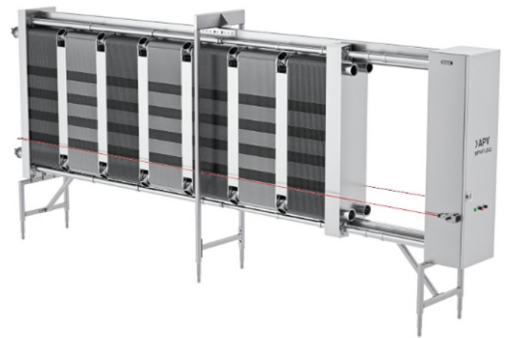
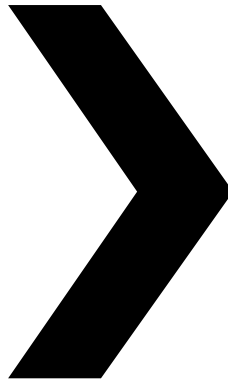


FastFrame™ & Automated FastFrame™



MODELS: V017, NR5, R5

FORM NO.: GPHE-FASTFRAME

REVISION: 02

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INTRODUCTION

1 Frame

Typical, manual, and powered Automated FastFrame™ plate heat exchangers are shown in Figures 1 and 2, respectively. Primary components consist of a stationary head and end support, connected by a top bar and bottom bar. These components are bolted together to form a rigid frame that supports the thin, metal, heat transfer plates, moveable follower and four tie bars.

Each heat transfer plate is separated by a gasket and compressed between the head and follower by rotation of four tie bars located above and below the plate pack. Liquids are introduced to the heat exchanger through connections located in the head, follower and, when supplied, connector grid(s).

For details about plate sequence, number and type of connector grids, Divider Plates (sometimes supplied) and flow arrangement, see the laminated plate arrangement drawing that came with your FastFrame™.

When a FastFrame™ is opened, the follower is drawn back along the top bar by four, simultaneously rotating tie bars to allow full access to each heat transfer plate, Divider Plate and grid.

FastFrame™ frames are designed for sanitary duties and fabricated from stainless steel clad, carbon steel and other sanitary, corrosion resistant alloys. The finish is primarily a #4 polish with certain components receiving a glass bead blast finish. Standard connections are sanitary tube fittings at all locations. Other fittings may be supplied for special orders.

Divider Plates (sometimes supplied) may be used to divide a heat exchanger into separate

sections. Divider Plates have no connections but do allow flow from one section to the next.

Connector grids may be used to divide a heat exchanger into separate sections to accommodate multiple duties within a single frame. General details of connector grids will be found in the CONNECTOR GRID section of the General User Manual.

2 Frame types

The FastFrame™ is available in both manual and powered versions. The frames are also available in eight different lengths, or frame sizes, to accommodate the required number of plates, grids and Divider Plates.

The plate capacity of each FastFrame™ is located on the general arrangement drawing supplied with each machine. This number varies based on a number of factors such as quantity of connector grid(s) and fitting lengths.

All but the longest frame is designed to be expandable in length by replacement of the top, bottom and tie bars and sometimes other components.

Manual frames are designed to be easily upgraded to a powered version by adding an electrical drive system and modular electrical control box. The upgrade can be accomplished within a single day and while the heat exchanger is running its duty.

3 Manually Closed Frame

The manual frame has no motor or electrical system but is instead provided with two closing points, each with a different drive ratio. The first, an auxiliary closing extension shaft, is installed on a lower tie bar (usually number 3 on bottom left looking into end support). This is used to rapidly close the machine near to pitch. When tightening becomes difficult, the supplied wrench can be moved to the hexagon

on the primary drive to finally bring the FastFrame™ to pitch.

4 FastFrame™

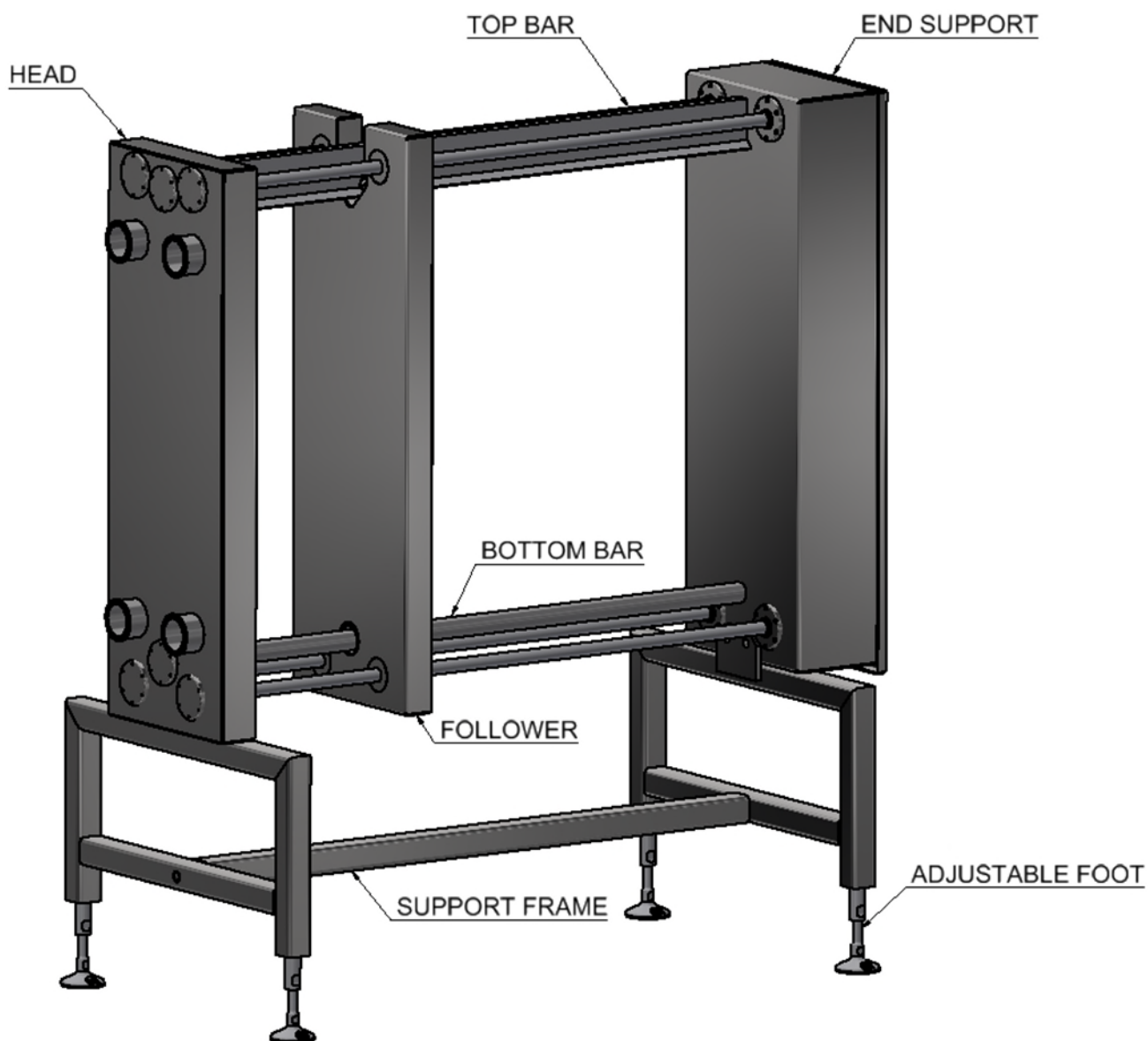


Figure 1: Manual FastFrame™ Components

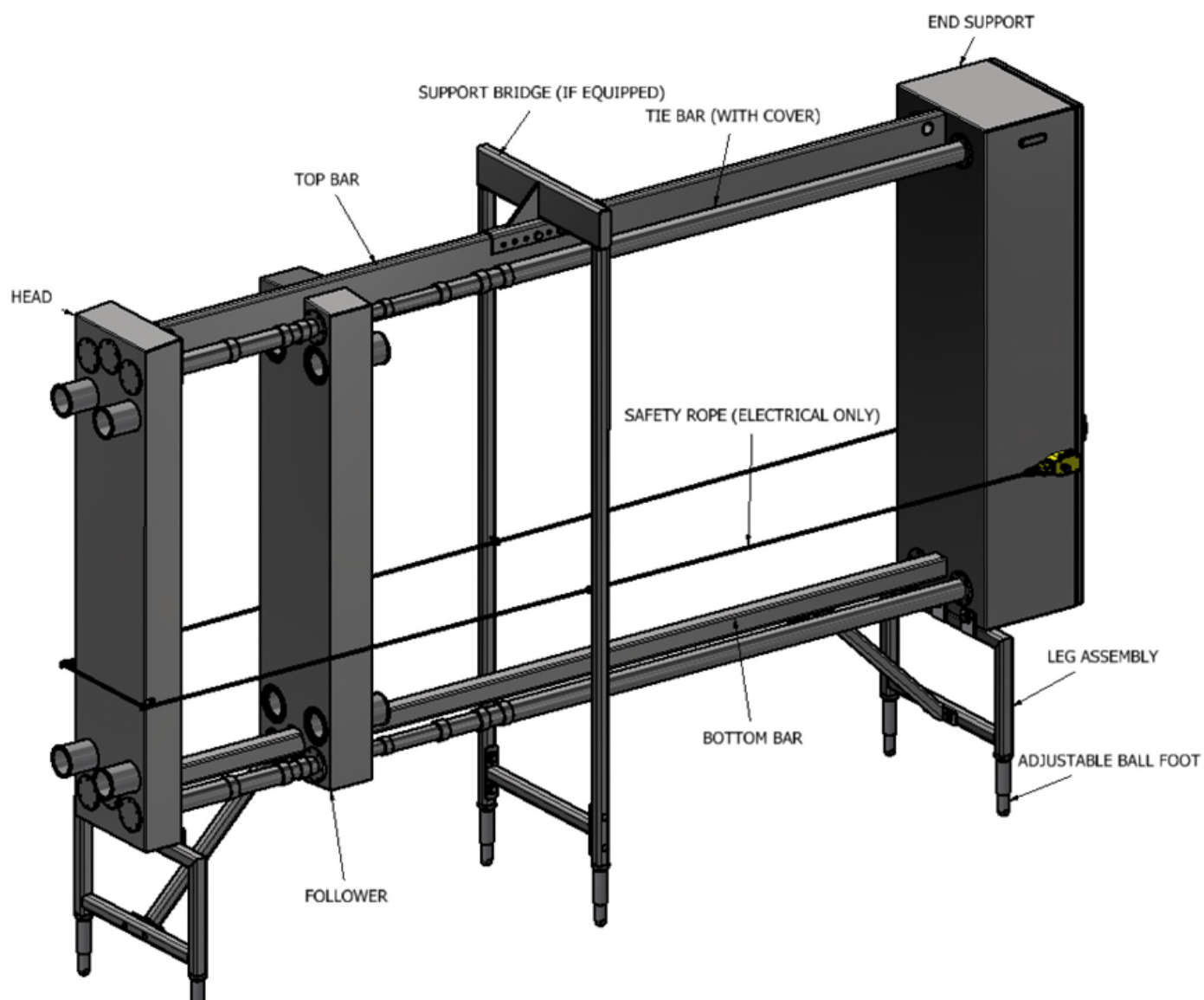


Figure 2: Automated FastFrame™ Components

6 Tie Bar Assembly

The following tie bar drawings give a parts breakdown of the tie bars installed in each machine. Each drawing is representative of one corner of the machine.

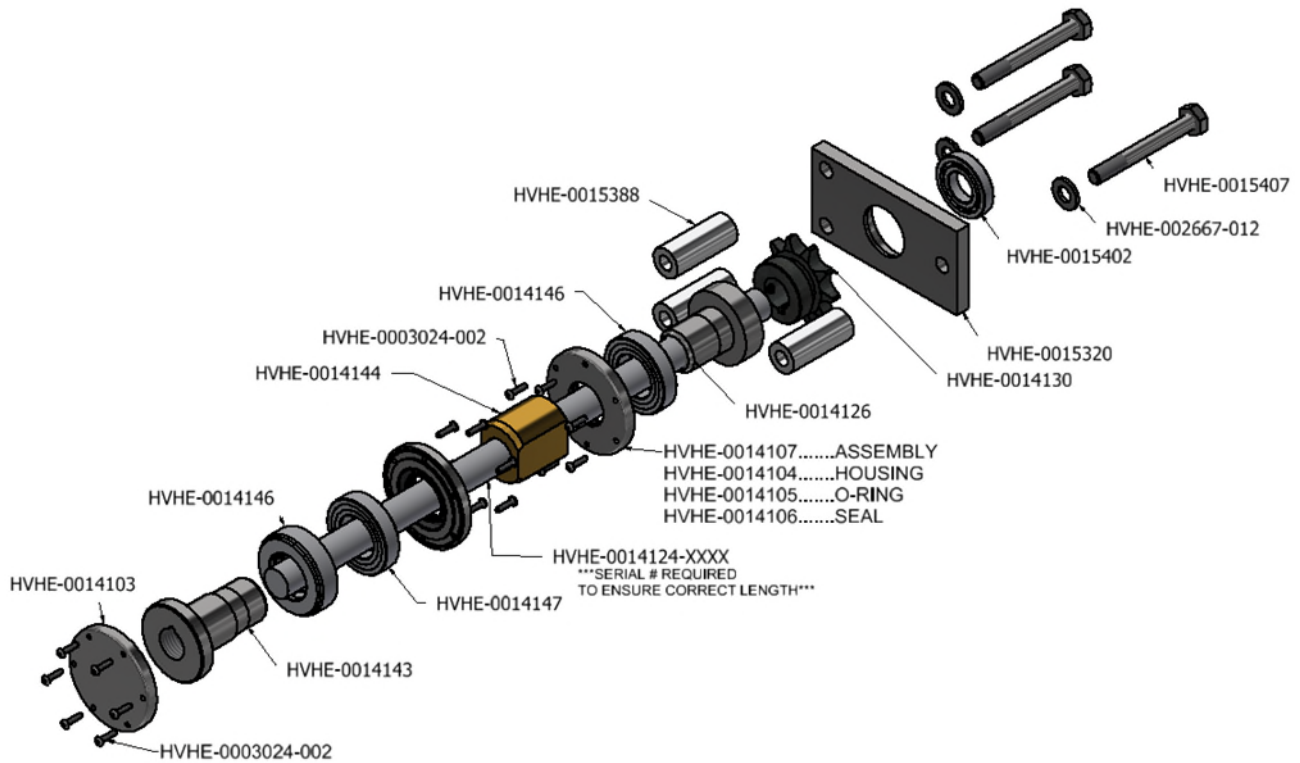


Figure 3: Manual FastFrame Tie Bar Assembly

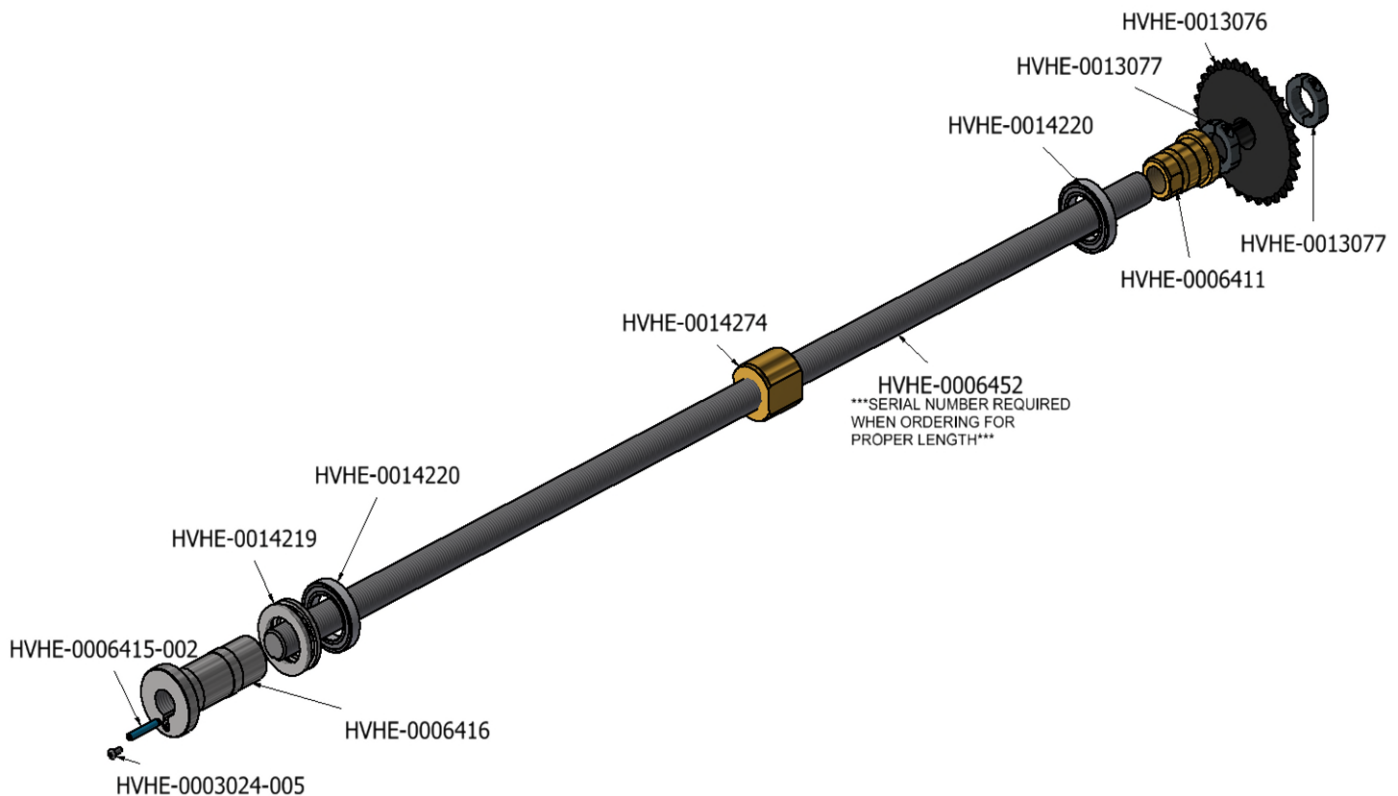


Figure 4: Automated FastFrame™ Tie Bar Assembly

The Automated FastFrame™ provides completely powered frame opening and closing. An overall view of the powered frame is shown below. See ELECTRICAL SYSTEM section for a description of the electrical system and how to connect the Automated FastFrame™ to the power supply. The end supports for the FastFrame™ family are all shown below.

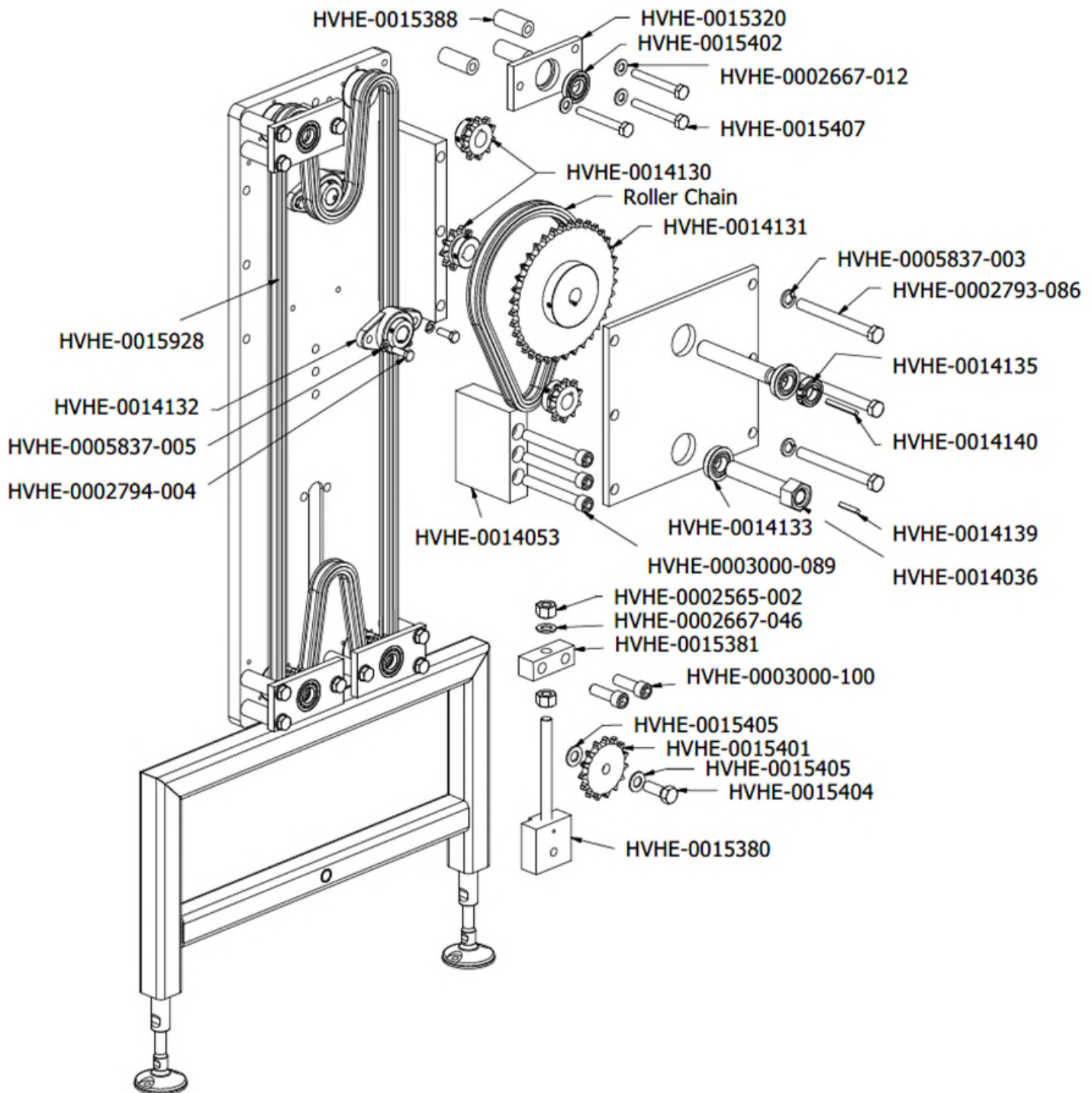


Figure 5: Manual FastFrame™ End Support

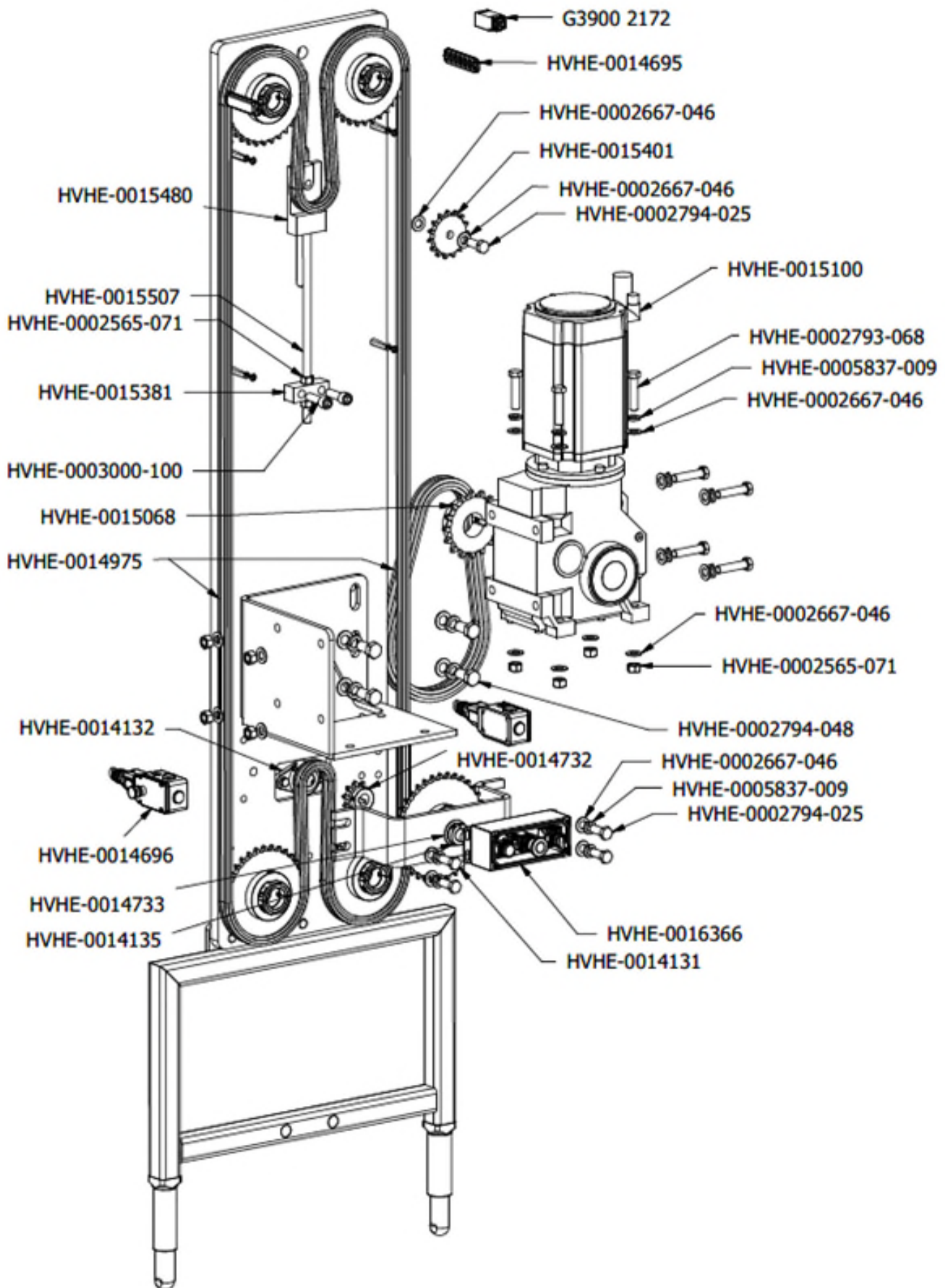


Figure 6: Automated FastFrame™ Powered End Support

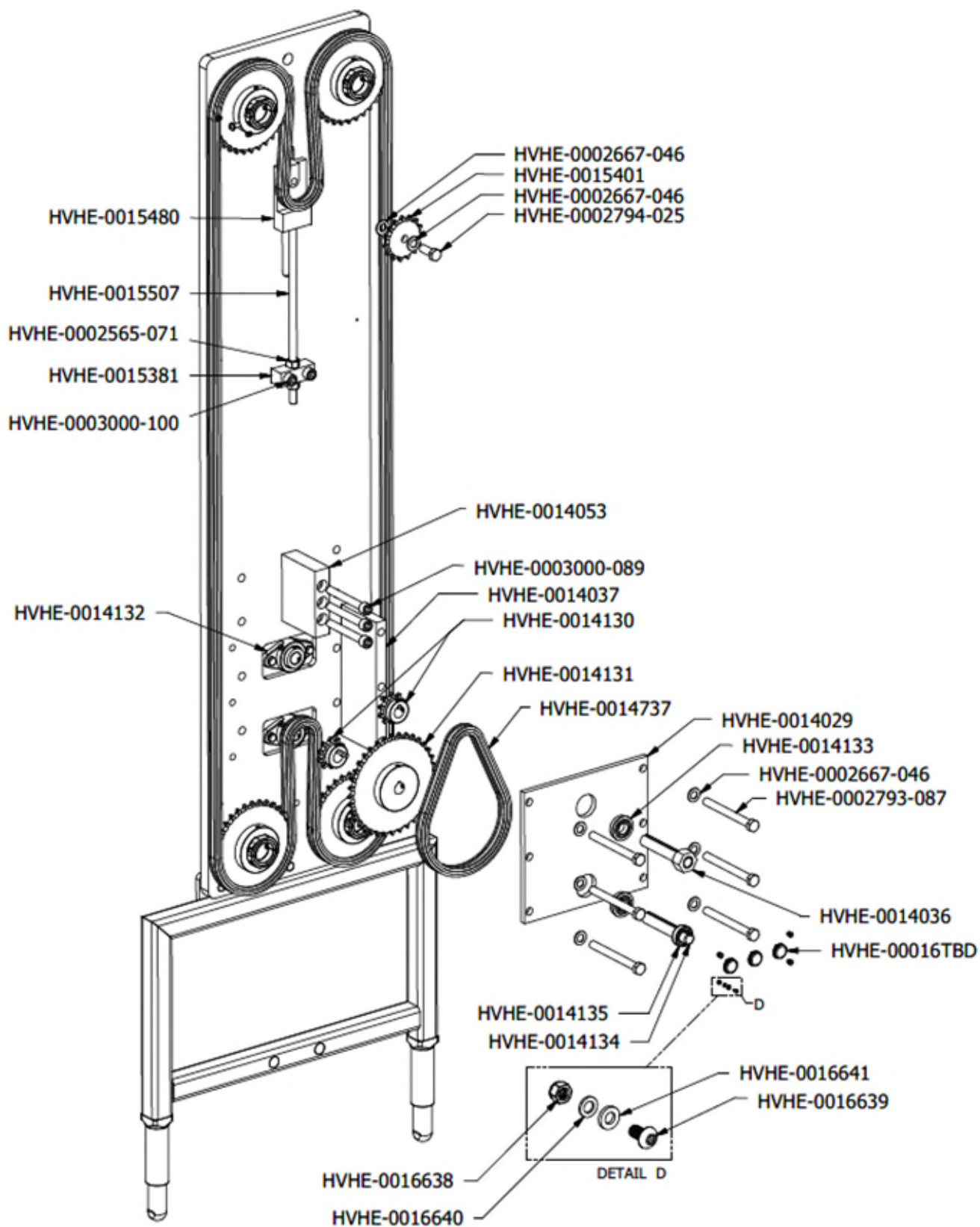


Figure 7: Automated FastFrame™ Manual End Support

ELECTRICAL

1 Description

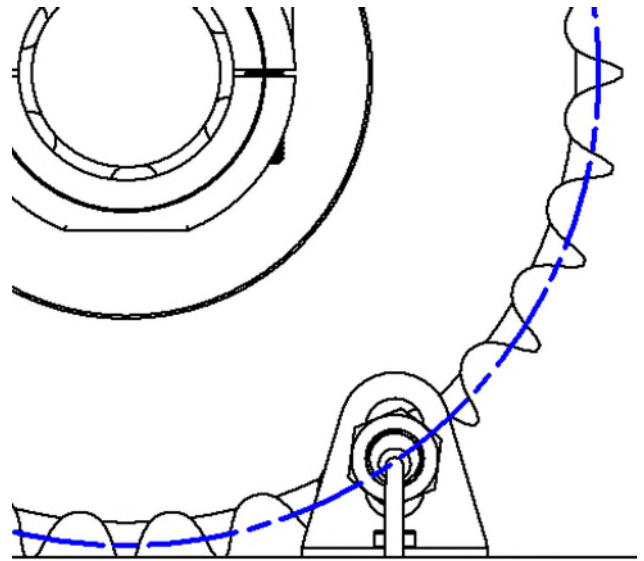
The FastFrame™ electrical system is primarily housed inside the small electrical cabinet(s) inside of the end support enclosure. The system is UL508/CUL compliant.'

The backlit, touch screen LCD display on the inside of the end support provides a user interface to control the system and feedback to the user. The controls are further simplified on the exterior door of the cabinet to protect the display from potential wash down damage. See SCREEN OPERATION section for instructions on how to operate the Automated FastFrame™.

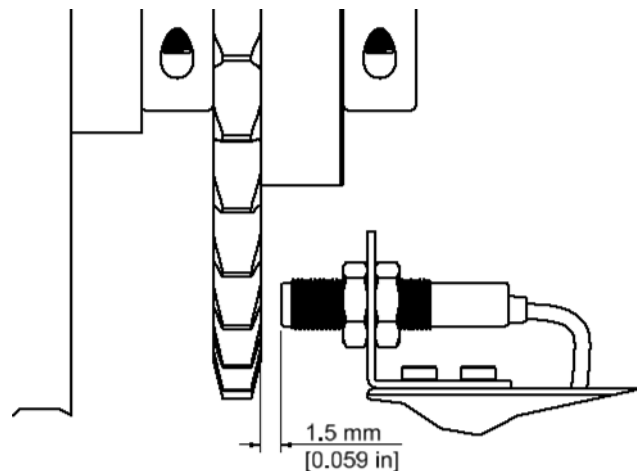
On the outside of the end support located on the cabinet door are a series of buttons and switches. The green button will initialize the motor and also set the machine in motion, a green light (will confirm the electric motor is running). The toggle switch on the right side selects open or close direction. By holding the desired direction and pressing the green button simultaneously the machine will move. Moving the toggle switch, pressing the red emergency stop button or pulling the safety rope will halt all mechanical movement.

A safety cutoff switch is situated on the front of the electrical cabinet door inside the support enclosure to disable mechanical movement should the door be opened during operation. The end support door must be in the closed position for the electrical system to function.

The PLC sends and receives information to provide accurate follower positioning from a magnetic encoder. The encoder is located on the top of the electrical cabinet and detects the gaps in the sprocket to determine distance travelled. The encoder is adjusted from the factory. In the event the encoder needs to be readjusted refer to the diagrams below. The sensor should be centered/aligned with the sprocket on the blue line.



The gap between the sensor and the sprocket should be set to 1.5mm [0.059 in]



The electrical control system cannot be manually bypassed. DO NOT attempt to manually turn the tie bars with the primary chain connected to the motor.

It is acceptable to power down the machine after operation for an indefinite period of time. The PLC is designed to permanently store all critical data.

2 Voltage

Standard powered FastFrame™ machines are supplied in the following voltages:

460 VAC 3-phase 60Hz 15 amp

3 Wiring details

WARNING! RISK OF ELECTRIC SHOCK

The following operations must be performed by a qualified electrician.

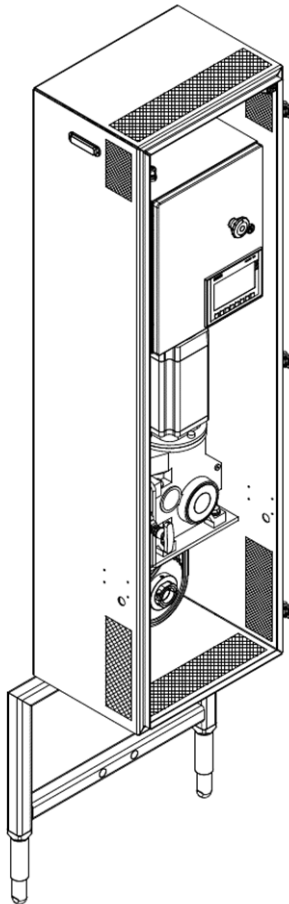


Figure 8: Electrical Passthrough Locations

The customer is required to provide a suitably sized drop lead, conforming to all local and national electrical codes, and a breaker box situated within sight of the Automated FastFrame™ and easily accessible in case of

emergency. Do not lay electrical cable on the floor. The electrical can be installed through any of the shaded areas on Figure 8. The penetrations need to be within the front 125mm[5in.] of the cabinet. Ensure the power routing maintains clearance from the moving parts of the machine. Route the power into the end support and through the cord grip and into the underside of the electrical cabinet.

Connect the cables as follows:

Line 1 to Pin 1

Line 2 to Pin 2

Line 3 to Pin 3

Ground to Ground clamp

Ensure that all wires are properly fastened in their correct positions and no loose or bare wires are present.

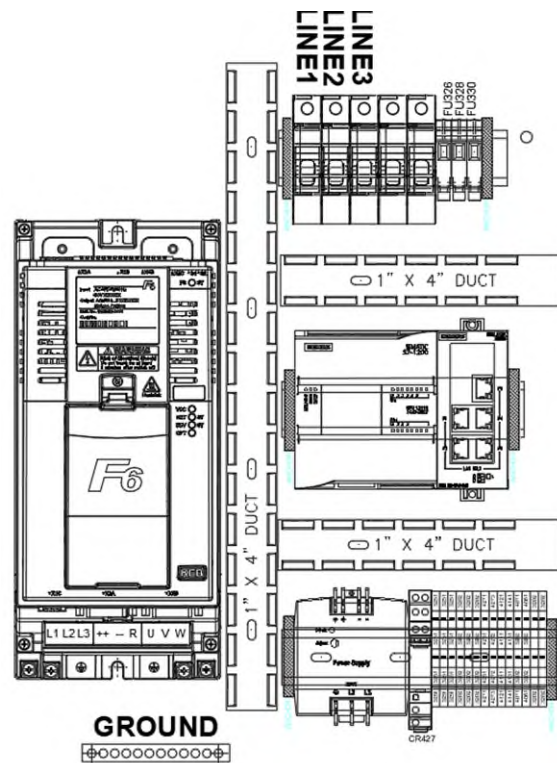


Figure 9: Electrical Connection Points

4 PLC software upgrade

From time to time, SPXFLOW may upgrade the PLC and HMI (screen) software to add functionality or address user issues.

Upgrades can be provided to the customer in the form of an exchanged PLC, a memory cartridge module from which the new software is transferred or fully installed by SPXFLOW personnel from a laptop running the source software.

Upgrading from memory cartridge requires installing the supplied cartridge onto the PLC.

6 Spares

Siemens Spares

Part Number	Description	Vendor	Trade P/N
HVHE-0016765	Siemens KP700 HMI with project	ASI	6AV2123-2GB03-0AX0
HVHE-0016766	Siemens S7-1200 PLC with Project	ASI	6ES7211-1HE40-0XB0
HVHE-0016767	VFD Combivert F6	KEB	15F6A32-3511
HVHE-0016768	Power Supply PULS ML90.200	ASI	ML90.200
HVHE-0016769	Scalance Ethernet Switch 24VDC	ASI	6GH5005-0BA00-1AB2

Once installed, the new software will be transferred to the PLC on power up. Clear, step-by-step instructions will be provided with the memory cartridge. After upgrade the cartridge MUST be removed from the PLC and should be returned to SPXFLOW.

5 Fuses

If a fuse blows, it must be replaced with one of the same type and rating. If a new fuse blows immediately after replacement, contact SPXFLOW for assistance in identifying the cause.

SCREEN OPERATION

1 Introduction

Please read this entire introduction before inserting the key and starting the machine.

The powered Automated FastFrame™ is equipped with a Programmable Logic Control (PLC) device and a backlit, LCD touch-screen display. When navigating the touchscreen, press the 'buttons' firmly.

See 5.0 Settings to adjust screen contrast or change the units (inches or mm).

There are three user accessible screens for machine operation plus an opening screen. To change screens, touch the appropriate tab at the top. There are also SERVICE screens, which are only accessible via a password and used by SPXFLOW to assist with setup and on-site service.

The screen shots in this section often include 'boxes' containing '0000', indicating user information.

IMPORTANT: Certain safeguards are built into the PLC that prevent machine damage; however, before you operate the Automated FastFrame™, you must familiarize yourself with the location of the EMERGENCY-STOPS (red button under the screen, rope pulls and red button on the outside of the cabinet) and the safety warnings throughout this manual.

1.1 Before you begin:

- a) Ensure that the stored number of plates, grids and Divider Plates are correct. See 4 Enquiry for details.
- b) Ensure that the stored length of any pipework to be left on the follower connections when the machine is opened is correct. This includes the case where blanks (port supports) will be left on the machine when opened (most

FastFrame™ heat exchangers fall in this category). See 5.6 Fitting Length for details.

- c) Warning: Ensure all personnel are clear of tie bars, follower and plate pack before operation.
- d) Ensure that the end support door is properly closed as it incorporates a safety cutoff switch.

1.2 Screen Saver

The screensaver is usually set at the factory to 30 minutes, but should this need to be changed or disabled follow these steps:

Whenever the machine is powered up, three buttons briefly appear during the boot sequence; Transfer, Start and Control Panel.

- a. Select the Control Panel button and double tap the screensaver icon.
- b. Enter the required number of minutes and press enter. (The 30-minute setting ensures the screensaver will not activate during a normal open or close cycle). A zero will switch off the screensaver.
- c. Touch ok in the top right corner of the screen saver.
- d. Touch X in the top right corner of the Control Panel.
- e. Touch Start button to continue to initial screen.

When the screensaver activates, simply touch the screen anywhere to clear it and return to the previously displayed screen. Note that the password function only provides the means to restrict access to Control Panel options.

1.3 Memory backup

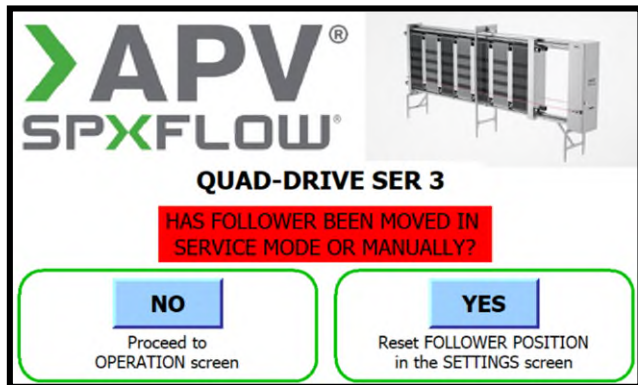
It is acceptable to power down the machine after operation for an indefinite period of time as all critical machine data are stored in permanent memory.

Should the machine be switched off for extended periods of time (months), any data lost will be restored from permanent memory at the next power up.

2 Initial screen

After the boot sequence, the initial screen displays a Loading data... message followed by the machine type. Below this, a question is asked:

“HAS THE FOLLOWER BEEN MOVED IN SERVICE MODE OR MANUALLY?”



Press the NO button if the follower has not been moved since last normal operation. You will be taken to the OPERATION screen.

Press the YES button if the follower has been moved either in Service Mode (with power) or manually (using a wrench). You will be taken to the SETTINGS screen (via a warning message) where you will need to enter the new follower position.

If you move to the OPERATION screen while data is still loading, the Loading data... message will continue to show until data loading is complete.

3 Operation

This screen will be displayed most of the time. Here you perform the basic tasks of opening the Automated FastFrame™ to access the plates and closing the machine to pitch.

OPERATION		ENQUIRY		SETTINGS	
DISPLAY PREV. PLATE	DISPLAY NEXT PLATE	MAXIMUM OPEN DIM 0000.00 ACTUAL FITTING LEN 0000.00 MAX FITTING LEN 0000.00 CURRENT UNITS mm			
0000000000 NONE PLATE QUANTITY 0000 UNCOMP PITCH mm 00.000 NOMINAL PITCH mm 00.000 MINIMUM PITCH mm 00.000		BUILD MONTH DAY YEAR DATE 00 00 0000			
GRID QUANTITY 00 DIVIDER PLATE QTY 00 OTHER ITEMS mm 0000.00 PLATE REMOVAL mm 0000.00		OPEN + CLOSE HOURS 00000 MACHINE LOCKUPS 000 PLC/HMI VERSION 00000 PLC FIRMWARE 000000 HMI FIRMWARE 000000			
MACHINE NUMBER 0000 0000				SPXFLOW	

3.1 Warning Strobe Light

Your machine is fitted with a movement warning system. A five second countdown appears on the screen prior to follower movement and the strobe light is activated during countdown and follower movement.

3.2 Open and Close

To open the machine:

- Depress the green button for 2 seconds until it illuminates.
- Toggle the selector switch to the open position and hold.
- Depress the green button while keeping the selector switch toggled to open.
- Release the selector and green button.
- The strobe lights will illuminate and after 5 second delay the machine will begin moving.

To close the machine:

- Depress the green button for 2 seconds until it illuminates.
- Toggle the selector switch to the closed position and hold.
- Depress the green button while keeping the selector switch toggled to closed.
- Release the selector and green button.
- The strobe lights will illuminate and after 5 second delay the machine will begin moving.

To prematurely stop the machine:

- a) Toggle the selector switch, pull the safety rope, or depress the E-STOP

The machine may be stopped or reversed at any time during movement without harm.

3.3 Information Shown

ENQUIRY and SETTINGS tabs at the top of the screen take you to the other screens (discussed later).

UNITS: Displays either inches or mm. All figures shown on the OPERATION screen are in the selected units. (TIP – touch the units to go to the SETTINGS screen if you wish to make a change).

Loading Data...: The frame type is displayed after the data has been loaded.

PITCH: The currently selected compressed plate pitch. See 5.4 PLATE PITCH for details. (TIP – touch the pitch to go to the SETTINGS screen if you wish to make a change).

CLOSED DIMENSION: The distance between the inside of the head and follower when the machine is closed.

CURRENT POSITION: The current distance between the inside of the head and follower. This is continuously updated as the follower moves.

OPEN FOR PLATE ACCESS: The distance between the inside of the head and follower when the machine is open sufficiently for access to any plate.

OPEN TO END SUPPORT: The distance between the inside of the head and follower when the machine is open fully. The follower (or attached pipework) will automatically stop 5mm before the End Support.

The box below these buttons is used to inform you which operation is being performed or provide warning messages.

4 Enquiry

Touch the ENQUIRY tab to access the enquiry screen. This screen allows you to view (but not change) most parameters or settings within the machine.

The screenshot shows the ENQUIRY screen with three main tabs: OPERATION, ENQUIRY (selected), and SETTINGS. The ENQUIRY tab is divided into two columns. The left column contains buttons for 'DISPLAY PREV. PLATE' and 'DISPLAY NEXT PLATE', followed by a list of parameters: 0000000000 NONE, PLATE QUANTITY 0000, UNCOMP PITCH mm 00.000, NOMINAL PITCH mm 00.000, MINIMUM PITCH mm 00.000, GRID QUANTITY 00, DIVIDER PLATE QTY 00, OTHER ITEMS mm 0000.00, PLATE REMOVAL mm 0000.00, and MACHINE NUMBER 0000 0000. The right column shows: MAXIMUM OPEN DIM 0000.00, ACTUAL FITTING LEN 0000.00, MAX FITTING LEN 0000.00, CURRENT UNITS mm, BUILD MONTH DAY YEAR (00 00 0000), DATE (00 00 0000), OPEN + CLOSE HOURS 00000, MACHINE LOCKUPS 000, PLC/HMI VERSION 00000, PLC FIRMWARE 000000, HMI FIRMWARE 000000, and the SPXFLOW logo.

4.1 Display Prev./Next Plate Buttons

Up to three different types (material, style, angle ect.) of plate can be installed in your machine but usually you will have just one type.

The data displayed below these buttons shows the plate number (1/3, 2/3 or 3/3) the plate type (name, thickness and material) and the associated quantity and pitch data (in mm regardless of UNITS setting).

Press the DISPLAY NEXT PLATE button to see data for the next plate if you have more than one type installed. Press the DISPLAY PREV. PLATE button to show the previous plates' data.

4.2 Other Installed Components

GRID QUANTITY: Total number of grids installed in the frame. Grid thickness 149 mm (5.866") each.

DIVIDER PLATE QTY: Total quantity of solid Divider Plates installed in the frame. (divider plates thickness 15.88 mm (0.625") each.

OTHER ITEMS: The total dimension of any other installed component(s) apart from plates, grids,

or Divider Plates (always in mm) or used for non-standard thickness grids or Divider Plates.

PLATE REMOVAL: The space reserved to remove a plate from the Automated FastFrame™ when it's in the OPEN FOR PLATE ACCESS position (always in mm).

4.3 Machine Number

The four-digit year of order and up to four digit machine serial number (without leading zeros). This will agree with the corresponding serial number shown on the Data Plate.

4.4 Parameters

MAXIMUM OPEN DIM: The maximum distance available between the head and follower when fully opened. This figure takes into account any pipework (FITTING) attached and a safety space of 5mm.

ACTUAL FITTING LEN: The actual fitting length stored by the user (if entered).

MAX FITTING LEN: The maximum length of pipework that may be left on a follower connection when OPEN >| is pressed. This figure varies depending upon the frame size and plate pack dimension.

CURRENT UNITS: Currently selected units in inches or millimeters. The above three figures are displayed in the currently selected units.

4.5 Build Date

SPXFLOW Manufacture (or ship) date of the Automated FastFrame™.

4.6 Usage Information

CLOSE + OPEN HOURS: The total number of hours that the follower has been moving (opening or closing in normal mode) since manufacture, refurbishment or PLC software

update. This is useful for determining periodic maintenance.

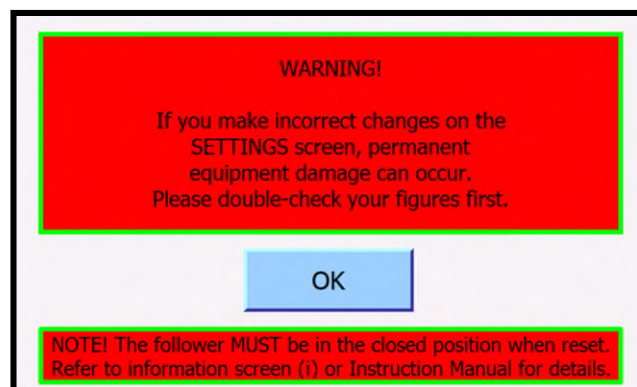
MACHINE LOCKUPS: The number of times that the PLC has detected a fault condition where the follower has been instructed to move but the PLC is not receiving pulses. See 7 TROUBLESHOOTING section for more details.

PLC S/W VERSION: Revision of the Automated FastFrame™ project loaded in the PLC.

HMI S/W VERSION: Revision of the Automated FastFrame™ project loaded in the screen (Human Machine Interface).

5 Settings

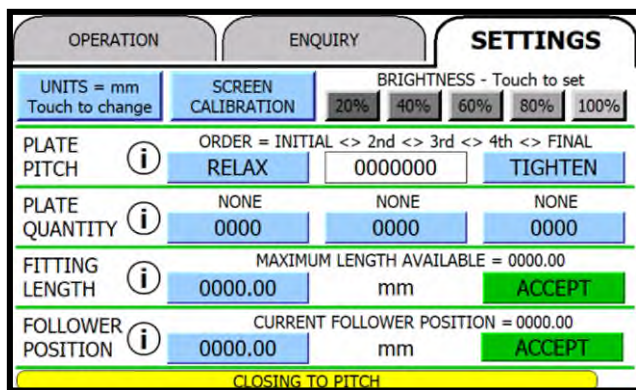
Touch the SETTINGS tab to access the settings screen. Prior to opening the SETTINGS screen, a warning is displayed as follows.



Entering fewer plates than actually loaded, not identifying a fitting left on the follower when opened or entering a larger follower position dimension than actual can lead to the indicated damage.

Once you have read and understood the warning, press OK to enter the SETTINGS screen.

This screen allows you to change certain data. Ensure that correct figures are entered.



5.1 Units

Touch this button to swap between inches or millimeters.

5.2 Screen Calibration

Touch this button to recalibrate the screen. Follow the on-screen instructions.

5.3 Contrast - / Contrast +

Touch either of these buttons to reduce or increase the contrast of the screen.

5.4 Plate Pitch

When gaskets are subjected to compression and elevated temperatures, over time they tend to suffer 'compression set' which reduces their sealing ability. The 'Plate Pitch' setting allows you to compensate for this effect by incrementally reducing the pitch from nominal (INITIAL) to its minimum (FINAL) value in five even steps. In this way, gasket life can be extended to the maximum possible.

Before making this adjustment, eliminate other possible causes of leaks such as debris on the sealing faces or a misaligned gasket. Adjustment should generally be used at the onset of a small plate pack leak caused by compression set but note that there are some other circumstances that necessitate a smaller plate pitch setting. See 5.4.1 Special need for plate pitch reduction.

When adjustment becomes necessary, press the TIGHTEN button once. A new closing dimension is calculated by the PLC and stored. Only when the CLOSE button is next pressed, will the follower move to the slightly reduced pitch.

Once the new pitch is stored, ensure that inlet and outlet valves are open all sections and press CLOSE. The follower will move to its new position. After movement, confirm that the leak has been eliminated. If the machine still leaks after one more reduction, call SPXFLOW for assistance.

Step reductions can be repeated over the life of the gasket until FINAL is shown in the display. From this point, the Automated FastFrame™ may continue to be used until a leak develops again. At this point no further reduction is possible and gaskets must be replaced.

DO NOT ATTEMPT TO DEFEAT THIS FEATURE SINCE IRREPAIRABLE PLATE DAMAGE CAN OCCUR.

To minimize machine downtime, it is recommended that gasket replacement is considered once the 4th or FINAL pitch has been reached. Once new gaskets have been installed, reset the pitch by repeatedly pressing RELAX until INITIAL is displayed.

5.4.1 Special need for plate pitch reduction

Some arrangements of new plates can require the use of a smaller pitch than INITIAL. One example is in certain multi-section units. In these cases it is acceptable to compress to lower than INITIAL or even minimum pitch to obtain an adequate seal. Refer to the accompanying General User manual for a more detailed discussion on this subject.

5.5 Plate Quantity

From time to time it is necessary to change the number of plates in an Automated FastFrame™. It is essential that the new installed quantity is correctly stored in the machine.

To change the quantity, touch the current figure below the appropriate plate type. A 'keypad' will be displayed. Enter the new figure and press the enter button. The new plate quantity will be

stored. Confirm that the correct figure is displayed.

The machine will allow you to increase this quantity before physically adding the plates, even if the follower is below the new closed dimension. However, if you press the CLOSE button in this condition, the follower will actually open to the new, larger closed dimension (no message is displayed during this movement).

5.6 Fitting Length

Sometimes it is desirable to leave one or more fittings in place on the follower connections when the machine is opened (eg: to avoid repeated removal of sensitive equipment such as a thermometer or pressure gauge).

By entering a figure here, you inform the PLC to take such 'permanently' attached pipe-work into account when opening the machine, thus avoiding damage.

The length of pipe-work left on a machine when opened can be no greater than the space available. This is automatically calculated and displayed for you above the ACCEPT button.

Determine the length of the longest piece of pipe-work (blank, tee, elbow, bush etc.) you wish to permanently leave on the follower. The figure is the distance between the face of the follower connection and the end of your pipework (or the point which will touch the End Support enclosure first).

Touch the current figure and enter the new number in the current units on the 'keypad'. Press enter and then ACCEPT if correct.

IMPORTANT: In most cases, a blank (port support) will be the only fitting left on the follower when the machine is opened. A figure of 1" (25 mm) must be entered in this case.

If your figure is greater than the space available, no change is accepted and a warning message is displayed at the bottom of the screen.

If there is insufficient space available, the pipework must be removed from the follower before opening the machine.

5.7 Follower Position

If the follower has been moved by any method other than the OPEN and CLOSE buttons on the OPERATION screen or if an 'ABNORMAL FOLLOWER STOP...' message is issued, then the new current follower position must be measured and entered. Unregistered follower movement can happen (a) manually (with a wrench) (b) under a fault condition (where pulses are not detected). The cause of the fault must be determined and corrected before proceeding with a follower position reset.

Using a tape measure check the distance from the inside of the head to the inside of the follower. Go to the SETTINGS screen.

OPERATION		ENQUIRY		SETTINGS	
UNITS = mm Touch to change		SCREEN CALIBRATION		BRIGHTNESS - Touch to set 20% 40% 60% 80% 100%	
PLATE PITCH	RELAX	0000000	TIGHTEN		
PLATE QUANTITY	0000	0000	0000		
FITTING LENGTH	0000.00	mm	ACCEPT		
FOLLOWER POSITION	0000.00	CURRENT FOLLOWER POSITION = 0000.00		ACCEPT	
CLOSING TO PITCH					

Touch the current follower position figure and a 'keypad' will appear. Enter the actual measured figure in mm and press enter. Confirm that the figure is correct and press ACCEPT. The current follower position figure will be updated if an acceptable distance is entered.

It is essential that a correct figure be entered. Double-check your measurement and any unit conversion calculation.

The machine verifies the number using pre-calculated values based on the machine configuration, if you enter an out-of-range figure, a warning will appear at the bottom of the screen and the figure will not be changed.

6 SPXFLOW Service

Password protected SERVICE screens are available to allow SPXFLOW personnel to change some settings and adjust data. Note that, for

safety and security reasons, it is not SPXFLOW's policy to allow end-user access to these screens.

7 Troubleshooting

If the machine cannot or does not respond as you expect while attempting to use the screen, perform a power cycle one time. If screen buttons are visible, ensure you have pressed the button firmly and given a second or two for a response.

MAINTENANCE

1 Introduction

The FastFrame™ and Automated FastFrame™ are designed to give many years of trouble-free service and require minimal maintenance. This document describes the recommended inspection and maintenance procedures to care for the unit and ensure the best performance. Details that apply only to the Automated FastFrame™ are noted.

SPXFLOW is also equipped to maintain your FastFrame™ and Automated FastFrame™.

2 Maintenance schedule

Tie Bars:

The section of tie bars where the follower travels must hold a light coat of food grade grease whenever the machine is opened or closed. Ensure the tie bars have a coating of grease by taking the covers loose at the follower on each side and applying fresh grease every **6 months**. An elevated free nut temperature and/or a high-pitched whine will be audible when closing the machine if there is insufficient lubrication on any tie bar. Lack of lubrication will reduce machine life and can result in machine damage. Such damage is not covered under warranty.

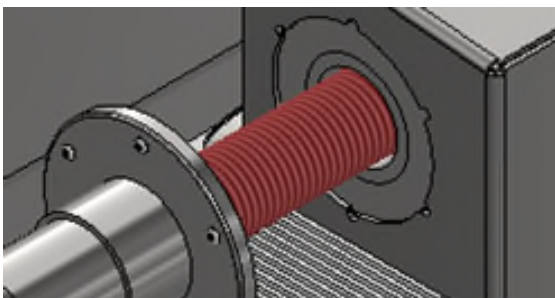


Figure 10

Top Bar:

A light coat of food grade grease should be present on the top bar hanging strip, where the plates touch the hanging strip on the top bar and on the sides of the bottom bar whenever the machine is opened or closed. Always check

before powered operation. Frequency of lubrication will be dependent upon the type and frequency of external machine cleaning and the frequency of opening/closing. A loud clicking noise will be audible when closing the machine if there is insufficient lubrication. However, a properly lubricated top bar hanging surface will not completely eliminate plate clicking. Aggressive and/or frequent machine cleaning will increase the need for lubrication.

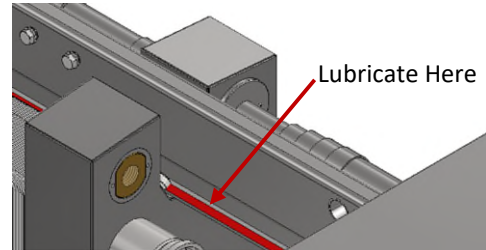


Figure 11

Drive chains:

Inspect the drive chains in the End Support cabinet for the **first 5 openings and closings** and every **6 months** thereafter.

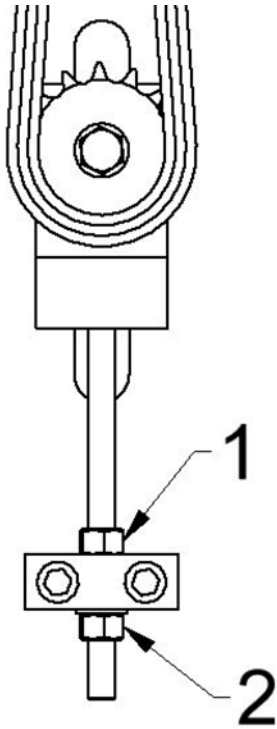
Chain lubrication:

If the chains appear dry, apply a light coat of chain oil to each one.

Chain adjustment:

The primary drive chain connecting the electrical motor to the drive shaft is tensioned by loosening the four bracket bolts connecting the motor bracket to the end support backing plate. Take a large pry bar and insert into the lip on the backing plate and push up on the bracket. Tighten the bolts. The chain should have less than 1/2" (12mm) of play.

The tie bar drive chain is tensioned using the chain tensioner on the back wall of the machine.



Loosen the top hex nut (#1 27mm A/F) and tighten the bottom hex nut (#2 27mm A/F) until the chain achieves the desired tension. Retighten the top hex nut to lock the chain tensioner in place.

Electrical Motor Oil (Automated FastFrame™ only)

The motor gearbox ships with oil that is intended to last the life of the machine. Should the need arise the gearbox requires CLP HC VG220 USDA-H1 food grade oil. SPXFLOW recommends Mobil SHC Cibus 220.

Fasteners

It is prudent to check the tightness of fasteners from time-to-time on any powered equipment. Inspect **annually** and, if necessary, retighten.

Flange bearings

Inspect and, if necessary, grease the flange bearings every **12 months** (there are one or more bearings depending upon model). Flange bearings are located inside the end support and support the drive shaft(s). An inspection mirror may be helpful.

Driven sprocket

Inspect the primary drive driven sprocket after the **first few openings** (up to 5) to ensure that alignment has not been disturbed between assembly and use. Thereafter, check every **6 months** or after **60 hours** of runtime, whichever comes first.

Check for driven sprocket or shaft migration by use of a straight edge between the driven sprocket face and driving sprocket face on the electrical motor.



FastFrame & Automated Fast Frame

MODELS: V017, NR5, R5

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