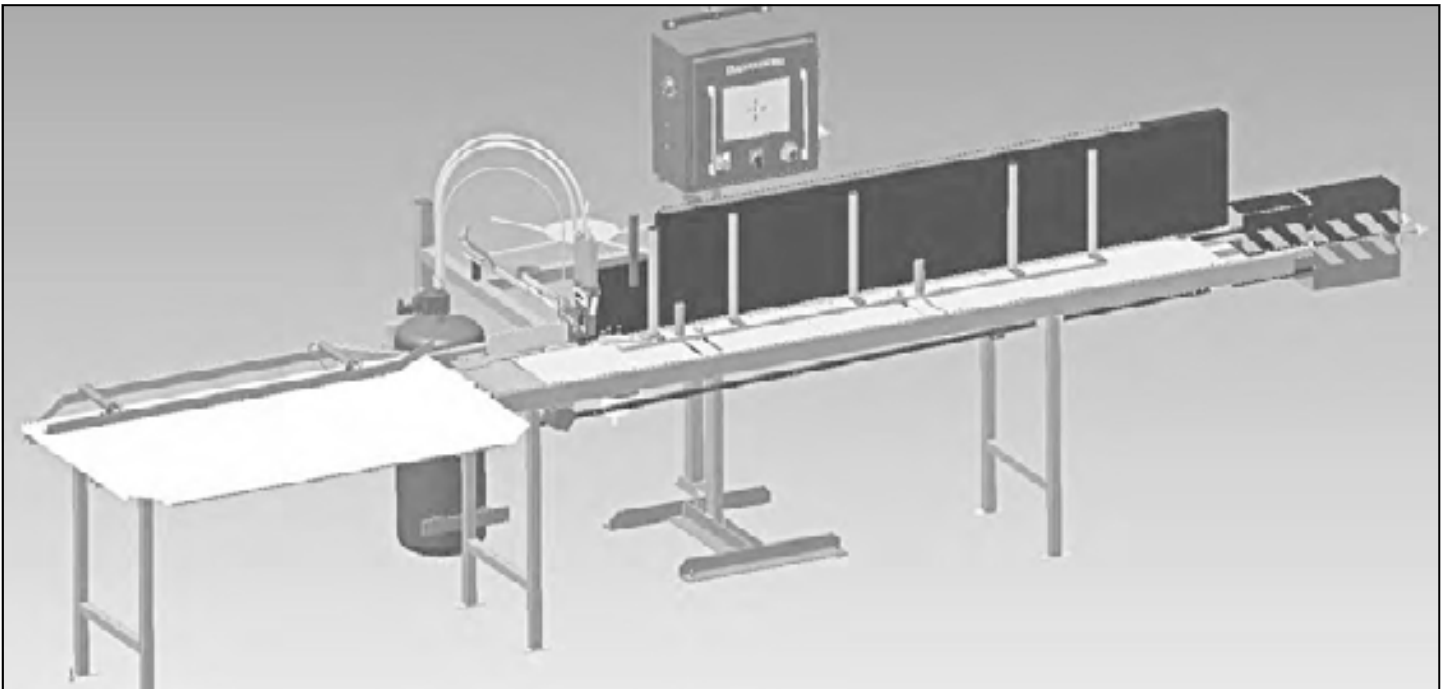


# Operations & Parts Manual

“FaceClipper 3100”

Heavy Duty Servo Driven & Computer Controlled  
Fully Automatic and Highly Versatile Clip Attaching Machine



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## Safety information

### **Warning!**

- Read all instructions before turning machine on.
- Do not operate without wearing proper eye and hearing protection
- Never operate any machinery without all guards properly mounted and fastened securely in place.
- Do not operate with air pressure set beyond the maximum of 90 PSI.
- Do not remove safety warnings or stickers
- Inspect machine daily for worn or abraded surfaces including air hoses and all cables.
- Avoid wearing loose clothing and jewelry while operating, servicing or cleaning Vertex equipment.
- Follow all appropriate lock out tag out (LOTO) procedures for electric and air before servicing this unit.
- Never place hands or fingers near clip exit area when operating tool or when connecting air supply to machine.
- Never place hands or fingers near the moving chain.
- Remove all power and air supply before clearing any jammed rails.
- To prevent any accidental starting of the machine, it is necessary that after initial power up of the unit, the operator must go to the fault screen to reset the axis fault (see page 14)

# DESCRIPTION OF EQUIPMENT

The Face Clipper 3100 is a specially engineered servo driven machine for quickly and accurately installing a variety of patented VersaClips (spring retainers) into wooden frame rails with a variety of rail spacing and alignment configurations.

## The Face Clipper 3100 main assemblies:

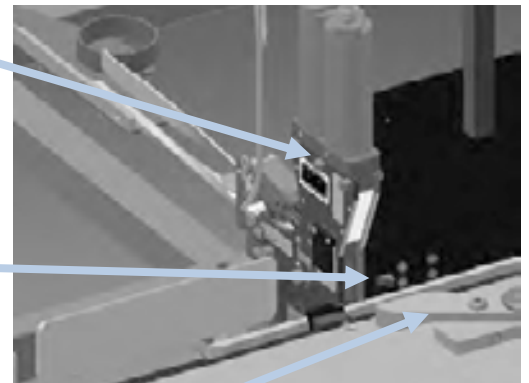
Control Box coordinates and controls all functions of the machine



Clip Dispenser Frame holds a spool of Face Clips containing 625 pieces



Tool Assembly (Clipping Head)



Rail Sensor switch

Adjustable Rail Guide

Exit Table—used to clear rail path



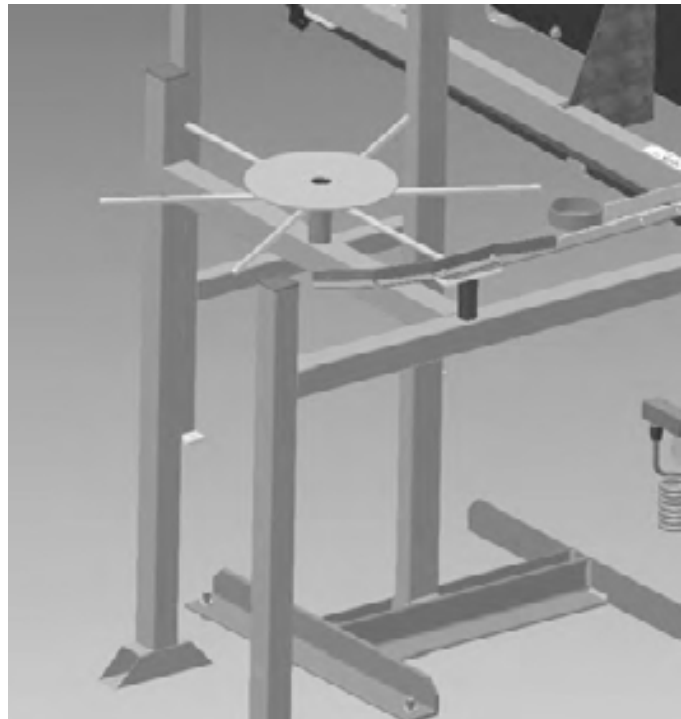
## Machine Setup

### Adjusting Air pressure

Set the operating air pressure to a minimum of 40 PSI and a maximum of 90 PSI using the air regulator. Determine the lowest PSI the machine requires to drive the fasteners correctly and use that setting. Lock regulator cap after setting air pressure.

### Loading a Spool of Face Clips

1. Guide the clips along the track and into the back of the application tool. Push the clips gently but firmly until they seat in the tool.
2. Verify that Feed Cylinder is down.
3. On the HMI touch screen, go to the manual machine screen
4. While depressing "MANUAL CLIP" pushbutton push clips into back of tool until clips contact driver blade. Release pushbutton.



## Adjustable Exit Table

Adjust air flow for balanced smooth operation



## Machine Speed Adjustments

The clipping machine is controlled by the microprocessor in the control box. During clipping of a rail the following happens to a rail (assuming a recipe is loaded to run).

The chain starts at a given speed, pushing a rail until the rail sensor switch is activated. At that time the speed is increased until just before the rail is in position for the clipping head to fire, applying the clip. Just before that firing position the rail is decelerated (or slowed to a stop). The clipping head fires, and the chain is started, accelerating to the clipping speed. That speed is held until the chain must be decelerated to a stop for the next clip. This continues until the last clip is installed and then ejects the rail to the exit table and activates the exit table pusher.

The speed of the machine can be adjusted in the security screen (see the Production Data instructions in this document for instructions on how to access the security screen).

There are two adjustments that can be made, adjustment 1 is the clipping speed. Adjustment 2 is the acceleration and deceleration.

Clipping speed is the speed of the chain moving the rails between the clip positions. There are 4 buttons, Factory Set Speed, Factory set speed +10%, Factory set speed +20%, and Factory set speed +30%. Pushing any of these buttons will change the clipping speed.

It is important to note that a short rail with many clips will see very little improvement in the total number of rails that can be produced by increasing the rail speed while a long rail with few clips will show the greatest increase in the total number of rails that can be produced. This is because of the time it takes to decelerate, apply the clip, and accelerate the rail. If the clips are close together the rail must start to slow down for the next clip before the rail can reach maximum speed.

The second adjustment is to change the acceleration and deceleration times. At 400 the clips are placed with the most accurate position +/- 2mm maximum. At 600 the accuracy drops to +/- 4mm but the total time to clip a rail is faster. The degree of accuracy needed by the customer will dictate how fast to set the acceleration and the deceleration. To adjust the acceleration and deceleration touch the number on the right and type in a new value. Acceleration and deceleration can be adjusted between 300 and 600 with the factory default at 500.



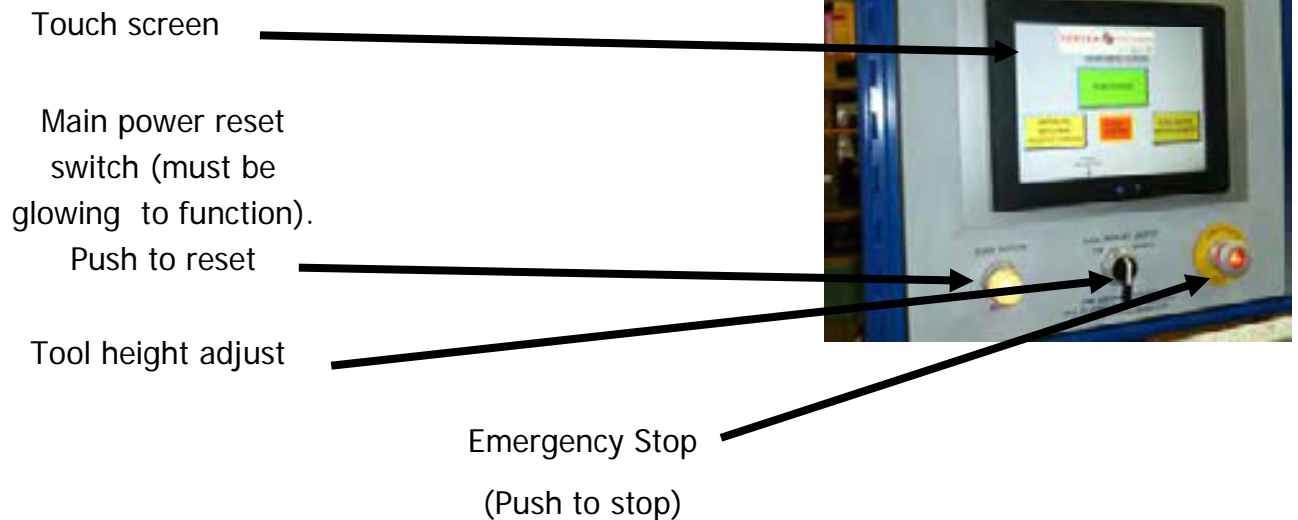


## Clip Tool Dwell Adjustments

The amount of time the clip tool is energized can be modified by touching the number on the right and typing in a new value between 15 and 55 milliseconds. The factory default is 30 milliseconds and should work for all but the shortest rails.



## Controller Front Panel





## Controller Side Panel

Main power switch 220 VAC  
15 Amps. Rotate handle to  
turn power on



Remote 120 VAC outlet and  
ETHERNET cable connec-  
tions using standard CAT-6  
cable for communicating  
with the HMI touch screen  
and the servo controller via  
the data hub.



## Turning on

1. Turn Main Power on. Be certain the red "E-Stop" button is pulled out
2. Press Main Power Reset button located on the lower left front operator control panel. The button should be illuminated "white" if all the power circuits are made.
3. The Main Menu screen will appear on the HMI touch screen.

## Programming a new rail manually

1. Set lug spacing (See appendix A)
2. From the controller main screen:
  - A. Press "Rail Recipe Management"
  - B. Press "Rail Recipe's Edit Search Create New"
  - C. Press "Create New" (all fields will be Zero)
  - D. Press the black area next to Rail Number and enter the rail number
  - E. enter the rail type: ( See Appendix B for rail descriptions)
    - Enter 1 for standard rail (Refer to Appendix B for diagram)
    - Enter 2 for group rail (Refer to Appendix B for diagram)
    - Enter 3 for odd rail (Refer to Appendix B for diagram)
  - F. Standard Rail.
    1. Enter P1 (position 1) of the first clip measured from the end of the rail to the center of the clip
    2. Enter P2 measured from the center of clip 1 to the center of clip 2 (this entry is optional depending on layout of clips desired)
    3. Enter P3 measured from the center of clip 2 to the center of clip 3 (this entry is optional depending on layout of clips desired)
    4. Enter P4 which is the distance between clips
    5. Press "Download Recipe to Controller"
    6. Press "Load Selected Recipe for Production"
    7. Skip to Step 3 "Start Production"
  - G. Group Rail.
    1. Enter P1 (position 1) of the first clip measured from the end of the rail to the center of the clip
    2. Enter P2 measured from the center of clip 1 to the center of clip 2 (this entry is optional depending on layout of clips desired)
    3. Enter P3 which is the distance between clips
    4. Enter P4 the distance between groups
    5. Enter P5 the number of clips per group (4 minimum)

#### G. Group Rail.. (continued)

6. Enter the number of groups (total clips per rail not to exceed 24)
7. Press "Download Recipe to Controller"
8. Press "Load Selected Recipe for Production"
9. Skip to Step I "Start Production"

#### H. Odd Rail..

1. Enter P1 (position 1) of the first clip measured from the end of the rail to the center of the clip
2. Enter P2 measured from the center of clip 1 to the center of clip 2
3. Enter P3 measured from the center of clip 2 to the center of clip 3
4. Continue enter remaining clips press page down arrow to access the next screen if needed
5. Press "Download Recipe to Controller"
6. Press "Load Selected Recipe for Production"

### 3. Start Production

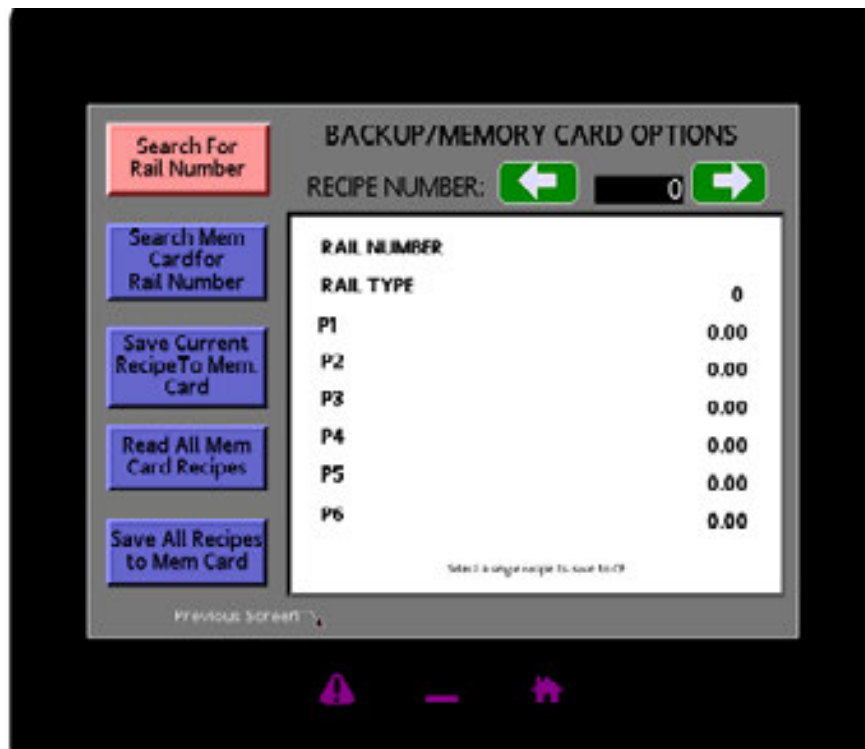
- A. Verify correct clip placement
- B. Load rails into the machine making sure not to place on top of any of the pusher lugs
- C. Important: P1 offset must be calibrated when the machine is set up for the first time before running production. Once set, the offset should not need recalibration. (See Appendix F)
- D. Adjust the Front Rail Guide (See Appendix C)
- E. Adjust the clipping head (See Appendix D)
- F. Press "Run". The LEDs on this screen will light when a device is activated.

## Running a preprogrammed rail (recalling a recipe from internal memory)

1. Set lug spacing (See appendix A)
2. From the controller main screen:
  3. Press "Rail Recipe Management"
  4. Press "Rail Recipe's Edit Search Create New"
  5. Press "Search For Rail Number"
  6. Press the black area and enter the desired rail number, press search
  7. If rail is found, press "Download Recipe to Controller"
8. Press "Load Selected Recipe for Production". The screen will then automatically change to the run screen.
9. Verify correct clip placement
10. Important P1 offset must be calibrated when the machine is set up for the first time before running production. Once set, the offset should not need recalibration unless machine speed is changed. (See Appendix F)
11. Load rails into the machine making sure not to place on top of any of the lugs
12. Adjust the Front Rail Guide (See Appendix D)
13. Adjust the clipping head (See Appendix E)
14. Press "Run". The LEDs on this screen will light when the device listed is activated.

## Recalling or Saving a recipe from/to Memory Card

1. From the controller main screen:
2. Press "Rail Recipe Management"
3. Press "Save or load Rail Recipes Mem Card"
4. To "Search the memory card for Rail Number" press the 2nd button
5. To "Save Current Recipe to the memory card" press the 3rd button
6. To "read all the recipes on the memory card " press the 4th button (all recipes in resident memory will be lost)
7. To "Save all Recipes to the memory card" press the 5th button (all recipes on the CF will be lost)
8. If recalling a recipe press the black area in the search screen and enter the desired rail number, press search
9. If rail is found, press "Download Recipe to Controller"
10. Press "Load Selected Recipe for Production". The screen will then automatically change to the run screen.
11. Verify correct clip placement
12. Load rails into the machine making sure not to place on top of any of the lugs
13. Adjust the Front Rail Guide (See Appendix D)
14. Adjust the clipping head (See Appendix E)
15. Press "Run". The LEDs on this screen will light when the device listed is activated.



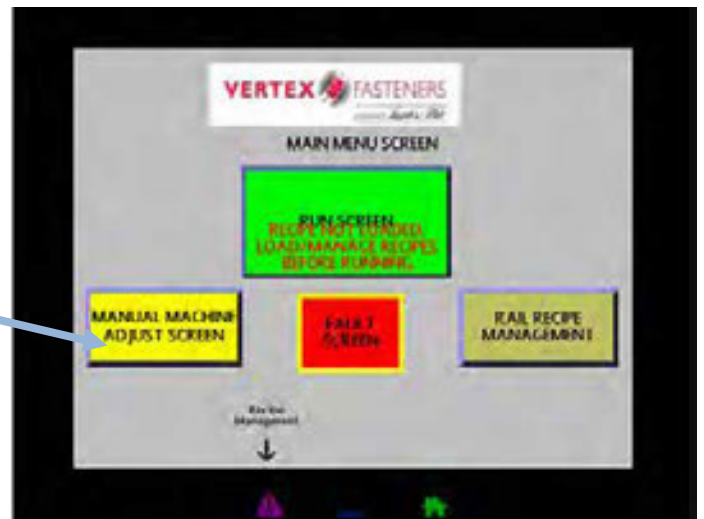
## Production Data

Two screens are available to report production of rails produced and clips applied. The first screen is a Lifetime Production total of clips fired.

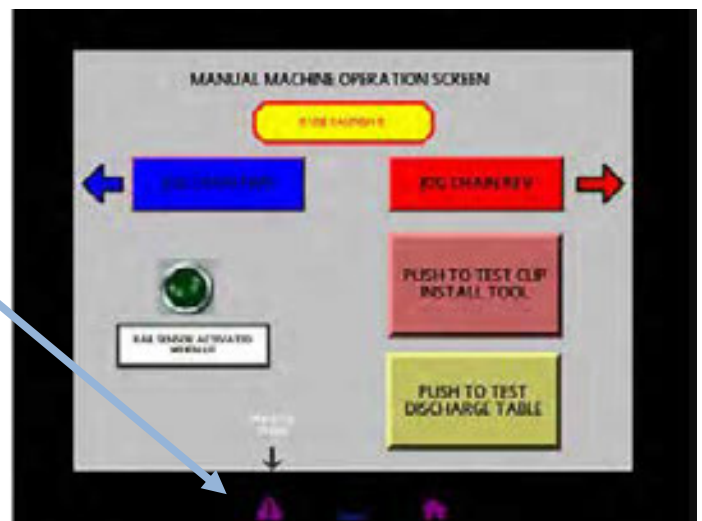
This number is intended for maintenance and should only be reset after customer maintenance.



**To access this screen**, turn on the main power switch and wait for the unit to start. When the "Run" box appears touch the Manual Machine Adjust button .



From the Manual Machine adjust screen, touch the hidden button below the Machine Setup



The Security Manager notification will pop up. Press the Green enter button



Enter "SYSTEM" for the USERNAME. Press the Green enter button



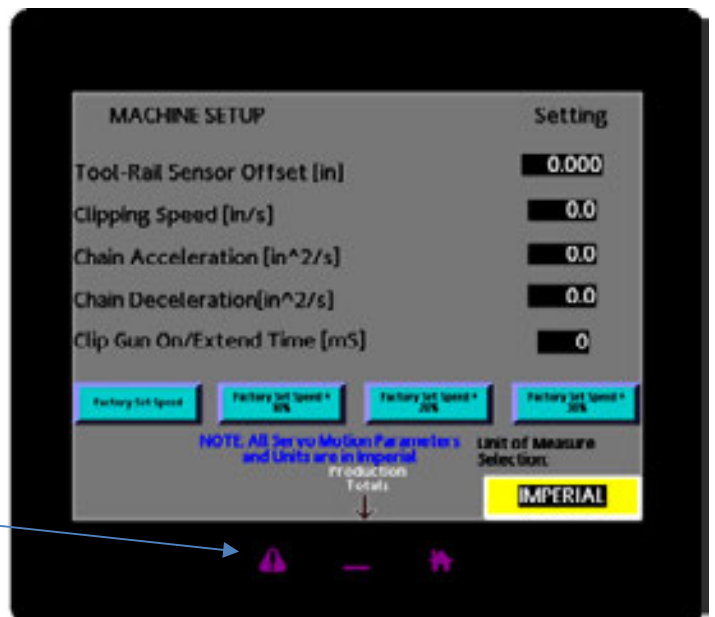
Call Vertex at 847-768-6139 for the password

Enter the password

Press the Green enter button.

Press the hidden button that is to the left of the Production Totals hidden button

This button is not marked so the lifetime production quantities cannot be accidentally reset

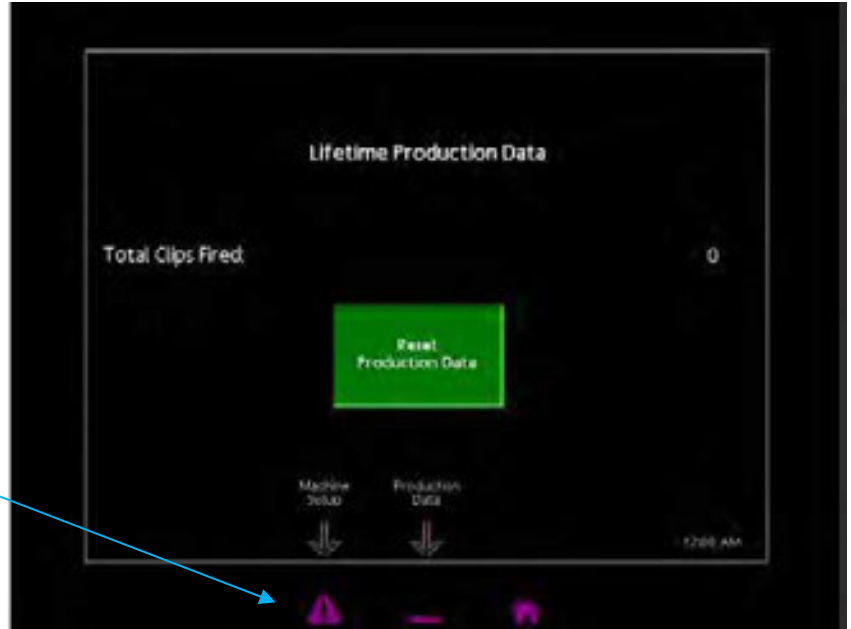




This will bring up the "Lifetime Production Data Screen.

Note: This screen is intended as a counter for Maintenance to determine service for the machine and is resettable by the customer as needed.

To return to the machine set up  
press the hidden button below  
Machine Setup



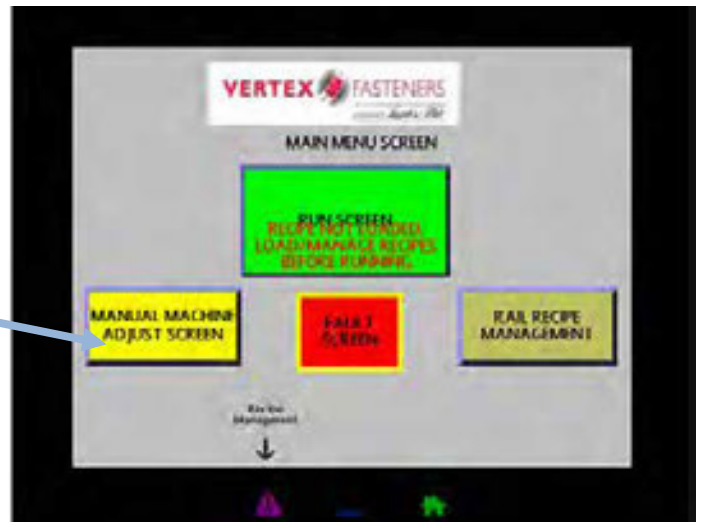
To return to the Production Data  
up press the hidden button below  
Production Data

## Production Data

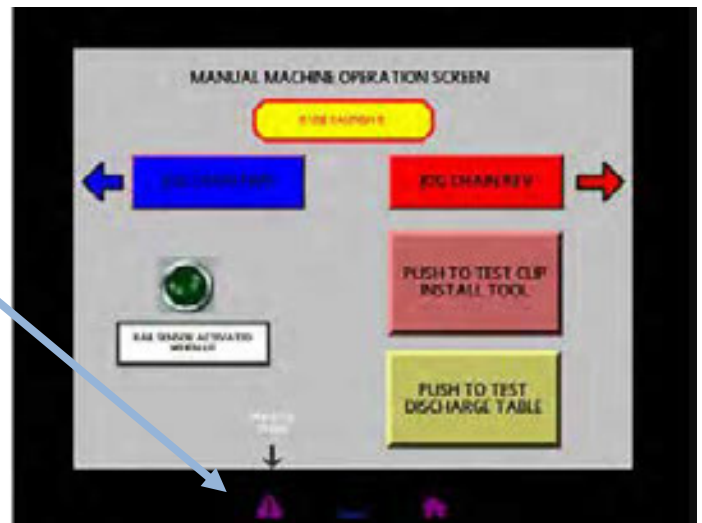
The second screen is a read out of the rails produced on a daily basis showing the total rails produced and the total clips applied since the count was manually reset or power reset.



To access this screen, turn on the main power switch and wait for the unit to start. When the "Run" box appears touch the Manual Machine button .



From the Manual Machine adjust screen, touch the hidden button below the Machine Setup



The Security Manager notification will pop up. Press the Green enter button



Enter "SYSTEM" for the USERNAME. Press the Green enter button



Call Vertex for the password 847-768-6139

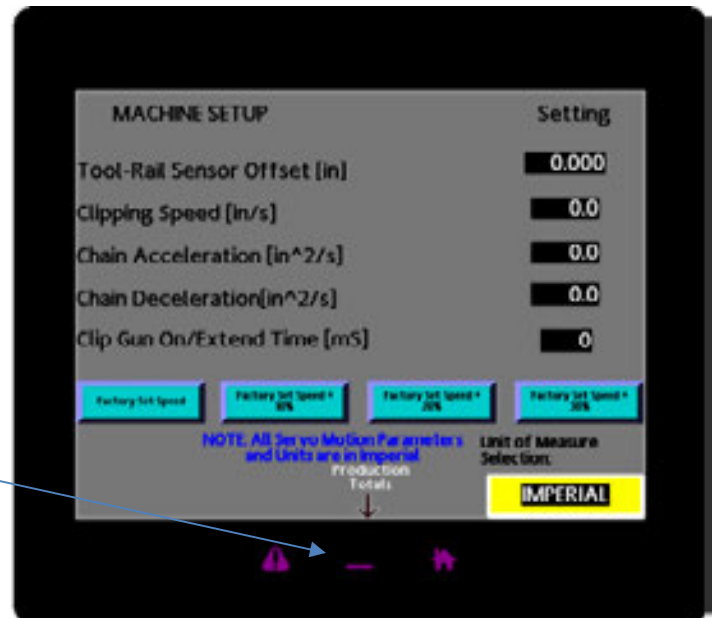
Enter the password

Press the Green enter button.



This will bring you to the Machine set up screen.

Press the hidden button below the Production Totals.



## Daily Production Data (continued)

This will bring up the "Daily Shift Production Count Data" screen.

Note: Please note the Daily shift production of clips fired may not agree with the lifetime production data depending on when the lifetime production was reset for maintenance.

The daily counts will reset with a power reset or they can be reset manually.



# Appendix A

## Lug Spacing's and installation

### Calculating Lug Placement

A 4-inch (102mm) gap should be left between end of rail and following lug. To optimize machine efficiency, use the maximum number of lugs appropriate for your rail length. To figure the maximum possible lugs you can use, add 4 inches (102mm) to the rail length you will be using. Then divide the chain length, 270" (6858mm) by this number; the answer will equal the maximum number of lugs you may fasten to the drive chain.

Divide chain length, 270 inches (6858mm), by number of lugs you wish to use.

2 lugs = 135 inches (3429mm) between lugs

3 lugs = 90 inches (2286mm) between lugs

4 lugs = 67.5 inches (1715mm) between lugs

5 lugs = 54 inches (1372mm) between lugs

6 lugs = 45 inches (1143mm) between lugs

#### Example:

Rail length = 48 inches

$48 + 4 = 52$

$270 \div 52 = 5.019$

5 lug maximum on drive chain

Use chart above for equal distant lug placement on chain.

Note, placing less than the optimal number of lugs on the chain or running rails longer than 72" (1828mm) may require the run button to be pressed more than once to complete a cycle successfully. If the chain is running and no rail is detected within a predetermined length the machine will stop. If the time it takes for a lug to come around and push the next rail is too long the machine will stop. Pressing the run button a second time will restart the cycle.

# Appendix A (continued)

## Lug Spacing's and installation

### Applying Universal Lugs to Drive Chain

Raise chain guard to open position

Install lug as shown below

Close chain guard.

**DO NOT RUN MACHINE WITH GUARD OPEN**



### Applying Universal Lugs to Drive Chain

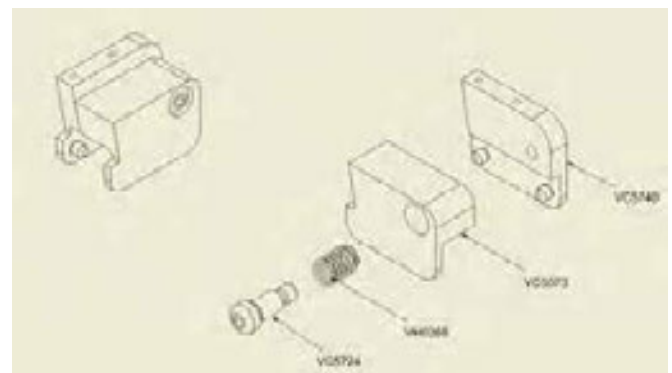
Twist front half of lug 90 degrees from rear half.

Insert pegs of rear half into chain.

Holding rear half in place, pull lug apart.

Twist front half back 90 degrees.

Insert pegs into chain.



# Appendix B

## STANDARD RAIL

P1 = END OF RAIL TO CENTER OF 1ST CLIP

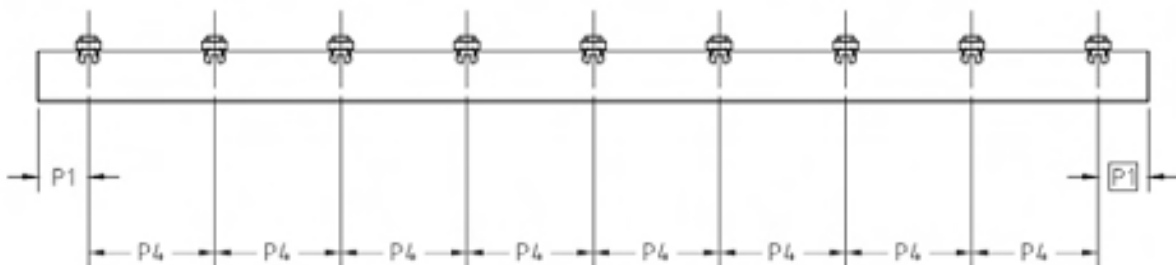
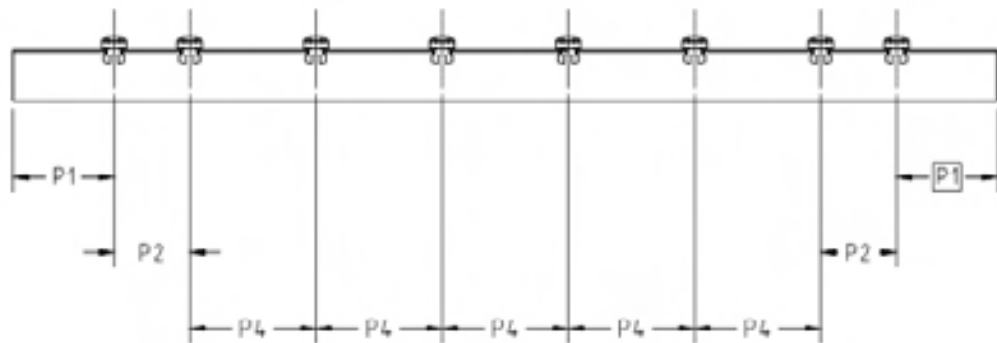
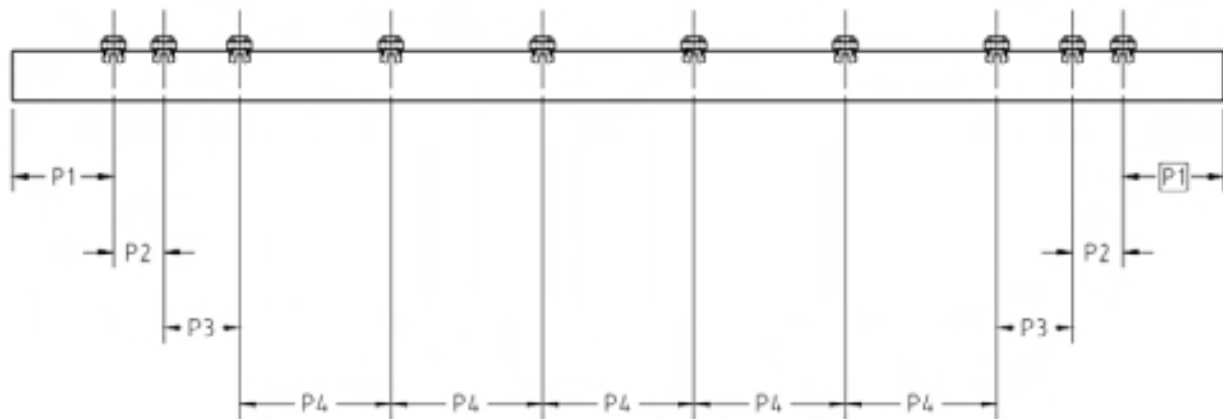
P2\* = CENTER OF 1ST CLIP TO CENTER OF 2ND CLIP

P3\* = CENTER OF 2ND CLIP TO CENTER OF 3RD CLIP

P4 = COMMON CENTER TO CENTER

P5 = TOTAL NUMBER OF CLIPS

\* OPTIONAL



3-5-01

P1 LAST P1 WILL EQUAL 1ST P1 ONLY IF CUSTOMER CALCULATIONS ARE CORRECT.

Note: P1 offset must be set prior to use

# Appendix B

## GROUP RAIL

P1 = END OF RAIL TO CENTER OF 1ST CLIP

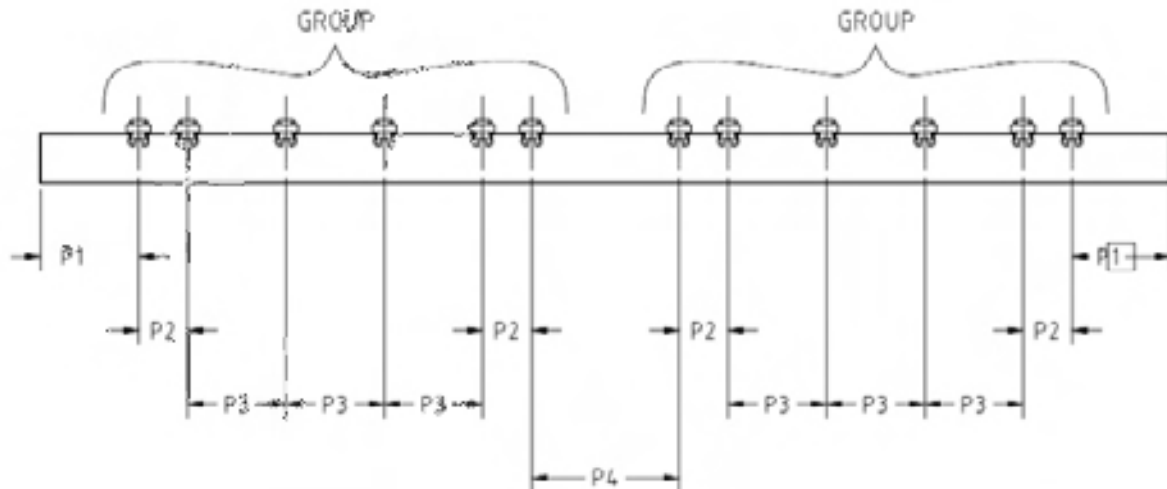
P2 = CENTER OF 1ST CLIP TO CENTER OF 2ND CLIP

P3 = CENTER TO CENTER IN GROUP

P4 = GROUP TO GROUP

P5 = NUMBER OF CLIPS PER GROUP

P6 = NUMBER OF GROUPS

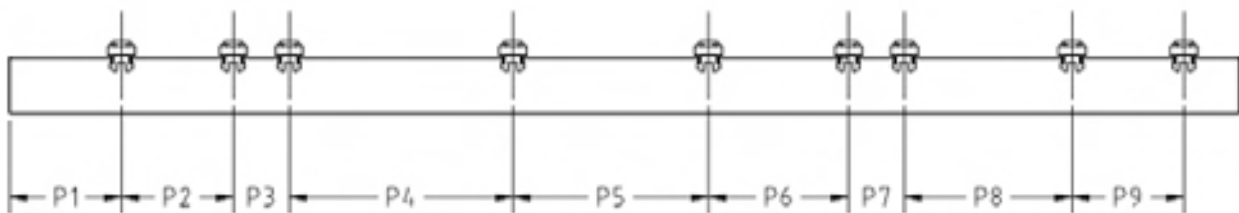
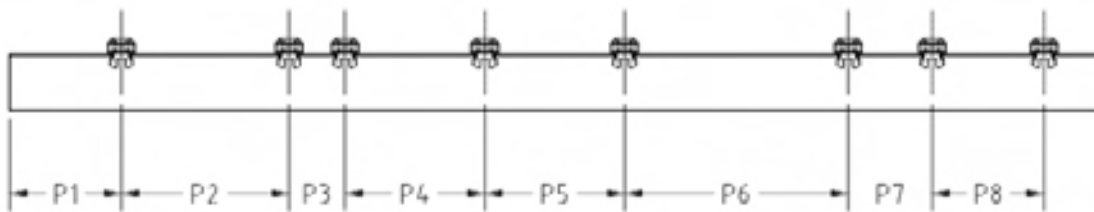
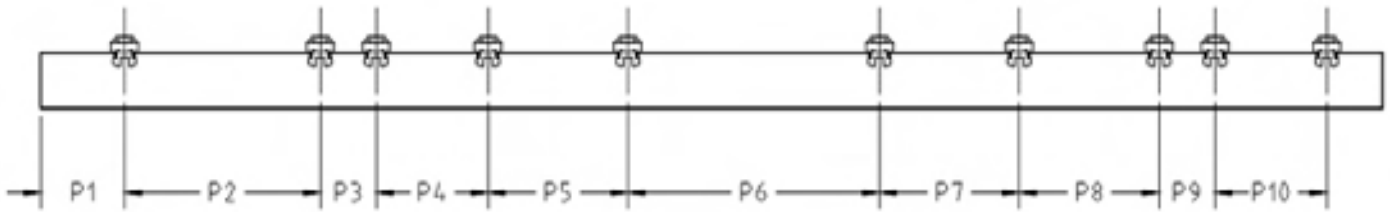


LAST P1 WILL EQUAL 1ST P1 ONLY IF CUSTOMER CALCULATIONS ARE CORRECT.



# Appendix B

## ODD RAIL



Note: P1 offset must be set prior to use

# Appendix C

## Front Rail Guide

### Positioning Front Rail Guide

Place stack of rails against rear fence.



Rear Fence

Pushbutton - depress to release clamps. Note, both buttons must be depressed to move rail guide evenly

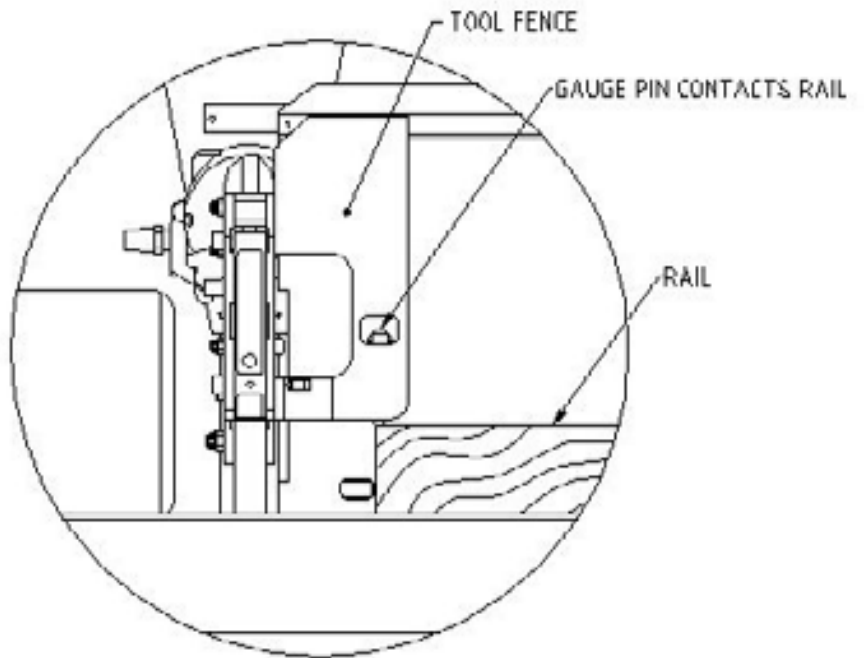
# Appendix D

## Clipping head adjustment

### Adjusting Tool Assembly Height

Turn "Tool Height" selector lever counterclockwise to raise clipping head

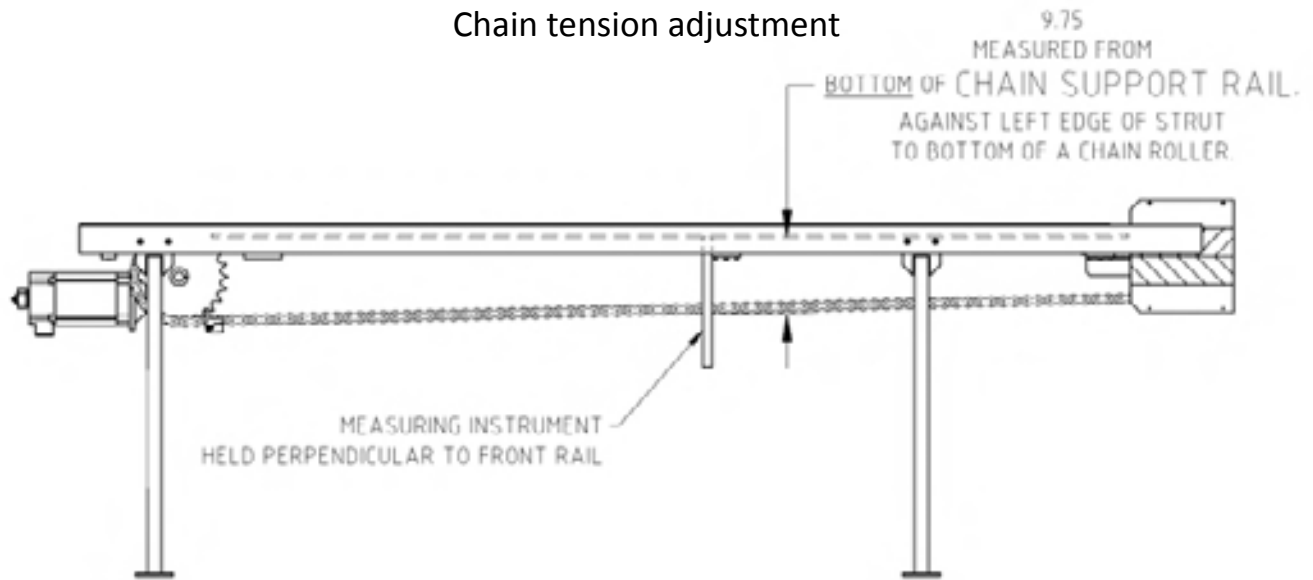
Place the rail to be clipped under the clipping head. Lower the clipping head until the gauge pin rises slightly after engaging the rail.



**!!! Warning.... NEVER Adjust Tool Height While Chain is Moving!!!**

# Appendix E

## Chain tension adjustment



To adjust the chain tension loosen the two locknuts counter-clockwise and turn the main adjustment nuts clockwise. Turn each nut equal amounts to keep the chain sprocket straight.

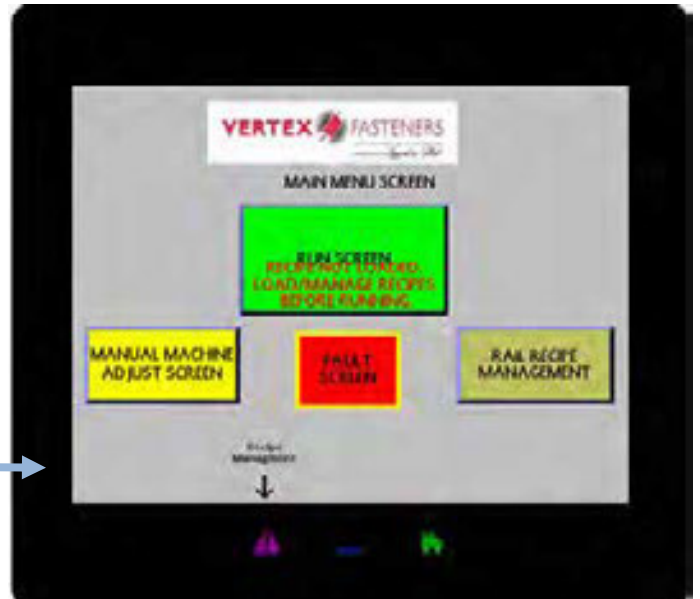


# Appendix F

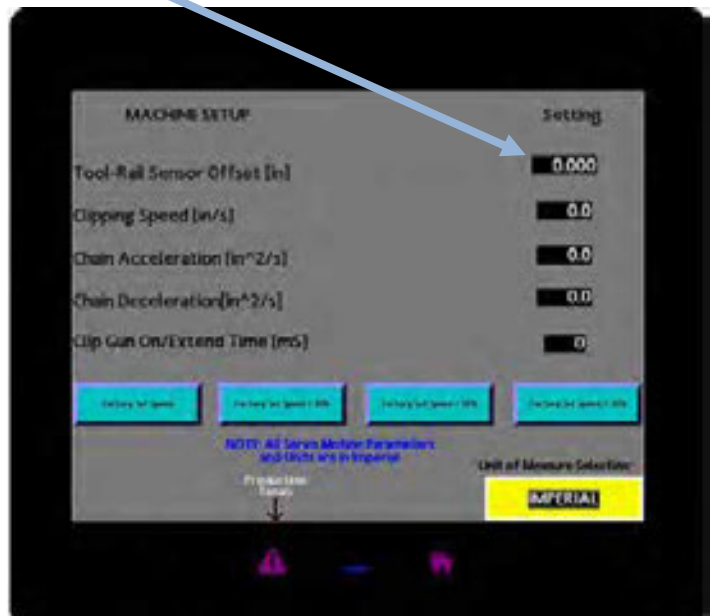
## P1 Calibration

To calibrate the machine for the correct placement of the first clip (P1):

1. The FaceClipper must be fully set up and ready to run a rail. The rail recipe must be programmed in and rails loaded with the front rail guide properly adjusted.
2. Press "Run" from the main screen and process one rail. Measure the actual distance from the end of the rail to the center of the first clip.
3. If the measured distance matches the programmed distance then no further adjustment is necessary. If the measured distance does not match the programmed distance then proceed to step 4
4. The offset is adjusted in the security screen. See production data earlier in this manual to access the machine set up screen.



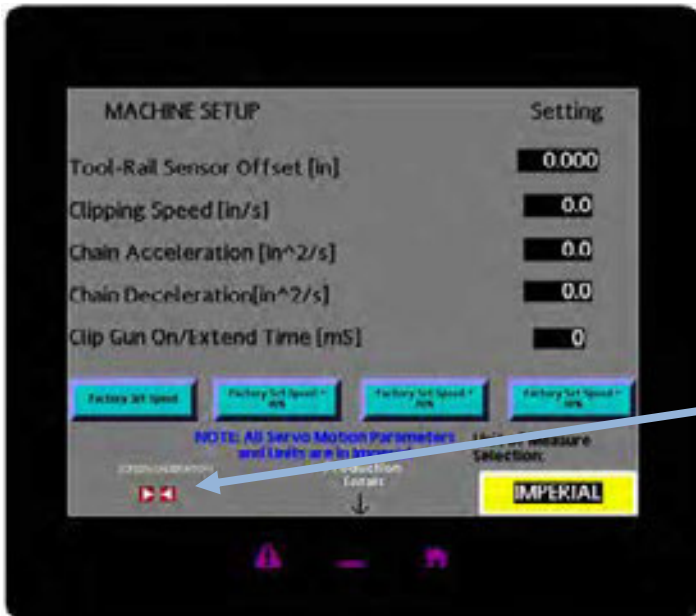
5. Touch the black area under settings next to the "Tool Rail Sensor Offset". This will bring up a box to allow entering a new offset number.
6. If the measured distance is larger than the programmed distance, reduce the offset. If the measured distance is smaller than the programmed distance, increase the offset.
7. Run an additional rail and check the distance. If necessary continue to adjust the offset until the measured and programmed distance are the same.



# Appendix G

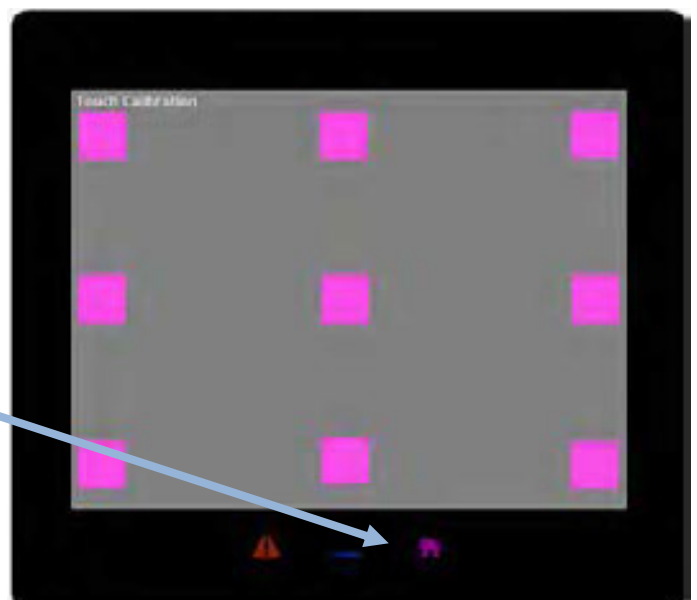
## Touch Screen Calibration

1. The touch screen is calibrated from the machine set up screen. See production data earlier in this manual to access the machine set up screen.



2. Touch the red arrows. This will take you to the calibration screen

3. Follow the prompts and touch each square as indicated. When complete, touch the home button



## OVERALL MACHINE MAINTENANCE

### **Recommended Daily Maintenance**

1. Blow off woodchips and debris from Tools, Rail Trigger and Acme rod/tool height motor area.
2. Add 2-3 drops of 30 weight oil to opening between front plate and top of blade of Tool assembly.

Remove air hose from the Clip Feed Cylinder, add 2-3 drops of 30 weight oil to opening and reinstall hose.

### **Recommended Bi-Weekly Maintenance**

1. Drain Air Reservoir Tank for condensation.
2. Check and adjust main drive chain for proper tension (VC5773).

### **Recommended Monthly Maintenance**

1. Remove front plate from tool and lubricate driver blade, front plate and top plate.
2. Check guard fasteners.



**Daily**  
**PREVENTATIVE MAINTENANCE**

DATE: \_\_/\_\_/\_\_

SHIFT: A B C D (CIRCLE ONE)

**MAINTENANCE TO PERFORM**

**RESPONSIBILITY**

**INITIALS**

BLOW OFF CLIP TOOL ASSY AND SURROUNDING AREA WITH AIR HOSE

OPERATOR

\_\_\_\_\_

BLOW OFF CLIP FEED ASSY AND TRACK AREA WITH AIR HOSE

OPERATOR

\_\_\_\_\_

OIL (1) BEHIND TOOL "FRONT PLATE" AND "BLADE" AREA

OPERATOR

\_\_\_\_\_

NOTE: (1) RECOMMENDED OIL VERTEX VC0340

COMMENTS: (REMARKS ABOUT CONDITION OF PARTS AND/OR MAINTENANCE PERFORMED).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Weekly**  
**PREVENTATIVE MAINTENANCE**

DATE: \_\_/\_\_/\_\_

SHIFT: A B C D (CIRCLE ONE)

**MAINTENANCE TO PERFORM**

**RESPONSIBILITY**

**INITIALS**

CHECK AIR LINE LUBRICATOR AND FILL AS NECESSARY (1)

OPERATOR

\_\_\_\_\_

CHECK FOR LOOSE OR MISSING SCREWS ON CLIPPING TOOLS

SUPERVISOR

\_\_\_\_\_

ASSEMBLIES TO CHECK

CLIPPING TOOLS

SUPERVISOR

\_\_\_\_\_

FEEDER ASSEMBLIES

SUPERVISOR

\_\_\_\_\_

COMMENTS: (REMARKS ABOUT CONDITION OF PARTS AND/OR MAINTENANCE PERFORMED).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**"MONTHLY"**  
**PREVENTATIVE MAINTENANCE**

DATE: \_\_/\_\_/\_\_

SHIFT: A B C D (CIRCLE ONE)

**MAINTENANCE TO PERFORM**

**RESPONSIBILITY**

**INITIALS**

REMOVE CLIPPING TOOL "FRONT PLATE" SUPERVISOR \_\_\_\_\_

REMOVE "BLADE" AND "BLADE PIN"

BLOW OUT INSIDE OF CLIPPING TOOL WITH AIR HOSE

WIPE OF "BLADE", "BLADE PIN", AND "FRONT PLATE"

CHECK FOR WEAR. REPLACE IF BADLY WORN.

CHECK "ANVIL" REPLACE IF BADLY WORN

LUBRICATE (2) "BLADE", "BLADE PIN", AND "FRONT PLATE"

LUBRICATE (2) "ROLLER" AND "ROLLER PIN" WITHOUT REMOVING

LUBRICATE (2) SLOTS INSIDE OF "SIDE PLATES"

REASSEMBLE ALL COMPONENTS AND MANUALLY FIRE TOOL TO INSURE FUNCTIONALITY

DRAIN LIQUIDS THAT HAVE COLLECTED INSIDE AIR TANK BY SUPERVISOR \_\_\_\_\_

OPENING VALVE ON BOTTOM OF AIR TANK

CHECK DRIVE CHAIN FOR PROPER TENSION AND WEAR,  
REPLACE IF NEEDED SUPERVISOR \_\_\_\_\_

CHECK RAIL DETECT SWITCH FOR PROPER FUNCTION

(this can be verified by checking P1 clip placement.)

ADJUST AS NECESSARY SUPERVISOR \_\_\_\_\_

NOTE: (2) USE VERTEX VH0214 GREASE

COMMENTS: (REMARKS ABOUT CONDITION OF PARTS AND/OR MAINTENANCE PERFORMED).

\_\_\_\_\_

\_\_\_\_\_

**"SEMI-ANNUALLY"**  
**PREVENTATIVE MAINTENANCE**

DATE: \_\_/\_\_/\_\_

SHIFT: A B C D (CIRCLE ONE)

<b><u>MAINTENANCE TO PERFORM</u></b>	<b><u>RESPONSIBILITY</u></b>	<b><u>INITIALS</u></b>
CHECK TENSION ON CHAIN AND LUBRICATE (2)	SUPERVISOR	_____
REPLACE AIR LINE FILTERS (IF INSTALLED)	SUPERVISOR	_____

NOTE: (2) USE VERTEX GREASE VH0214

COMMENTS: (REMARKS ABOUT CONDITION OF PARTS AND/OR MAINTENANCE PERFORMED).

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**"ANNUALY"**  
**PREVENTATIVE MAINTENANCE**

DATE: \_\_/\_\_/\_\_

SHIFT: A B C D (CIRCLE ONE)

**MAINTENANCE TO PERFORM**

**RESPONSIBILITY**

**INITIALS**

REBUILD CLIPPING TOOLS

MAINTENANCE DEPT. \_\_\_\_\_

DISASSEMBLE TOOLS COMPLETELY

CLEAN COMPONENTS AND DRY

INSPECT ALL COMPONENTS FOR WEAR. REPLACE AS NEEDED

REPLACE PISTON O-RING

LUBRICATE (2) ALL WORKING PARTS AND REASSEMBLE

REBUILD MAGAZINE ASSEMBLY

MAINTENANCE DEPT. \_\_\_\_\_

DISASSEMBLE FEEDER CYLINDER AND ANTI BACKUP WHEEL ASSEMBLY

CLEAN COMPONENTS AND DRY

INSPECT ALL COMPONENTS FOR WEAR REPLACE AS NEEDED

REPLACE O-RINGS IN AIR CYLINDER

LUBRICATE (2) ALL WORKING PARTS AND REASSEMBLE

DE-GREASE AND CLEAN EXTERIOR SURFACE OF MACHINE

MAINTENANCE DEPT. \_\_\_\_\_

INSPECT ALL PARTS FOR WEAR AND REPAIR OR REPLACE AS NEEDED

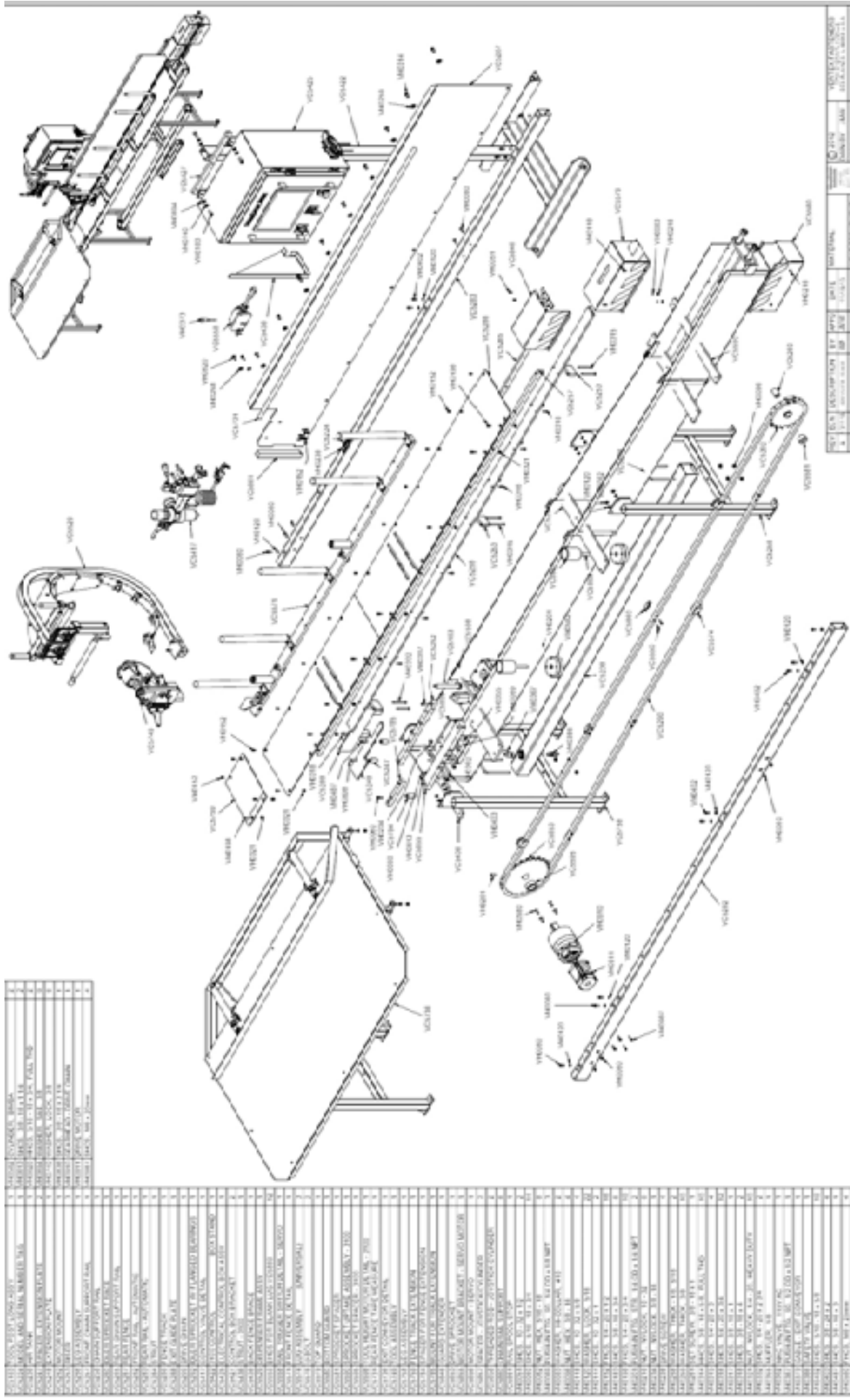
NOTE: (2) USE VERTEX GREASE VH0214

COMMENTS: (REMARKS ABOUT CONDITION OF PARTS AND/OR MAINTENANCE PERFORMED).

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# Parts List



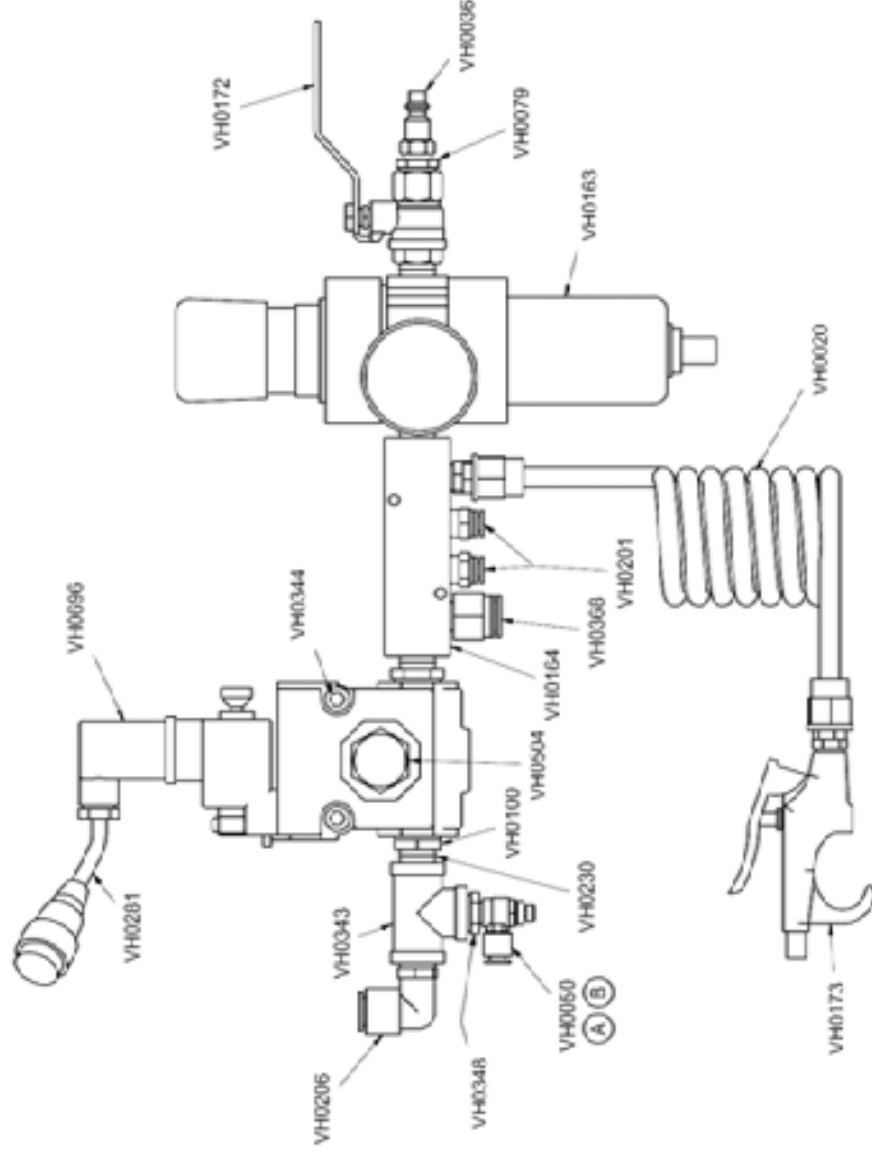
QTY	DESCRIPTION	UNIT	PRICE	STATUS
1	MOTOR	1/2 HP	150.00	NEW
1	SHAFT	1/2"	20.00	NEW
1	GEAR	20 TOOTH	15.00	NEW
1	PULLEY	3"	10.00	NEW
1	BEARING	1/2"	12.00	NEW
1	ROLLER	1/2"	8.00	NEW
1	DRIVE SHAFT	1/2"	18.00	NEW
1	DRIVE PULLEY	3"	12.00	NEW
1	SHAFT	3/4"	25.00	NEW
1	GEAR	15 TOOTH	10.00	NEW
1	BEARING	3/4"	15.00	NEW
1	ROLLER	3/4"	10.00	NEW
1	SHAFT	1"	30.00	NEW
1	GEAR	10 TOOTH	8.00	NEW
1	BEARING	1"	18.00	NEW
1	ROLLER	1"	12.00	NEW
1	SHAFT	1 1/4"	35.00	NEW
1	GEAR	6 TOOTH	6.00	NEW
1	BEARING	1 1/4"	22.00	NEW
1	ROLLER	1 1/4"	15.00	NEW
1	SHAFT	1 3/4"	40.00	NEW
1	GEAR	4 TOOTH	5.00	NEW
1	BEARING	1 3/4"	25.00	NEW
1	ROLLER	1 3/4"	18.00	NEW
1	SHAFT	2"	45.00	NEW
1	GEAR	3 TOOTH	4.00	NEW
1	BEARING	2"	30.00	NEW
1	ROLLER	2"	22.00	NEW
1	SHAFT	2 1/2"	50.00	NEW
1	GEAR	2 TOOTH	3.00	NEW
1	BEARING	2 1/2"	35.00	NEW
1	ROLLER	2 1/2"	28.00	NEW
1	SHAFT	3"	55.00	NEW
1	GEAR	1 TOOTH	2.00	NEW
1	BEARING	3"	40.00	NEW
1	ROLLER	3"	32.00	NEW

QTY	DESCRIPTION	UNIT	PRICE	STATUS
1	FLAT IRON	10"	12.00	NEW
1	FLAT IRON	12"	15.00	NEW
1	FLAT IRON	14"	18.00	NEW
1	FLAT IRON	16"	22.00	NEW
1	FLAT IRON	18"	28.00	NEW
1	FLAT IRON	20"	35.00	NEW
1	FLAT IRON	22"	42.00	NEW
1	FLAT IRON	24"	50.00	NEW
1	FLAT IRON	26"	58.00	NEW
1	FLAT IRON	28"	68.00	NEW
1	FLAT IRON	30"	80.00	NEW
1	FLAT IRON	32"	92.00	NEW
1	FLAT IRON	34"	105.00	NEW
1	FLAT IRON	36"	120.00	NEW
1	FLAT IRON	38"	135.00	NEW
1	FLAT IRON	40"	155.00	NEW
1	FLAT IRON	42"	175.00	NEW
1	FLAT IRON	44"	195.00	NEW
1	FLAT IRON	46"	220.00	NEW
1	FLAT IRON	48"	245.00	NEW
1	FLAT IRON	50"	280.00	NEW
1	FLAT IRON	52"	315.00	NEW
1	FLAT IRON	54"	350.00	NEW
1	FLAT IRON	56"	390.00	NEW
1	FLAT IRON	58"	435.00	NEW
1	FLAT IRON	60"	480.00	NEW
1	FLAT IRON	62"	525.00	NEW
1	FLAT IRON	64"	580.00	NEW
1	FLAT IRON	66"	635.00	NEW
1	FLAT IRON	68"	695.00	NEW
1	FLAT IRON	70"	760.00	NEW
1	FLAT IRON	72"	825.00	NEW
1	FLAT IRON	74"	895.00	NEW
1	FLAT IRON	76"	965.00	NEW
1	FLAT IRON	78"	1040.00	NEW
1	FLAT IRON	80"	1120.00	NEW
1	FLAT IRON	82"	1200.00	NEW
1	FLAT IRON	84"	1285.00	NEW
1	FLAT IRON	86"	1370.00	NEW
1	FLAT IRON	88"	1460.00	NEW
1	FLAT IRON	90"	1555.00	NEW
1	FLAT IRON	92"	1650.00	NEW
1	FLAT IRON	94"	1750.00	NEW
1	FLAT IRON	96"	1850.00	NEW
1	FLAT IRON	98"	1955.00	NEW
1	FLAT IRON	100"	2060.00	NEW

REV	DATE	DESCRIPTION	BY	CHKD	APP'D	STATUS
1	10/27/08	INITIAL DRAWING	WHS	WHS	WHS	NEW
2	11/10/08	REVISIONS	WHS	WHS	WHS	NEW
3	11/25/08	REVISIONS	WHS	WHS	WHS	NEW
4	12/01/08	REVISIONS	WHS	WHS	WHS	NEW
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49	12/01/08	REVISIONS	WHS	WHS	WHS	NEW
50	12/01/08	REVISIONS	WHS	WHS	WHS	NEW

# Parts List

PART #	DESCRIPTION	QT
VH0020	RETRACTABLE HOSE	1
VH0036	PLUG, MALE, 1/4 - 1/4	1
VH0050	FLOW CONTROL	1
VH0079	BUSHING, REDUCER, 3/8 x 1/4	1
VH0100	BUSHING, REDUCER, BRASS, 1/2 x 3/8	2
VH0163	FILTER/REGULATOR W/ GAUGE	1
VH0164	MANIFOLD	1
VH0172	VALVE, VENTED SHUT-OFF BALL, 3/8 NPT	1
VH0173	AIR GUN	1
VH0201	PUSH-IN FTG, STR, 1/4 OD x 1/4 NPT	2
VH0206	PUSH-IN FTG, 90, 1/2 OD x 3/8 NPT	1
VH0230	NIPPLE, 3/8 NPT x 1 CLOSE	4
VH0281	SOLENOID CABLE	1
VH0343	TEE, 3/8	1
VH0344	SHCS, 5/16 - 18 x 2	2
VH0348	BUSHING, REDUCER, 3/8 x 1/8	1
VH0368	PUSH-IN FTG, STR, 1/2 OD x 1/4 NPT	1
VH0504	MUFFLER	1
VH0696	VALVE, 24V DC, TOOL	1



REV	ECN	DESCRIPTION	BY	APPD	DATE	MATERIAL	HEAT TREATMENT	FINISH
A	931	TRANS UNDO	JMW	MR	7-23-09			
B	1085	BACK TO VH090	JMW	JMF	8-11-11			

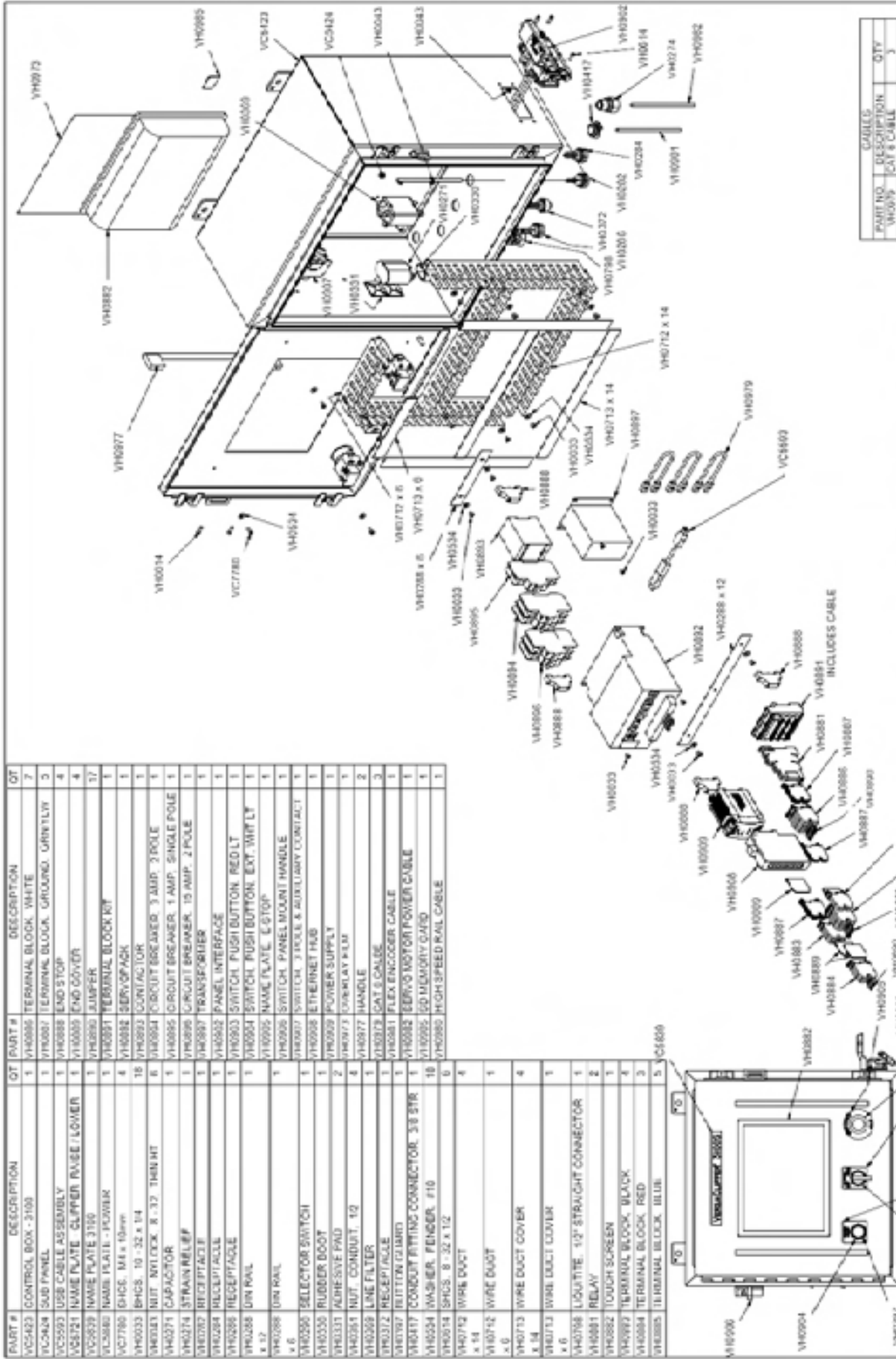
  

VERTEX FASTENERS 1708 SHERWIN AVENUE DES PLAINES, IL 60018 U.S.A.	2006 DOWN BY JMW APPD MR DATE 9-23-00 SCALE NONE	VERTEX FASTENERS 1708 SHERWIN AVENUE DES PLAINES, IL 60018 U.S.A.
CONTROL VALVE DETAIL (SINGLE & TRI SERVO)		DWG. NO. VC5417
		<b>B</b>

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE. IT IS UNCLASSIFIED IN WHOLE OR IN PART TO SUPPORT AIR FORCE OPERATIONS AND RESEARCH.

# Parts List

PART #	DESCRIPTION	QTY	PART #	DESCRIPTION	QTY
VCS423	CONTROL BOX - 3100	1	VH0096	TERMINAL BLOCK, WHITE	7
VCS424	SUB PANEL	1	VH0097	TERMINAL BLOCK, GROUND, GRN/WTLY	3
VCS593	USB CABLE ASSEMBLY	1	VH0098	END STOP	4
VCS721	NAME PLATE - CLIPPER RISE LOWER	1	VH0099	END COVER	4
VCS729	NAME PLATE 3150	1	VH0099	ALUMINUM	37
VCS880	NAME PLATE - POWER	1	VH0099	TERMINAL BLOCK, RT	1
VCT780	DHCL, M1 x 10mm	4	VH0099	SERVO PACK	1
VH0033	BHCS, 10 - 32 x 14	18	VH0099	CIRCUIT BREAKER, 3 AMP, 2 POLE	1
VH0034	NUT NYLOCK, 8 - 32, 1MM HT	8	VH0099	CIRCUIT BREAKER, 1 AMP, SINGLE POLE	1
VH0035	CAPACITOR	1	VH0099	CIRCUIT BREAKER, 15 AMP, 2 POLE	1
VH0036	RECEPTACLE	1	VH0099	TRANSFERIDER	1
VH0037	RECEPTACLE	1	VH0099	PANEL INTERFACE	1
VH0038	RECEPTACLE	1	VH0099	SWITCH PUSH BUTTON, REOLT	1
VH0039	UN RAIL	1	VH0099	SWITCH PUSH BUTTON, EXT. WIPLY	1
VH0040	UN RAIL	1	VH0099	NAMC PLATE, E-STOP	1
VH0041	SELECTOR SWITCH	1	VH0099	SWITCH, 3 POLE & AUXILIARY CONTACT	1
VH0042	RUBBER BOOT	1	VH0099	ETHERNET HUB	1
VH0043	ADH-SIVE PAD	2	VH0099	POWER SUPPLY	1
VH0044	NUT, CONDUIT, 1/2	4	VH0099	CONSOLE PAD	1
VH0045	LINE FILTER	1	VH0099	HANDLE	2
VH0046	RECEPTACLE	1	VH0099	CAT.5 CABLE	3
VH0047	BOTTOM ZIARM	1	VH0099	FLEX ENCODER CABLE	1
VH0048	CONDUIT FITTING CONNECTOR, 3/8 STR	1	VH0099	SERVO MOTOR POWER CABLE	1
VH0049	WASHER, FENDER, #10	18	VH0099	50 MEMORY GATO	1
VH0050	SPCS, 8 - 32 x 1/2	6	VH0099	HIGH SPEED RAIL CABLE	1
VH0051	WIRE DUCT	4			
VH0052	WIRE DUCT	1			
VH0053	WIRE DUCT COVER	4			
VH0054	WIRE DUCT COVER	1			
VH0055	LIQUITITE, 1/2" STRAIGHT CONNECTOR	1			
VH0056	RELAY	2			
VH0057	TOUCH SCREEN	1			
VH0058	TERMINAL BLOCK, BLACK	3			
VH0059	TERMINAL BLOCK, RED	3			
VH0060	TERMINAL BLOCK, BLUE	5			



CABLES		
PART NO.	DESCRIPTION	QTY
VH0099	CAT 5 CABLE	3

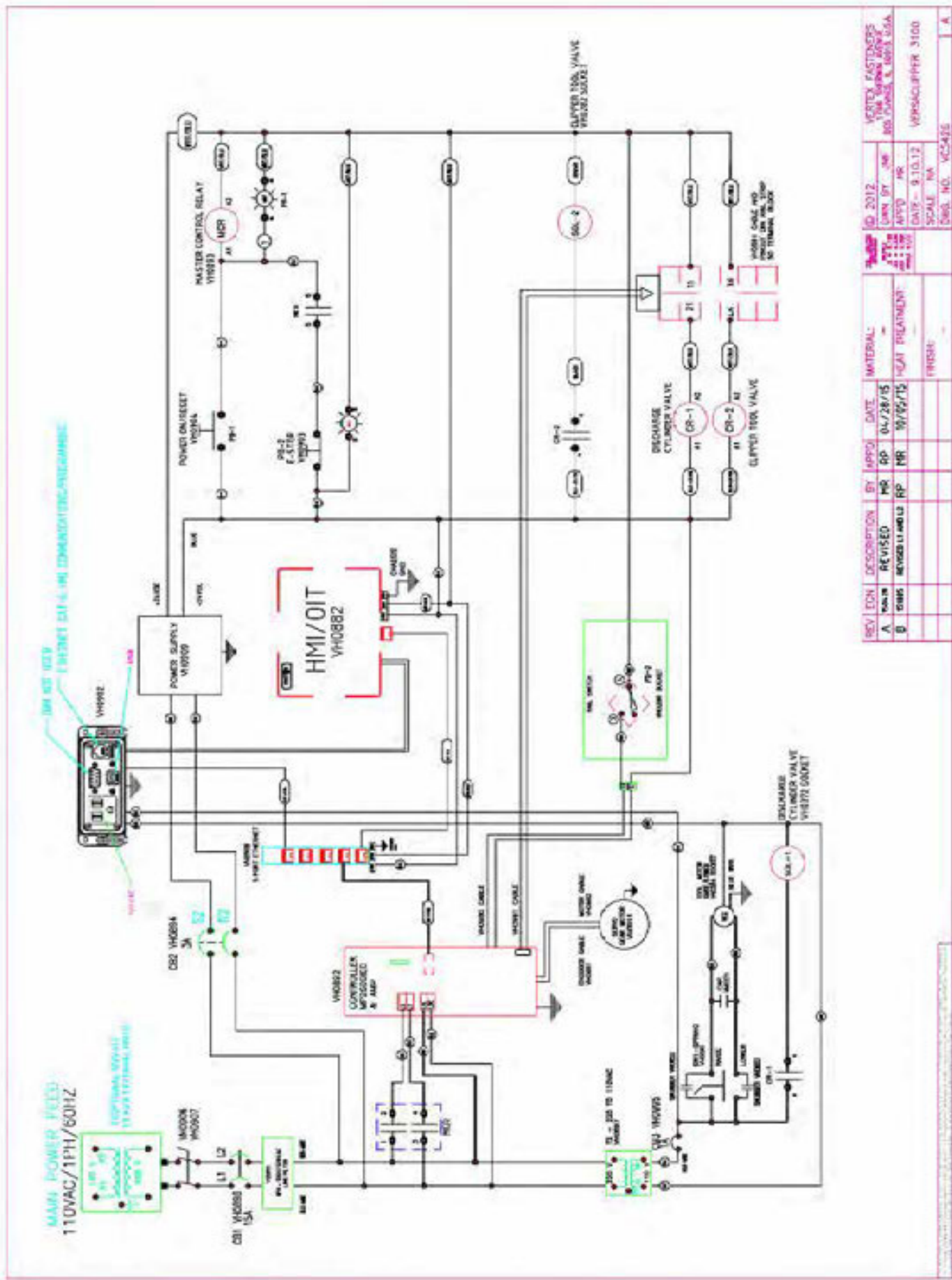
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A	31118	ADD PARTS	RP	AWP	11/15/13	
B	35013	REVISIONS	MP	MR	04/13/15	HEAT TREATMENT

DATE	2017	SCALE	
DESIGNED BY	JAW	SCALE	
APPD.	JEP	SCALE	
DATE	04-13	SCALE	
DWG. NO.	VCS425	SCALE	
C		SCALE	

VIKTEK PARTS INC. 2815 JAMES ST. S. SUITE 100. VANCOUVER, BC V6M 2C6. TEL: (604) 263-1111. FAX: (604) 263-1112. WWW.VIKTEKPARTS.COM



# Parts List



REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

REV	EDN	DESCRIPTION	BY	APPRO	DATE	MATERIAL
A	00000	REVISED	MR	MR	04/28/15	-
B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

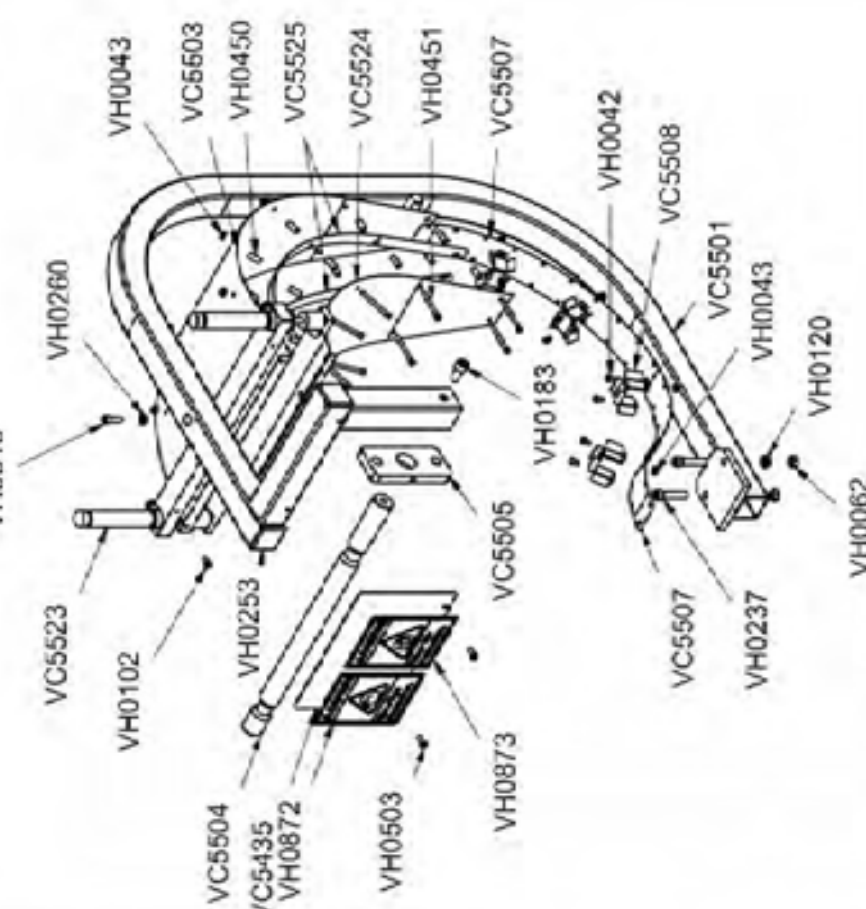
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B	00005	REVISED LT AND LS	RP	MR	07/09/15	ICAI RELAYMENT

# Parts List

VC5529

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PART #	DESCRIPTION	QTY
VC5435	WARNING LABEL MOUNTING PLATE	1
VC5501	DISPENSER FRAME	1
VC5503	CLIP CHUTE	1
VC5504	SPOOL ROD	1
VC5505	MAGNETIC BRAKE BLOCK ASSY	1
VC5507	TRACK	1
VC5508	TRACK GUIDE	4
VC5523	CLIP LIFTER ASSEMBLY	1
VC5524	INSIDE CLIP CHUTE	1
VC5525	STRIP GUIDE FOR CHUTE	2
VH0042	SHCS, 8 - 32 x 1/4	8
VH0043	NUT, NYLOCK, 8 - 32, THIN HT	16
VH0062	NUT, HEX, 5/16 - 18	2
VH0102	SHCS, 8 - 32 x 3/8 W/ PATCH	3
VH0120	WASHER, LOCK, 5/16	2
VH0183	SHCS, 3/8 - 16 x 3/4	1
VH0237	SHCS, 5/16 - 18 x 1 1/2	2
VH0253	CAP	2
VH0260	WASHER, LOCK, 1/4	1
VH0316	SHCS, 1/4 - 20 x 3/4	1
VH0450	SPACER, 1/4 OD x 5/8, #8	20
VH0451	SHCS, 8 - 32 x 1 3/4	10
VH0503	PAN HEAD SCREW, #10 x 1/2	2
VH0872	LABEL, CAUTION, EYE PROTECTION	1
VH0873	LABEL, CAUTION, EAR PROTECTION	1



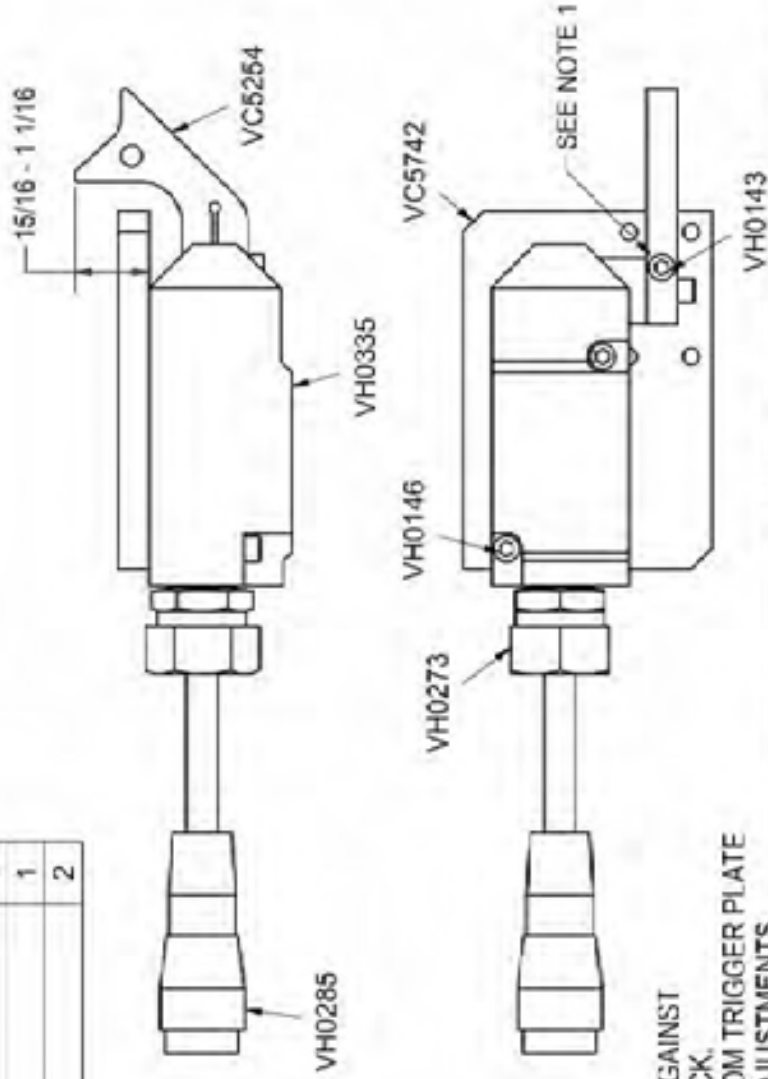
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A	1008	VC5530 WAS VC5505	JMW	JMF	1-25-11		PAC-RES X-1-2-000 JUL-1-010 JUL-1-005 APR-1-010	DWN BY	1756 GILKIRWIN AVENUE DES PLAINES, IL 60018 U.S.A.
B	1101	BACK TO VC5505	JMW	JMF	9-7-11	HEAT TREATMENT:		APPD	
C	13118	REV. VC5501 ADD LABELS	RP	JMW	11/18/13	FINISH:		DATE	DISPENSER FRAME ASSY
								SCALE	1:8
								DWG. NO.	VC5529
									A

# Parts List

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VC5558

PART #	DESCRIPTION	QT
VC5254	RAIL TRIGGER	1
VC5559	RAIL TRIGGER SWITCH ASSY - SERVO	1
VH0273	STRAIN RELIEF	-
VH0285	RAIL SENSOR CABLE	-
VH0335	SWITCH, TRIGGER	-
VC5742	TRIGGER PLATE	1
VH0143	SHCS, 10 - 32 x 3/4	1
VH0146	SHCS, 10 - 32 x 1 1/2	2



- NOTES:
1. RAIL TRIGGER MUST BE PUSHED AGAINST SHOULDER ON RAIL TRIGGER BLOCK.
  2. REMOVE RAIL TRIGGER BLOCK FROM TRIGGER PLATE TO MAKE NECESSARY TRIGGER ADJUSTMENTS.

REV	ECN	DESCRIPTION	BY	APPD	DATE	MATERIAL:
						HEAT TREATMENT:
						FINISH:

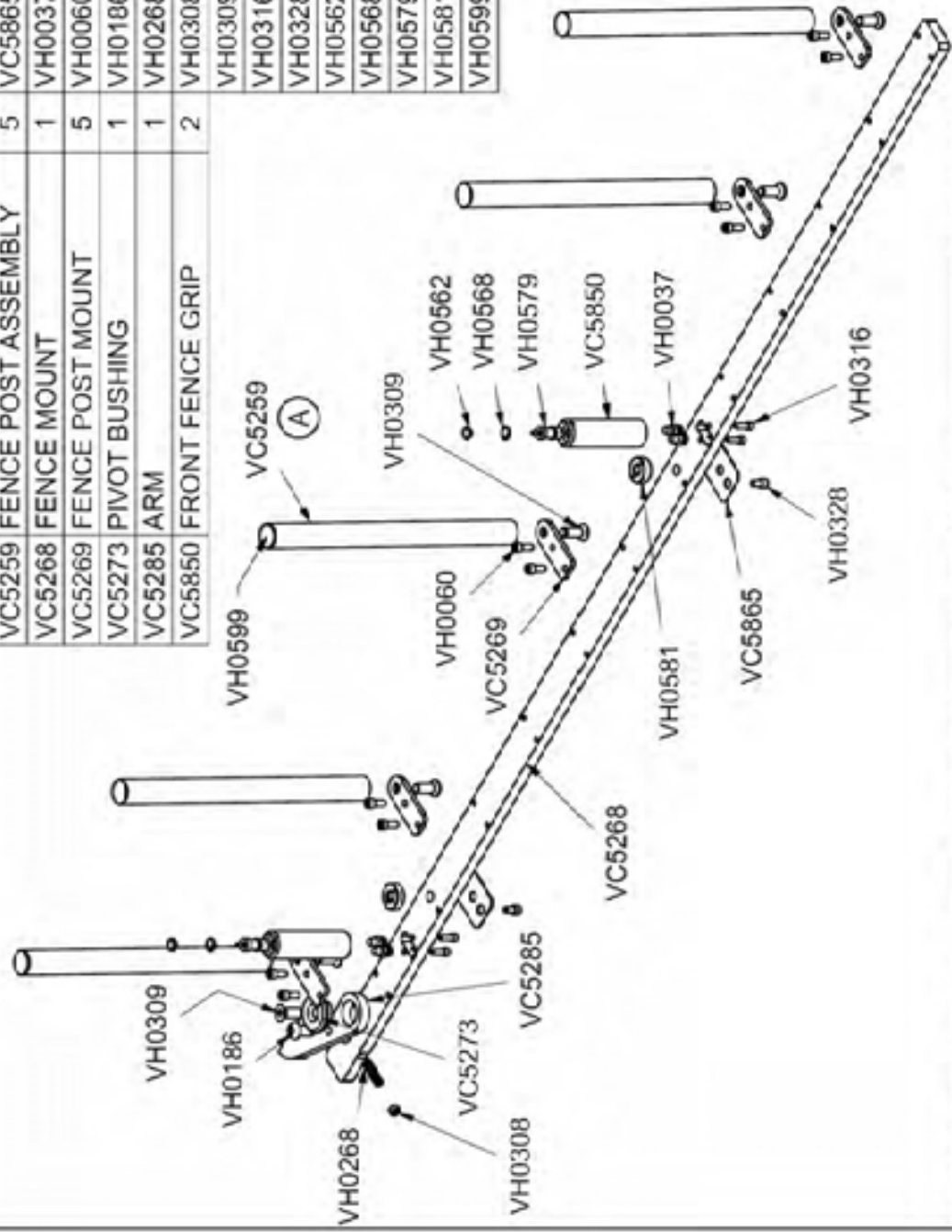
© 2008	VERTICE FASTENERS 3714 JARVIS AVENUE SKOKIE, IL 60076 U.S.A.
DWN BY JMW	
APPD MR	
DATE 11-25-08	
SCALE 1:2	
DWG. NO. VC5558	
	RAIL TRIGGER SWITCH DETAIL - SERVO
	A

# Parts List

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VC5571

PART #	DESCRIPTION	QT	PART #	DESCRIPTION	QT
VC5259	FENCE POST ASSEMBLY	5	VC5865	FENCE WASHER	2
VC5268	FENCE MOUNT	1	VH0037	PUSH-IN FTG, 1/4 x 1/8 NPT	4
VC5269	FENCE POST MOUNT	5	VH0060	SHCS, 5/16 - 18 x 3/4	10
VC5273	PIVOT BUSHING	1	VH0186	BHCS, 1/2 - 13 x 1	1
VC5285	ARM	1	VH0268	SPRING	1
VC5850	FRONT FENCE GRIP	2	VH0308	SET SCREW, 1/2 - 13 x 3/8	1
			VH0309	FHCS, 1/2 - 13 x 1 1/4	6
			VH0316	SHCS, 1/4 - 20 x 3/4	4
			VH0328	SHCS, 5/16 - 18 x 1/2	2
			VH0562	PUSH BUTTON, MANUAL	2
			VH0568	RETAINING RING, 5/8 INTNL	2
			VH0579	CARTRIDGE VALVE	2
			VH0581	CLAMP COLLAR, 1/2 - 20	2
			VH0599	CAP	-



REV	ECN	DESCRIPTION	BY	APPD	DATE	MATERIAL:
A	1013	WAS VC5893	JMW	JMF	3-16-11	
						HEAT TREATMENT:
						FINISH:

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DWN BY	JMW	APPD	MIR
DATE	7-13-09	SCALE	1:8
DWG. NO.	VC5571	FRONT FENCE DETAIL	
			A

# Parts List

VC5589

VH0971

VH0671

VH0971

VH0985

VC5578

VH0978

VC5577

VH0978

VH0935

VC5729

VH0935

VC5578

VC5577

PART #	DESCRIPTION	QT
VC5577	TAKE-UP BRACKET	2
VC5578	TAKE UP SCREW	2
VC5589	IDLER SPROCKET BRACKET	1
VH0985	NUT, JAM, 3/4 - 16	2
VH0671	PIN, ROLL, 1/8 x 3/4	2
VH0935	NUT, NYLOCK, 1/2 - 13	1
VH0971	NUT, 1/2 - 13, SLOTTED HEX	2
VH0978	HHCS, 1/2 - 13 x 4 1/2	1
VC5729	IDLER SPROCKET WASHER	1

DATE: 11/11/13  
 11/11/13  
 11/11/13

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 APPD JMF

DATE 1-11-11  
 SCALE 1:4

DWG. NO. VC5590

VERTX FASTENERS  
 1750 SHERWIN AVENUE  
 DES PLAINES, IL 60018 U.S.A.

SPROCKET UPTAKE  
 ASSEMBLY - 3100

REV	ECN	DESCRIPTION	BY	APPD	DATE	MATERIAL:
A	130820	ADDED VH0943	JMW	RP	8-20-13	
B	131111	ADD VH0671, VH0971	RP	LJC	11/11/13	HEAT TREATMENT:
C	141212	ADD ROLLER BEARING THREADED ROD & NUT	RP	MR	12/12/14	FINISH:

BOTTOM VIEW

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# Parts List

PART #	DESCRIPTION	QT
VC5209	SPACER	4
VC5217	ELEVATOR NUT/SPROCKET ASSY	1
VC5261	CHAIN GUARD	1
VC5276	LIFT MOTOR PLATE	1
VC5293	TOOL ELEVATION CHAIN	1
VC5430	SLEEVE BUSHING - 3100	1
VC5431	SHORT ACME ROD	1
VC5437	FIXED PLATE - 3100	1
VC5727	TOOL MOTOR	1
VC5741	SPROCKET SPACER	1
VH0051	SHCS, 10 - 32 x 1/2	2
VH0146	SHCS, 10 - 32 x 1 1/2	3
VH0175	SHCS, 5/8 - 11 x 8	1
VH0184	SHCS, 1/4 - 20 x 2 1/2	4
VH0196	BEARING, CAM ROLLER	4
VH0216	NUT, NYLOCK, 10 - 32	1
VH0270	SPROCKET 14 TEETH	1
VH0324	SPACER, 1/2 OD x 7/8, #10	3
VH0429	MACHINE KEY, 1/8 SQ x 3/4	1
VH0616	WASHER, WAVE SPRING	1

REV	ECN	DESCRIPTION	BY	APPD	DATE	MATERIAL:
						HEAT TREATMENT:
						FINISH:

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DWN BY JMW	
APPD MR	
DATE 3-13-12	
SCALE 1:4	
DWG. NO. VC-5598	
	<b>B</b>

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# Parts List

PART #	DESCRIPTION	QTY
VC5221	BRACKET	2
VC5256	LEG ASSEMBLY	1
VC5535	STRAP NUT - TH SERVO PUSHER CYLINDER	2
VC5541	EXIT PUSHER GLIDE - TRI SERVO	4
VC5786	EXIT TABLE TOP W/ FRAME & FSTNRS	1
VC5271	EXIT CONVEYOR	(1)
VC5768	TABLE WELDMENT	(1)
VH0198	FHCS, 1/4 - 20 x 3/4	(10)
VH0321	NUT, NYLOCK, 1/4 - 20, HEAVY DUTY	(10)
VH0424	WASHER, 1/4	(10)
VC5836	PUSHER ASSEMBLY	1
VH0002	NUT, FLEX, 1/4 - 20	4
VH0037	PUSHIN FTG. STR, 1/4 OD x 1/8 NPT	4
VH0060	SHCS, 5/16 - 18 x 3/4	8
VH0062	NUT, HEX, 5/16 - 18	6
VH0069	PUSHIN FTG, 90, 1/4 OD x 1/8 NPT	4
VH0120	WASHER, LOCK, 5/16	10
VH0128	FHCS, 3/8 - 16 x 1 1/2	2
VH0152	FHCS, 1/4 - 20 x 1/2	4
VH0207	NUT, JAM, 3/8 - 16, GR5	2
VH0246 x 12	TUBING, 1/4, POLYETHYLENE	2
VH0246 x 23	TUBING, 1/4, POLYETHYLENE	2
VH0246 x 6	TUBING, 1/4, POLYETHYLENE	2
VH0359	PUSHIN FTG, TEE, 1/4 OD	2
VH0365	CYLINDER	2
VH0386	CYLINDER, HARDWARE	2
VH0377	NUT, JAM, 7/16 - 20	2
VH0378	FHCS, 1/4 - 20 x 3/4, FULL THD	4
VH0424	WASHER, 1/4	4
VH0840	FLOW CONTROL VALVE	2
VH0938	P-CLIP, NYLON, BLACK	4
VH0954	SELF-DRILLING SCREW, 6 - 20 x 3/8	4
VH0970	PIN, CLEVIS, 1-PIECE LOCKING, 3/8 OD x 3/4	2
VH0972	CLEVIS ROD END	2

REV	ECN	DESCRIPTION	BY	APPD	DATE	MATERIAL
F	1086	UNION ANDERSON 43200000	MR	JMF	8-11-11	
G	1310	REWORK - TUBING	JMF	JMF	5-6-13	
H	13113	REWORK PIVOT PIN	RP	JMW	11/13/13	
J	140123	REWORK CYLINDER HOUSING	RP	JMW	1/23/14	
K	140522	ADD 1/8" BORE HOUSING	RP	JMW	5/22/14	

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