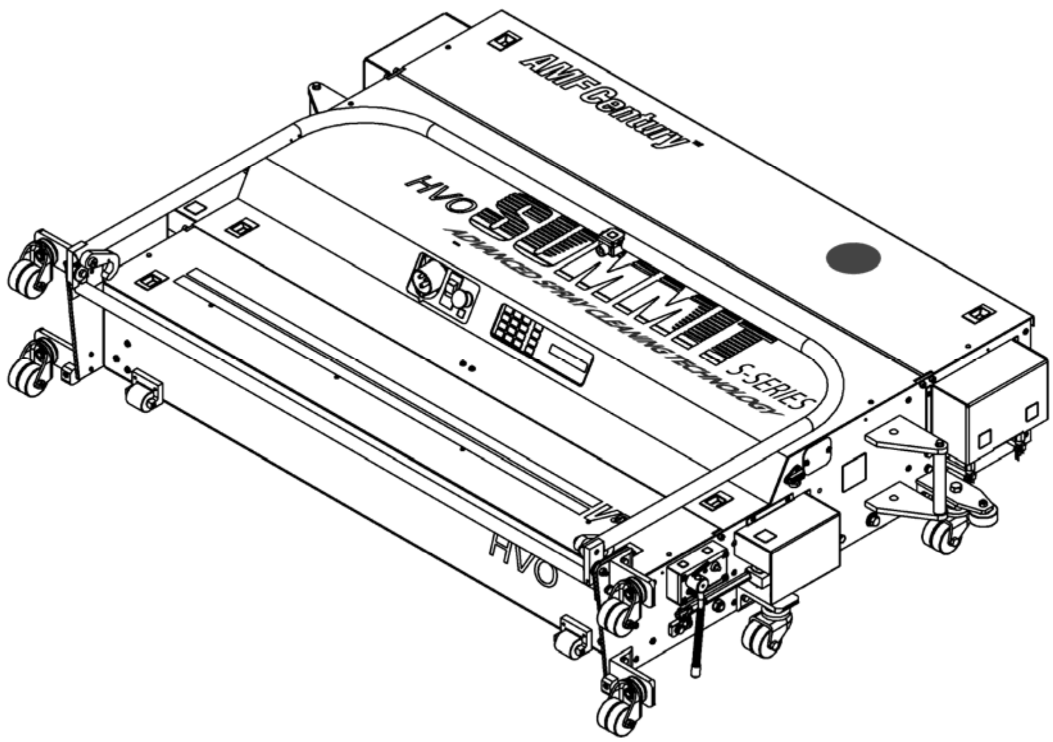
QUBICAAMF

HVO SUMMIT S-Series



Programming Guide

For Software Versions 10.0 and higher.

HVO SUMMIT S-SERIES

Programming Guide

For software versions 10.0 and higher

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HVO Summit S-Series
Programming Guide - P/N 294-005-022
Rev. C

Summary of Changes

Change No.	ECR No.

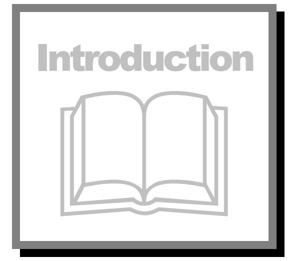
List of Effective Pages

Page	Change No.	Effective Date
All	Revision C	12/22/2008

Table of Contents

* Used with spray mode only

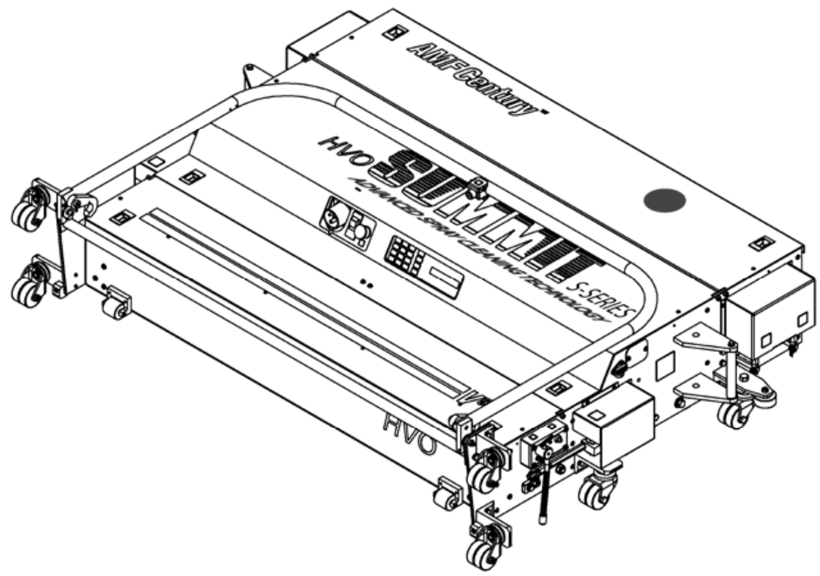
**Used with drip mode only.



HVO SUMMIT S-SERIES

ADVANCED SPRAY CLEANING TECHNOLOGY

PROGRAMMING GUIDE



The *HVO Summit S-Series* from *QubicaAMF* offers the latest in state-of-the-art operating features for wick-type lane maintenance machines including our new Spray and Pad System for Advanced Cleaning.

Mechanical Features

AMFCentury's patented V^5 *HVO* Conditioning System Consisting of:

- V^1ariable Flow Tanks and Foam Wicks
- V^2ariable Speed Oil Transfer Roller
- V^3ariable Machine Speed
- V^4ariable Distance and Position Tank Sections
- V^5ariable Distance Dressing Buffer

Electronic Features

- Microprocessor Control of All Electronics
- Hewlett Packard® Optical Sensor for Accurate Distance Tracking
- Pulse Width Modulation Cleaner System Flow Control
- 5-Volt Logic for All Micro-Control Switches
- Real Time Clock

Software Features

- 20 Fully Programmable Operational Programs for: Conditioning Only, Stripping Only, or Conditioning and Stripping
- Independent Left and Right Oil Tank Operation
- Independently Programmable Buffer and Oil Distances in Two Bi-directional Passes
- Multilevel Password Security Control for Individual Menu Functions
- Data Logger for recording the dates, times, and programs run by the lane machine – an aid in verifying lane conditions for sanctioned play
- Automated Adjustment Sequences
- Power Failure Lane Recovery
- Lane Odometer and Lane Tripmeter
- Configurable Lane Number Tracker
- Two-Way Communication with PC-Based Host Software (Century Programmer™ for Windows®) using either USB or Serial Communication Ports
- Custom Marquee Display (with Century Programmer™ For Windows®)
- Drive Failure Timeout with Full Lane Recovery

Section 1

Start-up

When the *HVO Summit S-Series* is powered up, the unit name and software revision level are displayed on the control panel as shown below.

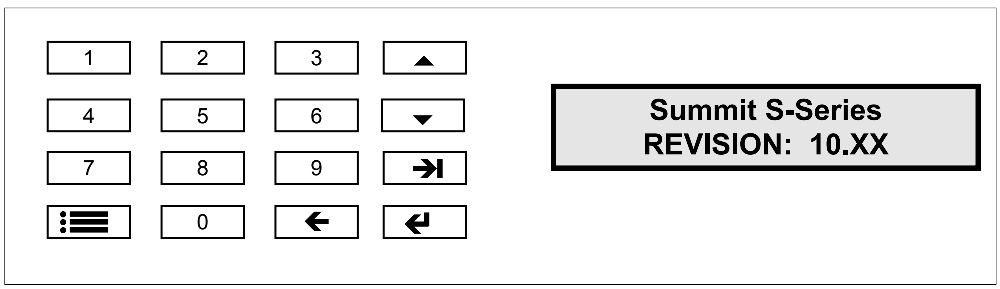


Figure 1-1, HVO Summit S-Series Control Panel

MULTIPLE WICK
APPLICATION SOFTWARE

(c) 2008 QUBICAAMF

The initial screen is followed by two additional startup screens as shown at the left. The first screen indicates that the software has been written with the *HVO Summit S-Series* multiwick design in mind, while the second screen is a copyright statement. Each of the three startup screens is displayed for approximately two seconds.

Summit S-Series
PGM:XX READY

At the completion of the unit's startup, the screen displays this message:
Where **XX** is a lane conditioning program number between 01 and 20.

The unit name, *Summit S-Series Spray Mode,* scrolls across the screen from right to left. This is the **Custom Marquee Display** that can be changed to your center's name, or otherwise customized by using the ***QUBICAAMF*** **Programmer for Windows (CPWIN)** software package from *QubicaAMF.*

This screen is called the **READY DISPLAY**, and indicates that the machine is ready to accept a command from the user through the **Start Switch** or through the **Keypad** located by the digital display. If the start switch is pressed at this time, the lane conditioning program that will be executed is the program shown on the display.

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Section
2

The Display, Keypad, & User Interface Guidelines

The *HVO Summit S-Series* is simple to program and operate. Understanding the interface that the machine uses is all that is needed to navigate through the numerous programs and menu functions. This section provides the user with the tools needed to get started.

THE DISPLAY

The **Display** on the *HVO Summit S-Series* consists of two lines of alpha-numeric characters that provide information on the status of the machine, and allows the user to customize lane conditioning programs, security levels, and scheduling options. The *HVO Summit S-Series* can be easily programmed to provide custom lane conditioning that is matched to each center's (or each lane's) unique requirements.

```
05  BUFFER        P1
    MODE : DOUBLE
```

To the left is an example of a display screen from **Menu Function 03, Edit Program**. (Menu functions will be covered in detail later on.) The screen contains a substantial amount of information. This section of the manual is not intended to be a step-by-step "how-to" on programming the *HVO Summit S-Series* (that is also discussed elsewhere in this manual), but is provided to help you become familiar with the layout and terminology associated with the display.

```
05  BUFFER        P1
    MODE : DOUBLE
```

The display consists of several areas, or **fields**. Note that different Menu Functions provide different displays, so the specific fields shown here are not always present. In this example, the first field on the top line (underlined) shows the **Program Number** (05) that was selected to be edited. The unit is capable of storing 20 different user-customizable lane conditioning programs.

```
05  BUFFER        P1
    MODE : DOUBLE
```

The next field shows the **Program Section** being edited. This example addresses buffer operation. It is just one of a number of program sections, which are: **Buffer, Buffer Distance, Oil, Oil Distance, Transfer Rate, Strip, Vacuum, Cleaner Pad, Cleaner Flow, Short Run,** and **Speeds.** These can be selected and edited separately for each of the 20 lane conditioning programs.

05 BUFFER P1
MODE : DOUBLE

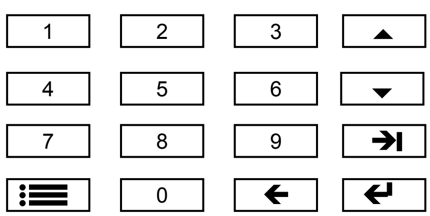
The last field on the top line indicates that this period of buffer operation applies to the first pass of the machine. (A **pass** is one complete cycle down the lane and back to the foul line.) The *HVO Summit S-Series* can make two passes (P1 & P2) during program execution. Each pass can be further broken down into a forward component (P1F or P2F – read, "pass one forward or pass two forward") and a reverse component (P1R or P2R). The different passes, and for some program sections the different components of each pass, can be programmed separately.

05 BUFFER P1
MODE : DOUBLE

The bottom line shows that the **Mode** associated with this program section is programmable. Several modes (**forward, reverse, double,** and **off**) are available. Here, **Double** has been selected. Modes are one type of **Option** field. The other type of option field is a **Data** field, also referred to as a **Data Option** field. This simply means that a number is required to be entered (for example, 40.0) or an option is to be selected (such as the day of the week). The result is a program (Program 05) that directs the machine to perform a specific programmed action (BUFFER operation), on the first pass (P1), in a selected mode (DOUBLE - i.e., both forward and reverse directions), for a specified distance (40 feet). Note that the Data Option Field of 40 feet is entered under another program section, and is not part of the screen shown in this example. Simply complete data entry for the remaining program sections, and the program is complete. Detailed programming instructions are given in the Menu Functions section.

THE KEYPAD

The **Keypad** on the *HVO Summit S-Series* is used to program the lane machine and is configured on the control box as follows:



There are 16 different keys that accommodate all of the programming options for the lane machine.

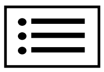
The Number Keys

There are ten number keys, 0 through 9, for entering all numeric options. These options include choosing **Menu Functions** 01 through 99, selecting Lane Conditioning Programs 01 through 20, entering numeric values, and specifying conditioner transfer rates and cleaner flow rates.

Special Use Keys

There are six specially labeled keys that aid in operating and programming the machine:

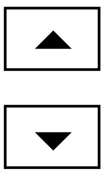
Menu Key



MENU Key - Starts and Ends a Menu Function

Begins all movement from the **Ready Display**.
Exits most Menu Functions.

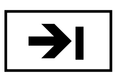
Scroll Keys



SCROLL Keys - Select an Option

Select from a list of **Options**.
Increase or **decrease Numbers**.
▲ – This is the **SCROLL UP** key.
▼ – This is the **SCROLL DOWN** key.

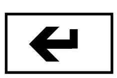
Next Key



NEXT Key - Moves the Prompt:

From the **Program Section** field to an **Option** field.
From the **Mode** field to a **Data Option** field.
Between **Data Option** fields.

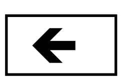
Enter Key



ENTER Key - Enters and Saves Program Changes and Advances Software

Accepts and confirms information on the screen.
Exits function to the **Ready Display**.
Moves the prompt back to the **Program Section** field.

Backspace Key



BACKSPACE Key - Positions the Prompt Within a Data Field

Moves the prompt from right to left (with a wrap feature) within a data entry field.

Prompt

PROMPT - Flashing Rectangle or Cursor

Provides visual indication of location within software.
Indicates changeable option fields.

GENERAL USER INTERFACE GUIDELINES

1. If the Prompt is on a blank space or on a number, it means <u>enter a number</u>. You press the **SCROLL UP** key to increase the number and the **SCROLL DOWN** key to decrease the number, or you can press one or more numbers on the number keypad.

2. The **SCROLL** keys must be pressed once for each desired number increase or decrease.

3. The prompt initially appears in the left-most position of a number field. To enter a number using the number keypad, simply enter the desired number. When the first digit is keyed in, the number under the prompt, if any, is overwritten by the new number, and the prompt moves one space to the right. As you continue keying in the new number, each digit of the old number is overwritten by the new one. If you only want to change part of an existing number, first use the **BACKSPACE** key to position the prompt over the digit to be changed, then enter the new number from the number keypad. **Note that entering a single-digit number, such as the number five, must be entered as a two-digit number using a zero as the first of the two digits (as in '05'). Because the prompt first appears in the left-most position in a number field, simply entering '5' will result in '50' being entered.**

   If a number that is outside the allowable range is entered, the *HVO Summit S-Series* will **auto-correct** the number to within the allowable range. For example, when editing a lane conditioning program within Menu Function 03, the screen prompts the user to "Save as Program _ _". The allowable range is 01 to 20. If '5' is entered instead of '05', it will be entered as '50', which is out of the allowable range. When the **ENTER** key is pressed, the number is automatically corrected to '20' (the upper limit of the allowable range). If the software were to save the edited changes at this point (which it normally does) program 20 would be overwritten instead of program 5. To safeguard against this, the machine beeps to alert the user that an auto-correction was made, and remains in the current screen allowing the user to enter the correct number.

4. If the Prompt is on a word, it means <u>select an option</u>. Press the **SCROLL DOWN** key to scroll to the next option, or use the **SCROLL UP** key to scroll to the previous option.

5. A **FIELD** is an area of the screen where you can enter data by selecting an option or by entering a number. The screen can have more than one **FIELD** at a time. You can move between multiple **FIELDS** by pressing the **NEXT** key or the **ENTER** key <u>depending on the Menu Function</u>!

6. Pressing the **MENU** key from the **Ready Display** is the first action for all Menu Functions.

7. **GENERALLY BUT NOT ALWAYS:**

   - The **ENTER** key means enter or save the data and continue.

   - The **MENU** key means do NOT save the data and exit (escape) the Menu Function to the Ready Screen.

This guide provides a full description of all valid keystrokes for each function.

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Section 3

MENU FUNCTIONS

MENU FUNCTION: _ _
UNDEFINED FUNCTION

Menu functions are selected by pressing the **MENU** key at the **READY DISPLAY**. When this MENU key is pressed, this message is displayed:

To select a function, enter a number at the **MENU FUNCTION** prompt (See the list of menu functions on the following page).

MENU FUNCTION: XX
FUNCTION NAME

The displayed message changes to:

Where **XX** is a function number between 01 and 99.
Note that these numbers are *functions* that are different from the lane conditioning *programs*, 1 to 20, discussed previously.

If the selected number has no assigned function, the bottom line will continue to display **UNDEFINED FUNCTION**.

FUNCTION SELECTED:
FUNCTION NAME

When you have entered the desired function number, press the **ENTER** key to execute or initiate the function. This message appears for approximately one second:

Where **FUNCTION NAME** is the actual name of the function selected.

The Menu Functions have been laid out in **General Categories** according to the first digit of the function number:

FUNCTION #	CATEGORY
0X	Program Functions
1X	Clock Functions
2X	Undefined
3X	Security Functions
4X	Lane Functions
5X	Log Book Functions
6X	Adjustment Functions
7X	Adjustment Functions
8X	Adjustment Functions
9X	Adjustment Functions

Where **X** is a number between 0 and 9.

The individual functions in the **General Categories** are listed below:

CATEGORY	FUNCTION #	FUNCTION NAME
PROGRAM	01	Retrieve Program
PROGRAM	02	View Program
PROGRAM	03	Edit Program
CLOCK	10	Display Clock
CLOCK	11	Set Clock
SECURITY	30	Set Security
SECURITY	31	Set Passwords
SECURITY	32	Enter / Exit Security Mode
LANE	41	Lane Odometer
ADJUSTMENT	63	Cycle Timer (times one complete run)
ADJUSTMENT	70	Set Encoder Factor
ADJUSTMENT	80	Pass 2 Start Distance
ADJUSTMENT	81	Adjust Foul Line Stop
ADJUSTMENT	82	Reversing Switch Brake Delay
ADJUSTMENT	83	Calculate Speed Factor
ADJUSTMENT	84	Edit Speed Factor
ADJUSTMENT	85	HVO Summit or HVO Magnum Select
ADJUSTMENT	86	Select 1, 2, or 3 Vac Head Shakes
ADJUSTMENT	87	Cleaner Pre-Stop Distance
ADJUSTMENT	88	Cleaner Pre-Start Distance
ADJUSTMENT	89	Cleaner Preload ON/OFF
ADJUSTMENT	90	Set Switch Type
ADJUSTMENT	91	Test Function
ADJUSTMENT	92	Saturate
ADJUSTMENT	93	Adjust Oil
ADJUSTMENT	94	Adjust Buffer
ADJUSTMENT	95	Adjust Cleaner Pad / Vacuum Head
ADJUSTMENT	96	Cleaner Presoak
ADJUSTMENT	97	Cleaner Drip or Spray Mode
ADJUSTMENT	98	Set Oil Delay 0, 1, or 2 Feet

The following pages contain step-by-step instructions, along with an explanation of each screen, for every available Menu Function.

Section 4

PROGRAM FUNCTIONS

A program tells the lane machine how to condition and/or strip a bowling lane. You can save up to 20 different programs in the lane machine as program numbers 01 through 20. You can execute or run a program on a bowling lane by retrieving the desired program and then pressing the machine's start button.

There are programs, functions, and program functions.

- ***PROGRAMS*** create lane conditions.
- ***FUNCTIONS*** allow for machine adjustments and settings**.**
- ***PROGRAM FUNCTIONS*** act on programs to retrieve, view, or edit.

Retrieve Program - This program function retrieves a stored lane conditioning program (01 to 20), and makes that program "current". You can then execute or run that program on a lane by pressing the start switch twice in rapid succession.

View Program - This program function allows the user to view, but not change, any of the stored program information.

Edit Program - This program function allows the user to edit or change any of the 20 stored programs. You are able to edit or change the buffing distances, conditioner application distances, conditioner transfer rates, cleaning solution flow rates, stripping options, and machine speeds.

Note

Editing or changing the program will modify lane conditions.

These **program functions,** along with the built-in software, are the user's main tools for designing custom lane conditioning programs.

RETRIEVE PROGRAM - MENU FUNCTION 01

The purpose of this operation is to retrieve a lane conditioning program that has already been stored in memory.

To select this Menu Function:

Press the **MENU** key.
Enter "**01**".
Press the **ENTER** key.

The above series is entered for every Menu Function except that the number changes to match the Menu Function. This series of instructions will not be restated for the remaining Menu Function instructions.

RETRIEVE
PROGRAM: _ _

When you select this function, this message is displayed:

Enter the program number (01 to 20) to be retrieved.

Press the **ENTER** key to retrieve the program.

SUMMIT S-SERIES
PGM:XX READY

The displayed message changes as shown here:
Where **XX** is the program number just selected.

The program has now been retrieved, and the program number is shown on the **Ready Display**. The retrieved program can be executed by simply pressing the machine's start button twice in rapid succession.

REMEMBER!!!

A program must first be retrieved to be used.

VIEW PROGRAM - MENU FUNCTION 02

This function allows a lane conditioning program (01 to 20) to be viewed. Viewing a program allows you to review the settings without the ability to make changes.

Note

The message 'DISABLED' at the bottom of a program screen indicates that the program section is deactivated because an associated program section has been turned OFF. For example, turning BUFFER operation OFF deactivates OILING during the same pass because the machine cannot apply oil to the lane unless the buffer is operating.

VIEW PROGRAM: _ _

When you select this function, this message is displayed:

XX	BUFFER MODE : YYYYYYY	P1

Enter the program number to be viewed and press the **ENTER** key. This program screen is displayed:

Where **XX** is the program number being viewed, and **YYYYYYY** is the buffer mode selected for that program.

The Program Screen

There are four fields within this screen:

① PGM#	② PGM SECTION	③ PASS#
	④ DATA/MODE SECTION	

TIP! Keeping a Programming Record Sheet will allow you to view all data entry fields and options for all of your lane conditioning programs at a glance.

The Prompt will be in the **Program Section** field. To view different Program Sections, use the **SCROLL** keys. To view the Data or Mode setting for each pass within a **Program Section** (when available), press the **NEXT** key to move the prompt to the Pass Number field **(Pass#)**, and use the **SCROLL** keys to advance through the passes. The **Data/Mode Section** is updated and automatically displays the current settings as the Pass Number is changed.

To view other Program Sections, return the prompt to the Program Section field by pressing the **ENTER** key, and use the **SCROLL** keys to advance to the desired option.

To exit to the **Ready Display**, press the **MENU** key from the Program Section field.

The following is a description of each Program Section with details of screen layouts and program options available in the VIEW Menu Function. All distances are in feet and tenths of feet.

Buffer Program Section

```
XX  BUFFER          P#
    MODE : YYYYYYY
```

The *Buffer* Program Screen is displayed in this manner:

Where **YYYYYYY** is one of the following: **OFF, FORWARD, REVERSE**, or **DOUBLE**.

The *Buffer* Program Section defines buffer usage in each pass.

- **OFF** means there will be no oiling or buffing during the pass.
- **FORWARD** means buffing in the forward direction only.
- **REVERSE** means buffing in the reverse direction only.
- **DOUBLE** means buffing in the forward and reverse directions.

Move the Prompt to the Pass field, and scroll to view the Mode setting for each pass.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Buff Distance Program Section

```
XX  BUFF DISTANCE   P#
    BUFFER DIST:ZZ.Z
```

The *Buff Distance* Program Screen is displayed in this manner:

Where **ZZ.Z** is the buffer brush operating distance.

The *Buff Distance* Program Section defines the buffer distances for the forward and reverse portions of pass one and pass two.

To view the buffer distances for each pass, move the prompt to the pass number field **(P#)**, and scroll to view the settings for each pass.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Oil Program Section

```
XX  OIL          P#
    MODE : YYYYYYY
```

The *Oil* Program Screen is displayed in this manner:

Where **YYYYYYY** is either: **OFF, FORWARD, REVERSE**, or **DOUBLE**.

The *Oil* Program Section defines the application of conditioner to the brush. Each pass has its own settings.

- **OFF** means no conditioning will be done on that pass (forward and reverse).
- **FORWARD** means oil is applied to the brush only in the forward direction.
- **REVERSE** means oil is applied to the brush only in the reverse direction.
- **DOUBLE** means oil is applied to the brush in both directions.

To view the conditioning settings for each pass, move the prompt to the Pass Number field **(P#)**, and scroll to view the settings for each pass.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Oil Distance Program Section

The *HVO Summit S-Series* lane machines are capable of programming the six oil tanks to operate completely independent of each other. Each oil tank can be set to a different oiling distance for each of the four possible pass components (P1F, P1R, P2F, & P2R) of the lane conditioning program.

```
XX  OIL DISTANCE   P#
YYYYY YYY   DIST:ZZ.Z
```

The *Oil Distance* Program Screen is displayed in this manner:

Where:
YYYYY YYY is the specific oil tank (**LEFT OUT, LEFT TRK, LEFT CNT, RIGHT CNT, RIGHT TRK,** or **RIGHT OUT)**, and **ZZ.Z** is the distance from the foul line along which oil is applied to the brush from the selected tank(s).

The *Oil Distance* Program Section defines the conditioning distances for each of the tanks during each pass.

Move the prompt to the Tank field, and scroll to view the settings for each tank for the pass and direction indicated.

To view the tank settings for each pass, move the prompt to the Pass Number field **(P#)**, scroll to select a different pass, move the prompt back to the Tank field, and scroll to view the settings for each tank. Repeat the process to review the oil tank distance settings for the remaining passes.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Transfer Rate Program Section

```
XX TRANSFER RATE  P#
   PERCENTAGE: %%%
```

The *Transfer Rate* Program Screen is displayed in this manner:

Where **%%%** is a percentage of the maximum transfer rate from 1% to 100%.

The *Transfer Rate* Program Section defines the rate of conditioner transfer to the buffer as a function of transfer roller speed for the forward and reverse components of passes one and two. This is measured as a percentage of the fastest rate possible, from 1% to 100%.

To view the conditioner transfer rates for each pass, move the prompt to the Pass Number field **(P#)**, and scroll to view the settings for each pass.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Strip Program Section

```
XX     STRIP
MODE:YYYY
```

The *Strip* Program Screen is displayed in this manner:

Where **YYYY** can be one of the following: **OFF, FULL,** or **BACK**.

The *Strip* Program Section defines stripper usage or mode.

- **OFF** means no stripping.
- **FULL** means strip the entire lane from the foul line to the end of the lane or to the turnaround point if SHORT RUN is turned on.
- **BACK** means strip the back end of the lane starting at a selected distance from the foul line to the end of the lane.

```
XX     STRIP
MODE:BACK   DIST:ZZ.Z
```

If the strip mode is BACK, this screen is displayed:

Where **ZZ.Z** is the distance from the foul line to the point where the lane machine starts stripping the lane.

If you want to strip the entire lane surface but <u>not</u> the pin deck, set the Strip Mode to FULL and turn on SHORT RUN (see page 4-8), setting the turnaround point just short of the pin deck.

There is no option to view data other than what is initially displayed on the Strip Screen.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Vacuum Program Section

```
XX    VACUUM
       MODE:YYYYYYY
```

The *Vacuum* Program Screen is displayed in this manner:

Where **YYYYYYY** can be one of the following: **ON START** or **ON PLUG**.

The *Vacuum* Program Section defines when the vacuum motor starts and stops.

ON START means the vacuum motor will **start** when the machine's START switch is pressed, and will **stop** after the first pass of the program.

ON PLUG means the vacuum motor will **start** when the machine START switch is pressed, and will **stay on continuously** until the lane machine is powered down.

There is no option to view data other than what is initially displayed on the Vacuum Screen.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Cleaner Pad Program Section

```
XX     CLEANER PAD
CLEAN PAD DIST:ZZ.Z
```

The *Cleaner Pad* Program Screen is displayed in this manner:

Where **ZZ.Z** is the distance from the foul line where the cleaner pad is lifted from the lane. 60.0 feet is the recommended distance.

The *Cleaner Pad* Program Section defines the distance from the point where the start switch is pressed to the point where the cleaner pad is lifted off the lane and cleaning solution is shut off. The factory programmed setting is 61.5 feet.

There is no option to view data other than what is initially displayed on the Cleaner Pad Screen.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Cleaner Flow Program Section

```
XX     CLEANER FLOW
YYYYYYYY     %%%
```

The *Cleaner Flow* Program Screen is displayed as shown at the left.

Where:

1. If the program is set up to both strip and condition, **YYYYYYYY** is either **IN OIL** or **BACK LANE** indicating the lane area to be stripped. The IN OIL distance is equal to the maximum programmed buff distance for all passes in all directions <u>within the selected lane conditioning program</u>.

2. If it is a strip-only program, **YYYYYYYY** is **FLOW RATE** (the strip-only mode uses a single flow rate for all lane areas).

In either case, **%%%** is the percentage of the maximum cleaner flow rate available. This program section defines cleaner usage for the front and back areas of the lane. The rate is adjustable from 0% to 100%. Typically, stripping the back of the lane requires a lower cleaner flow rate than for stripping the rest of the lane. However in Spray Mode, both *In Oil* and *Back,* or out of the oiled areas, are both defaulted to 100% but can be adjusted at your convenience. In the Spray Mode, the % Flow is measured as a fraction of a 2 second window, where in the drip mode it is a fraction of a 1/3-second window.

To view the cleaner flow rates, move the prompt to the lane area data field, and scroll to view the selected flow rate.

Press the **ENTER** key to return the prompt to the program section field, and scroll to view other Program Sections.

Short Run Program Section

XX SHORT RUN
MODE:YYY

The Short Run Program Screen is displayed in this manner:

Where **YYY** can be **ON** or **OFF**.

The Short Run Program Section is an optional stop-and-turnaround distance for both forward passes. This is primarily used to program a run that is shorter than the current program. An example of when this feature might be used is when you are not stripping the lane and only need the machine to travel to the buff line, that is, to fill in. When turned on, this feature overrides the distance settings of the current program.

XX SHORT RUN
MODE: ON@ DIST:ZZ.Z

If the short run mode is ON, this screen is displayed:

Where **ZZ.Z** is the turnaround point (distance from the foul line).

There is no option to view data other than what is initially displayed on the Short Run Screen.

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

Speeds Program Section

XX SPEEDS P#
YYYYYYYYYYYY L/M/H

The Speeds Program Screen is displayed in this manner:

Where **YYYYYYYYYYYY** is **STRIPPING, TRAVEL, or CONDITIONING**, and **L/M/H** stands for **Low (L), Medium (M),** or **High (H)**.

The Speeds Program Section allows the user to set the speed of the machine to the Low, Medium, or High setting for the different machine functions of stripping, conditioning, and traveling. Doing this allows the machine to perform optimally under all conditions and gives the user more flexibility to achieve the desired effect in less time. Table 4-1 provides a comparison of the *SUMMIT'*s speeds with the speeds of other machines.

Machine	Stripping	Conditioning	Traveling
Gemini Silver Bullet®	1.5 fps	1.5 fps	1.5 fps
Chairman	2.3 fps	2.3 fps	2.3 fps
Silver Bullet® MAGNUM	H - 5.0 fps M - 3.2 fps L - 2.2 fps	H - 3.2 fps M - 2.2 fps L - 1.2 fps	H - 6.2 fps M - 5.0 fps L - 3.7 fps
HVO Summit & HVO Summit S-Series	H - 4.8 fps M - 3.7 fps L - 2.1 fps	H - 3.7 fps M - 2.1 fps L - 0.7 fps	H - 6.2 fps M - 5.6 fps L - 4.8 fps

Table 4-1, Comparison of Machine Speeds

To view the speed selected for a machine function, move the prompt to the Pass Number field, and scroll to select the desired pass. Next, move the prompt to the machine function data field and scroll to view the selected speed associated with the displayed machine function. Not all functions are available for all passes. For example, if the machine is programmed to strip-only during the first pass forward (P1F) and the stripping mode is FULL, only the stripping speed can be viewed for that pass. **Whenever the machine is simultaneously stripping and conditioning, the machine will travel at whichever selected speed (either stripping or conditioning) is slowest.**

Press the **ENTER** key to return the prompt to the Program Section field, and scroll to view other Program Sections.

EDIT PROGRAM - MENU FUNCTION 03

This function creates a new program, or edits a program that is already stored in one of the 20 lane conditioning program files.

Note: **The message 'DISABLED' on the bottom line of a program screen indicates that the current mode (OFF) of an associated Program Section has deactivated the displayed Program Section. For example, selecting OFF for the Strip Mode deactivates Cleaner Pad and Vacuum operation.**

EDIT
PROGRAM: _ _

When you select this function, this message is displayed:

XX BUFFER P1
MODE:YYYY

Enter the program number to be edited and press the **ENTER** key. The displayed message changes to:

Where **XX** is the program number being edited, and **YYYY** is the Mode or Data Option that corresponds to the selected Program Section. A list of all **Program Sections** and their corresponding **Modes** and **Data Options** follows:

Program Section	Pass	Mode	Data Option
BUFFER	P1 P2	OFF, DOUBLE, REVERSE, FORWARD OFF, DOUBLE, REVERSE, FORWARD	
BUFFER DISTANCE	P1F P1R P2F P2R		0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET
OIL	P1 P2	OFF, DOUBLE, REVERSE, FORWARD OFF, DOUBLE, REVERSE, FORWARD	
OIL DISTANCE	P1F	LEFT OUT (OUTSIDE) LEFT TRK (TRACK) LEFT CNT (CENTER) RIGHT CNT (CENTER) RIGHT TRK (TRACK) RIGHT OUT (OUTSIDE)	0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET
	P1R	LEFT OUT (OUTSIDE) LEFT TRK (TRACK) LEFT CNT (CENTER) RIGHT CNT (CENTER) RIGHT TRK (TRACK) RIGHT OUT (OUTSIDE)	0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET
	P2F	LEFT OUT (OUTSIDE) LEFT TRK (TRACK) LEFT CNT (CENTER) RIGHT CNT (CENTER) RIGHT TRK (TRACK) RIGHT OUT (OUTSIDE)	0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET
	P2R	LEFT OUT (OUTSIDE) LEFT TRK (TRACK) LEFT CNT (CENTER) RIGHT CNT (CENTER) RIGHT TRK (TRACK) RIGHT OUT (OUTSIDE)	0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET 0-60.0 FEET
TRANSFER RATE	P1F P1R P2F P2R		1%-100% 1%-100% 1%-100% 1%-100%
STRIP		OFF FULL BACK @	 0-60.0 FEET
VACUUM		ON START ON PLUG	
CLEANER PAD			0-63.0 FEET
CLEANER FLOW		IN OIL BACK LANE	0 - 100% 0 - 100%
SHORT RUN		OFF ON @	 0-60.0 FEET
SPEEDS	P1F P1R P2F P2R	STRIPPING - CONDITIONING - TRAVEL CONDITIONING - TRAVEL CONDITIONING - TRAVEL CONDITIONING - TRAVEL	L-M-H L-M-H L-M-H L-M-H

<u>Program Section Description</u>

For a description of the function of each of the Program Sections, see View Program - Menu Function 02, starting on page 4-3.

Notes

When entering settings, use actual on-lane distances. No corrections are necessary for mechanical offsets for machine components.

Different oil distances and buffer distances can be entered for the forward and reverse directions of each pass of the HVO Summit S-Series, and the six oil tanks can be programmed to operate completely independent of each other. Before entering the Oil Distance data, first set the Buffer Mode and Buffer Distance for all passes. This is necessary because the *Summit S-Series* uses Buffer Distance as the controlling parameter. Any time the Buffer Distance is set to less than the current Oil Distance setting for the corresponding pass, the Oil Distance setting changes to equal the Buffer Distance setting.

The variety of different programming options could result in the user attempting to enter incompatible program data. The operating software does not allow incompatible choices. For example, if the *Summit S-Series* is programmed to apply oil to 35.0 feet, but only buff to 30.0 feet, it will use the Buffer Distance as the control, and buff <u>and</u> oil to <u>30.0</u> feet.

In another case, the user could enter 20.0 feet of forward oil in pass 2, but also elect for the buffer to be OFF during the forward travel of the machine. This setting is obviously not compatible since the lane machine cannot apply oil to the lane unless the buffer is engaged against the lane. With the buffer programmed OFF for pass 2, the Buffer Distance, Oil, Oil Distance, and Transfer Rate displays for that pass will state "DISABLED", and the Summit S-Series will not make an automatic second pass run. If the Buffer Mode for pass 2 is double, forward, or reverse, the machine *will* make an automatic second pass run.

Note that all of the settings shown in the table on the previous page are program-specific and can be set differently for each lane conditioning program.

To Edit a Program:

1. Press the **NEXT** key to move the prompt to, and toggle between, the Pass, Mode, and Data Option fields of the Program Section being displayed.

2. **SCROLL** through the options or enter a number to make the desired setting for that Program Section.

3. Repeat selecting options or entering settings for each available pass.

4. Press **ENTER** to save the settings and return to the Program Section field.

5. Do **NOT** press **MENU** with the prompt in the Program Section field unless you want to stop editing and return to the main menu.

6. Scroll to select the next Program Section to be edited.

7. Repeat Steps 1 through 6 until all desired Program Sections have been edited.

SAVE PROGRAM?
0 = NO 1 = YES

8. With the prompt in the Program Section Field, press the **MENU** key**.** This message is displayed giving you the option to save or not to save the edit:

9. Enter "**1**" to exit and save the changes, or "**0**" to exit without saving any changes.

PROGRAM NOT SAVED

Pressing "**0**" displays this message, and then the screen returns to the **Ready Display**:

SAVE AS
PROGRAM: XX

Pressing "**1**" displays this message:
Where **XX** is the number of the program that was edited.

You may save the changes under this program number or under any other program number from 01 to 20. **If another program number is entered, then the program corresponding to that number will be overwritten by the edited changes**, and the program that was originally called up to be edited will remain unchanged. This feature can also be used to make **a duplicate of a program** by calling up the program to be copied, and saving it (without making any changes) under a different program number.

Enter the desired program number.

PROGRAM SAVED

Press **ENTER**. The screen displays this message:

The changes are saved, and the screen returns to the **Ready Display**.

To run a program after editing and saving the program using Menu Function 03, use Menu Function 01, Retrieve Program, to make it the current program.

While creating or changing a lane conditioning program, complete a Programming Record Sheet for future reference.

Section 5

CLOCK FUNCTIONS

One of the features of the *HVO Summit* control system is that it has an embedded real-time clock. This clock stays active even if the lane machine is powered off. The real-time clock may be used to view the current date and time and is also used by Scheduler to determine when scheduled programs are to be executed.

There are two clock functions:

Display Clock, which allows the user to see the current date, time, and day-of-the-week.

Set Clock, which allows the user to set the current date, time, and day of the week.

DISPLAY CLOCK - MENU FUNCTION 10

When you select this function, the current time is displayed in the following format:

```
DAY-OF-THE-WEEK              MM-DD-YY
                 HH:MM:SS
```

Where:
DAY-OF-THE-WEEK = (Monday, Tuesday, Wednesday, etc.)
MM-DD-YY = Current Month, Day, and Year.
HH:MM:SS = Current Hour (in 24 hour format), Minute, and Second

This function allows you to view the clock only. Pressing **any key** returns the screen to the **Ready Display**.

SET CLOCK - MENU FUNCTION 11

When you select this function, the time is displayed in the following format:

DAY-OF-THE-WEEK	**MM-DD-YY**
HH:MM:SS	

Where:
DAY-OF-THE-WEEK = (Monday, Tuesday, Wednesday, etc.)
MM-DD-YY = Current Month, Day, and Year.
HH:MM:SS = Current Hour (in 24 hour format), Minute, and Second

The Prompt indicates which **field** is selected to be edited.
Press the **NEXT** key to advance to the next field that can be edited.
At DAY-OF-THE-WEEK, **scroll** to select the day .
At MM-DD-YY, enter a number in each of the fields.
At HH:MM:SS, enter a number for the hour and minute.

Note: The seconds cannot be set.

To exit without setting the clock, press the **MENU** key.

SAVING DATA

To save the entire setting, press the **ENTER** key. The following message is displayed for approximately two seconds:

The screen then returns to the **Ready Display**.

Section 6

SECURITY FUNCTIONS

The HVO Summit S-Series Security System is built on four features:

- User control (security is set by the user, not by QubicaAMF).
- Hierarchical Security Levels (none, mechanic, owner) and Password Scheme (no Manager's Key).
- Individual Security Level Control for each Menu Function
- One-time Password Entry (in most cases).

The Security System is made up of three functions:

Set Security - This function allows certain users to set any of the valid Menu Functions to one of the three security levels.

Set Passwords - This function allows certain users to change the passwords.

Enter/Exit Security Mode:

Enter Security Mode - This function allows users to enter a valid password to put the lane machine into a "Security Mode". This allows the user access to secured Menu Functions.

Exit Security Mode - This function is displayed when the lane machine is already in a "Security Mode" and Menu Function 32 is entered. The function provides for exiting and changing the security mode without shutting down the machine.

Security Hierarchy

The three Menu Functions that make up the security system are interrelated through the security hierarchy. There are three user security levels. From Highest to lowest they are: OWNER, MECHANIC, and NONE as depicted below.

	Set Security (30)	Set Password (31)	Security Mode (32)
Highest	OWNER	OWNER	OWNER
	MECHANIC	MECHANIC	MECHANIC
Lowest	NONE	--------------	NONE

The user can set passwords for the OWNER and MECHANIC security levels, and can set any Menu Function's security, except those assigned a permanent security level (see below), to OWNER, MECHANIC, or NONE.

Default and Permanent Security

The factory default OWNER password is 22222.
The factory default MECHANIC password is 11111.

We recommend that owners change the factory default Owner's password to one of their own choosing using Menu Function 31 as soon as possible in order to keep access to this security level under the owner's control.

The functions, Set Security (Menu Function 30), and Set Password (Menu Function 31), have the permanent security level of OWNER and cannot be changed! These functions require you to enter a valid OWNER password in Enter Security Mode (Menu Function 32) before they can be accessed. Therefore, changing the security level assigned to a Menu Function, or changing the OWNER or MECHANIC password, requires OWNER-level security access.

The function Enter/Exit Security Mode (Menu Function 32), has a default security level of NONE and cannot be changed. However, Menu Function 32 requires you to enter a valid password to enter a specific level of Security Mode. The password you enter in this menu function gives you access to other menu functions that have been assigned this level, or any lower level, of security.

All other menu functions have a default security level of NONE, which means that anyone can access these functions without a password or without entering a Security Mode. These functions can be set to any of the three security levels.

SET SECURITY - MENU FUNCTION 30

Note

You must enter the Security Mode at the OWNER level to access this function!

SECURE FUNC:_ _
UNDEFINED FUNCTION

Use this function to set the security level for any of the Menu Functions. When you select this function, the screen displays this message:

The Prompt will be at SECURE FUNC. Enter the Menu Function number for the function you want to set. The function name corresponding to the number will be displayed on the second line of the screen.

To exit and return to the **Ready Display** without changing the security level for that function, press the **MENU** key.

SECURITY:YYYYYYYY
<FUNCTION NAME>

To continue to set the security for the chosen function, press the **ENTER** key. The screen displays the security level of the chosen function with the name of the function:

Where **YYYYYYYY** is NONE, MECHANIC, or OWNER.

SAVING SECURITY

The Prompt will be at SECURITY. Scroll to select the desired security level for the function. When finished, press the ENTER key to save the setting. The screen displays this message for two seconds before returning to the SECURE FUNC: screen (see above).

To continue setting security levels for other functions, scroll to or enter the function number to be set, and repeat the above.

When finished, press the **MENU** key to return to the **Ready Display.**

SET PASSWORDS - MENU FUNCTION 31

Note

You must enter the Security Mode at the OWNER level to enter this function!

CHANGE MECHANIC ENTER PASSWORD: _ _ _ _

Use this function to set the passwords for the various levels of security. When you select this function, the screen displays this message:

The Prompt will be at the MECHANIC option. You can scroll between MECHANIC and OWNER. **This indicates which password you are changing.**

When you have selected the password level you wish to change, press the **NEXT** key. The Prompt will be at ENTER PASSWORD. Enter the new password. Mechanic's passwords by default always begin with 1 while the Owner's passwords always begin with 2 in order to prevent them from both being set to the same password which could cause access problems.

CHANGE MECHANIC ENTER IT AGAIN: _ _ _ _

As a further safeguard, the screen displays an asterisk (*) in place of each number when you enter the password. When you are finished entering the password, press the **ENTER** key. The screen displays this message for verification of the new password:

NEW PASSWORD ACCEPTED

Enter the same password again. If the four digits match the first entry exactly, the new password for that security level will be accepted and this message is displayed:

PASSWORD MISMATCH NO CHANGE

If the four digits do not match exactly, the new password is not accepted and this message is displayed for two seconds:

The screen then returns to the **Ready Display**.

ENTER / EXIT SECURITY MODE - MENU FUNCTION 32

The Security Mode is entered to allow access to secured Menu Functions. Once the lane machine is in Security Mode, it will remain in that state until:

- The lane machine is powered down.
- The user explicitly exits the Security Mode by using Menu Function 32.

Menu Function 32 has the dual purpose of entering and exiting the Security Mode. The Security Mode level is identical to the password levels: OWNER, MECHANIC, or NONE. When the Security Mode is NONE, the display states: ENTER SECURITY MODE. If the Security Mode is either OWNER or MECHANIC, the display states: EXIT SECURITY MODE.

Enter Security Mode

ENTER PASSWORD: _ _ _ _ _

When the Security Mode is NONE and you select this function, the screen displays this message:

SECURITY MODE =
YYYYYYYY

At this prompt, enter a valid five-digit password and then press **ENTER**.
If the entered password is valid, the screen displays the Security Mode that corresponds to the password as shown here:

Where **YYYYYYYY** is either **OWNER** or **MECHANIC**.

WRONG PASSWORD

If the entered password is not valid, the control module beeps three times and the screen first displays this message:

SECURITY MODE =
NONE

Then this screen is displayed:
And then the screen returns to the **Ready Display**.

Exit Security Mode

EXIT SECURITY MODE?
0 = NO 1 = YES

When the Security Mode is OWNER or MECHANIC and you select this function, the screen displays this message:

SECURITY MODE =
YYYYYYYY

If you enter “0”, the screen displays the current Security Mode:

Where **YYYYYYYY** is either **OWNER** or **MECHANIC**.

SECURITY MODE =
NONE

If you enter “1”, the lane machine exits Security Mode and displays:

The screen then returns to the **Ready Display**.

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Section 7

LANE FUNCTIONS

The *HVO Summit S-Series* has a feature to help you keep track of the number of lanes that have been conditioned.

Lane Odometer & Tripmeter - This function displays the number of lanes completed by the lane machine. The odometer and tripmeter are displayed together. The odometer can only be reset by QubicaAMF trained personnel, and returns to zero automatically at 100,000 lanes. The tripmeter is resettable by anyone having access to this function, and automatically resets to zero every 1,000 lanes. These features can be very helpful in scheduling machine maintenance.

LANE ODOMETER & TRIPMETER - MENU FUNCTION 41

```
LANES:XXXXX
LANES:XXX
```

This function displays the lane odometer on the top line and the tripmeter on the bottom line as shown to the left.

Where the **X**'s represent the number of respective lanes maintained by the machine.

Pressing the **MENU** key returns you to the **Ready Display**.

```
LANES:XXXXX
LANES:XXX    ←RESET?
```

To reset the tripmeter, press the **BACKSPACE** key. The screen changes as shown:

If you decide not to reset the tripmeter at this point, press the **MENU** key. The reset prompt (←RESET?) disappears. Pressing the MENU key again returns you to the **Ready Display**.

```
LANES:XXXXXX
LANES:XXX     RESET
```

To reset the tripmeter, press the **ENTER** key. The screen changes as shown, and is displayed for approximately two seconds. The tripmeter resets to 000 lanes, and then the screen returns to the **Lane Odometer** and **Tripmeter** display.

Press the **MENU** key to return to the **Ready Display**.

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Section 8

DATA LOGGER

The *HVO Summit S-Series* control box contains a new software feature that records the date, time, program number(s), and action whenever a password is changed or a program or programs are downloaded, run, or edited. The software will track up to 4780 entries at which time the oldest entry will drop off and the newest entry will appear at the top of the list. Individual entries are viewable on the control box display, or the entire database can be uploaded to your computer using the *QubicaAMF Programmer* software and communications cable that were provided with your machine.

When uploading the data to your computer, a .clg file is created. This data is not editable in order to preserve the integrity of the data. The data can be exported in an editable .csv format to your Excel program for use in creating reports, etc. One use for this information is to verify lane conditions in the event that an award is earned by a bowler during sanctioned play.

DISPLAY LOG ENTRIES - MENU FUNCTION 50

```
LOG ENTRY: XXXX
YYYYYY      Z/ ZZ       ##
```

When you select this function, this message is displayed:

Where:

XXXX is the log entry number.

YYYYYY is the coded date/time entry.

Z or **ZZ** indicates the category of the function that was performed. (For example, **R** indicates that the program was run; **E** indicates the program was edited; **P** indicates a password change; **D** indicates a single program download; and **M1** precedes the first program number of a multiple program download while **M2** indicates that it is the last program of the multi-program download.)

is the program number that was involved in the operation.

Use the **Scroll** keys to move up or down through the list of log entries.

When you have finished checking the log entries, press the **MENU** key to return to the **Ready Display**.

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Section
9

ADJUSTMENT FUNCTIONS

It is necessary to periodically adjust the *HVO Summit's* operating components, or to reset performance parameters. This is also required during initial machine setup. The adjustment or setting commands have already been programmed into the lane machine to make these adjustments easier.

There are twenty-one adjustment functions:

Cycle Timer – This feature allows the user to determine the amount of time it takes the machine to run a lane conditioning program on one lane.

Set Encoder Factor – This feature allows the user to change the formula that the machine uses to calculate the distance travelled down the lane. It can be used to compensate for wear of the encoder wheel or to adjust the distance calculation should the indication prove to be inaccurate.

Pass 2 Start Distance - This sets the distance from the foul line to where the lane machine stops between passes. It prevents the stop switch from making contact with the transition blocks and shutting down the machine.

Adjust Foul Line Stop - This function allows setting the distance from the foul line that the lane machine will stop at the completion of a lane conditioning program.

Reversing Switch Brake Delay - This function determines the time delay between the actuation of the reversing switch and the application of the brake. This helps to ensure that the vacuum head extends past the tail plank after stripping the lane.

Calculate Speed Factor - This function calibrates the machine's speed by timing a multispeed run, comparing the actual run time against a standard, and calculating a speed factor based on the difference between the two.

Edit Speed Factor - This function is used to manually adjust the speed factor to fine-tune the setting to achieve machine speeds that are as close as possible to the design speeds.

Change to HVO Summit or HVO Magnum - This function is used to manually select the type of lane machine you have, either HVO Summit (which is the default) or HVO Magnum. Selecting the appropriate machine type is required in order to help obtain accurate oil profiles because the two machines operate at different speeds.

Select 1, 2, or 3 VacHead Shakes - This function is used to select the number of shakes that a VacHead does at the end of the lane.

Cleaner Pre-Stop Distance - This function is used to select a distance to stop cleaner (spray system) from being sprayed on pins or into the pit.

Cleaner Pre-Start Distance - This function is used to select a distance to start the cleaner before the pad start distance.

Cleaner Preload - This function is used to start cleaner flowing to the cleaner pad in order to prepare for the next lane to be cleaned (drip system only).

Set Switch Type - This sets the machine Start Switch type, either **HANDLE** or **SIDE SWITCH**. **The *HVO Summit S-Series* must be set to HANDLE for proper operation!**

Test Function - This function is used to test the various machine components and can aid in checking adjustments or in troubleshooting problems.

Saturate - This function saturates the buffer brush with oil before use. This helps make lane conditioning more consistent from the very first lane.

Adjust Oil - This function allows for measuring and adjusting the wick pressure against the transfer roller.

Adjust Buffer - This function allows for measuring and adjusting buffer brush pressure against the lane.

Adjust Cleaner Pad & Vacuum Head - This function allows for measuring and adjusting cleaner pad and vacuum head pressure against the lane.

Cleaner Presoak - This function allows the user to flow cleaning solution onto the cleaner pad to presoak the pad.

Cleaner Drip Mode or Spray Mode - This function is used to manually select the type of cleaning system that you have, either drip style cleaner or spray nozzles.

Set Oil Delay – This function allows the user to apply an offset of 0, 1, or 2 feet from the machine's starting position whenever it is desired to not apply oil too close to the foul line. This is a global feature that applies to all lane conditioning programs.

Suggested Order of Use

1. Adjust Cleaner Pad and Vacuum Head (Menu Function 95)
2. Adjust Buffer (Menu Function 94)
3. Adjust Oil (Menu Function 93)
4. Saturate (Menu Function 92)

As necessary:

A. HVO Summit S-Series or HVO Magnum Select (Menu Function 85)
B. Pass 2 Start Distance (Menu Function 80)
C. Adjust Foul Line Stop (Menu Function 81)
D. Reversing Switch Brake Delay (Menu Function 82)
E. Cycle Timer (Menu Function 63)
F. Calculate Speed Factor (Menu Function 83)
G. Edit Speed Factor (Menu Function 84)
H. Test Function (Menu Function 91)
I. Cleaner Presoak (Menu Function 96)
J. Set Switch Type (Menu Function 90)
K. Cleaner Drip Mode or Spray Mode (Menu Function 97)
L. Set Vacuum Head Shake 1, 2, or 3 (Menu Function 86)
M. Adjust Cleaner Prestop Distance (Menu Function 87) (Spray Mode)
N. Adjust Cleaner Prestart Distances (Menu Function 88) (Spray Mode)
O. Set Cleaner Preload {P1R or P2R} (Menu Function 89) (Drip Mode)
P. Set Oil Delay (Menu Function 98)
Q. Set Encoder Factor (Menu Function 70)

CYCLE TIMER - MENU FUNCTION 63

Use this function to determine the length of time it takes the machine to complete a lane conditioning program on one lane. This can be useful in making schedules based on which lane program is to be run, or for example, determining how much time it would add to run a strip-only program before running the lane conditioning program. It is necessary to turn on this function just prior to running the lane conditioning program you wish to time. When the lane machine stops at the end of the program, the time it took for the program to be completed is shown on the control box liquid crystal display.

FUNCTION SELECTED:
CYCLE TIMER

When you select this function, this message is momentarily displayed:

The machine then returns to the Ready Display and is ready to run a program.
You must select this function each time you want to time a run.

SET ENCODER FACTOR - MENU FUNCTION 70

Use this function to fine tune the distance calculation the machine uses to perform its various functions. Strip the lane first to get the most accurate indication, and then make several runs and compare the actual against the indicated distance. If the machine consistently indicates high or low, adjust the factor is .01 increments until the desired result is achieved.

SET ENCODER FACTOR
FACTOR: X.XX

When you select this function, this message is displayed:

Where **X.XX** is the current factor.
Enter the new factor using either the numeric keypad or the scroll keys.

If you do not wish to save the number entered, press the **MENU** key to return to the **Ready Display**.

SAVING DATA

If you want to save the new Encoder Factor, press the **ENTER** key. The screen displays this message while it stores the new setting:

The screen then returns to the **Ready Display**.

PASS 2 START DISTANCE - MENU FUNCTION 80

Use this function to adjust the distance from the foul line where the *HVO Summit* will stop and reverse travel between the first and second passes. This is called the turnaround point, and this feature prevents the shutoff arm from contacting the gutter transition blocks causing the machine to shut down. This distance is measured in tenths of a foot. The recommended setting is 0.8, or 8 tenths of a foot.

TURNAROUND
POINT:ZZ.Z

When you select this function, this message is displayed:

Where **ZZ.Z** is the turnaround point, as measured from the foul line.

Enter the desired turnaround distance.
If you do not wish to save the turnaround distance entered, press the **MENU** key to return to the **Ready Display**.

SAVING DATA

If you want to save the new turnaround distance, press the **ENTER** key. The screen displays this message while it stores the new setting:

The screen then returns to the **Ready Display**.

ADJUST FOUL LINE STOP - MENU FUNCTION 81

This Menu Function is used to set the distance that the lane machine stops from the foul line at the completion of a lane conditioning program. The proper setting stops the lane machine just before the shut off arm makes contact with the end of the gutter. The recommended initial setting is 0.5, or 5 tenths of a foot. Adjust as necessary to obtain the optimum stopping point.

STOP DIST : ZZ.Z

When you select this function, this message is displayed:

Where **ZZ.Z** is the stopping distance, as measured from the foul line.

Enter the desired stopping distance.

If you do not wish to save the stopping distance entered, press the **MENU** key to return to the **Ready Display**.

If you want to save the new stopping distance, press the **ENTER** key. The screen displays this message:

SAVING DATA

The screen then returns to the **Ready Display**.

REVERSING SWITCH BRAKE DELAY - MENU FUNCTION 82

Use this function to set the time delay between the actuation of the reversing switch and the application of the brake. This helps to ensure that the vacuum head extends past the tail plank after stripping the lane. This is necessary in order to allow the machine to cycle the vacuum head down and up so that any oil/cleaning solution will be shaken off into the pit and not redeposited on the lane surface. This delay is measured in seconds. The baseline setting is 0.10 seconds. An initial adjustment to this baseline setting is made at the factory, but it may be necessary to adjust this slightly to suit your bowling center's conditions. **Be careful! Too much delay will cause the machine to run off into the pit!**

BRAKE DELAY: T.TT

When you select this function, this message is displayed:

Where **T.TT** is the duration of the delay, in seconds, before the brake is applied. The allowable range of this setting is 0.00 to 1.00 seconds.

Enter the desired time delay. Because the conditions are different in each bowling center, the exact number may need to be determined by trial and error.

SAVING DATA

If you want to save the new number, press **ENTER.** The screen displays this message while it stores the new setting:

To exit without saving, press **MENU**.

The screen returns to the **Ready Display**.

CALCULATE SPEED FACTOR - MENU FUNCTION 83

Use this function to determine the speed factor. This speed factor is used to electronically adjust the machine's speed so that it operates at the design speeds. This is important because it helps to ensure that the actual oil patterns are consistent with the expected oil patterns. **Before using this function, ensure that all cleaner pad and vacuum head adjustments have been made and that the pad is normally wet.** The "drag" created by these components should be as close to normal as possible to ensure accurate results.

RUN WITH FACTOR? 0-NO 1-YES MENU-QUIT

When you select this function, this initial screen is displayed:

The first run should be made without a correction factor. During this run the machine monitors the time it takes to make the programmed run and then compares this time with an expected goal that has been determined and programmed at the factory. Depending on the actual time it takes to complete the run, a speed factor of 1.00 ±0.25 is calculated. This number is factored into the variable speed drive motor's speed control circuitry so that the machine runs at its rated speeds.

CURRENT FACTOR: X.XX PUSH START

Press **"0"** to calculate a speed factor. This message is displayed:

Where **X.XX** is a number between 0.75 and 1.25.

Press the machine's **START** button. The machine will make a single pass in the strip-only mode. The machine will strip at medium speed and then shift to high speed for the return to the foul line. When the run is completed, the screen displays this message:

GOAL-TT ACTUAL-TT' NEW FACTOR: X.XX

Where:
TT is the time, in seconds, that *should* elapse during the run if the machine is traveling at its design speeds,
TT′ is the time, to the nearest second, that it actually took to complete the run, and
X.XX is the calculated speed factor based on the just-completed run.

Once the speed factor has been determined, another run with the speed factor inserted in the control circuitry should be made. Pressing any key returns you to the initial screen. This second run is used to verify that the calculated speed factor is accurate.

Press **"1"** to run with the speed factor.

Press the machine's **START** button. The machine will operate as before; running down the lane in the strip-only mode and returning at high speed. The machine then displays this message:

GOAL-TT ACTUAL-TT'

If the actual time differs from the goal by more than ± one second, repeat this process from the beginning. Once the actual time is within one second of the goal, you can use Menu Function 84, Edit Speed Factor, to adjust the speed factor so that the actual time equals the goal, if desired. **WE RECOMMEND THAT ADJUSTMENTS TO THE SPEED FACTOR BE LIMITED TO INCREMENTS OF A FEW HUNDREDTHS AT A TIME.**

Press the **MENU** key to exit this function and return to the **Ready Display.**

CAUTION

CAUTION !

SETTING LARGE SPEED FACTORS CAN RESULT IN THE MACHINE RUNNING OFF THE END OF THE LANE AT HIGH SPEED, DAMAGING THE LANE MACHINE, THE PINSPOTTER, OR BOTH!

EDIT SPEED FACTOR - MENU FUNCTION 84

Use this function to fine-tune the speed factor so that the machine runs as close to the design speeds as possible. Once a speed factor has been calculated and you have completed a run *with* the speed factor, you can use this function to achieve an actual run time that is equal to the goal used to determine the speed factor (see Menu Function 83, Calculate Speed Factor).

CURRENT FACTOR: X.XX
FACTOR: X.XX'

When you select this function, this screen is displayed:

Where **X.XX** is the current speed factor and **X.XX'** is a number that is editable and can be used to manually set the speed factor.

To decrease the speed of the machine because the runtime was less than (faster than) the goal, decrease the new speed factor using the **DOWN ARROW SCROLL** key or enter the number directly from the number keypad. **WE RECOMMEND THAT ADJUSTMENTS TO THE SPEED FACTOR BE LIMITED TO INCREMENTS OF A FEW HUNDREDTHS AT A TIME.**

To Increase the speed of the machine, increase the speed factor using the **UP ARROW SCROLL** key or the number keypad.

The maximum allowable manual setting is 1.25, and the minimum is 0.75.

Press the **MENU** key to exit and return to the **Ready Display** without saving the new speed factor.

Press **ENTER** to save the new speed factor and return to the **Ready Display**.

CAUTION

SETTING LARGE SPEED FACTORS CAN RESULT IN THE MACHINE RUNNING OFF THE END OF THE LANE AT HIGH SPEED, DAMAGING THE LANE MACHINE, THE PINSPOTTER, OR BOTH!

HVO SUMMIT or MAGNUM SELECT – MENU FUNCTION 85

This function is available starting with software version 8.1a. HVO technology and is being made available as an upgrade to Silver Bullet® Magnum owners and is standard on HVO Summit and HVO Summit S-Series, lane machines. Use this function to select the type of machine you have – either the HVO Summit S-Series or the HVO Magnum. The two machines have different operating speeds, and unless the appropriate machine is selected, the actual oil profiles will not match the expected oil profiles. The software's default selection is HVO Summit S-Series. You should use this function to change the machine type if the Scrolling Marquee on the display does not match your machine type. Note, that the setting is the same for the new HVO Summit S-Series lane machine and the HVO Summit.

MENU FUNCTION: 85
HVO MAGNUM

When you select this function for the first time, the message at the left is displayed:

Since the software's default machine type is HVO Summit S-Series, the alternate selection, HVO Magnum, is displayed. To select HVO Magnum as your machine type, press the **ENTER** key. The display message changes as shown here:

SPEEDS MIGHT CHANGE
0-NO 1-YES MENU-QUIT

This screen informs you that the machine speeds will change if you change the current machine type and provides you with the opportunity to either continue or quit without making changes.

To select the HVO Magnum as your machine type, press **"1"**. The Scrolling Marquee on the Ready Display, which initially read *HVO Summit* changes to *HVO Magnum* to indicate the machine type selected.

To quit without making any changes, press **"0"** or the **MENU** key.
The screen returns to the **Ready Display**.

To select HVO Summit S-Series as the machine type, repeat the above steps. Note that HVO Summit is shown but will cover both regular and S Series with 9.0 and higher software.

VACUUM HEAD SHAKE 1, 2, or 3 - MENU FUNCTION 86

With the introduction of version 9.0 software you can now select whether to have your machine shake the Vac Head up to three times. This may be needed if you have excessive cleaner build up due to very high amounts of lane oil. This is a global function for all lane conditioning programs.

MENU FUNCTION: 86
VAC HEAD SHAKE

When you select this function the message at the left is displayed:

VAC HEAD SHAKE
PRESS 1, 2, or 3

Press the **ENTER** key and you will see the menu display as shown to the left. Select ether 1, 2, or 3 shakes. This is to allow more shaking if your cleaner usage is high or the cleaner pad stays down through the pin deck, and you find that cleaner drips from the Vac Head on the return pass. The factory default setting is one (1).

CLEANER PRE-STOP DISTANCE - MENU FUNCTION 87

This function was introduced to control the **HVO Summit S-Series** spray cleaning method only. This function is not active when in Drip mode. Since the cleaner sprays 3 to 4 feet ahead of the machine, it could spray the pins or spray cleaner into the pit if the machine sprayed to the same distance that is used to control the action of the cleaner pad. This function inserts an offset from the cleaner pad pickup distance that determines where the machine will stop spraying. For example, if the cleaner pad distance is set at 61.5 feet, and the PRE-STOP distance is set at 6.0 feet, the machine will stop spraying cleaner at 55.5 feet. This is a global function that affects all lane conditioning programs.

MENU FUNCTION: 87
CLEANER PRE-STOP

When you select this function the message at the left is displayed:

CLEANER PRE-STOP
DISTANCE: XX.X

Press the **ENTER** key and you will see the menu display as shown to the left:

Where **XX.X** represents the distance to stop the cleaner spray prior to picking up the cleaner pad. Using the keypad, input a distance from 00.0 to 10.0 feet.

CLEANER PRE-START DISTANCE - MENU FUNCTION 88

This function was introduced to control the **HVO Summit S-Series** spray cleaning Method and in BACK LANE cleaning mode only. This function is not active when in Drip mode. Since the cleaner sprays 3 to 4 feet ahead of the machine, you will need to start the cleaner spray prior to the cleaner pad start distance when cleaning the back end of the lane only. For example, if the cleaner pad back lane start distance is 39.5 feet, and the PRE-START distance is 3.0 feet, then the cleaner will turn on at 36.5 feet. This is a global function for all lane conditioning programs.

MENU FUNCTION: 88
CLEANER PRE-START

When you select this function the message at the left is displayed:

CLEANER PRE-START
DISTANCE: XX.X

Press the **ENTER** key and you will see the menu display as shown to the left:

Where **XX.X** represents the distance to start the cleaner spray prior to engaging the cleaner pad. Using the keypad, input a distance from 00.0 to 10.0 feet.

CLEANER PRE-LOAD - MENU FUNCTION 89

This function was introduced in Software Version 9.0 to assist the HVO Summit Drip cleaning method only. This function is not active when in spray mode. Since there is a greater amount of oil on the lanes these days, you may need to preload the cleaner pad to be ready for the next lane. On the last pass reverse, the cleaner turns on for the last few feet with the In Oil cleaner percentage from the current program. This is a global function for all the 20 programs.

MENU FUNCTION: 89
CLEANER PRE LOAD

When you select this function the message at the left is displayed:

0 - OFF, 1 - ON
MENU - QUIT

Press the **ENTER** key and you will see the menu display as shown to the left:

Using the Keypad, input ether 0 to turn off the Cleaner Pre-load (default) or Press 1 to turn on the Cleaner Pre-load.

SET SWITCH TYPE - MENU FUNCTION 90

Use this function to set the type of start switch to be used. The *HVO Summit S-Series* is equipped with both a side-mounted start switch and a handle-mounted start switch.

SET START SWITCH TYPE: YYYYYYYYYY

When you select this function, this message is displayed:

Where **YYYYYYYYYY** is either **HANDLE** or **SIDE SWITCH**. **HANDLE** is the default setting. The *HVO Summit S-Series* must use the **HANDLE** setting. Both start switches will function in this mode. Some earlier models without handle start switches that have been updated with HVO technology have side start switches that differ from the Summit's. These machines must use the **SIDE SWITCH** setting to function properly. Use the **UP** or **DOWN ARROW** keys to toggle between switch types.

To save the new switch type selection, press the **ENTER** key. To exit this function without saving any changes, press the **MENU** key. The following message is displayed briefly before the screen returns to the **Ready Display.**

START SWITCH TYPE IS YYYYYYYYYY

Where **YYYYYYYYY** is the current setting, either **HANDLE** or **SIDE SWITCH**.

TEST FUNCTION - MENU FUNCTION 91

Use this function to test individual components and switches. This function can be very valuable in debugging problems that may occur with the machine. Pressing the number or scroll keys on the keypad energizes the associated component. When the key is released, the component deenergizes.

S:YYY R:YYY M:YYY

When you select this function, this message is displayed:
Where **S** represents the **Start** switch, **R** represents the **Reversing** switch, **M** represents the **Manual Reverse** push button, and **YYY** is either **ON** or **OFF**.

To test the **START**, **REVERSING,** and **MANUAL REVERSE** switches, actuate the switch while viewing the display. If the switch is operating properly, the indication for that switch will change from **OFF** to **ON**. Test both START switches separately.

S:YYY R:YYY M:YYY RATE:_20%

To set the rate at which the drive motor, transfer roller motor, and cleaner flow are to be tested, press the **Next** key. The screen now displays:

Twenty percent is the default setting. Use the scroll keys or the number keys to set the desired rate. When the drive motor, transfer motor, or cleaner flow is tested, they will operate at this percentage of full speed or flow. When the drive motor is tested, it does not start at full speed, but ramps up to prevent spinning the wheels on an oiled surface. **It is important to note that the Shut Off Arm will not function to stop the drive motor in the reverse direction during testing! To stop the drive motor while testing it in either direction, remove your finger from the UP or DOWN Arrow key.**

The following list shows the association between the keypad keys and the machine components when being tested in this menu function.

KEY	**COMPONENT**
1	Buffer Motor
2	Outside Oil
3	Track Oil
4	Center OIL
5	Transfer Motor
6	Vacuum Motor
7	Vacuum Head
8	Cleaner Pad
9	Cleaner Pump
0	Alarm Speaker
▲	Drive FWD _0.0
▼	Drive REV _0.0

```
S:YYY   R:YYY   M:YYY
 YYYYYYYYYYYYY
```

When a key is pressed, the display changes as shown here:

Where **YYYYYYYYYYYYY** is the description of the component being tested. When the scroll keys are used to test the drive motor, an additional indication is displayed. This indication shows the distance (in feet) that the machine travels while the drive motor is being tested. This additional indication allows testing the encoder (counter wheel) simultaneously with the drive motor.

When component testing is complete, press the **MENU** key.

The screen returns to the **Ready Display**.

SATURATE - MENU FUNCTION 92

It may be necessary to saturate the buffer brush with conditioner prior to each use of the *HVO Summit S-Series*. After each use, the buffer brush should be cleaned with a cloth that has been dampened with the same lane dressing being used to dress the lanes.

Prior to making this adjustment:

- The buffer brush and dressing tanks must be installed in the machine.
- The buffer brush pressure should have been adjusted properly.
- The calibration and tank alignment for the dressing tanks should have been completed.
- The *HVO Summit S-Series* should be at the foul line in the normal operating position.

RATE: %%%

When you select this function, this message is displayed:

Where **%%%** is the percentage of the maximum oil transfer rate.
Enter the desired transfer rate and press **ENTER**. The display changes to read:

PUSH START

To proceed with saturation, press the machine's **START** button twice. The machine remains at the foul line while oil transfers from the dressing tank felts to the transfer roller and onto the buffer brush. At the same time, this message is displayed:

PUSH STOP TO END

The saturation time is determined by the operator. To stop saturation move the **Shut Off Arm** forward.

The screen returns to the **Ready Display**.

ADJUST OIL - MENU FUNCTION 93

This adjustment command is used to align the dressing tanks in the machine as well as to "rough" calibrate the dressing tanks for the desired oil pattern.

Prior to making this adjustment:

- The buffer brush should be installed in the machine ***and properly adjusted***.
- Lane dressing should be in the dressing tanks.
- The dressing tank felts should be wet with lane dressing.
- The *HVO Summit S-Series* should be at the foul line in the normal operating position.

PUSH START

When you select this function, the screen displays this message:

PUSH STOP TO END

To proceed with the oil adjustment, press the **START** button twice. The *HVO Summit S-Series* does not travel down the lane. It remains in position with the buffer brush engaged and rotating against the lane surface and the oil tanks engaged against the oil transfer roller. During this time the lane machine displays this message:

For adjustment specifics, refer to the adjustment section of the Summit's Operating, Maintenance, and Parts Manual.

After making the necessary adjustments, move the **Shut Off Arm** forward. This deactivates the machine components, and the screen returns to the **Ready Display**.

ADJUST BUFFER - MENU FUNCTION 94

Prior to making this adjustment:

- The buffer brush should be installed in the *HVO Summit S-Series*.
- The buffer brush should be normally oily.

If the buffer brush is adjusted while dry, recheck the adjustment after the buffer brush has been used to oil several lanes.

PUSH START

When you select this function, this message is displayed:

DWN KEY:ENGAGE BUFF
MAN REV=RTN TO HOME

To proceed with the buffer adjustment, press either **START** button twice. The *HVO Summit S-Series* will begin to travel down the lane. At a distance of 12 feet from the foul line, the machine will stop and display this message:

DWN KEY:ENGAGE BUFF
UP KEY: RELEASE BUFF

Press the **DOWN ARROW** key to engage the buffer brush against the lane surface. At this time the message displayed on the screen changes to read:

The user may press the **UP** or **DOWN ARROW** keys as desired while making adjustments or taking measurements. The displayed message will alternate between the two shown here as the buffer brush is raised or lowered.

For adjustment specifics, refer to the adjustment section of the Summit's Operating, Maintenance, and Parts Manual.

RTN TO FOUL LINE

After making the necessary adjustments, or to cancel this adjustment at any point in the cycle, press the **Manual Reverse** push button. The machine then displays this message:

The buffer brush disengages from the lane surface (if it is in contact with it), the lane machine returns to the foul line at slow speed, and the screen returns to the **Ready Display**.

ADJUST CLEANER PAD & VACUUM HEAD - MENU FUNCTION 95

Prior to making this adjustment:

- The vacuum head and the cleaner pad must be installed in the *HVO Summit S-Series*
- The cleaner pad should be normally wet with the cleaner being used.
- The *HVO Summit S-Series* should be positioned at the foul line in the normal operating position.

PUSH START

When you select this function, the screen displays this message:

MAN REV = RTN HOME

To proceed with the cleaner pad adjustment sequence, press either machine **START** button twice. The screen changes to display this message:

The *HVO Summit S-Series* will begin to travel down the lane. At a point 35 feet from the foul line, both the vacuum head and the cleaner pad will engage against the lane surface, and the machine will travel an additional two feet from that point before stopping. The extra travel ensures that both the vacuum head and cleaner pad are engaged against the lane as they would be during forward travel of the machine during a stripping cycle.

For adjustment specifics, refer to the adjustment section of the Summit's Operating, Maintenance, and Parts Manual.

RTN TO FOUL LINE

After making the necessary adjustments, or to cancel the adjustment, press the **Manual Reverse** push button. The screen displays this message while the lane machine returns to the foul line:

The screen then returns to the **Ready Display**.

CLEANER PRESOAK - MENU FUNCTION 96

This function is applicable to both the spray and drip Summit machines. For the drip system, the cleaner pad is presoaked for 30 seconds. This function is not to be used in place of storing the cleaner pad in the storage container when not in use. For the spray system, cleaner is sprayed on the lane for 30 seconds and is used to adjust the spray nozzles.

RATE: %%%

When you select this function, this message is displayed:

Where **%%%** is the percentage of the maximum cleaner flow available.

To change the cleaner flow rate to be used for the presoak, use the **SCROLL** keys to scroll to the desired number, or enter the number directly from the number keypad. The available range is 0 to 100%.

PUSH START

When the desired number has been entered, press **ENTER**. The display changes as shown here:

TT SECONDS LEFT
PUSH STOP TO END

To start cleaner flow, press the START button twice. The message on the display changes as shown at the left.

Cleaner flows at the selected rate for 30 seconds and then stops. The time remaining is displayed and counted down on the screen. At the end of 30 seconds, the screen returns to the **Ready Display**.

CLEANER DRIP or SPRAY - MENU FUNCTION 97

This Function was introduced in Version 9.0 to select between the new improved *HVO Summit S-Series* (Spray Cleaner) or older machines as in the HVO Summit (Drip cleaner), Magnum (Drip Cleaner), or Silver Bullet V^4 (Drip Cleaner). The default is the SPRAY mode. The customer with an *HVO SUMMIT S-Series* or an upgrade machine with the new spray system will not have to adjust this setting if the control box has version 9.0 or higher software.

This function will need to be set if you received an EPROM with Version 9.0 or higher software as part of an upgrade to an existing machine.

MENU FUNCTION: 97
CLEANER DRIP/SPRAY

When you select this function, the message at the left is displayed:

0 - DRIP, 1 - SPRAY
MENU - QUIT

Press the **ENTER** key and you will see the menu display as shown to the left. Using the keypad, input ether 0 to select the DRIP mode or 1 to turn on the SPRAY mode. Pressing the MENU button will quit the function.

SET OIL DELAY - MENU FUNCTION 98

This function allows the user to apply an offset of 0, 1, or 2 feet from the machine's starting position whenever it is desired to not apply oil too close to the foul line. This may be especially desirable if children will be using the lane. Oil on shoes can present a slipping hazard.

SELECT OIL DELAY
0-0FT, 1-1FT, 2-2FT

When you select this function, this message is displayed:

If you do not wish to change the oil delay distance, press the **MENU** key to return to the **Ready Display**.

SAVING DATA

To change the oil delay distance, enter the new distance (0, 1, or 2). The screen displays this message while it stores the new setting:

The screen then returns to the **Ready Display**.

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Section 10

LANE RECOVERY

The *HVO Summit S-Series* has an automatic **LANE RECOVERY** feature that covers two situations: POWER FAILURE and DRIVE TIMEOUT.

POWER FAILURE

If power to the machine is disconnected for any reason during operation, the *HVO Summit S-Series* recalls the program it was running as well as where it was on the lane when power was disconnected.

0 = RTN TO FOUL LINE

Upon power-up following a power failure, this message is displayed:

Enter "**0**" to return to the foul line and repeat the lane that was being maintained when the power failed. After entering "0" there is a delay of approximately two seconds before the machine begins to move so that the operator can move out of the way.

When the lane machine reaches the foul line, the screen returns to the **Ready Display**.

DRIVE TIMEOUT

DRIVE/ENCODER ERROR!
PRESS ANY KEY

If the lane machine becomes stuck on the lane for any reason while the drive motor is engaged, the *HVO Summit S-Series* will stop (***timeout***), beep three times, and display this message:

1 = RESTART
0 = RTN TO FOUL LINE

Pressing any key results in a second message being displayed.
Enter "**1**" to continue with the program, or "**0**" to return to the foul line and repeat the lane that was being maintained when the lane machine became stuck. When the lane machine is finished, the screen returns to the **Ready Display**.

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