Our products are designed to be used correctly and with care for the purpose for which they are intended. No liability is accepted by the Tool Connection for incorrect use of any of our products, and the Tool Connection cannot be held responsible for any damage to personnel, property or equipment when using the tools. Incorrect use will also invalidate the warranty.

If applicable, the applications database and any instructional information provided has been designed to offer general guidance for a particular tool's use and while all attention is given to the accuracy of the data no project should be attempted without referring first to the manufacturer's technical documentation (workshop or instruction manual) or the use of a recognised authority such as Autodata.

It is our policy to continually improve our products and thus we reserve the right to alter specifications and components without prior notice. It is the responsibility of the user to ensure the suitability of the tools and information prior to their use.

6 March 2017 3:44 PM

## Guarantee

If this product fails through faulty materials or workmanship, contact our service department direct on: **+44 (0) 1926 818186**. Normal wear and tear are excluded as are consumable items and abuse.

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# LASER®

**6934**

## Portable Inspection Camera

3.9mm x 1000mm Probe


- Ideal for mechanics, plumbers, electricians, police and customs officers.
- Features include snapshot and video function with motion detection.
- Waterproof IP67, levels of brightness 2 LEDs/100,000 pixels/screen 2.4 inch TFT/LCD/ QVGA 480 x 234 16M COLOUR.
- Small diameter 3.9mm probe can reach almost everywhere.
- Accessories include: mirror, AV cable, USB cable and SD card.

**www.lasertools.co.uk**

**www.lasertools.co.uk**

## 6934 - Portable Inspection Camera

The Laser 6934 Portable Inspection Camera allows you to easily perform visual inspections in hard to reach areas. Its lightweight, handheld design means that it is extremely portable. The extremely flexible semi-rigid camera probe is 1 metre long and just 3.9mm in diameter. The inspection camera has numerous applications from inspecting engines and engine components, inspecting cables or pipes in or behind walls, to locating lost keys, etc, in drains. Read part number of components buried in engine-bays without dismantling. Includes 90° mirror attachment for increased versatility. Particularly useful for unobtrusive inspection and viewing applications such as bat location, etc.

Instrument is fitted with a Micro SD card which enables still images and video recordings to be saved. Sound is also recorded. Playback can be on the instrument screen or on a PC or laptop via the supplied USB lead. An RCA/Video-Out lead is also supplied with enables a larger screen (with compatible Video-In socket) to be used both when the camera is live or to view still images and video recordings.

Accessories Included:

- 1 metre camera probe
- Micro SD card (8 Gb)
- USB lead
- RCA/Video-Out lead
- Mirror attachment 90°

## Controls

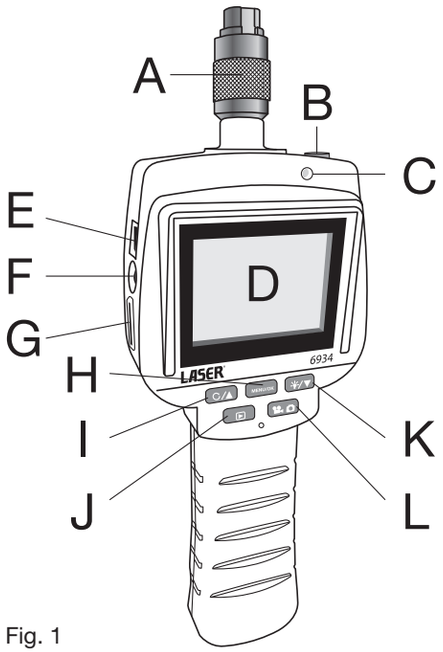


Fig. 1

| | |
|---|---|
| **A** | Camera probe connection |
| **B** | On / Off switch |
| **C** | Status light |
| **D** | TFT LCD Screen |
| **E** | USB socket |
| **F** | RCA / Video-out |
| **G** | Micro SD card socket |
| **H** | Menu / OK button |
| **I** | Image rotate / UP button |
| **J** | Playback (photo or video) |
| **K** | LED brightness / DOWN button |
| **L** | Photo / Video select / start-stop |
| **M** | Battery Cover |
| **N** | Probe end |
| **O** | 90° mirror attachment |

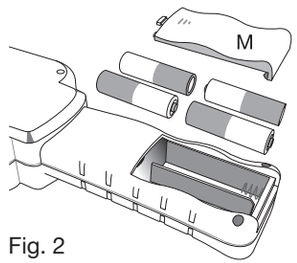


Fig. 2



## Specifications

| | |
|---|---|
| **Image sensor:** | CMOS sensor |
| **Focus distance:** | 20mm – 50mm |
| **View angle:** | 90° field of view |
| **Probe diameter:** | 3.9mm |
| **Probe length:** | 1 metre |
| **LED camera illumination:** | 2 LEDs (6 level adjustment) |
| **Screen:** | 2.4" TFT LCD 480 x 234 16M colours |
| **Image format** | JPEG |
| **Video format:** | AVI |
| **Micro SD card capacity:** | Up to 32GB |
| **Batteries:** | 4 x AA 1.5V alkaline (Required) |

## Precautions

- Always refer to instructions before use.
- **Do not** remove or refit the Micro SD card if the instrument is switched **ON**. **Power OFF** the instrument before removing or refitting the Micro SD card. Failure to carry out this advice will damage the instrument.
- Menu 2 — **Format: CAUTION**: this will erase all data on the Micro SD card! Any previously saved images or video recordings will be erased.
- **Do not use excessive force** when connecting probe to instrument — carefully align tab on probe connector with channel on instrument connector and push fully home.
- Observe standard workshop safety procedures when using the instrument.
- If operating the inspection camera on a vehicle, make sure the engine is not running. If working under a vehicle, make sure that it is fully and safely supported.
- Do not put the camera probe into anything or near anywhere that may contain a live electrical charge.
- Keep the instrument dry, clean, free from oil, water and grease. Use a mild detergent on a clean cloth to clean the outside of the instrument when necessary.
- Do not carry the instrument by the probe.
- The instrument is not shock-resistant. Do not use it as a hammer or drop it.
- Protect the camera lens (on end of probe) from dirt and corrosive substances.
- Do not let the camera get wet or use in damp or wet conditions.
- Protect the inspection camera from prolonged exposure to humid or damp conditions.
- Do not use the instrument in temperatures above 60°C
- Ideal storing & operating temperature: 0˚C to +50˚C.
- Be sure to install batteries with the correct polarity as indicated in the battery compartment.
- Remove the batteries if storing for an extended period.
- Properly dispose of used batteries in accordance with local authority guidelines.
- Please keep the instrument and accessories away from children at all times.

**Safety First.** Be Protected.

## Image and Video Capture and Saving

Press and hold the Photo / Video select / start-stop button (**L**) to select either “Camera” or “Video” mode. In camera mode (green icon on top right of screen), still images can be recorded and saved. In video mode (red icon on top right of screen), video recordings can be saved.

In camera mode, to capture an image, press the Photo / Video select / start-stop button (**L**); the screen flickers and the status light (**C**) flashes off momentarily as the image is being captured and saved to the Micro SD card.

In video mode press the Photo / Video select / start-stop button (**L**) to start recording the video; to show that the instrument is recording video the status light (**C**) flashes on and off and the duration of the video is displayed at the bottom right of the screen. To stop the recording, press the Photo / Video select / start-stop button (**L**) again. The video is stored on the Micro SD card.

## Viewing the Saved Images or Video on the Device:

Playback mode: with the instrument switched on, press and hold the Playback button (**J**). Scroll through the previously saved images and videos using buttons **I** or **K** to make your selection. To play a video, press the Playback button (**J**).

Press and hold button **J** again to return to normal operation.

## Deleting Stored Images or Video

Refer to Figure 10: Once in playback mode (see above) press and hold Menu/OK button **H**. This sub-menu lets you delete files (all, or select file to delete); produce image thumbnails, modify the audio recording level and protect files.


Fig. 10

## Viewing the Saved Images or Video on a PC or Laptop

There are two methods of reading the contents of the Micro SD card directly on a PC or laptop: (**1**) by connecting the instrument via the supplied USB lead — do not switch the instrument on — it powers on automatically as the USB lead is plugged in; or (**2**) remove the Micro SD card and connect directly to the PC or laptop via an adaptor if necessary.

(Note: **Power OFF** the instrument before removing or refitting the Micro SD card).



## Set-up

- Remove battery cover (**M**) and install four (4) AA 1.5 volt batteries (refer to Figure 2).
- Refer to Figure 3 and insert the Micro SD card in socket G. (8 Gb Micro SD card is provided with instrument). **Do not** remove or refit the Micro SD card if the instrument is switched **ON**. **Power OFF** the instrument before removing or refitting the Micro SD card. Failure to carry out this advice will damage the instrument.
- Connect camera probe to the connection (**A**) on the top of the instrument. Refer to Figure 4: carefully align tab on probe connector with channel on instrument connector and push fully home. Screw locking ring until tight against probe connector.
- Mirror attachment (90°): refer to Figure 5 — when required, clip the 90° mirror attachment (**O**) to the camera end of the probe (**N**).

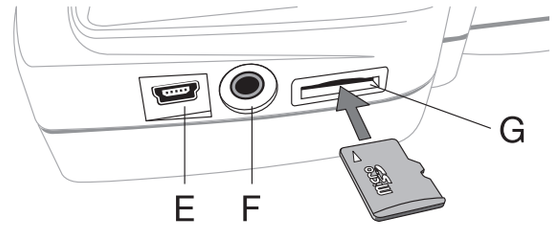


Fig. 3

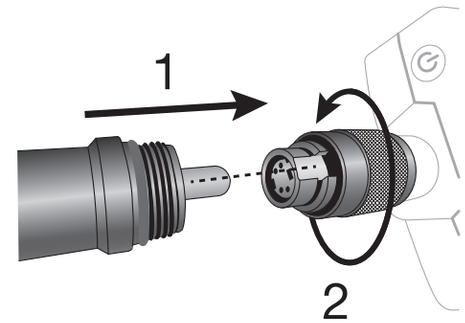


Fig. 4

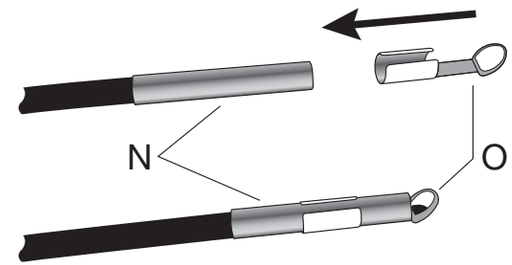


Fig. 5

## Preferences

- Press On/Off switch (**B**) to power on the instrument.
- Press and hold the Photo / Video select / start-stop button (**L**) to select either “Camera” or “Video” mode. In camera mode (green icon on top right of screen), still images can be recorded and saved. In video mode (red icon on top right of screen), video recordings can be saved.
- Press and hold the Menu / OK button (**H**) to enter the settings menu. (Refer to Figure 6).

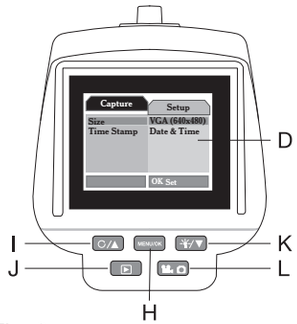


Fig. 6

- In camera mode the first menu (Capture) is as illustrated in Figure 6; from this menu click the Down button **K** once to select “Time Stamp”, then press Menu/OK **H** again to bring up the Time Stamp sub-menu. Refer to Figure 7; the options are “Off”, “Date Only” and Date & Time”. Use buttons **I** or **K** to select the required format then press Menu/OK **H** to confirm. The selected date/time format will be stamped onto the still images saved.

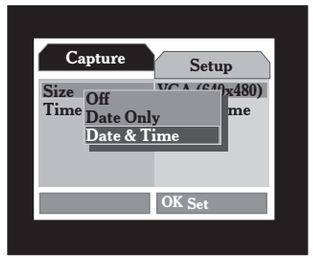


Fig. 7

- In video mode the first menu (Video Output) is as illustrated in Figure 8; from this menu the size in pixels of the video output can be selected (640x480 pixels or up-scaled 1280x720 pixels); the desired time stamp can be selected (as described above) and the audio recording can be switched on or off.

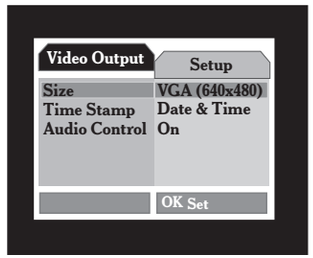


Fig. 8

- In the first menu, press and hold Menu/OK **H** to access the second menu; this offers similar selections in both Camera and Video modes. Refer to Figure 9.

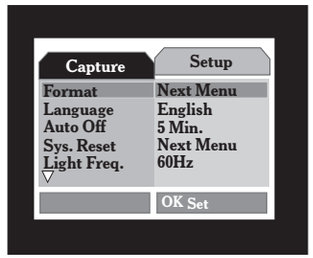


Fig. 9



Available selections are as follows. Use buttons **I** or **K** to make your selection then press Menu/OK **H** to confirm:

- **Format**: formats the Micro SD card. **CAUTION**: this will erase all data on the Micro SD card! Any previously saved images or video recordings will be erased.
- **Language**: select language required (eleven available).
- **Auto-Off**: the instrument will power off if it is not being used; this can be set to 1 minute, 3 minutes, 5 minutes and OFF.
- **System Reset**: Reverts all menu settings to factory default.
- **Light Frequency**: 50Hz or 60Hz; matches camera frequency to electrical frequency of environment. This will reduce flickering from electric lighting.
- **TV Output**: PAL or NTSC.
- **Date Input**: This can be switched OFF, or scroll down to set the date & time. First select the date format using buttons **I** or **K** to make your selection, then press and hold Menu/OK **H** to move down to the date set. Use buttons **I** or **K** to change the day, then press and hold Menu/OK **H** to move to the month. Continue in this manner to set year and time.
- **Desktop Icon**: The icons appearing on the screen **D** can be switched on or off.

## Additional Functions

- **Status light** (**C**): The light illuminates when the instrument is switched ON. It glows **red** as the instrument powers on and off; it glows yellow as the instrument is functioning and flashes on and off during video recording.
- **Image Rotation**: pressing Image rotate / UP button (I) will rotate the screen image by 180°.
- **Screen Brightness**: Press Menu/OK **H** button to increase screen brightness (three levels).
- **Camera LEDs**: When working in dark environments, press LED brightness / DOWN button **K** to switch on the built-in camera LEDs. Press again to increase the brightness (six levels).
- **Screen Icons**: SD card present (top left of screen); current date and time (top right); “Camera” or “Video” mode (top right); battery condition (bottom left); camera LED level (top left); video recording (flashing red button on bottom right of screen with video duration in hrs:min:secs;) VGA mode (bottom right); space on Micro SD card (in camera mode only — bottom right).
- **RCA / Video-out**: the screen output can be transferred to a larger TV screen if that TV has a compatible RCA / Video-in socket (colour-coded yellow). Connect the supplied RCA lead to the TV and to the RCA / Video-out socket (**F**) on the instrument.
- **Connect to a PC or Laptop**: the contents of the Micro SD card can be read directly on a PC or laptop by connecting the instrument via the supplied USB lead; do not switch the instrument on — it powers on automatically as the USB lead is plugged in.