

# Acceleration Control Circuit

## (30)

Moving **light-gate** (9) of figure (3-9) in direct relationship to the physical placement of **optical circuits** (8a xxx 8n), sets up a **time variable** (14a xxx 14n) of Figure (3-7) from **optical circuits** (8x) to another **optical circuit** (8xx) and/ or (8xxx) or to (8n) since the triggered **low logic state** (12) of Figure (3-7) and (3-8) moves in direct relationship to the displaced light-gate (9), as illustrated in Figure (3-12).

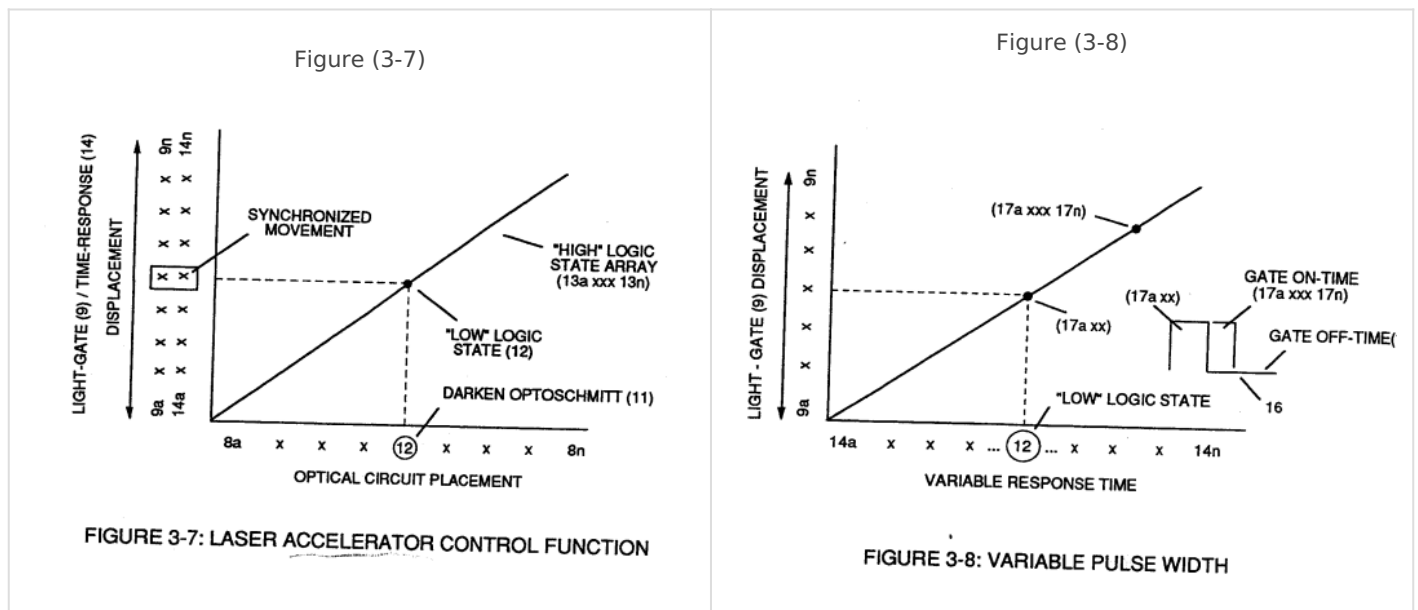


Figure (3-9)

**FIGURE 3-9: LED PICKUP CIRCUIT**

FIGURE 3-12: ACCELERATION CONTROL

This variable **response-time** (14axx ... 12 ... xxl4n) or **signal output** (15) of Figure (3-5) is, now, electrically transmitted to **Acceleration Control Circuit** (30) of Figure (3-5) since **Laser Accelerator Assembly** (20) of figure (3-10) converts **mechanical displacement** (9a xxx 9n) to **electrical time-response** (14a xxx 14n) of Figure (3-7) by linearly moving (forward and/or reverse direction) "low" **logic state signal** (12) in a array of "high" logic state **output signals** (13a xxx 13n), as further illustrated in Figure (3-8) and Figure (3-12).

Figure (3-7)

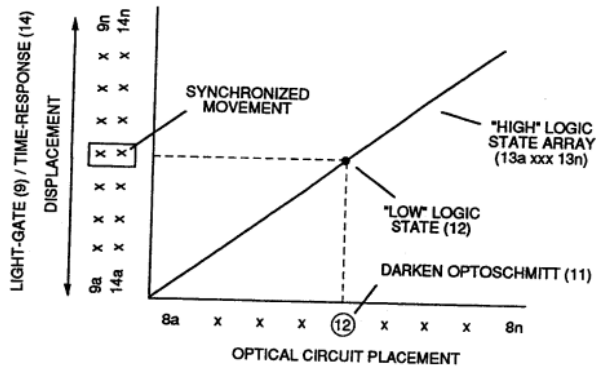


FIGURE 3-7: LASER ACCELERATOR CONTROL FUNCTION

Figure (3-5)

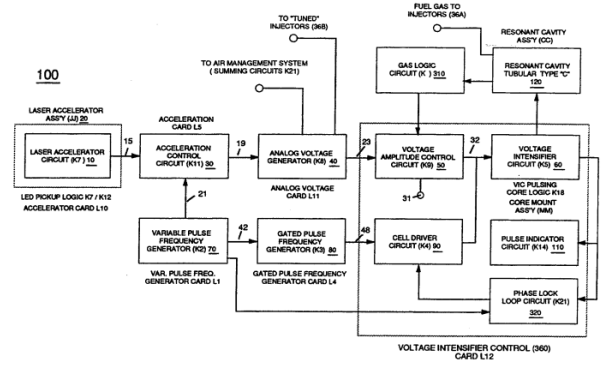


FIGURE 3-5: HYDROGEN GAS CONTROL CIRCUIT

Figure (3-8)

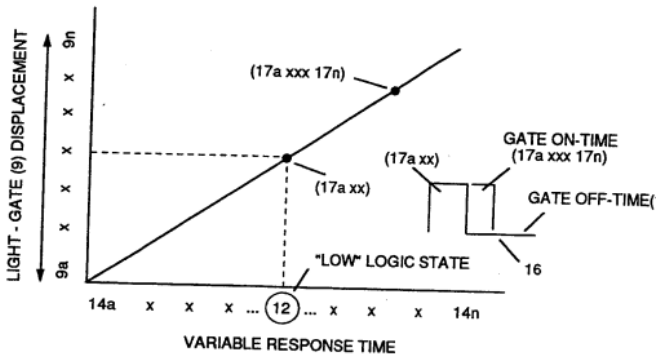


FIGURE 3-8: VARIABLE PULSE WIDTH

Figure (3-12)

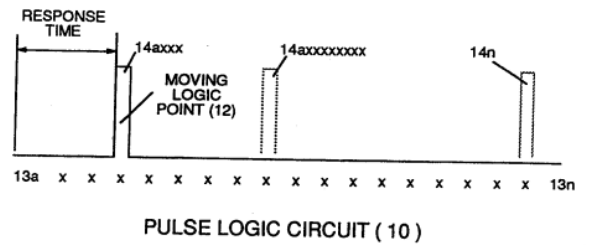


FIGURE 3-12: ACCELERATION CONTROL

In some cases **reverse signal-logic** (12a xxx ... 13 ... xxx 12n) is applicable by using **SDP 8601 Optoschmitt** which switches logic state from **Quiescent state** ("low" to "high" logic state) when de-energized.

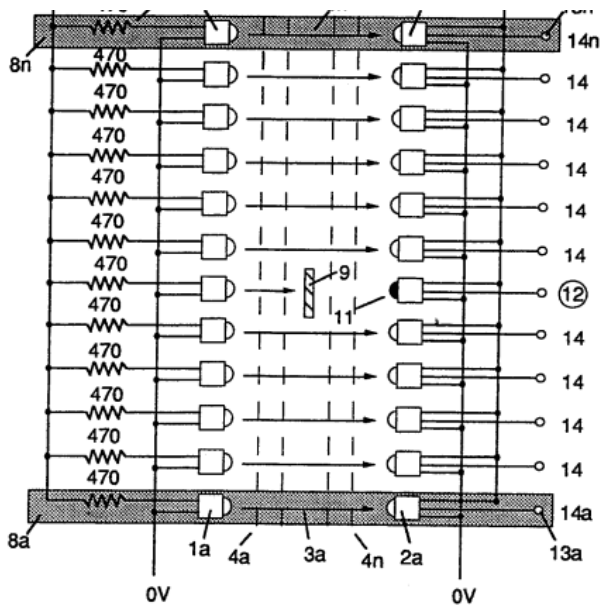


FIGURE 3-9: LED PICKUP CIRCUIT

Since **Led Pickup Circuit** (10) of Figure (3-9)

operates up to 100 kHz range or above, **electrical sensitivity** of **Opto-circuit** (8) provides a instantaneous response to Driver's acceleration, de-acceleration, or cruise control demands.

As signal **output** (15) of figure (4) (14a xxx ... 12 ... xx14n) is being received by **acceleration control circuit** (30) of Figure (3-5) as to Figure (3-12), **circuit** (30) converts incoming **time-response signal** (14a xxx ... 12 ... xx14n) into a **variable time-base unipolar pulse** (16), as shown in Figure (3-8).

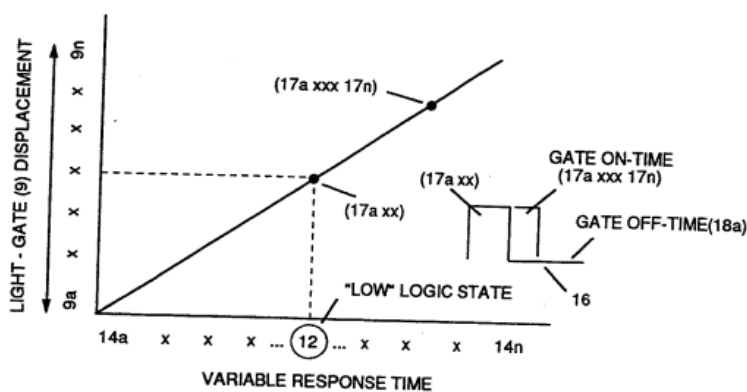


FIGURE 3-8: VARIABLE PULSE WIDTH

Circuit (30) electronically and automatically scans **output signal-array** (14axxx ... 12 ... xx14n) (15) until **circuit** (30) locates, **momentarily registers**, and translates response-

**time** (14a xxx ... 12) into a **variable unipolar pulse** (17/18) of Figure (3-8).

The sweeping action of the **scanning circuit** (30) always starts from **position** (9a) and moves **point** (8ax) to **point** (8axxx) of Figure (3-9) (3-12) until **logic-point** (12) is detected.

Once **logic signal** (12) is detected, the sweeping action toggles and recycles back to **start-position** (9a).

This toggling (*flip back*) action electronically determines **variable time-response** (14a xxx) regardless of wherever logic point (12) is being momentarily displaced within **circuit array** (13a x)

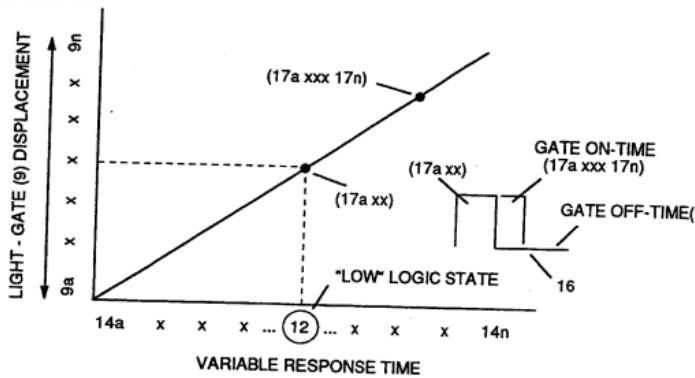


FIGURE 3-8: VARIABLE PULSE WIDTH

**Toggling action** at full-scale **deflection** (13a

xxx 13n) occurs in the range of (10) kHz or above and thus, allows instant response to driver's acceleration demands.

**Toggling-time** (scanning-time) is directly synchronized to **light gate** (9) displacement which, in turns, **circuit** (30) further sets up and establishes a given **pulse shape** (16) of Figure (3-8).

**Circuit** (30) continues to increase **pulse width** (17axxxx) of Figure (3-8) as the monitored ( *detected by < scanning*) **toggling-time** (14a xxxx ... 12) increases when **logic-point** (12) moves farther away from **start-position** (9a) to **stop-position** (9n), as further shown in Figure (3-13) as to Figure (3-12).

**Pulse width** (17a xxx 17n) diminishes when **logic-point** (12) reverses direction to start .. **position** (9a).

The diagram illustrates the timing of an acceleration control system. A horizontal axis represents a sequence of logic points from 13a to 13n. A vertical axis represents time. A horizontal bar labeled 'RESPONSE TIME' spans from the start of logic point 13a to the start of logic point 14a. A vertical dashed line labeled 'MOVING LOGIC POINT (12)' is positioned between logic points 13a and 14a. A horizontal bar labeled '14a' starts at the beginning of logic point 14a and ends at the beginning of logic point 14n. A horizontal bar labeled '14n' starts at the beginning of logic point 14n and ends at the beginning of logic point 14m. The logic points 13a through 13n are marked with 'x' on the horizontal axis.



Figure (3-13)

17a x 16a 18 16n

IDLING SPEED ( A )

17a xxx 16a 18 16n

CRUISING SPEED ( B )

16a 17a xxx 17n 18 16n

PASSING SPEEDS ( C )

FIGURE 3-13: SPEED CONTROL



Finally, **circuit** (30) reproduces the **variable controlled pulse-shape** (16) in a continuous **repetitive manner** (16a xxx 16n) of Figure (3-13) and electrically transmits the resultant **pulse-train signal** (19) to **Analog Voltage Circuit** (40), as shown in Figure (3-5).



### Figure 3-5: Hydrogen Gas Control Circuit



In retrospect to **engine performance** (*gas pedal attenuation*) (21) of Figure (3-10), a wider pulse width (17a xxx) of Figure (3-13C) increases (*accelerates*) engine R.P.M.;

whereas, smaller pulse-width (17ax) reduces (*de-accelerates*) engine R.P.M. .. Cruising speed (3-13B) of Figure (3-13) is simply accomplished when pulse width remains constant.

Incoming **clock pulse** (21a xxx 21n) of Figure (3-16) originating from **Pulse Frequency Generator** (70) of

Figure (3-16)

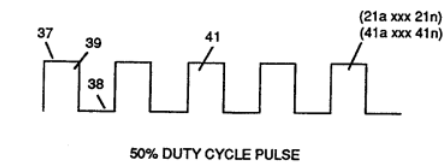


FIGURE 3-16: VARIABLE CLOCK PULSE TRAIN

Figure (3-5)

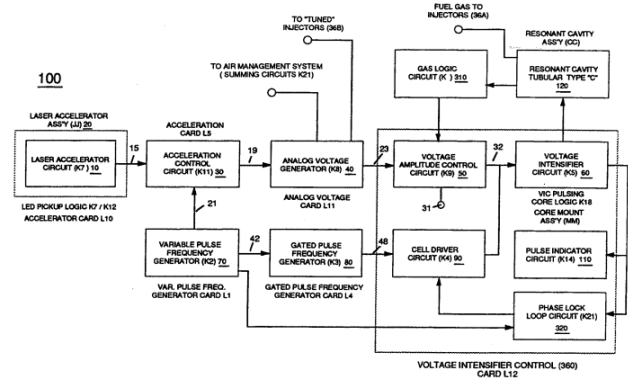


FIGURE 3-5: HYDROGEN GAS CONTROL CIRCUIT

sets up the **scan-rate** (toggling) by which **signal input** (15) of Figure (3-5) is electronically scanned by **circuit** (30).

The resultant **clock pulse** (21) of Figure (3-16) as to Figure (3-5) is always adjusted to exceed driver's response time to allow for instant acceleration control.

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