you it is not fun. You practically have to stand on your head to wire the control cable into the junction box located at the bottom center of Loader or Unloader, see (figure #10).

This conversion is quite clean and can save hours of down time caused by debris damaging existing hydraulic hoses and control cable, see (figure #11) next slide.



(figure #10)

Rack - Loader/Unloader

Drape Hose Conversion

(continued)

By removing the hoses and control cable from within the Loader/Unloader to a exterior mounting system, it not only makes it easier for clean up, it adds much longer life to these components as well, see (figure #11).



(figure #11)

Rack - Loader/Unloader

Requirements:

Drape Hose Conversion – #382.1126.1.xxx

This kit is designed to replace the current internal reciprocating hoses, and electrical cord (between Loader/Unloader carriage and towers) with exterior mounted Drape Hoses.

Includes: free-standing post, terminal brackets, hoses, fittings to connect to existing manifold bar. ***This kit will work with the following Loader/Unloader model #'s:***

<u>Model #</u>	<u>Model #</u>	<u>Model #</u>
307.192	307.214	307.223
307.206	307.218	307.224
307.207	307.219	307.228
307.209	307.220	307.229
307.210	307.221	
307.211	307.222	

Note: *This kit will not work with the UL systems still using the Columbia manufactured valve, or Outboard Valve conversion.*

Rack - Loader/Unloader

Requirements:

Proportional Valve Conversion Kit - #382.1035.1.xxx

This kit is designed to replace the indexing tree on the Loader/Unloader towers, to be used in conjunction with the Encoder Positioning Allen Bradley PLC conversion.

Includes: proportional valve, encoder drive assembly, chain, fittings, and hardware, for each tower. Note - encoder is not included in the kit, it is included in the Allen Bradley PLC conversion.

This kit will work with the following Loader/Unloader model #'s:

<u>Model #</u>	<u>Model #</u>	<u>Model #</u>
307.210	307.218	

Note: *This kit will not work with the UL systems still using the Columbia manufactured valve.*

Rack - Loader/Unloader

PLC Controls Conversion

UL Relay to PLC Controls Conversion Kit (encoder) – 328.179.xxx

This conversion is designed to be used in conjunction with the Encoder Positioning on the Lift Cylinder (forks) on the Loader/Unloader towers.

Includes: two encoders and encoder cables, Allen Bradley SLC5/03 PLC, analog output card, high speed count card, Panelview operator interface for setting height positions, control selector switches for jogging – Loader/Unloader carriage forward/back, Forks up/down, Rack Conveyor forward/reverse, Elevator up/down, Green Conveyor manual/off/auto, Pallet Return sections manual/auto, e-stop, reset, and automatic.

Note: *This kit will not work with the UL systems still using the Columbia manufactured valve, or Outboard valve conversion.*

Rack - Loader/Unloader

Converting to PLC with Encoder Positioning

To replace the indexing tree on the Loader/Unloader towers, two (2) conversion kits are needed.

- **PLC Controls Conversion with Encoder**
 - PLC Control Panel w/HMI, (AB SLC5/03 & Panelview 1000)
 - Manual PB Stations
 - Alarm Horn & Beacon
 - Encoder Kits (2)

- **Proportional Valve Conversion for Lift Cylinder (Forks–up/down)**
 - Proportional Valves with Cable (2)
 - Cartridge valve (2)
 - Encoder Driver Assembly (2)
 - Idler Assembly (2)
 - Clevis with Encoder mount (2)
 - Miscellaneous fitting / hardware

Rack - Loader/Unloader

Columbia

Product/Service

Features

A characteristic of the product.

Benefits-I

A customer-originated value.

Benefits-II

Relay to PLC
w/Encoder and
Proportional
Valve Conv.

Panel

Allen Bradley
PLC & I/O

Operator
Interface

Safety

Free-Standing or
Wall mountable

Latest Controls
technology

Overview Screen

Menu Driven
Set-ups

Ease of
Adjustment

Audible Warning
Horn

Industry
standard
components

Reliable,
available parts

Status Screens

No index tree to
remove or adjust

Pallet Height and
lift speeds

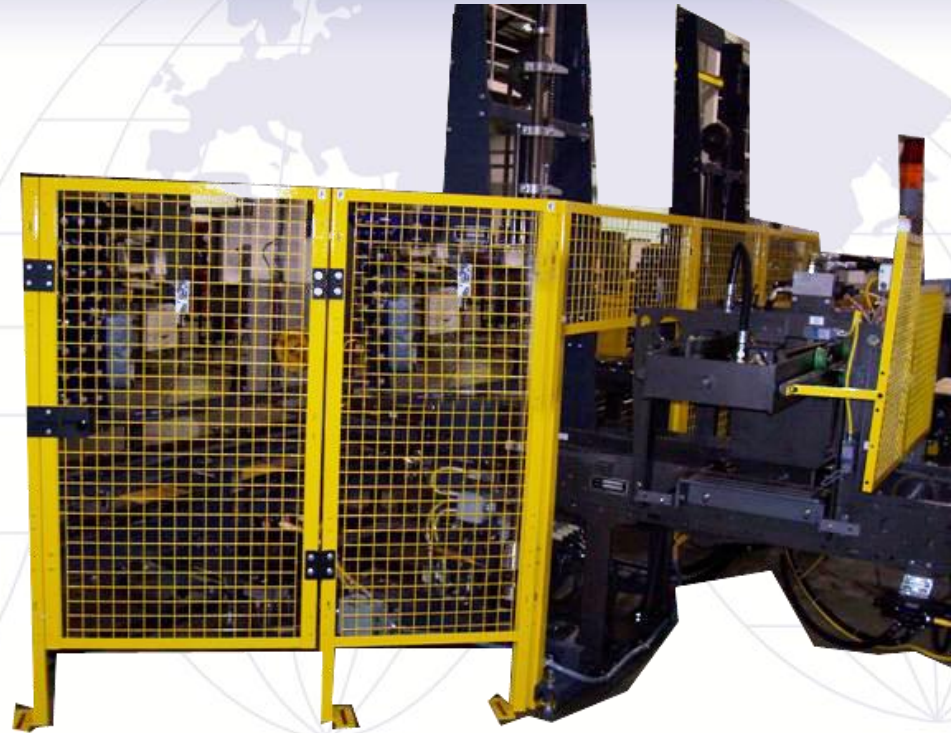
Visual Warning
Beacon

Rack - Loader/Unloader

Safety Guarding

On all conversions, upgrades or retrofits, we are required to quote safety guards (see photo).

If the customer chose not to purchase the safety guards, they will have to sign an agreement letter stating that they decline purchase of safety guarding. This signed document will be put into the customers file.



Rack - Loader/Unloader

Columbia

THE TOTAL SOLUTION



Questions?

PAVE • RETAIN • BUILD

Rack - Loader/Unloader

www.columbiamachine.com