

STEARNS SEQUENTIAL DELAY TIMER

INSTALLATION & OPERATING INSTRUCTIONS

REFERENCE DRAWING: A110-22-00-E

The Stearns Sequential Delay Timer is designed to be used in conjunction with the Stearns HS Metal Detector and a reject device. Its function is to delay action of the reject device until the product has traveled downstream from the metal detector to a given distance to the actual point of rejection.

SEQUENCE OF EVENTS

- 1.) When metal is detected, the metal detectors built in control relay energizes, which in turn, causes its normally open, normally closed contacts to make and break respectively.
- 2.) The make or break of these contacts causes the Sequential Timer to begin its timing cycle. The length of this timing action is determined by the position of the delay adjustment potentiometer. This delay adjustment potentiometer is either a multi-turn pot located on the printed circuit board, located inside of the enclosure or a single turn control potentiometer located in the center of the bottom panel of the HS control cabinet. Fully counterclockwise (CCW) is a minimum delay of 250 ms and fully clockwise (CW) is a maximum delay of 12 s.
- 3.) The built-in "Reset Timer" in the metal detector (large black knob in the lower left section of the control cabinet) determines the length of time the reject device is to be actuated. This timer has a 500 ms to 7 s range and should be set for the amount of time that the reject device should be actuated. The dial numbers on the reset timer are for reference points only. These numbers do not represent any specific time.

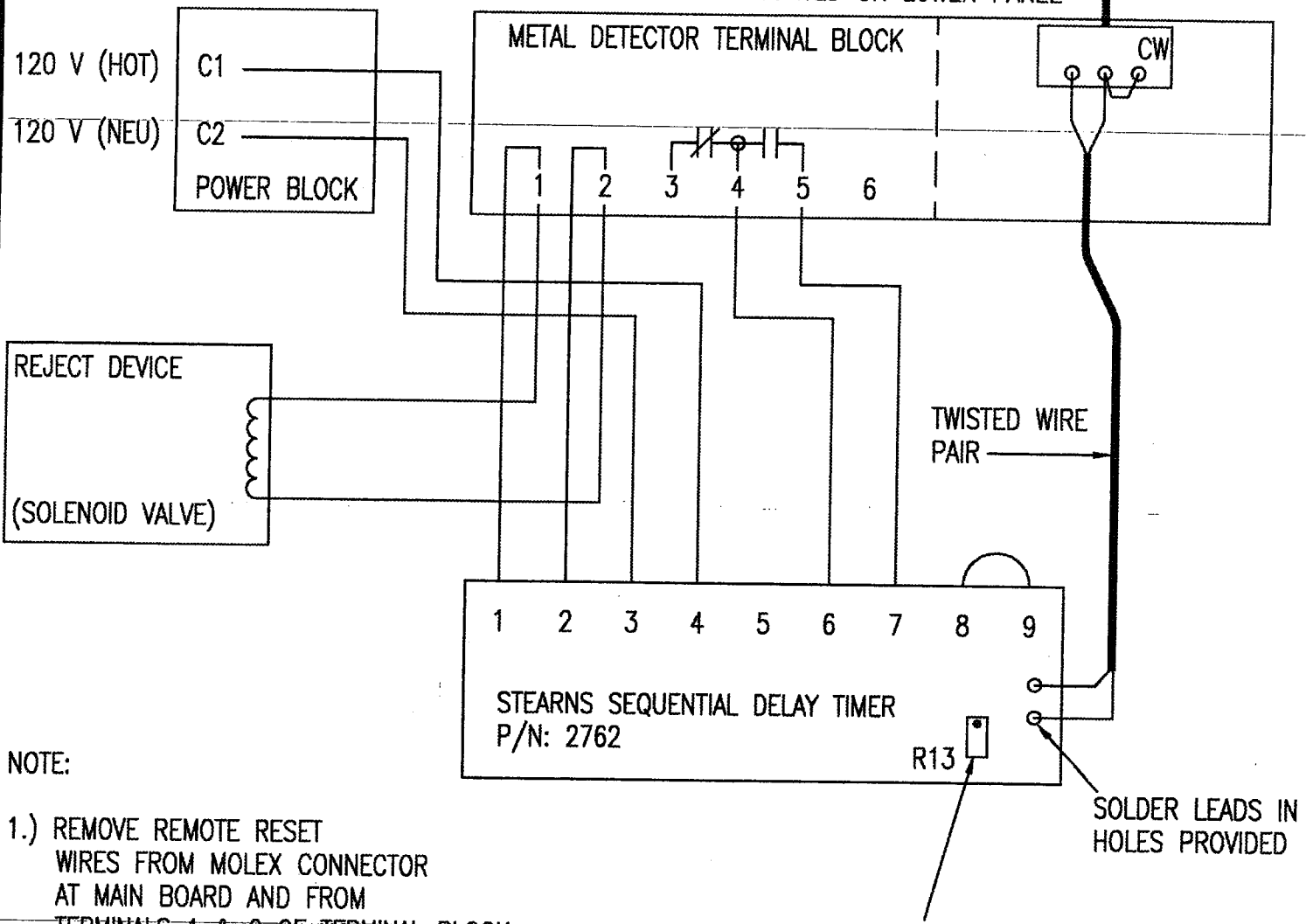
terminals). The meter read 0 Ω (or very close to it). This end is to be jumped to the center lead.

- 6.) Untwist about 30 mm of the lead wire that will be connected to the potentiometer. Slide a 15 mm (13/32 in) length of heat shrink tubing over the wire leads. Cut a small piece of wire, about 20 mm (3/4 in) in length (P/N: A-950000-206), to be used as a jumper. Cut off about 5 mm of insulation from each end.
- 7.) Connect one of the free leads in the lead pair to the end terminal of the potentiometer that did *not* read 0 Ω . Solder it in place and slide the heat shrink tubing over the connection. Connect one end of the jumper to the opposite terminal. Solder in place and slide a piece of heat shrink tubing over the connection.
- 8.) Connect the other free lead to the center terminal of the potentiometer. Pass the jumper through the heat shrink tubing and connect the jumper to the center terminal. Solder both wires in place. Slide the heat shrink tubing over the connection. Using a hot air gun, heat the tubing until it has completely shrunk around the connections.

(PC Board & Potentiometer Mounting)

- 1.) Install the four (4) Aluminium standoffs (P/N: A-900589-09) into the top four (4) holes in the mounting plate (P/N: 2559). Attached to the holes are Pennuts that the standoffs are to be screwed into. Use lock-tite if needed to hold standoffs in place.
- 2.) ~~Install PC Board onto the mounting plate standoffs and secure with the screws (P/N: A-900424-04) and washers (P/N: A-900116-15).~~
- 3.) Remove the Motherboard from the main HS cabinet. On the top part of the frame that is used to support the daughter boards, locate the four (4) holes used for securing the mounting plate. Place the mounting plate with the PC Board attached inside of the daughter board bracket, lining up the holes. Use the remaining four (4) screws and washers to support the mounting bracket for the Sequential Delay Timer to the frame. Re-install Motherboard in cabinet.
- 4.) On the bottom panel for the HS detector, locate the hole for the Delay Timer potentiometer. Remove the plastic holeplug. Route the potentiometer wires inside the HS cabinet along the left side of the cabinet only. Install the potentiometer in the hole. Affix the knob (P/N: 2532B) to the potentiometer shaft.
- 5.) Test operation of Sequential Timer and if satisfactory completely reassemble HS detector. If operation not satisfactory, troubleshoot problem. Installation completed.

EXTERNAL POTENTIOMETER
MOUNTED ON LOWER PANEL



NOTE:

- 1.) REMOVE REMOTE RESET WIRES FROM MOLEX CONNECTOR AT MAIN BOARD AND FROM TERMINALS 1 & 2 OF TERMINAL BLOCK.

REMOVE INTERNAL POTENTIOMETER IF EXTERNAL ONE IS USED

- 2.) CONNECT NEW WIRES FROM TERMINALS 1 & 2 OF SEQUENTIAL TIMER PCB TO TERMINALS 1 & 2 OF TERMINAL BLOCK.

- 3.) CONNECT TERMINALS 4 & 5 OF TERMINAL BLOCK TO TERMINAL 6 & 7 OF SEQUENTIAL TIMER.

WHEN USING THE NORMALLY CLOSED CONTACTS IN THE DETECTOR (3 & 4) REMOVE THE JUMPER BETWEEN TERMINALS 8 & 9, AND CONNECT THE CONTACTS (3 & 4) TO TERMINALS 8 & 9. TERMINALS 6 & 7 WOULD THEN REMAIN OPEN.

REFERENCE SCHEMATIC DIAGRAM: B-110-22-01-5

NOTICE

THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.

DIMENSION TOLERANCES EXCEPT AS SPECIFIED
 INCH DECIMAL +/- 0.002", INCH FINISH FRACTIONAL +/- 0.015", METRIC +/- 0.05 mm
 METRIC FINISH +/- 0.40 mm, ANGLE +/- 0.25°, INCH FRACTIONAL +/- 1/32"

BY MGS DATE 14 AUG 1978 SERIAL NO.

STEARNS MAGNETICS

A SUBSIDIARY OF PERRLESS-WINSMITH, INC.
 MAPLE HEIGHTS, OHIO

C	REVISED & REDREW	JPS	2003-04-11
B	ADDED TOP NOTE	TCK	1994-10-06
A	REDRAWN	BB	1987-02-23
REV. NO.	DESCRIPTION		

ISSUED FOR

INTERCONNECTION WIRE DIAGRAM
 BUILT-IN SEQUENTIAL TIME DELAY SYSTEM

ASSEMBLY INSTRUCTIONS

SEQUENTIAL DELAY TIMER

BUILD IN UNIT P/N: 4953

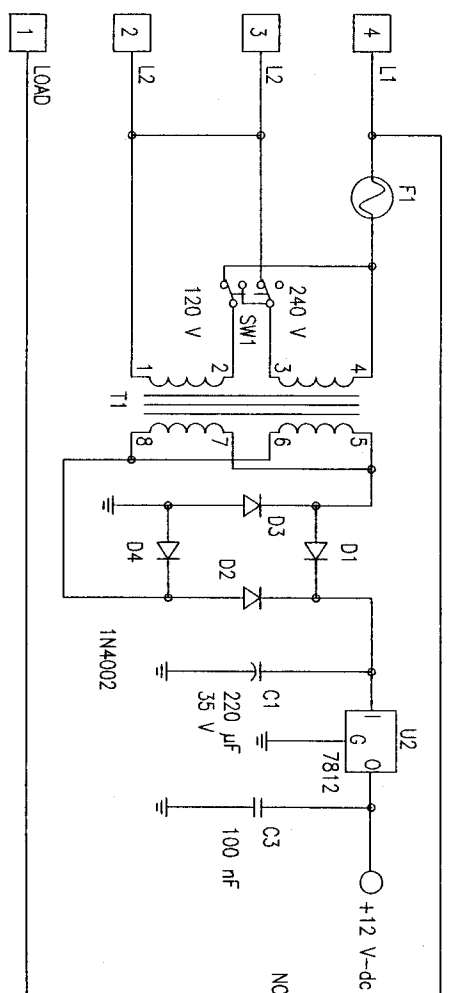
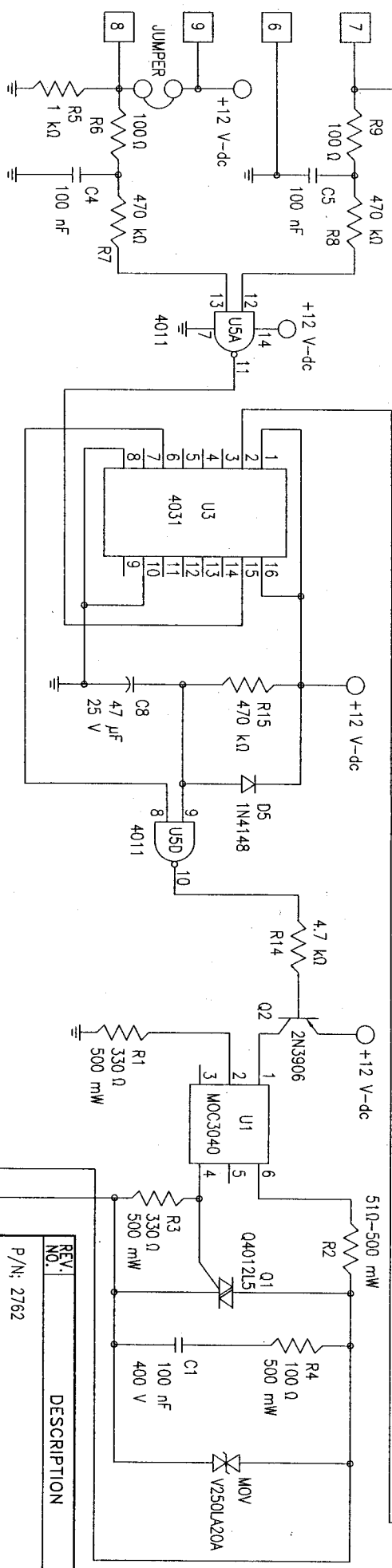
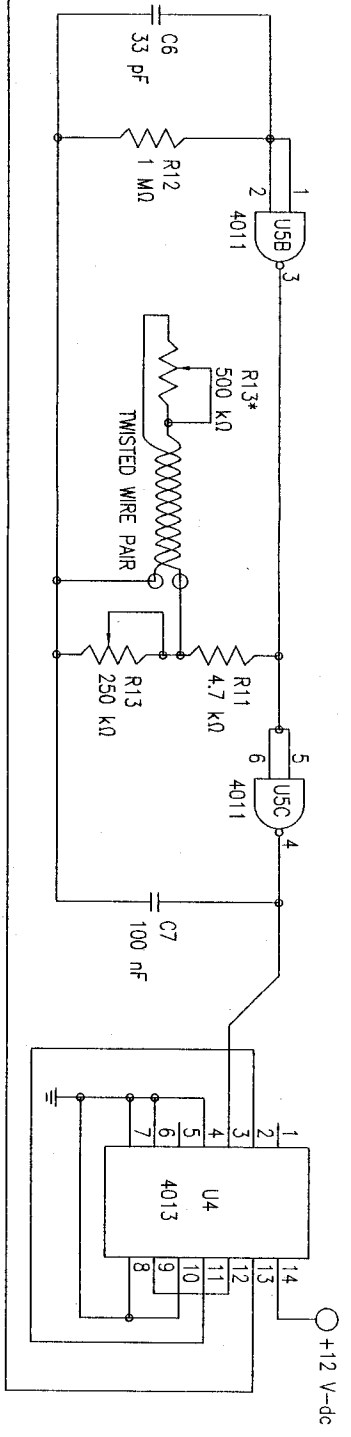
A.) PARTS REQUIRED

<u>DESCRIPTION</u>	<u>P/N</u>	<u>QTY</u>
1.) Sequence Timer PC Board	2762	1
2.) Sequence Timer Mounting Bracket	2559	1
3.) Standoffs Aluminium	A-900589-09	4
4.) Screws: M3 x 0.5 x 8.0 mm	A-900424-04	4
5.) Lock Washer Internal Tooth	A-900116-15	4
6.) Wire: 22 AWG – 0.5 mm ² blue	A-950000-206	3 ft – 1 m
8.) Potentiometer	2532	1
9.) Knob	2532B	1

B.) ASSEMBLY INSTRUCTIONS:

(Potentiometer to PC Board)

- 1.) Take a 2 m (6 ft) length of wire (P/N: A-950000-206) and cut it in half. Place the two pieces and place them next to each other twist the wires together. The twist pitch should be about 10 – 15 mm. Trim the wire length to about 600 mm (24 in).
- 2.) Strip the wire one both ends. On one end strip about 2 mm (1/16 in) of insulation off of each lead. On the other end strip about 5 mm (3/16 in) of insulation off of each end.
- 3.) On the sequence timer PC board (P/N: 2762), remove (by unsoldering) the R13 potentiometer. Locate the two holes directly to the right of the R11 & R12 resistors. If they are clogged with solder, clean them out. Insert the two (2) leads with the 2 mm insulation removed into the holes on the PC board from the top side. One lead into each hole.
- 4.) Using solder flux and rosin core solder (type 60/40 preferred), solder the two (2) leads in place. After the solder has cooled, use an approved cleaning solution (such as TCE) to remove any residue left on the board. Assure the solder connection is good and no "cold solder joints" exists. Trim any excess lead protruding past the solder bubble.
- 5.) Locate the potentiometer and assure the dial is turned full clockwise (CW). With a multimeter set to read resistance, measure the resistance from the center terminal to the terminal on the right side (when looking straight at the



NOTE: ALL RESISTORS 250 mW EXCEPT WHERE NOTED.
TOLERANCE: 5 %

* R13 (500 kΩ) IS EXTERNALLY MOUNTED
INTERNALLY MOUNTED R13 IS REMOVED IF
INTERNALLY MOUNTED R13 IS USED.

REV. NO.	DESCRIPTION
P/N: 2762	

STEARN'S MAGNETICS
A SUBSIDIARY OF PERLESS-WINSMITH, INC.
MAPLE HEIGHTS, OHIO

SEQUENCE TIMER SCHEMATIC FOR METAL DETECTOR

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DIMENSION TOLERANCES EXCEPT AS SPECIFIED:
MKS: DECIMAL +/- .002", ANGLES: FRACTIONAL +/- .015", METRIC +/- .015 mm
METRIC FINISH +/- 0.10 mm, HOLE +/- .025", HOLE FRACTIONAL +/- .125"

SERIAL NO.	SCALE
JPS	DATE 11 NOV 2002

DWG. NO.	B	110	22	01	5
JPS	APPROVED				