

# Laser Accelerator Assembly

**Laser Accelerator Circuit** (10) of Figure (4) which is a component part of **Laser Accelerator Assembly** (20) of Figure (3-10) uses a **GaAs infrared emitting diode** (1) of figure (3-9) to trigger a **SDP8611 Optoschmitt light receiver** (2) of Figure (3-9) from **quiescent state** ( output logic high ... B+) (13) to **on-state** (*the minimum irradiance that will switch the output low*) which switches or triggers the Optoschmitt (2) output to ground state (*zero volts*) (12).

**Laser Accelerator Assembly** (20) of Figure (3-10)

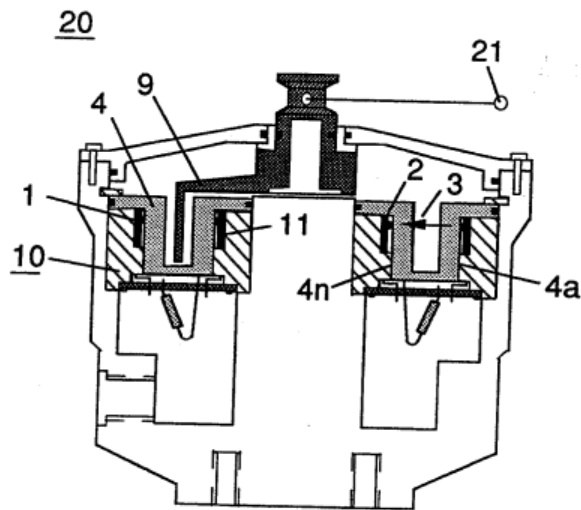


FIGURE 3-10:LASER ACCELERATOR

**SDP8611 Optoschmitt light receiver** (2) of Figure (3-9)

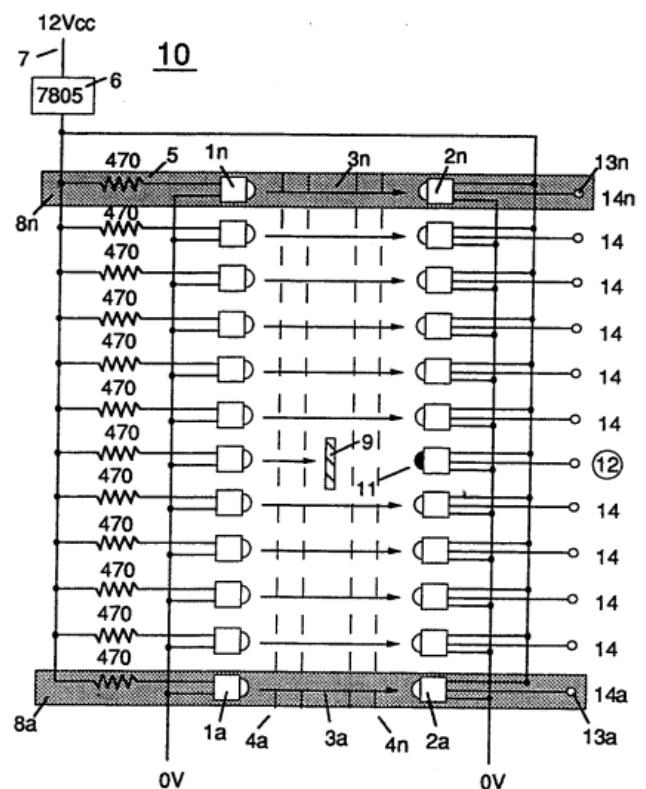


FIGURE 3-9: LED PICKUP CIRCUIT

The peak **wavelength** (3) of Figure (3-9) being transmitted from the infrared emitting diode (led) (1) to the **Optoschmitt receiver** (2) is typically (935 nm) and allows the **Optoschmitt** (2) clock frequency (the speed by which the Optoschmitt changes logic state) to be (100 kHz).

**Optical lens** (4) of Figure (310) redirects and focuses the **transmitted light source** (3) of Figure (3-9) (traveling infrared light waves) to the **Optoschmitt** (2) by passing the light source through a series of **concentric lenses** (4a xxx 4n) of Figure (3-10) which become progressively smaller from

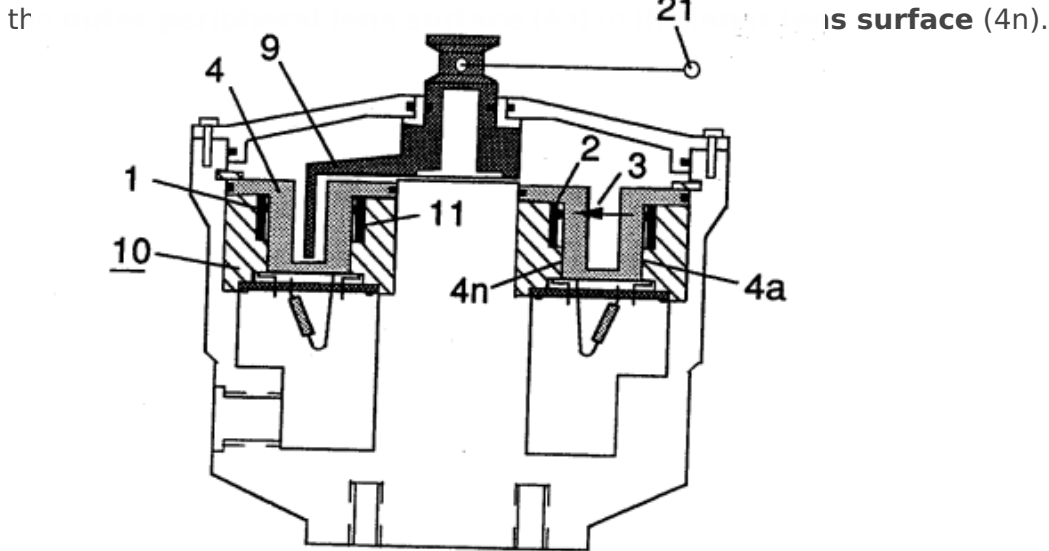


FIGURE 3-10:LASER ACCELERATOR

The **spatially concentric lenses** (4a

xxx 4n) of Figure (3-10) causes the beam angle of the light source to trigger the **Optoschmitt** (2) beyond the minimum irradiance that is needed to switch the Optoschmitt from **quiescent state** (high logic state I B+ ) to **on-state** (output changing to zero volts).

The **Derate linearly** of light intensity is approximately 1.25mWj degree C above 25 degree C at a spatial distance of .500 inches between the **two infrared devices** (1)(2) of Figure (3-9) as to Figure (3-10).

**Transmitted light source** (3) is turned-on when a electrical power source of 5 volts is applied to the **led** (1) through **dropping resister** (5) by way of **voltage regulator** (6) connected to the car **electrical system** (7).

Together, the **matched infrared devices** (1)(2) with **optical lens** (4) forms **optical circuit** (8) of Figure (3-9).

Grouping additional **optical circuits** (8a xxx 8n) in an inline or linear arrangement, now, forms **Led Pickup Circuit** (10) of Figure (3-9), as shown in Figure assembly (20) of Figure (3-10).

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

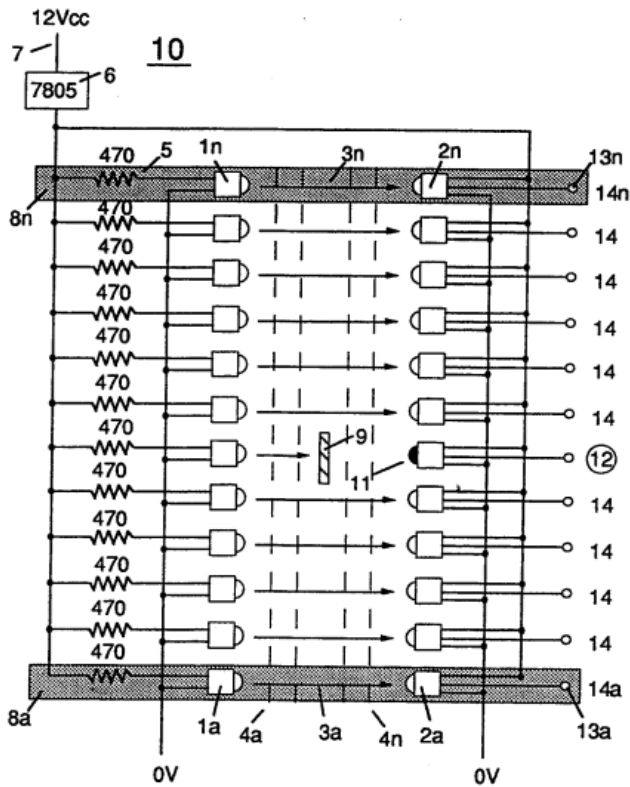


Figure assembly (20) of Figure (3-10)

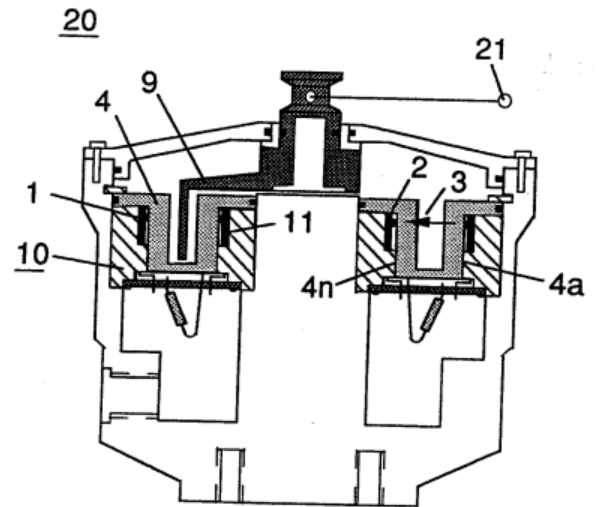


FIGURE 3-10:LASER ACCELERATOR

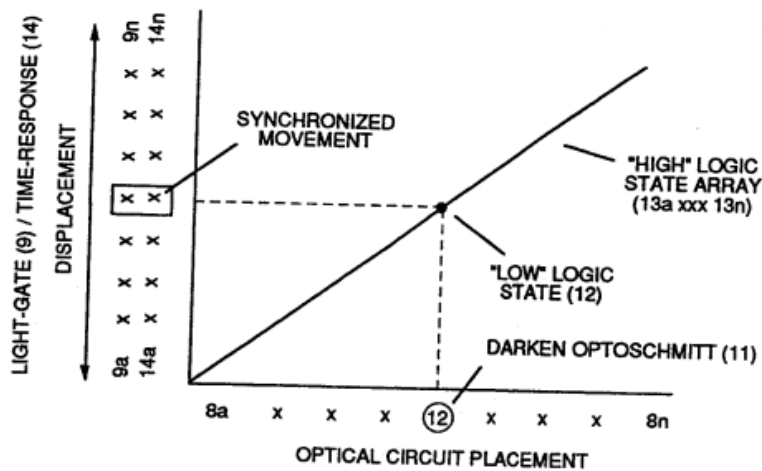


FIGURE 3-7: LASER ACCELERATOR CONTROL FUNCTION

To perform a switch-logic

function, **light - gate** (9) of Figure (3-9) as to Figure (3-10) is inserted between the **matched infrared devices** (1)(2) and moved in a linear displacement from **one optical circuit** (8x) to **another optical circuit** (8xx), as illustrated in Figure (3-9)(3-10) as to Figure (3-7).

Once light-gate (9) blocks and prevents traveling **light-beam** (3) from reaching the matched **Optoschmitt** (8xx), the darkened **Optoschmitt** (11) (non-energized) changes output state since the irradiance **energy level** (3) is reduced to, or below the release point...triggering **opposite logic state** (12).

As **light-gate** (9) advances to the next **optical circuit** (8xxx) a new and separate low-state **logic function** (12) occurs while the previous **optical circuit** (8xx) reverts back to **high-state logic** (13).

Advancing **light-gate** (9) still further performs the same opposite (alternate) logic-state switching in a sequential manner until the advancing **light-gate** (9) reaches the **last optical circuit** (8n).

Reversing the movement of **light gate** (9) performs the same high to low logic switch-function but in reverse sequential order.

Reversing the direction of the **light-gate** (9) once again reinstates the original sequential switching order, as illustrated in Figure (3-7) and Figure (3-9).

Longevity and reliability of component life is typically 100,000 hours since led pickup circuit (10) of figure (3-9) utilizes no mechanical contacts to perform the sequential logic switch function.

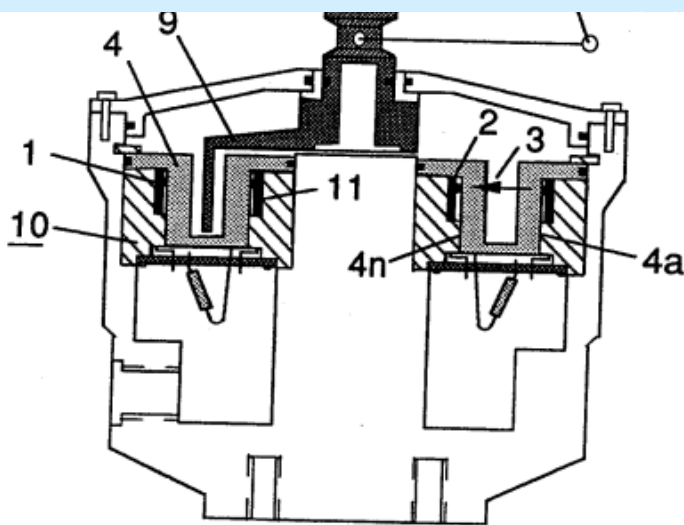


FIGURE 3-10:LASER ACCELERATOR

**Light-gate** (9) integrated with **led**

**pickup circuit** (10) make up **Laser Accelerator assembly** (20), as shown in Figure (3-10).

**Light-gate** (9) of Figure (3-10) is mechanically linked to the car acceleration pedal by way of **cabling hookup** (22).

Opposite placement of the **matched infrared devices** (1)(2) prevents bogus or false triggering of "low" **logic state** (12) during **light-gate displacement** (9a xxx 9n) of Figure (6)(7) and (8).

If light emitting diodes (led) (1a xxx 1n) of figure (8) are electrically disconnected from D.C. power supply (6), then **Led Pickup Circuit** (10) outputs are switch to "low" logic state (12a xxx 12n) which disallows "low" **logic state signal** (12), resulting in a "shut-down" condition to **Hydrogen Gas Control Circuit** (200) of Figure (3-1).

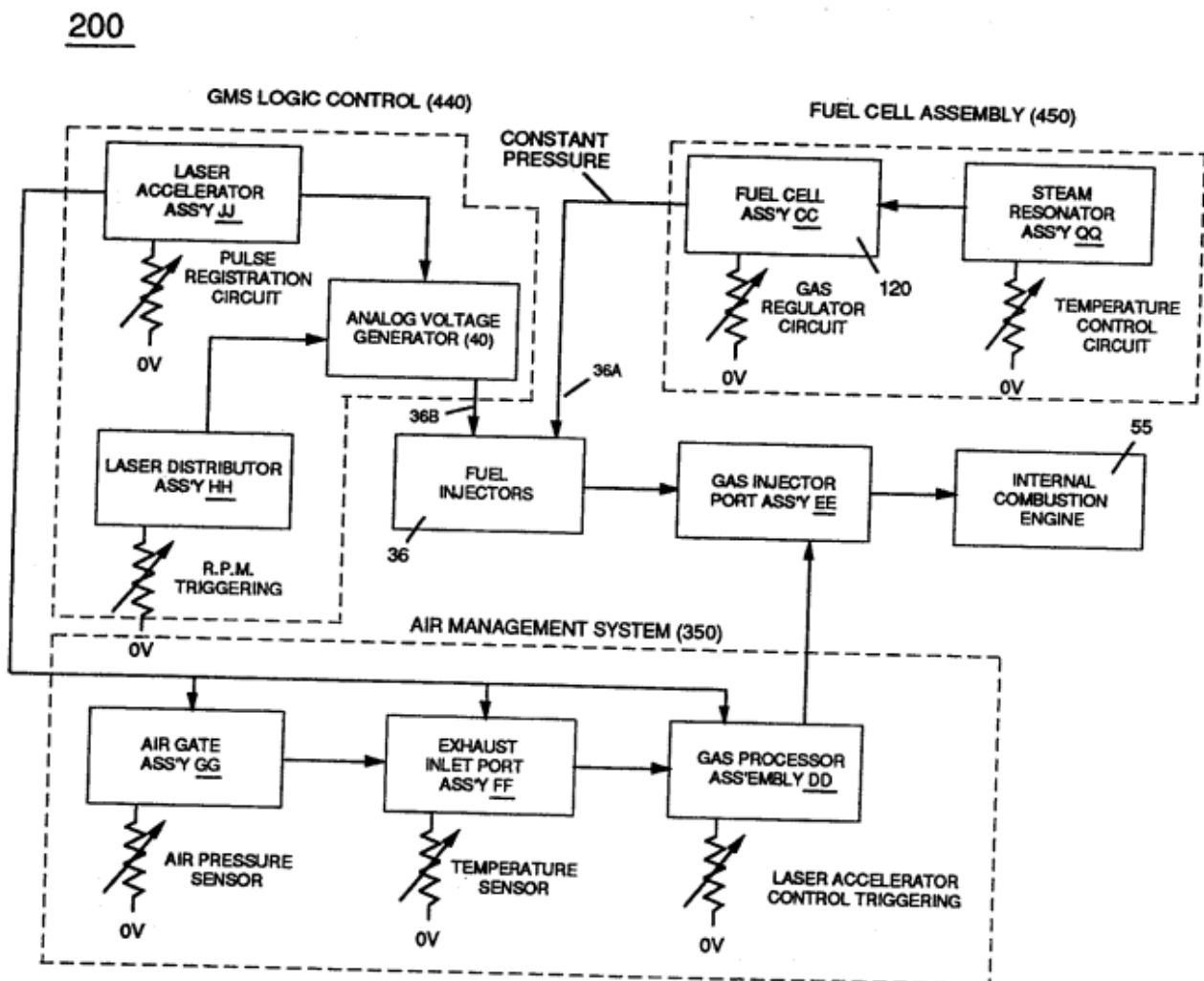


FIGURE 3-1: HYDROGEN GAS MANAGEMENT SYSTEM

Disconnection of **power supply** (6) to **Optoschmitt array** (2a xxx 2n) of Figure (3-9) results in a similar "shut down" condition to **control circuit** (200), as further shown in Figure (3-1).

This "shut-down" or "Switch-off" condition helps provide a fail-safe operable **Fuel Cell** (120) of Figure (3-20) by negating acceleration beyond driver's control.

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