AutoHoot Instruction Manual

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Contents

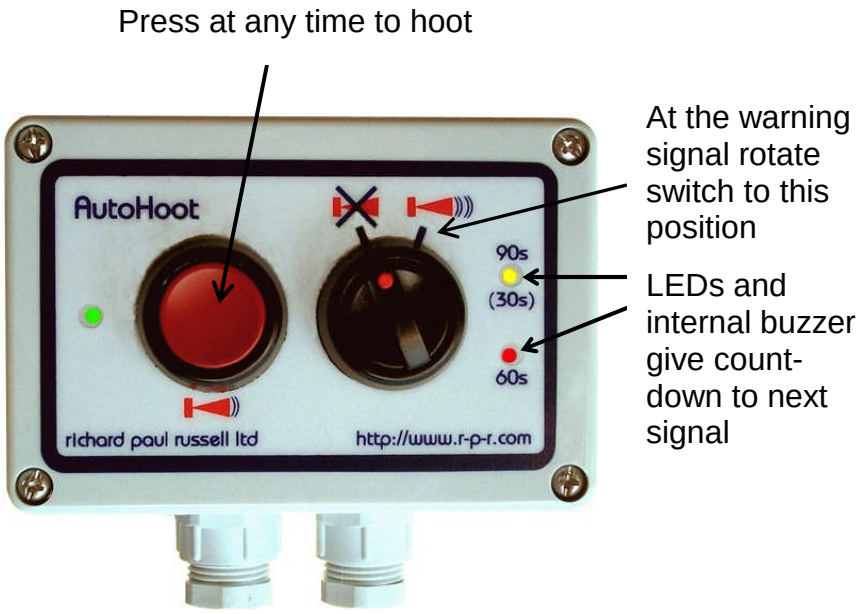
1. Software revision summary

Version	Date	Description
1.0	May 2000	Original software issue
2.0	March 2001	Added RR26 sequence and programmable user sequence
2.1	March 2001	Added the following commands for user sequences Delay 0 to 15 seconds and hoot Delay 30 minutes and time out disable Hoot control command Set loop counter Set outputs Sequence loop command
2.2	March 2003	In the RR26 sequence the 1-minute hoot is extended by 1 second. Added hoot length command Horn no longer automatically sounded at the start of a user sequence.
2.3	April 2005	Non-production version
2.4	July 2008	Replaced old Olympic without overlap sequence with team race sequence. RR26 sequence with a 10 second delay before the first warning signal added. In the RR26 sequences the 1-minute hoot is 1.5 seconds longer than the other hoots. Added goto command

2. Introduction

This Instruction Manual applies to AutoHoots with issue 2.4 software. If you wish to have an older AutoHoot upgraded please contact the manufacturer. The main changes in the software from previous versions can be found the table on page 2

Any complexity inferred by the length of these instructions is due to the large number of starting sequences in use and AutoHoots flexibility at coping with them. The complexity should not be evident to the race officer starting a race, as once set up for the starting sequence used by your club, AutoHoot is extremely simple and intuitive to use (see picture below). The standardisation brought about by the introduction of the 2001 racing rules means that in most cases setting up AutoHoot will be covered in "Quick set-up for RR26" section on page 5 of this manual and requires little more than selecting the warning signal and how long the horn should sound.

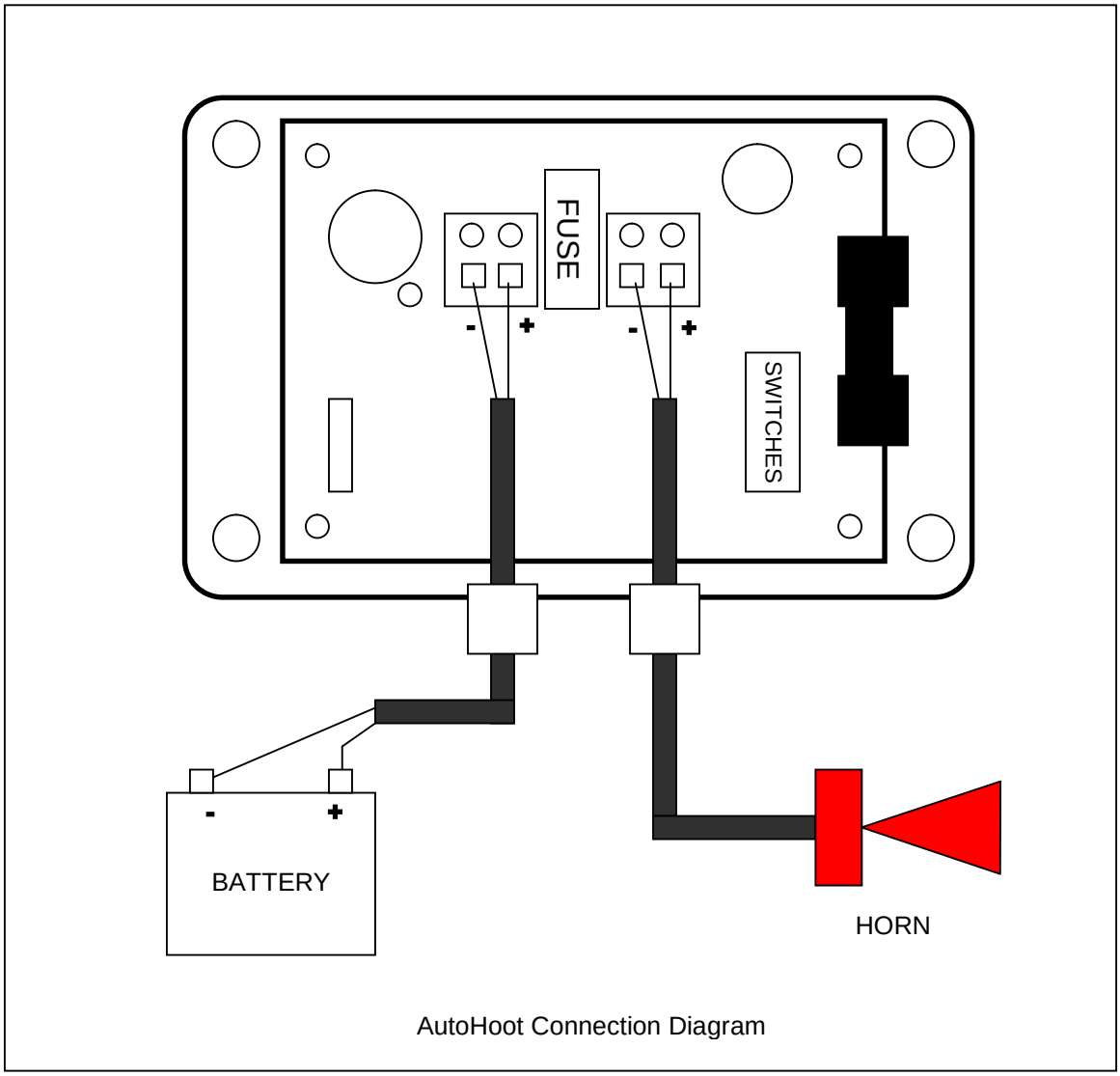


3. Installation

AutoHoot is an electronic control unit. A power source and horn must be provided. A small 12-volt car battery or if fitted on a committee boat the boats main battery is ideal. For most dinghy clubs on restricted water the type of low cost car horn that can be purchased from your local car accessory shop is suitable. If you are starting large fleets on open water then a large truck horn or marine horn may be better.

Access to the inside of the unit for wiring or adjusting the settings is gained by releasing the four corner spring loaded catches with a screwdriver. These require a quarter turn anticlockwise.

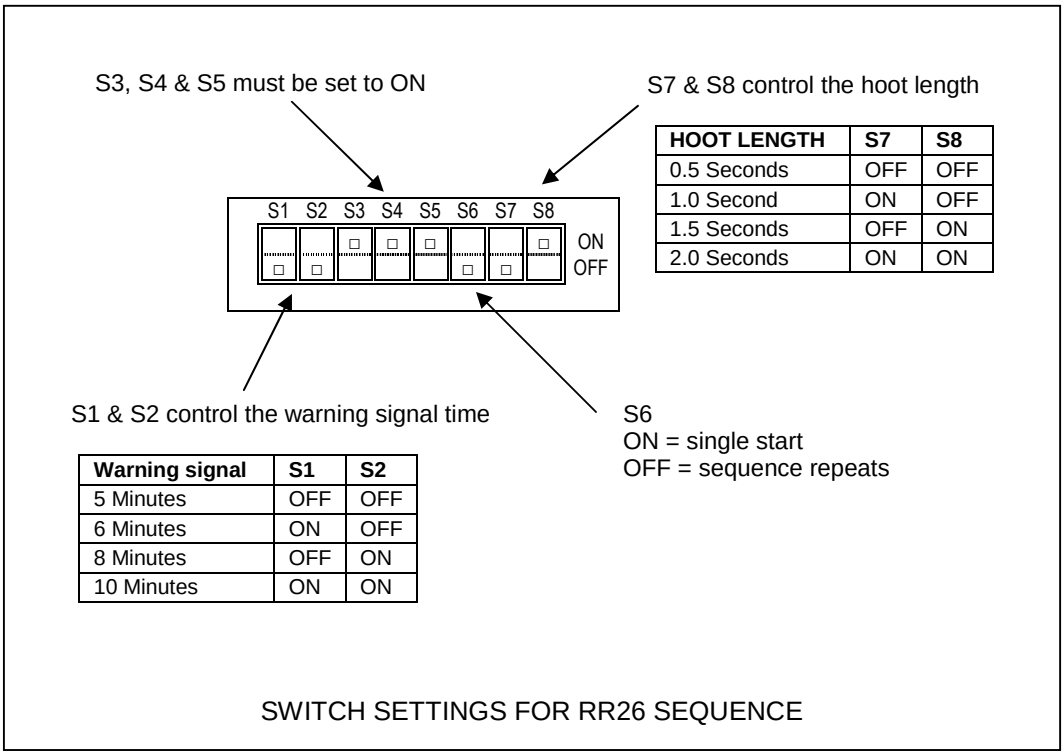
Connections are to two green terminal blocks either side of the fuse. The left-hand block is for connection to the battery and the right-hand block is for connection to the horn. The individual connections are marked on the printed circuit board. The terminals will accommodate cable with up to 2.5mm square conductors. Connection to the battery should be via a battery isolation switch if AutoHoot is to be permanently installed. Car horns can require high peak currents (15 to 20A), so long cable runs should be avoided. If higher currents are required AutoHoot can be used to drive a suitable relay. When installing AutoHoot be careful not to strain the ribbon cable connection between the circuit board and the front. This may be unplugged from the circuit board if necessary.



AutoHoot Connection Diagram

4. Quick set-up for RR26

If your preferred starting sequence is as given in ISAF racing rule 26 then this section is to save you having to read through the rest of this manual. The standard RR26 (5, 4, 1, 0) sequence has the warning signal at 5 minutes before the start. However as the rule gives the option of extending the warning time, AutoHoot provides a choice of 5, 6, 8 or 10 minutes for the warning signal. The diagram below gives details on how the eight small switches inside AutoHoot should be set. The one minute hoot will be 1.5 seconds longer than the length of the other hoots as set by switches S7 and S8



HOOT LENGTH	S7	S8
0.5 Seconds	OFF	OFF
1.0 Second	ON	OFF
1.5 Seconds	OFF	ON
2.0 Seconds	ON	ON

Warning signal	S1	S2
5 Minutes	OFF	OFF
6 Minutes	ON	OFF
8 Minutes	OFF	ON
10 Minutes	ON	ON

SWITCH SETTINGS FOR RR26 SEQUENCE

5. Settings

There are a large number of different sequences in use for starting sailing races and internal switches are provided for adjusting the following:

Sequence type
Sequence length
Repeat/single start
Hoot length

There is also the option of 2 user programmable sequences. The following tables give a summary of switch settings:

Sequence type - S3, S4, S5

There is a choice of six predefined sequence types, plus two user programmable sequences.

S3	S4	S5	Sequence type	Sequence letter
on	on	on	RR26	A
off	on	On	Delayed RR26	A
on	off	on	User programmable 1 & 2	B
off	off	on	Count-down	C
off	on	off	Match race	D
on	on	off	Team race	E
on	off	off	Old Olympic with overlap	F
off	off	off	Old System 1 & 2	G

For convenience in these instructions the different sequence types have been allocated a letter.

Sequence length – S1, S2

For each of the predefined sequence types there are four options for sequence length or sequence repeat time selected using S1 and S2. When the user sequence type is selected these switches select which user sequence is used.

		SEQUENCE LENGTH							SEQUENCE REPEAT TIME						
S1	S2	A	B	C	D	E	F	G	A	B	C	D	E	F	G
off	off	5		5	10	3	6	10	5		5	5	3	5	5
on	off	6	User 1	4	8	3	5	8	6	User 1	4	4	4	4	4
off	on	8	User 2	3	6	3	4	6	8	User 2	3	3	5	3	3
on	on	10	User 1+2	2	4	3	3	4	10	User 1+2	2	2	6	2	2

Repeat/single start – S6

Switch S6 is used to make the sequence repeat or not. On some of the predefined sequences, where it is normal for the preparatory signal to also be the warning signal of the succeeding start, the repeat time is shorter than the sequence length, see above.

S6	Repeat/Single
off	Repeat
on	Single

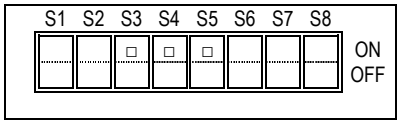
Hoot length – S7, S8

There are four options for the hoot length set using switches S7 and S8

S7	S8	Hoot length
off	off	0.5 seconds
on	off	1 second
off	on	1.5 seconds
on	on	2 seconds

6. Start sequences

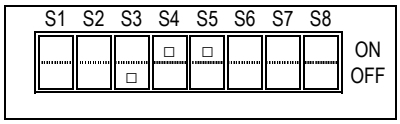
RR26 – ISAF Rules



S1 off	S2 off	S1 on	S2 off	S1 off	S2 on	S1 on	S2 on	Signal	Flags	Sound
5		6		8		10		Warning	Class flag displayed	1 hoot
4		4		4		4		Preparatory	P, I, Z, Black flag or I and Z displayed	1 hoot
1		1		1		1		One minute	Preparatory flag lowered	1 long hoot
0		0		0		0		Start	Class flag lowered	1 hoot

The 5, 4, 1, 0 is the standard sequence and if an extended warning time is used then this must be specified in the sailing instructions. The hoot at one minute is two seconds longer than the other hoots. If the sequence is to be shortened then the Olympic without overlap or a user programmable sequence can be used.

Delayed RR26 – ISAF Rules

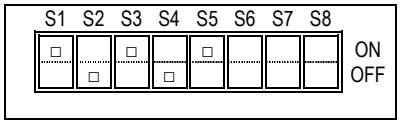


This is the same as the RR26 sequence above but there is a delay of 10 seconds before the first warning signal.

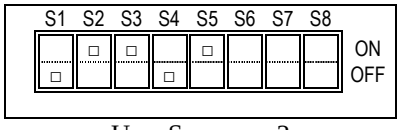
The race officer can then start AutoHoot have time to be ready to hoist or breakout the flag signals for the warning signal when the first hoot is made.

User Programmable Sequences

Two programmable sequences are available. They are selected using the following switch settings:

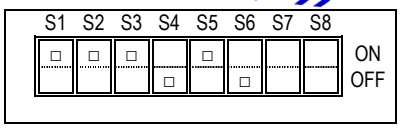


User Sequence 1



User Sequence 2

User Sequence can be set for a single sequence, S6 on or a repeating sequence S6 off. The two user sequences can be joined to form one long sequence

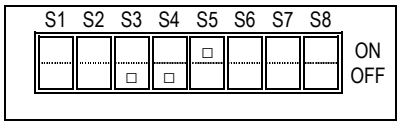


User Sequence 1 + 2

Note that when the two User Sequences are joined, S6 must be set to off for a repeating sequence.

Each user sequence can be up to 32 steps. Details of how the sequences are programmed can be found later in these instructions.

Count-down

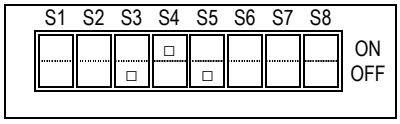


Count-down

The sequence length is set using S1 and S2 as given in the table in section 5. Sequence can be set for a single sequence, S6 on or a repeating sequence S6 off. The length of the long hoot is determined by the hoot length switch settings.

Time to start	Sound
5 minutes	5 long hoots
4 minutes	4 long hoots
3 minutes	3 long hoots
2 minutes	2 long hoots
1 minute 30 seconds	1 long hoot, 3 short hoots
1 minute	1 long hoot
30 seconds	3 short hoots
20 seconds	2 short hoots
10 seconds	1 short hoot
5 seconds	1 short hoot
4 seconds	1 short hoot
3 seconds	1 short hoot
2 seconds	1 short hoot
1 seconds	1 short hoot
0 seconds	1 long hoot

Match Race – ISAF RR Appendix C 3.1

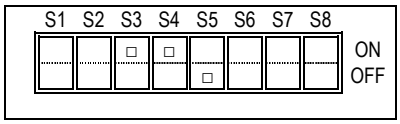


Match Race

Time to start	Signal	Flags	Sound
10 minutes	Attention	F flag displayed	1 hoot
6 minutes		F flag lowered	
5 minutes	Warning	Match numeral pennant displayed	1 hoot
4 minutes	Preparatory	P flag displayed	1 hoot
2 minutes	End of pre-start entry time	Blue or yellow flags if boats fail to comply with C4.2	1 hoot*
0 minutes	Start	Red flag displayed	1 hoot

* hoot must be made manually if required.
The yellow and red LEDs and the internal buzzer give count-down warnings of 6, 5, 4, 2 and start signals.

Team Race



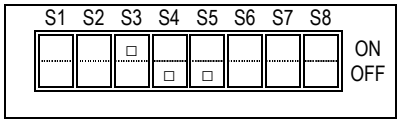
Team Race

Signal	Time before starting signal	Sound	Visual signals
Warning	3 min	3 long	Team sail colours
Preparatory	2 min	2 long	Flag ”P”
	1 min	1 long	
	30 sec	3 short	
	20 sec	2 short	
	10 sec	1 short	
	5 sec	1 short	
	4 sec	1 short	
	3 sec	1 short	
	2 sec	1 short	
	1 sec	1 short	
Starting	Start	1 long	Team sail colours and Flag ”P” removed

S1 and S2 control the gap between the start and the next warning signal when the sequence is set to repeat (s6 off)

S1	S2	Time to next warning signal
Off	Off	Starting signal is the warning signal for the next race
On	Off	1 minute
Off	On	2 minutes
On	On	3 minutes

Old Olympic with overlap

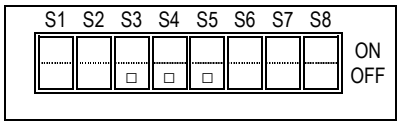


Old Olympic with overlap

S1 off	S2 off	S1 on	S2 off	S1 off	S2 on	S1 on	S2 on	Signal	Flags	Sound
6		5		4		3		Warning	Class flag displayed	1 hoot
5		4		3		2		Preparatory	P, I, Z or Black flag displayed	1 hoot
1		1		1		1		One Minute	P, I, Z or Black flag lowered	1 hoot
0		0		0		0		Start	Class flag lowered	1 hoot

In successive starts the One Minute signal is the Warning signal for the next start.

Old system 1 & 2 - ISAF 1997-2000 RR26.1 system 1 & 2



Old system 1 & 2

This sequence gives hoots at regular intervals and also the LEDs and buzzer give a count-down to one minute before the hoot to assist in lowering the signal in system 2. The sequence length can be adjusted using S1 and S2 as shown in this system 1 example

S1 off	S2 off	S1 on	S2 off	S1 off	S2 on	S1 on	S2 on	Signal	Flags	Sound
10		8		6		4		Warning	Class flag displayed	1 hoot
5		4		3		2		Preparatory	P flag displayed	1 hoot
0		0		0		0		Start	Class flag lowered	1 hoot

The flag signals for the old system 2 are:

Time to start	Signal	Flags	Sound
10 minutes	Warning	Yellow flag displayed	1 hoot
6 minutes		Yellow flag lowered	
5 minutes	Preparatory	Blue flag displayed	1 hoot
1 minute		Blue flag lowered	
0 minutes	Start	Red flag displayed	1 hoot

7. Programming User Sequences

1. Plan the sequence of sound signals you require making a note of the time between each hoot and when any special events like setting an output or an extra long hoot should occur. If part of the sequence repeats then how this is done and the number of times it repeats should be planed.

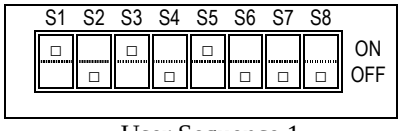
2. The next step is to translate your sequence into a series of commands and switch settings which can be entered into AutoHoot. It is best to write the switch settings in a User Sequence Programming Table as given in the back of these instructions before attempting to enter them in to AutoHoot. Simple delays between hoots are single steps and the switch settings can be determined from the following tables. Control functions and other commands require two steps with the first step having all the switches on. Details of these two step commands can be found in section 8. The last step in the sequence must be all switches set to off, to signify the end of the sequence.

TABLE 7.1

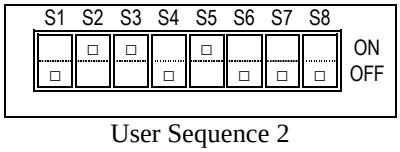
Seconds	S1	S2	S3	Seconds	S1	S2	S3
0	off	Off	off	30	on	on	Off
10	on	Off	off	40	off	off	On
20	off	On	off	50	on	off	On

Minutes	S4	S5	S6	S7	S8	Minutes	S4	S5	S6	S7	S8
0	off	off	off	Off	off	16	off	off	off	off	On
1	on	off	off	Off	off	17	on	off	off	off	On
2	off	on	off	Off	off	18	off	on	off	off	On
3	on	on	off	Off	off	19	on	on	off	off	On
4	off	off	on	Off	off	20	off	off	on	off	On
5	on	off	on	Off	off	21	on	off	on	off	On
6	off	on	on	Off	off	22	off	on	on	off	On
7	on	on	on	Off	off	23	on	on	on	off	On
8	off	off	off	On	off	24	off	off	off	on	On
9	on	off	off	On	off	25	on	off	off	on	On
10	off	on	off	On	off	26	off	on	off	on	On
11	on	on	off	On	off	27	on	on	off	on	On
12	off	off	on	On	off	28	off	off	on	on	On
13	on	off	on	On	off	29	on	off	on	on	On
14	off	on	on	On	off	30	off	on	on	on	On
15	on	on	on	On	off	31	on	on	on	on	On

3. To enter the sequence into AutoHoot first the user sequence 1 or user sequence 2 must be selected with the switches as follows.



User Sequence 1



User Sequence 2

4. Hold pressed the red Hoot switch and switch the Auto switch ON, OFF and ON. The horn will stop sounding. Release the Hoot switch. The buzzer will make 2 beeps and the red LED come on. AutoHoot is now in programme mode. If it fails to enter programming mode switch the Black Auto

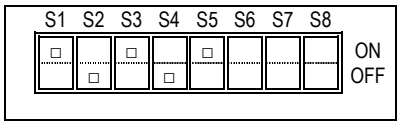
switch ON and then OFF without the Red Hoot switched pressed to clear the previous attempt at entering programming mode and then try again.

5. Using your User Sequence Programming Table Set the switches for the current step in the sequence.

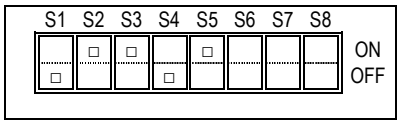
6. Press the red Hoot switch to enter the time. The buzzer will beep twice to confirm the entry. Release the Hoot switch.

7. If more steps are required go to instruction 5 or if it is the end of the sequence set all the switches off and press the red hoot switch. A series of beeps and the yellow LED coming on will indicate that the sequence is being programmed into AutoHoot's memory. Release the hoot switch and after the beeps stop switch off the Auto switch. The sequence will remain in AutoHoot's memory until reprogrammed even if the power is removed.

8. To use the programmed user sequence set switches as follows:

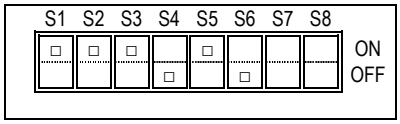


User Sequence 1



User Sequence 2

The two user sequences can be joined to form one long sequence

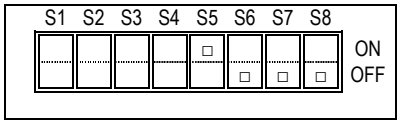


User Sequence 1 + 2

8. User sequence commands

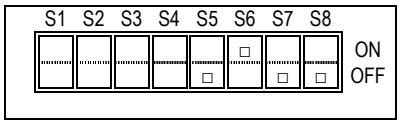
In addition to specifying the time between hoots there are a number of commands available. These all require two sequence steps. The first being to set all the switches to on. In the following only the second step of each command is shown.

Delay 0 to 15 seconds



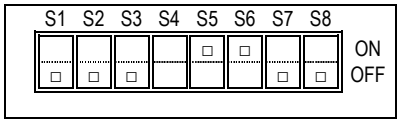
S1 to S4 are set to the required delay time, in seconds, as given in in Table 8.1 on page 15

Delay 0 to 15 seconds and hoot



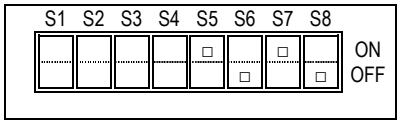
S1 to S4 are set to the required delay time as given in in Table 8.1 on page 15

Delay 30 minutes



This command gives a 30 minute delay without the LEDs or beeper giving a warning of the end of the period. If S4 is set to on then the three hour time out will not apply at the end of the sequence.

Hoot control



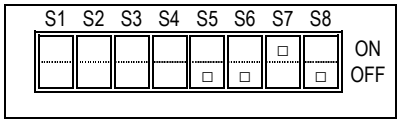
S1 on – next sequence hoot silenced.
S2 on – all sequence hoots silenced
S3 on – short hoots
S4 on – warning beeps silenced

These settings do not affect the manually operated hoot made by pressing the red switch.

The standard sequence of warning LEDs and beeps is as follows

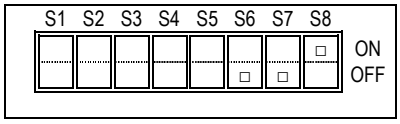
Time to start	LEDs	Internal beeper
1 minute 30 seconds	Yellow on	– ● ● ●
1 minute 20 seconds	Yellow blink	– ● ●
1 minute 10 seconds	Yellow blink	– ●
1 minute	Yellow off, red on	–
50 seconds	Red blink	●
40 seconds	Red blink	●
30 seconds	Red blink, yellow on	● ● ●
20 seconds	Red and yellow blink	● ●
10 seconds	Red and yellow blink	●
5 seconds	Red and yellow blink	●
4 seconds	Red and yellow blink	●
3 seconds	Red and yellow blink	●
2 seconds	Red and yellow blink	●
1 second	Red and yellow blink	●
START HOOT	Red and yellow off	●

Hoot length



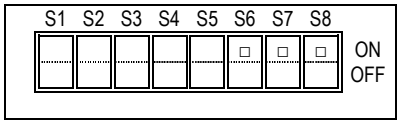
S1 to S4 are set using in Table 8.1 on page 15 to the required hoot length, in units of 0.25 seconds. If S1 to S4 are all set to off then the hoot length is determined by S7 and S8 when the sequence is run. (See Hoot length on page 6)

Set counter



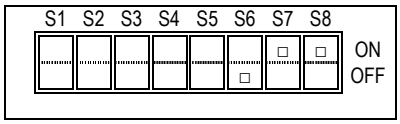
S1 to S5 are set to the required count as given in Table 8.1 on page 15

Jump if counter not zero and decrement counter



S1 to S5 are set to the number of the step (see Table 8.1 on page 15) to be jumped to if the counter is not zero. The program steps should be numbered with the first step as zero. Note that the counter must be set to the number of times that the jump is to be done. If this instruction is at the end of a loop then this will be one less than the number of times the steps within the loop are to be done.

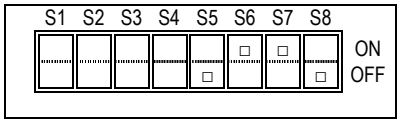
Goto



S1 to S5 are set to the number of the step (see Table 8.1 on page 15) to be jumped to. The program steps are numbered with the first step as zero.

Set outputs

This command controls three signals that can be made available on the circuit board. If required these could be used to control lights or an external timer. If fitted OUT1 is available on the miniature terminal block just above the ribbon cable connector. The two terminals are 0v and OUT1. 0v is nearest the ribbon cable connector. A 2mm blade screwdriver is required to do up the contacts. The OUT1 output has a 330 ohm resistor in series to provide some protection. The other two outputs are direct from AutoHoots processor and as such have no over voltage or current protection. Please contact Richard Paul Russell Limited before using these signals. Damage caused to AutoHoot due to the use of these signals is not covered by the Guarantee.



S1 on – set OUT1 high (+5v)
S1 off – set OUT1 low (0v)
S2 on – set OUT2 high (+5v)
S2 off – set OUT2 low (0v)
S3 on – set OUT3 high (+5v)
S3 off – set OUT3 low (0v)

At the end of the sequence or when the Auto switch is set to off these outputs go to the low state.

Switch settings for values in user sequence commands

Table 8.1

Value	S1	S2	S3	S4	S5	Value	S1	S2	S3	S4	S5
0	off	off	off	off	off	16	off	off	off	off	on
1	on	off	off	off	off	17	on	off	off	off	on
2	off	on	off	off	off	18	off	on	off	off	on
3	on	on	off	off	off	19	on	on	off	off	on
4	off	off	on	off	off	20	off	off	on	off	on
5	on	off	on	off	off	21	on	off	on	off	on
6	off	on	on	off	off	22	off	on	on	off	on
7	on	on	on	off	off	23	on	on	on	off	on
8	off	off	off	on	off	24	off	off	off	on	on
9	on	off	off	on	off	25	on	off	off	on	on
10	off	on	off	on	off	26	off	on	off	on	on
11	on	on	off	on	off	27	on	on	off	on	on
12	off	off	on	on	off	28	off	off	on	on	on
13	on	off	on	on	off	29	on	off	on	on	on
14	off	on	on	on	off	30	off	on	on	on	on
15	on	on	on	on	off	31	on	on	on	on	on

Command summary

Table 8.2

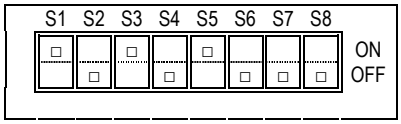
Command	S1	S2	S3	S4	S5	S6	S7	S8
Delay 0 to 15 seconds	on	on	on	on	on	on	on	on
	*	*	*	*	on	off	off	off
Delay 0 to 15 seconds and hoot	on	on	on	on	on	on	on	on
	*	*	*	*	off	on	off	off
Delay 30 minutes	on	on	on	on	on	on	on	on
	off	off	off	*	on	on	off	off
Hoot control	on	on	on	on	on	on	on	on
	*	*	*	*	on	off	on	off
Hoot length	on	on	on	on	on	on	on	on
	*	*	*	*	off	off	on	off
Set outputs	on	on	on	on	on	on	on	on
	*	*	*	off	off	on	on	off
Set i/o	on	on	on	on	on	on	on	on
	*	*	*	on	off	on	on	off
Set counter	on	on	on	on	on	on	on	on
	*	*	*	*	*	off	off	on
Skip if input	on	on	on	on	on	on	on	on
	*	*	*	*	on	on	on	off
Jump if not zero and decrement counter	on	on	on	on	on	on	on	on
	*	*	*	*	*	on	on	on
Goto	on	on	on	on	on	on	on	on
	*	*	*	*	*	off	on	on
End of sequence	off	off	off	off	off	off	off	off
Delay and hoot	s	s	s	m	m	m	m	m

* See command description for switch setting
s, m see TABLE 7.1 on page 11

9. User Sequence Example

A club runs a pursuit race and requires the following signals
09:50 Warning signal
09:55 Preparatory signal
10:00 First start
Then starts at 1-minute intervals until 10:20
11:15 Finish (signified by 2 sound signals)

First set the switches for the required user sequence. In this example we will use sequence 1



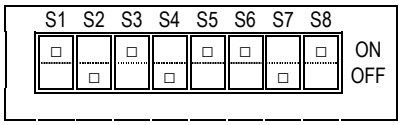
User Sequence 1

Enter programming mode by holding the red hoot switch pressed and switch the Black Auto switch ON, OFF and back ON. The following steps are then entered by pressing the hoot switch after the switches have been set for each step.

Step no.	Time of step	Time to next Hoot	S1	S2	S3	S4	S5	S6	S7	S8		NOTES
0	09:50		□	□	□	□	□	□	□	□	ON / OFF	First step of command
1	09:50							□			ON / OFF	Sound horn for warning signal (delay 0 seconds and hoot)
2	09:50	5min				□		□			ON / OFF	5 minutes to the next hoot
3	09:55	5min				□		□			ON / OFF	Preparatory signal, 5 minutes to next hoot
4	10:00		□	□	□	□	□	□	□	□	ON / OFF	Start signal. First step of command
5	10:00		□	□			□			□	ON / OFF	Set counter to 19
6		1 min				□					ON / OFF	1 minute to next hoot
7			□	□	□	□	□	□	□	□	ON / OFF	First step of command
8				□	□			□	□	□	ON / OFF	Jump to repeat step 6 until counter is zero
9	10:20		□	□	□	□	□	□	□	□	ON / OFF	First step of command
10	10:20						□	□			ON / OFF	Delay 30 minutes
11	10:50	25 min									ON / OFF	25 minutes to first finish hoot
12	11:15		□	□	□	□	□	□	□	□	ON / OFF	First step of command
13	11:15	2 sec		□				□			ON / OFF	Delay 2 seconds and hoot
14	11:15:02										ON / OFF	End of sequence
15											ON / OFF	

When the hoot switch is pressed to enter the end of sequence instruction there will be a series of beeps (one for each step) to indicate that sequence is being entered in to AutoHoot's memory. After the beeps have stopped the Auto switch should be set to off.

To use the sequence the internal switches should be set as follows



S6 has been set to on as the sequence does not need to be repeated and S7 and S8 have been set for 1.5 seconds hoots.

10. Power indication

The green LED indicates when power is being supplied. AutoHoot monitors the supply voltage and the green LED will flash every 2 seconds if the voltage is less than about 8.5 volts. If AutoHoot is left on for more than 3 hours without the hoot switch being pressed or the auto switch being switched on, then the green LED will switch off and only give a short flash every 15 seconds, so power consumption is reduced to a minimum.

If power is interrupted during a start sequence then the buzzer will sound for 15 seconds and the red and green LED's switch on. A postponement should be signalled and the sequence restarted by switching the auto switch off and on again.

11. AutoHoot specification

Physical		
	Size	80mm x 120mm x 74mm (excluding cable entries)
	Weight	410g
	Sealing	IP65
	Case material	High impact polycarbonate
	Temperature	Operating range –20C to 70C
	Mounting holes	4 diameter 4mm, centres 50.2mm x 108.2mm
	Enclosure lid fastening	4 stainless steel spring loaded quick release screws
Electrical		
	Supply voltage	9V to 27V
	Supply current (excluding horn)	15mA at 12V
	Max Horn switch current at 12V	20A
	EMC	CE marked
Settings		
	Sequence length	Selectable depending on the sequence type
	RR26 warning signal	5, 6, 8 or 10 minutes
	Sequence type	RR26, Match Race, Count Down, Old System 1 & 2, Old Olympic with and without overlap or Use Programmable
	Hoot time	0.5, 1, 1.5 or 2 seconds
Operation		
	Start sequence on/off	Large rotary switch on front
	Manual hoot	Large push button on front
	Warnings	LEDs - Power, 90s (30s), 60s Internal buzzer
	Settings	Internal switches
Miscellaneous		
	Timing	Quartz crystal oscillator
	Horn switch	Solid state high side switch

Guarantee

AutoHoot is guaranteed against faulty materials and manufacture for one year from the date of purchase. The guarantee does not apply to units which have been subjected to misuse, negligence, accident, improper maintenance or application or which have been repaired or altered without the prior consent of Richard Paul Russell Limited.

USER SEQUENCE PROGRAMMING TABLE												
EVENT												
USER SEQUENCE NUMBER _____										SHEET _____ of _____		
Step no.	**Time of step**	**Time to next Hoot**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**		**NOTES**
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	

Please photocopy if more sheets are required.

USER SEQUENCE PROGRAMMING TABLE												
EVENT												
USER SEQUENCE NUMBER _____									SHEET _____ of _____			
Step no.	**Time of step**	**Time to next Hoot**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**		**NOTES**
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
											ON OFF	
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