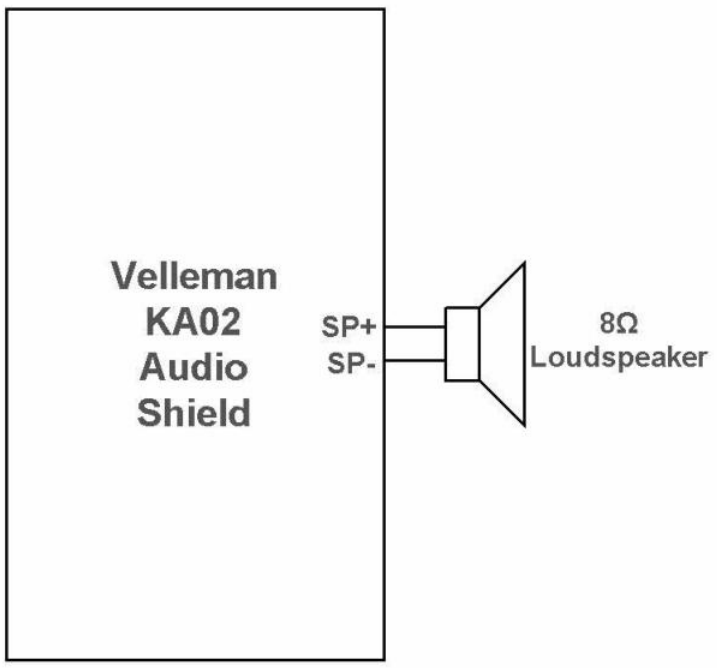
SOAP - Schematic

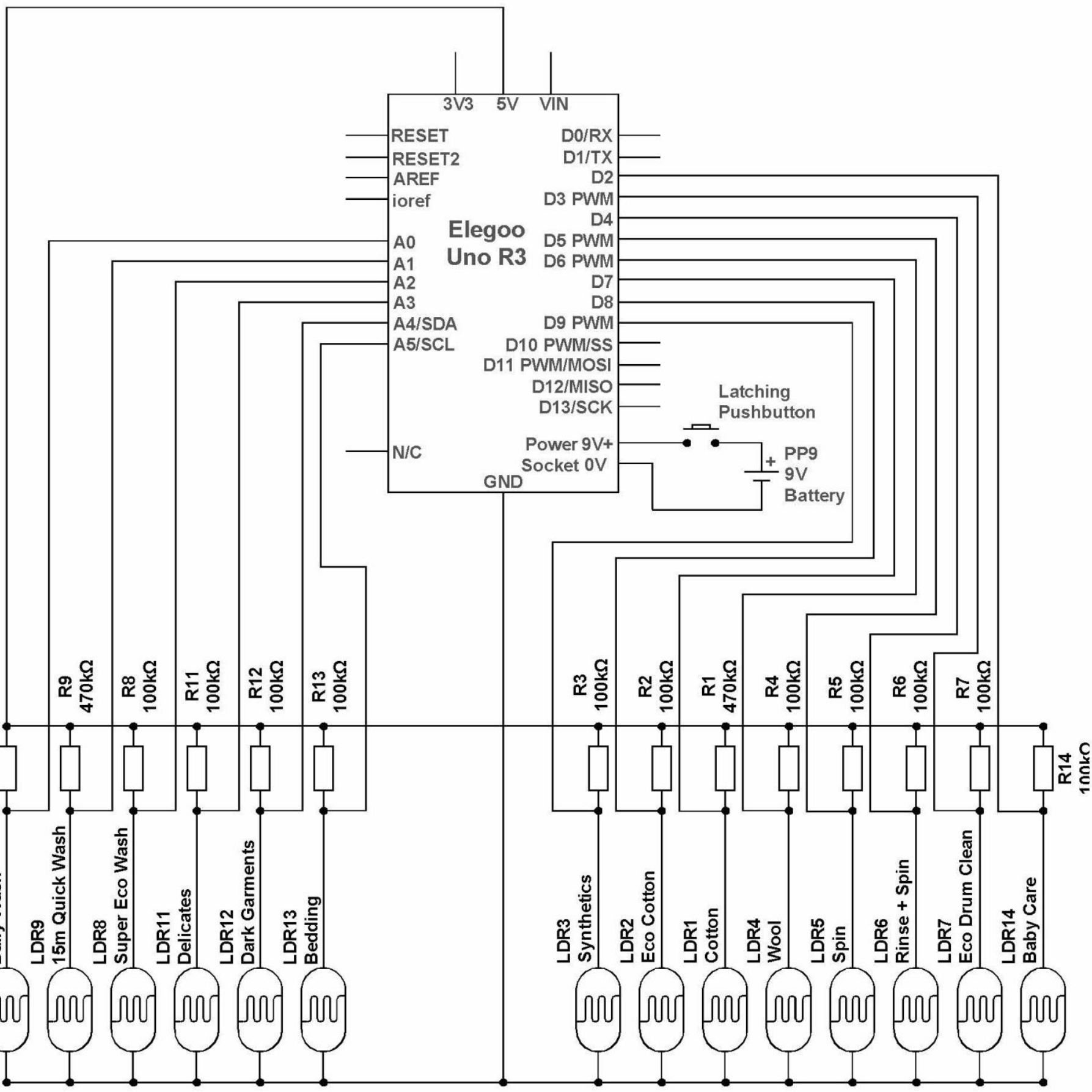
Notes

The KA02 Audio Shield is mounted on top of the UNO R3. Connections are made to the feed through sockets on the KA02.

Resistor values were determined during testing of the Ring Sensor.

R1 and R9 differ in value from the others probably because LDR1 and LDR9 are of a different type. It was easier to adjust the resistor values than dismantle the ring sensor!





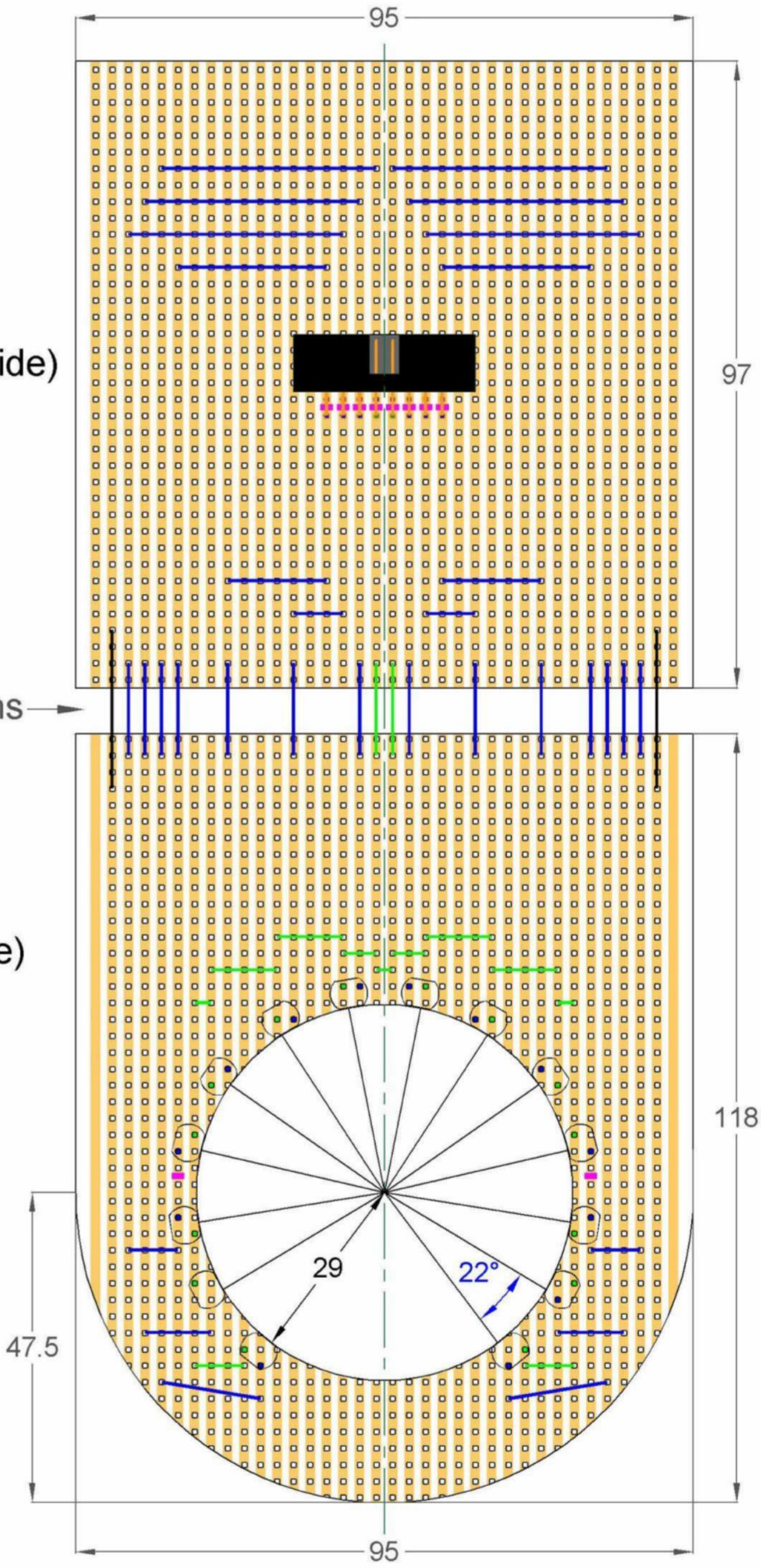
LDR Number = Wash Programme Number = Resistor Number

SOAP - Sensor Overview

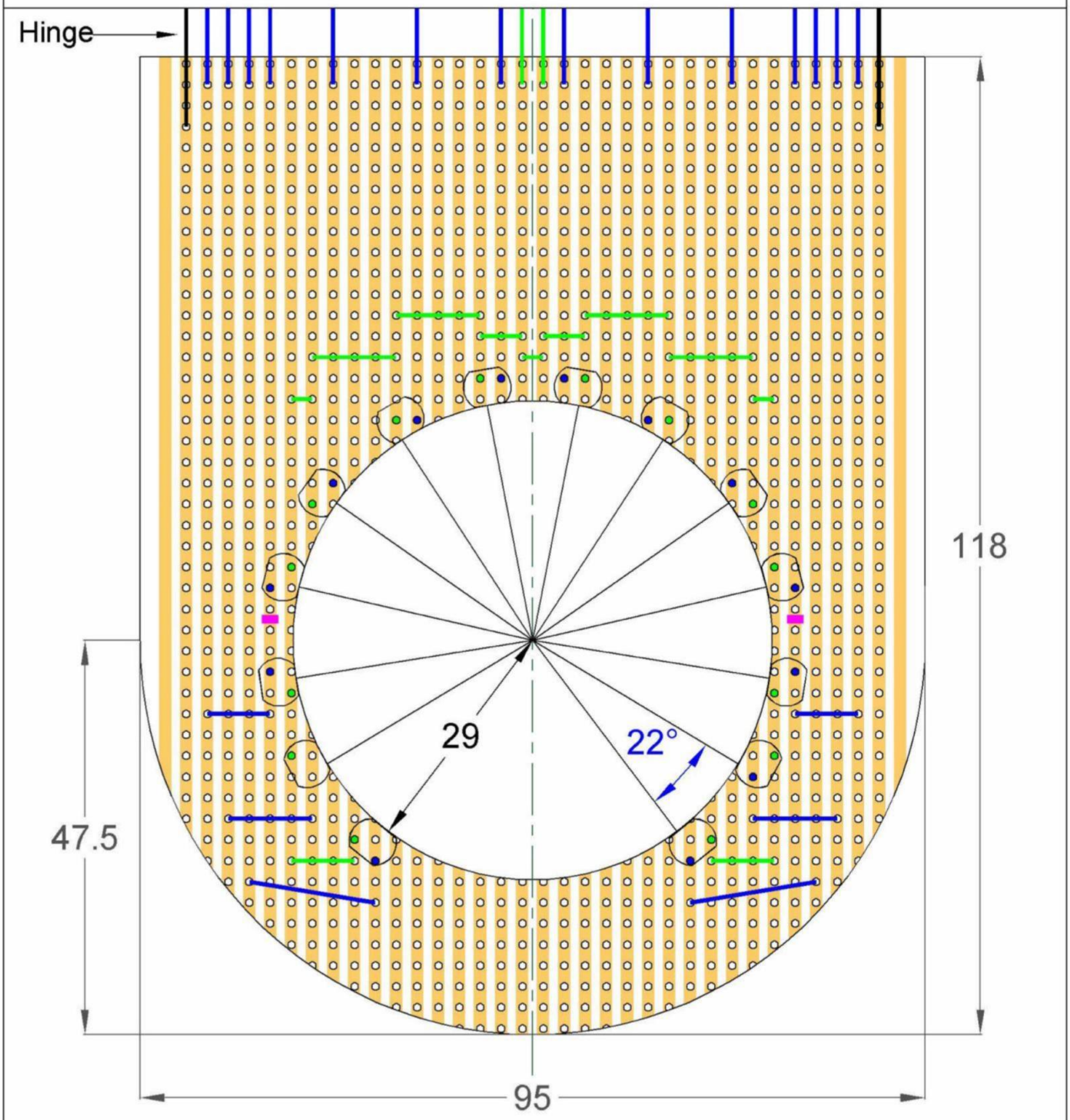
Support Board
(non-copper strip side)

'Hinge' Connections

Ring Board
(Copper strip side)



SOAP - Sensor Ring Board



LEGEND

- Signal Wire
- 0V Wire
- Wire for mechanical strength
- Break in copper strip
- Light Dependent Resistor

All components and wires installed on non-copper strip face.

SOAP

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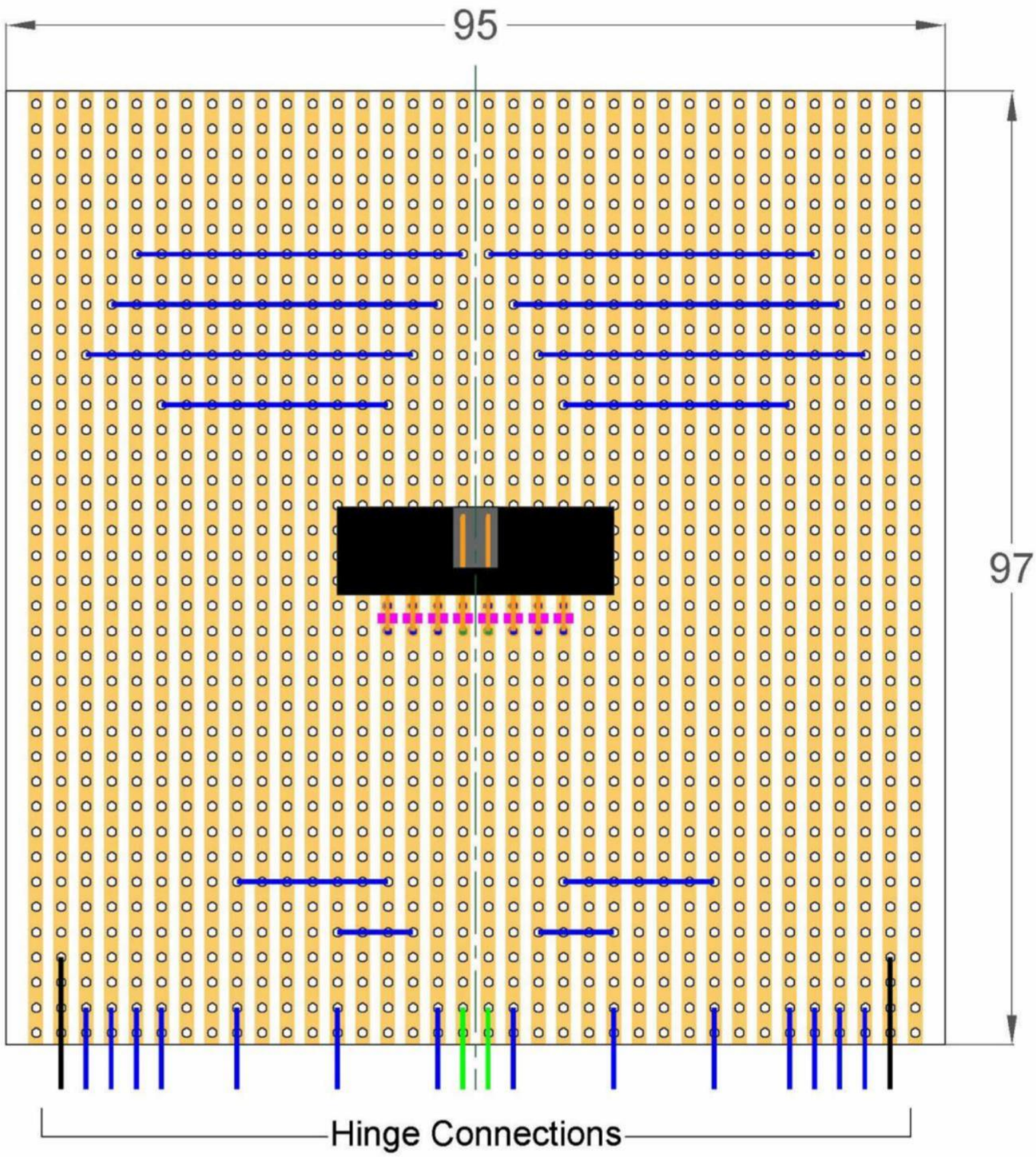
SOAP - Sensor Support Board



LEGEND

- Signal Wire
- 0V Wire
- Wire for mechanical strength
- Break in copper strip
- 16 Way Right Angle PCB Header

All components and wires installed on non-copper strip face except 'hinge' connections.

SOAP

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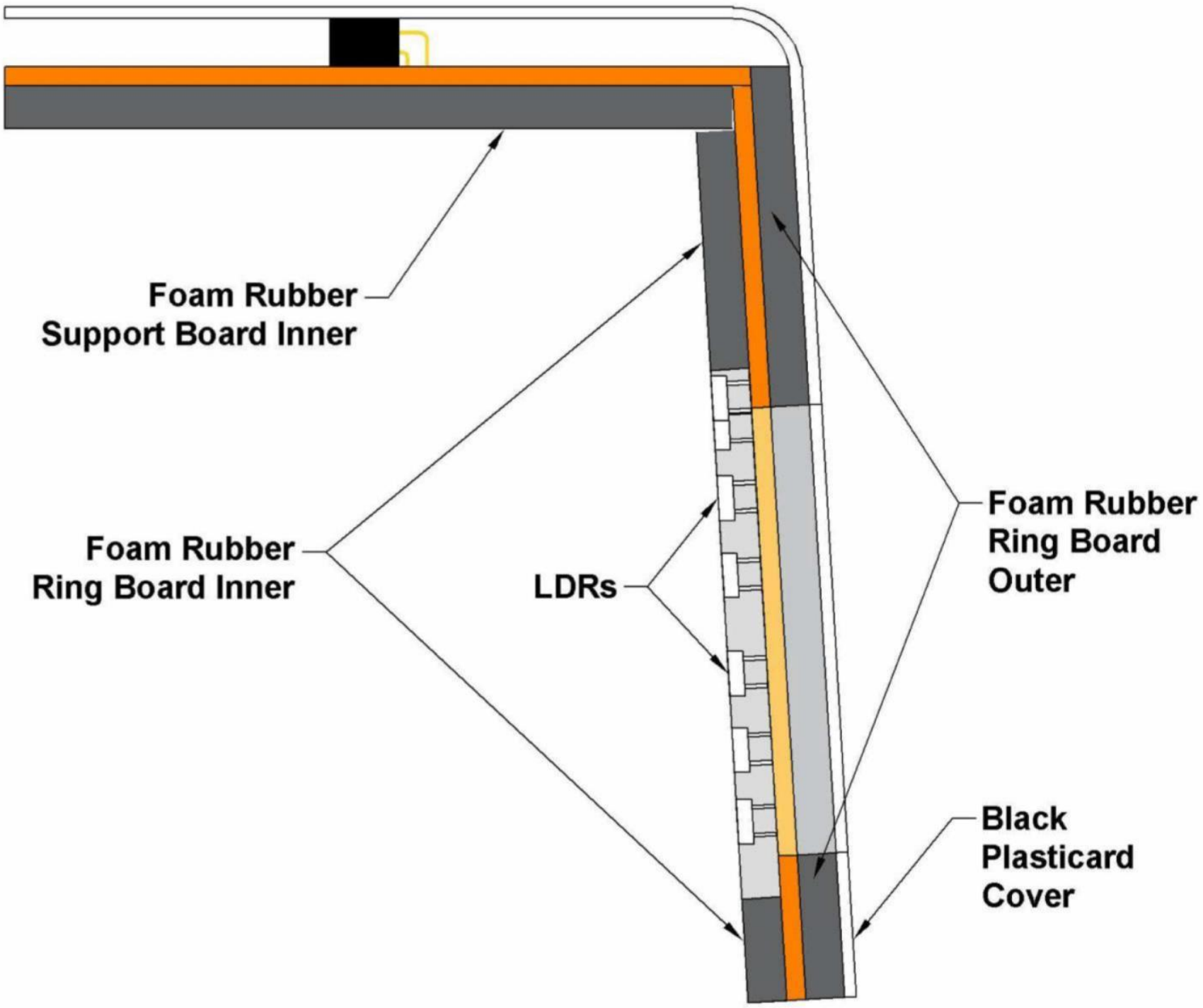
SOAP - Sensor Side View



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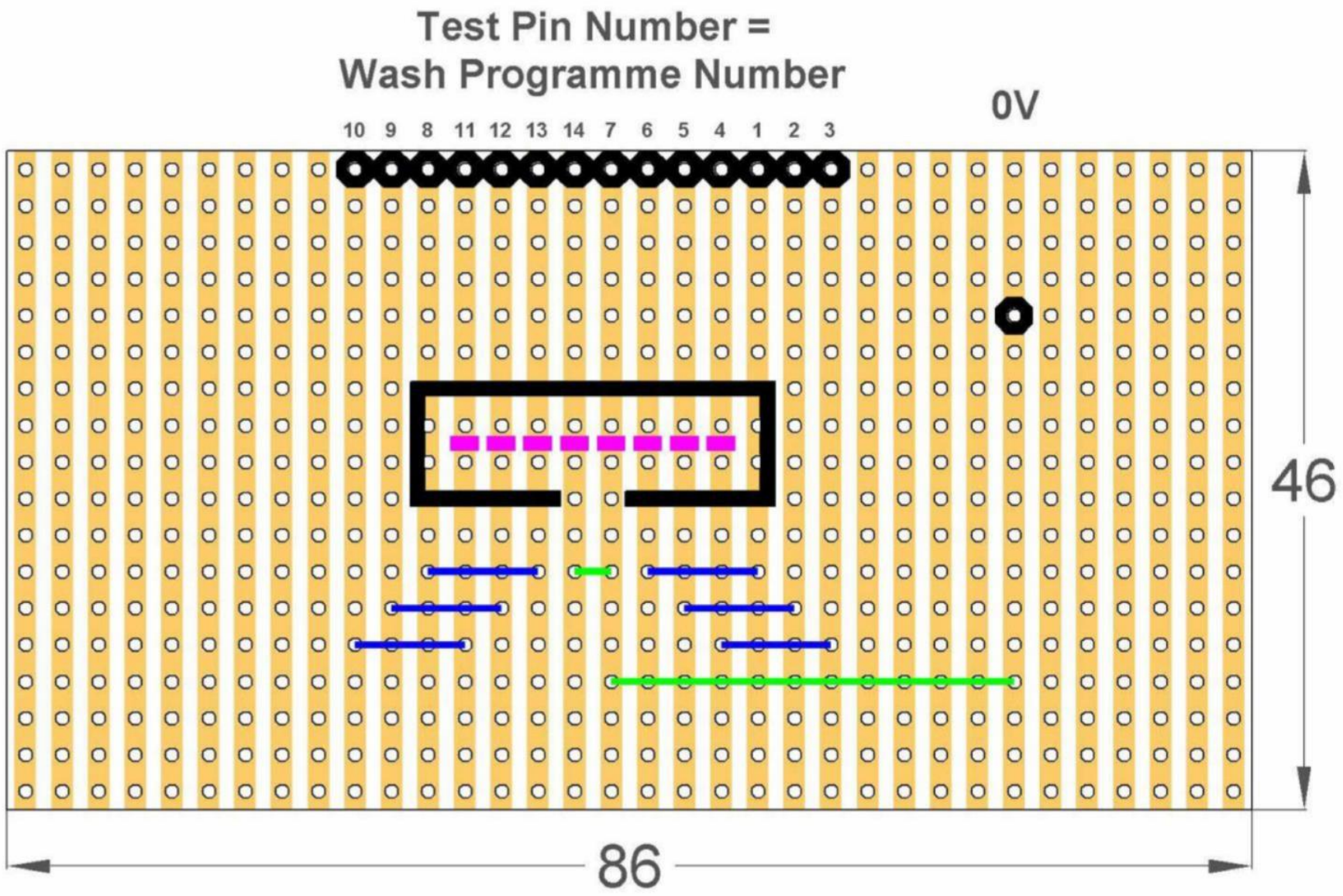
SOAP - Simulation & Test Board



LEGEND

- Signal Wire
- 0V Wire
- 5V Wire
- Break in copper strip
- 16 Way 2 Row PCB Header
- 14 Way Male Header Pin Strip
- 0V Pin

All components and wires installed on non-copper strip face.

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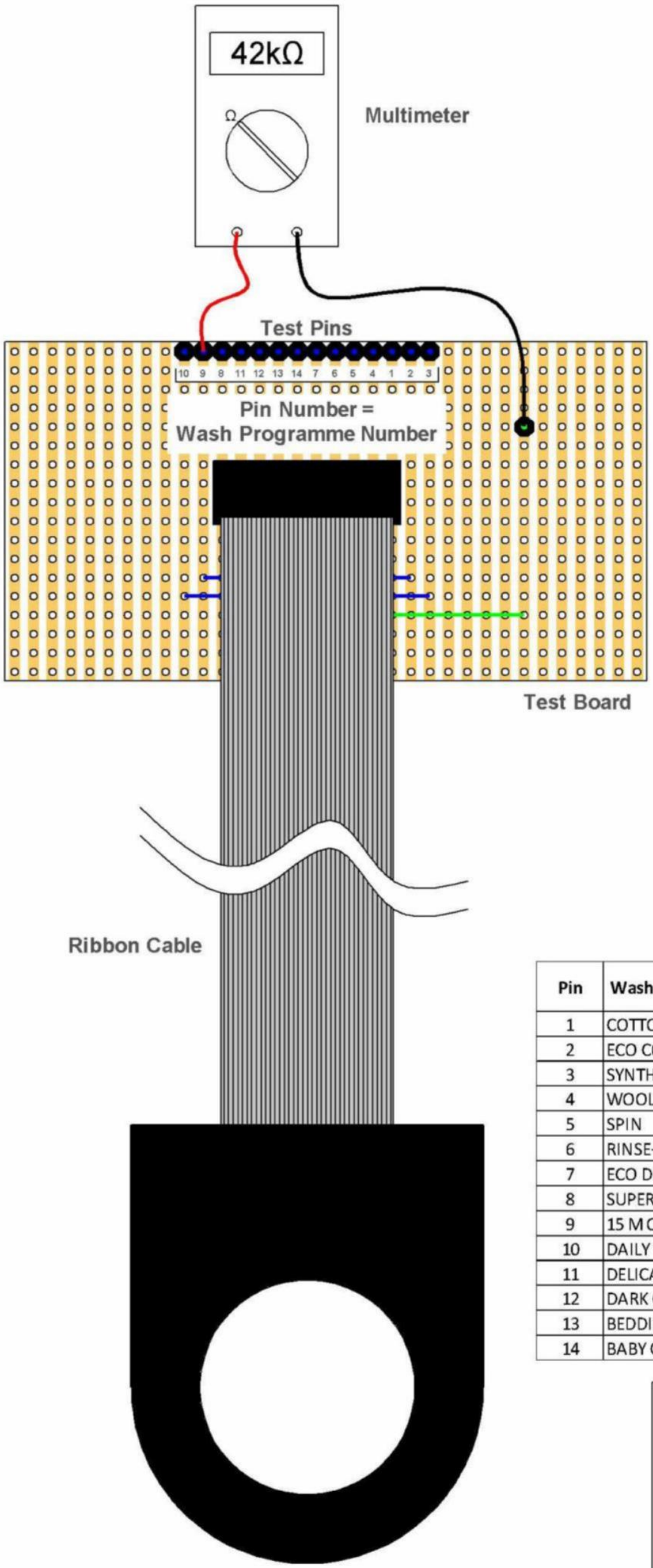
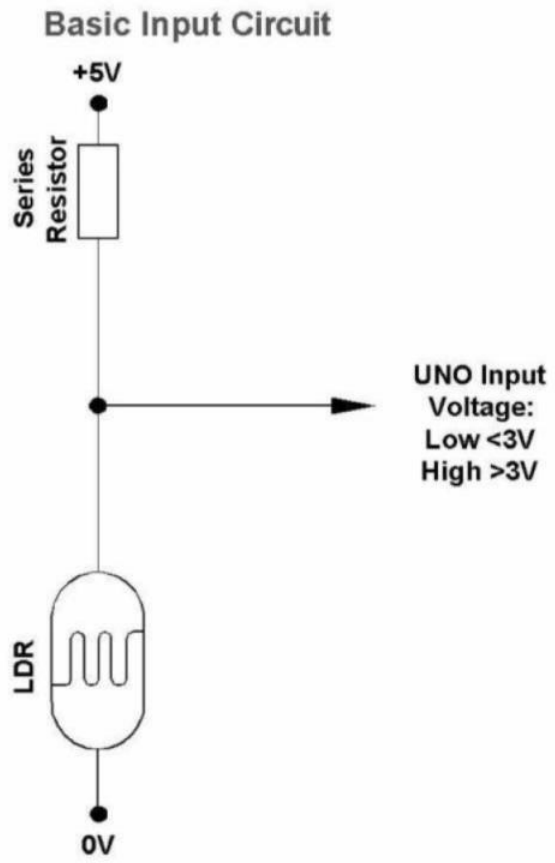
SOAP - Testing Ring Sensor



Complete sensor fixed to washing machine



Measured Resistances were used to select series resistor values.

UNO Input voltage must be more than 3V when the wash programme LED is off (LDR in darkness) and less than 3V when the LED is on (illuminating the LDR).

Pin	Wash Programme	On (kΩ)	Off (kΩ)	Series Resistor (kΩ)	Volts on	Volts off
1	COTTON	300	6000	470	1.9	4.6
2	ECO COTTON	42	500	100	1.5	4.2
3	SYNTHETICS	46	700	100	1.6	4.4
4	WOOL	90	2500	100	2.4	4.8
5	SPIN	70	1600	100	2.1	4.7
6	RINSE+SPIN	63	3800	100	1.9	4.9
7	ECO DRUM CLEAN	60	4000	100	1.9	4.9
8	SUPER ECO WASH	65	500	100	2.0	4.2
9	15 M QUICK WASH	102	1800	470	0.9	4.0
10	DAILY WASH	55	400	100	1.8	4.0
11	DELICATES	86	260	100	2.3	3.6
12	DARK GARMENT	44	250	100	1.5	3.6
13	BEDDING	55	250	100	1.8	3.6
14	BABY CARE	62	400	100	1.9	4.0

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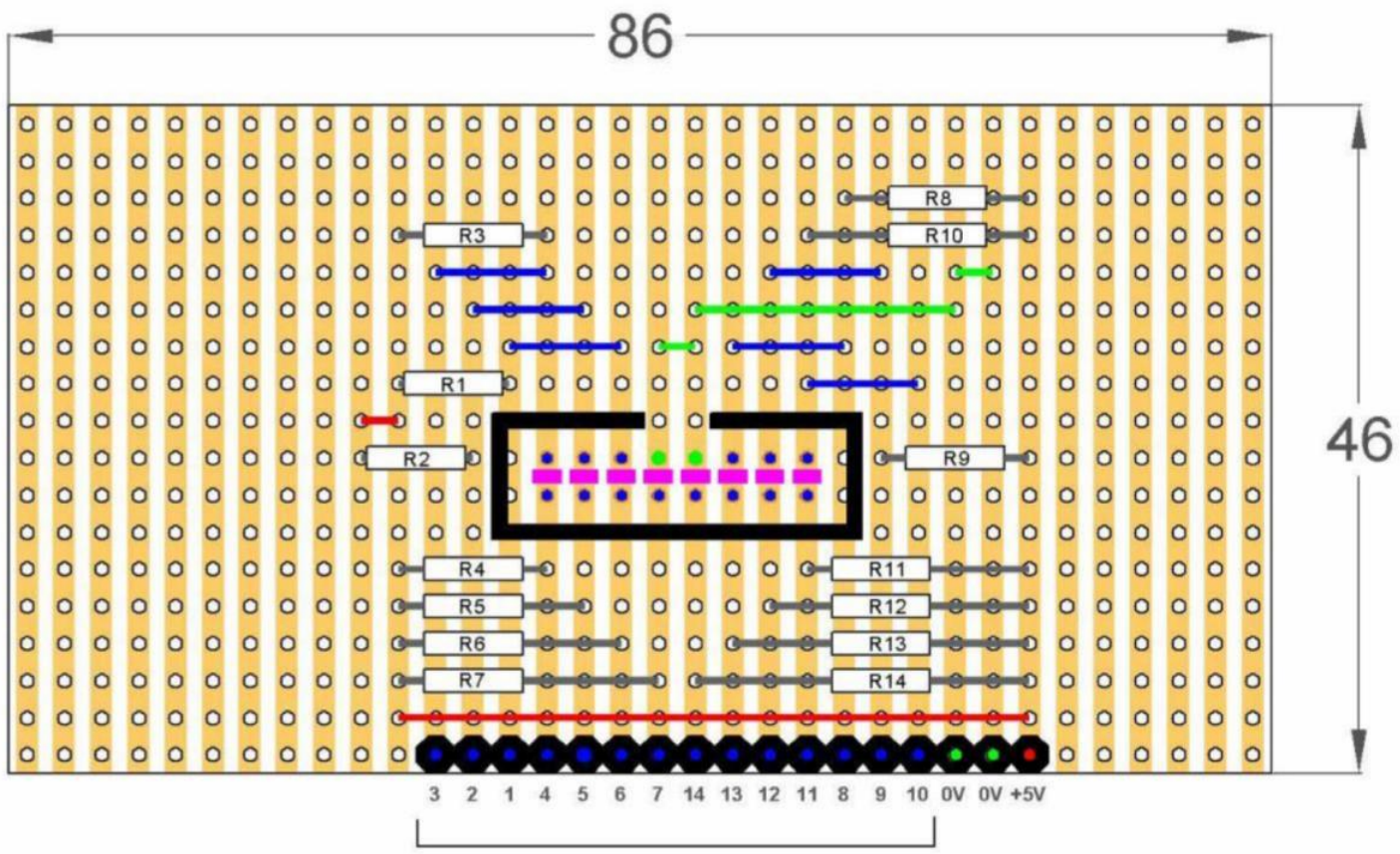
SOAP - Interface Board



Pin Number = Wash Programme Number = Resistor Number

Pin	Wash Programme	Series Resistor (kΩ)	
1	COTTON	R1	470
2	ECO COTTON	R2	100
3	SYNTHETICS	R3	100
4	WOOL	R4	100
5	SPIN	R5	100
6	RINSE+SPIN	R6	100
7	ECO DRUM CLEAN	R7	100
8	SUPER ECO WASH	R8	100
9	15 M QUICK WASH	R9	470
10	DAILY WASH	R10	100
11	DELICATES	R11	100
12	DARK GARMENT	R12	100
13	BEDDING	R13	100
14	BABY CARE	R14	100

Notes

Resistor values were determined during testing of the Ring Sensor.

R1 and R9 differ in value from the others probably because LDR1 and LDR9 are of a different type. It was easier to adjust the resistor values than dismantle the ring sensor!

LEGEND

- Signal Wire
- 0V Wire
- 5V Wire
- Break in copper strip
- 16 Way 2 Row PCB Header
- 17 Way Male Header Pin Strip
- R1 — Resistor (#=Wash Programme)

All components and wires installed on non-copper strip face.

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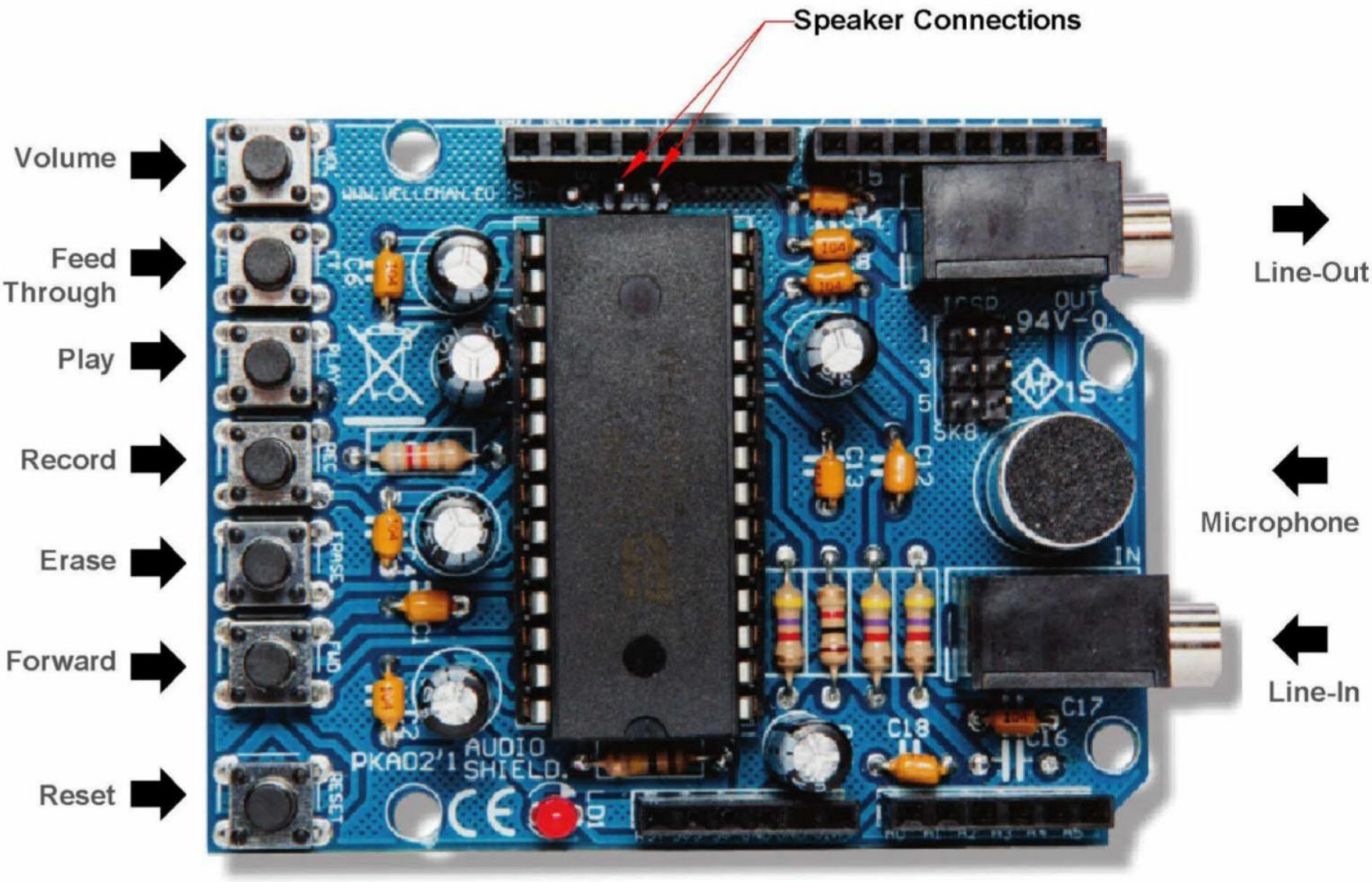
SOAP - Velleman KA02 Audio Shield



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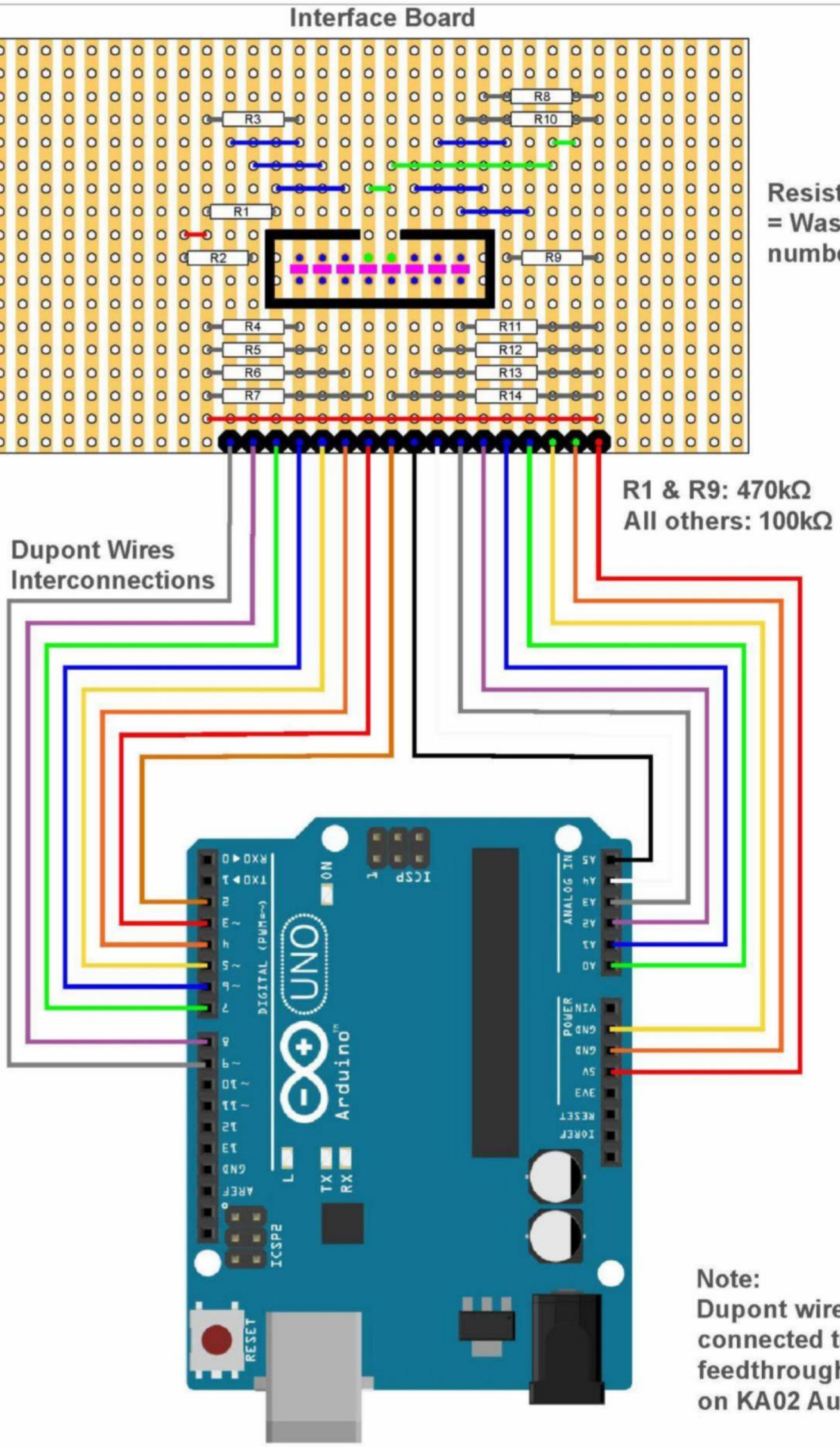
SOAP - Interface Board to Uno R3



Signal Wire
0V Wire
5V Wire
Break in copper strip

16 Way 2 Row PCB Header

17 Way Male Header Pin Strip

R# Resistor (#=Wash Programme)

SOAP

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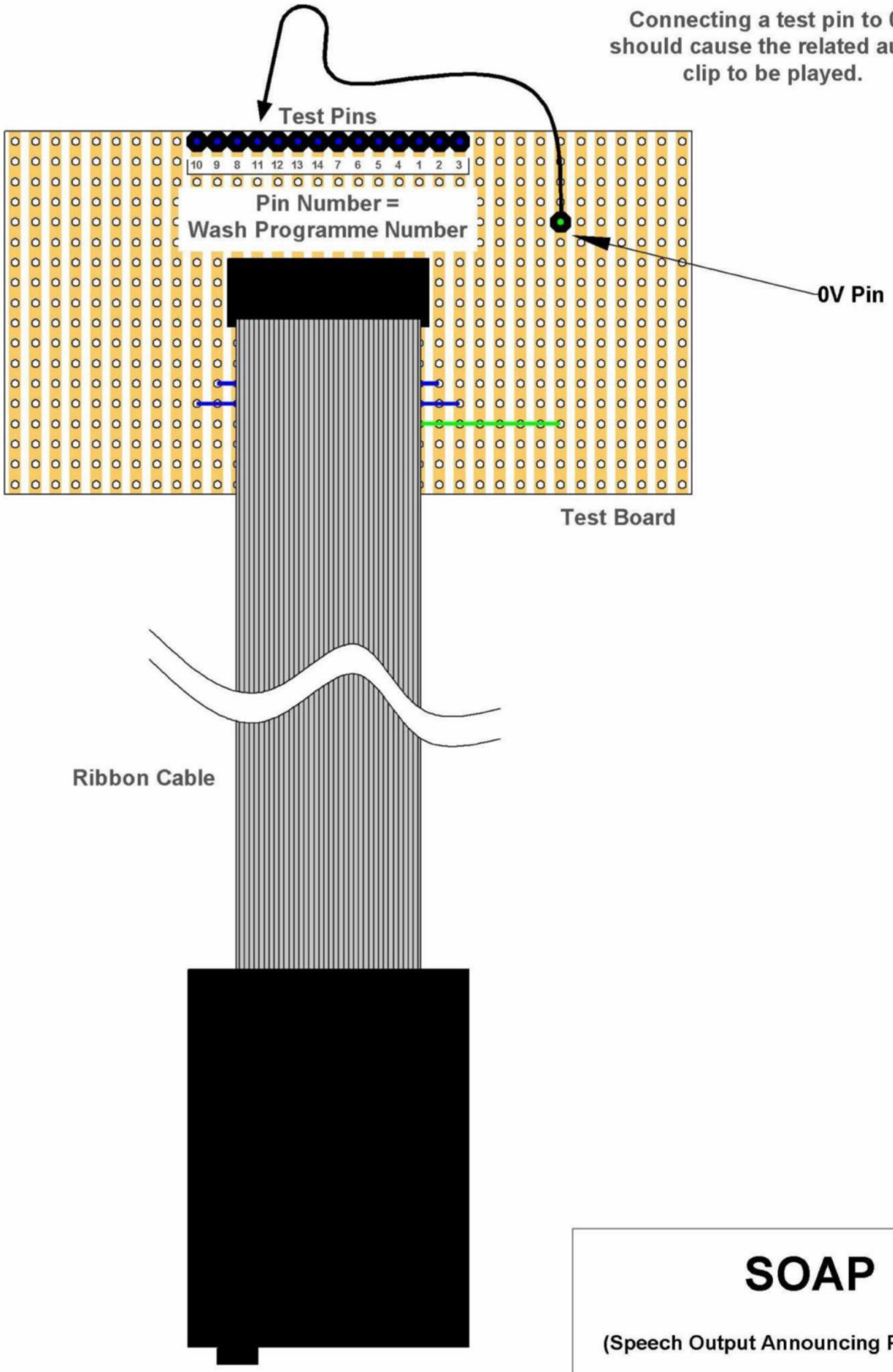
SOAP - Testing The Chatterbox



Assembled Chatterbox including interface board with selected series resistors

SOAP

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