

# LABURN2 Laser System Instructions

## 10 to 20 Watt TEM00 CO2 10 Micron Laser System

The LABURN is a complete self contained 10-20 watt TEM00 continuous output 10 micron CO2 laser system excellent for engraving or cutting thin plastic, cloth, paper, wood etc. System is turn key ready complete with water cooling in an attractive 23" x 8" x 3 1/4" enclosure with a transparent cover. Console panel contains all controls including a tube current meter for power output adjusting. Device is powered by either 115 vac or our optional portable battery and inverter module. System is in full compliance for sale and use. It is available as a kit or ready to use system.

**Operation of this laser requires eye safety goggles. Most plastic safety goggles can be used with caution. Never look directly into the laser beam!!**

1. Unpack and check for any damage.
2. Set up laser as shown on a table or other flat surface. Note to carefully remove the cotton swab over the output mirror as shown in fig 1. See note on cleaning and protecting this mirror.
3. Verify the proper operation of the cooling system as shown on fig 2. Systems are shipped with water but always should be re-checked. ***This is a very important step!!***
4. Obtain a block of wood for the test target and place about 12 to 18" from the laser output aperture.
5. Open the aperture cap and put on your safety glasses.
6. Turn the "POWER ADJUST control" fully ccw and turn the KEY SWITCH as shown on fig 3 to the second notch noting the "MAIN power indicator lamp" coming on along with the cooling pump.

\*7. Push the START push button switch and note about 10 seconds before the EMISSION indicating lamp comes on. Note the meter indicating a slight reading indicating laser tube current. You will also note a faint purple glow in the discharge cavity of the laser tube.

\*Note hat if the system has a second push button switch for the portable model that it two must be activated.

8. Adjust POWER ADJUST to mid-scale on meter noting the wooden target burning and flaming. Adjust the power level as required.

### Output optics:

The laser output mirror should be cleaned using acetone and a cotton swab or Q tip every time before firing up the laser.

A dry piece of cotton should be placed over the lens when not in use. Lens must never get wet!! Always dry out if on a humid day.

### Optional focusing lens:

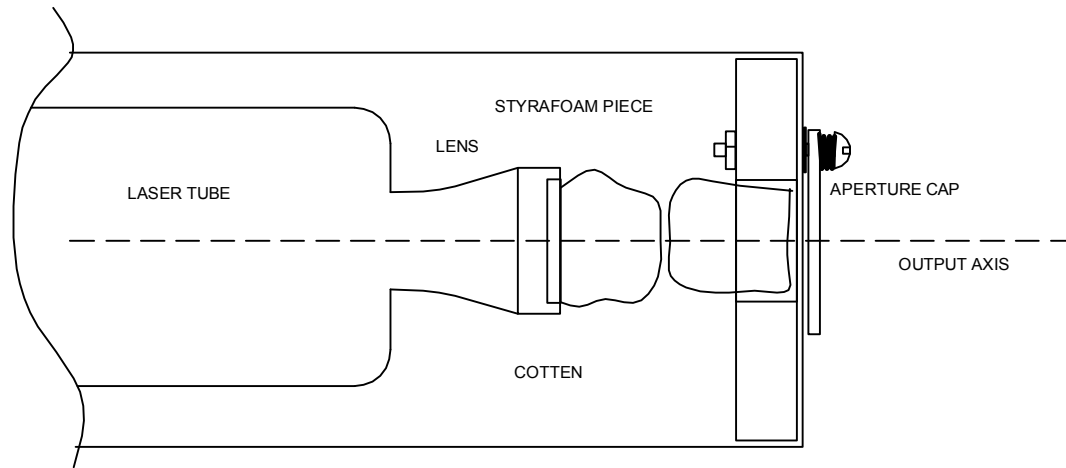
The focus tube and lens as shown on fig 4 will focus the laser energy onto a fine point allowing very high temperatures and precise cutting. The impact point on the target object will glow like a miniature sun!!

### Cooling system:

The laser cooling method uses a closed water circulation system utilizing a pump being controlled by the laser input energy. The more laser power the faster the pump circulates. It is very important to check the air bubble in the laser tube. This bubble should not be any more than 3 inches long after laser has set for several minutes. Observe by tilting the laser head up and noting the bubble..If it gets larger system must be bled as outlined on "bleeding the system".

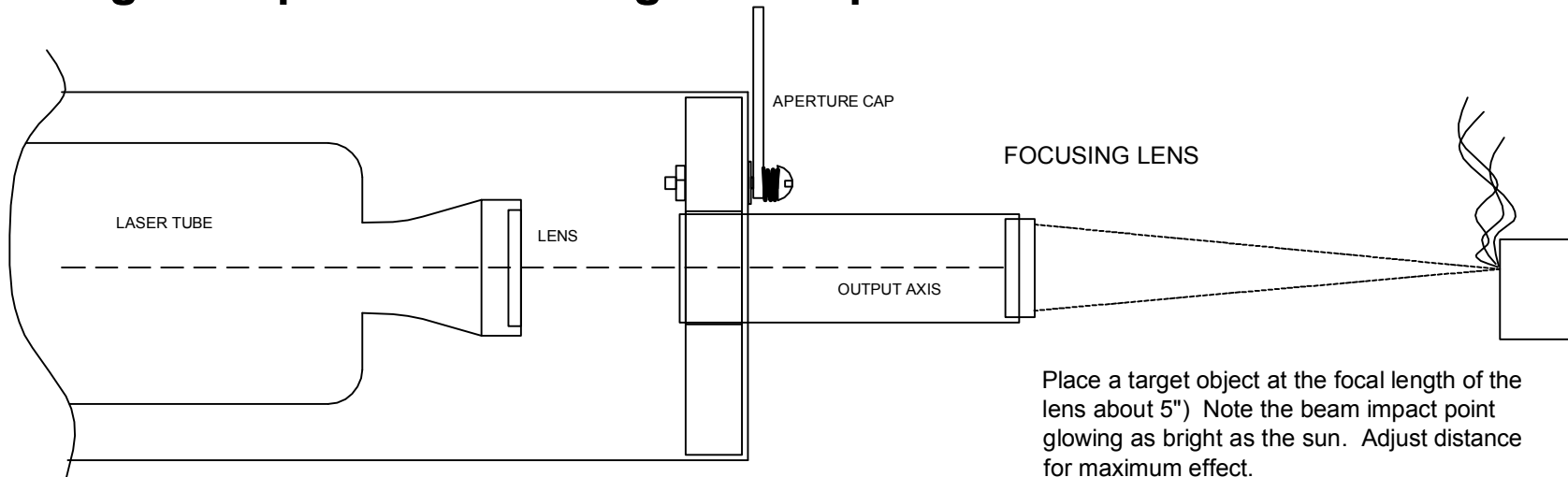
**It is very important that there is absolutely no leaks!!!!!!!**

# Fig 1 Output end showing protective cotton for long term storing



The output lens should be protected with a piece of clean dry cotton if not used for long periods. Hold the cotton swap in place using a piece of Styrofoam or foam secured against the aperture cap.

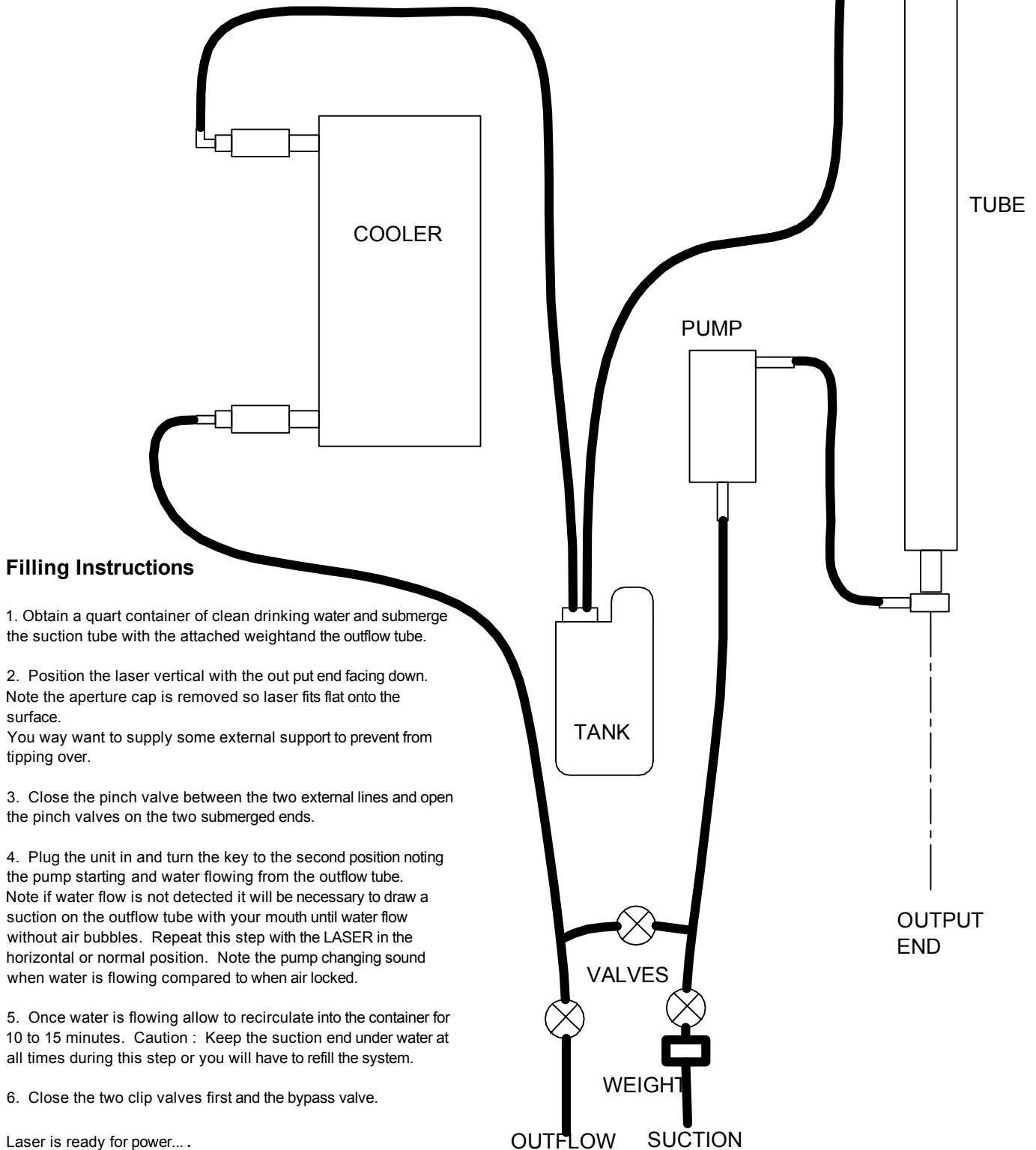
# Fig 4 Output end showing focus optional lens



Place a target object at the focal length of the lens about 5") Note the beam impact point glowing as bright as the sun. Adjust distance for maximum effect.

## Fig 2 Diagram of cooling system

Your laser system is shipped with water in the cooling system. It may be necessary to top off or change the water from time to time...Follow the below instructions if your system fails to circulate water or needs refilling.



### Filling Instructions

1. Obtain a quart container of clean drinking water and submerge the suction tube with the attached weight and the outflow tube.
2. Position the laser vertical with the out put end facing down. Note the aperture cap is removed so laser fits flat onto the surface. You way want to supply some external support to prevent from tipping over.
3. Close the pinch valve between the two external lines and open the pinch valves on the two submerged ends.
4. Plug the unit in and turn the key to the second position noting the pump starting and water flowing from the outflow tube. Note if water flow is not detected it will be necessary to draw a suction on the outflow tube with your mouth until water flow without air bubbles. Repeat this step with the LASER in the horizontal or normal position. Note the pump changing sound when water is flowing compared to when air locked.
5. Once water is flowing allow to recirculate into the container for 10 to 15 minutes. Caution : Keep the suction end under water at all times during this step or you will have to refill the system.
6. Close the two clip valves first and the bypass valve.

Laser is ready for power... .

# FIG 3 Front panel showing controls

