

Field Handbook OZII and OZIII

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CE Declaration of Conformity

Manufacturers Name: CleanFlow Systems Ltd

Manufacturers Address: 7A Dallan Place
Albany
New Zealand

Declares that the product:

Product Name: Profiler
Model Numbers: SnapOn

Product options: All

has been tested and found compliant to the following Directives and Standards

Directives: EMC 89/336/EEC

Standards: EN 50081-1
EN 50082-2
EN 60825-1

Equipment Type: Pipe Inspection Equipment

Laser Cautions

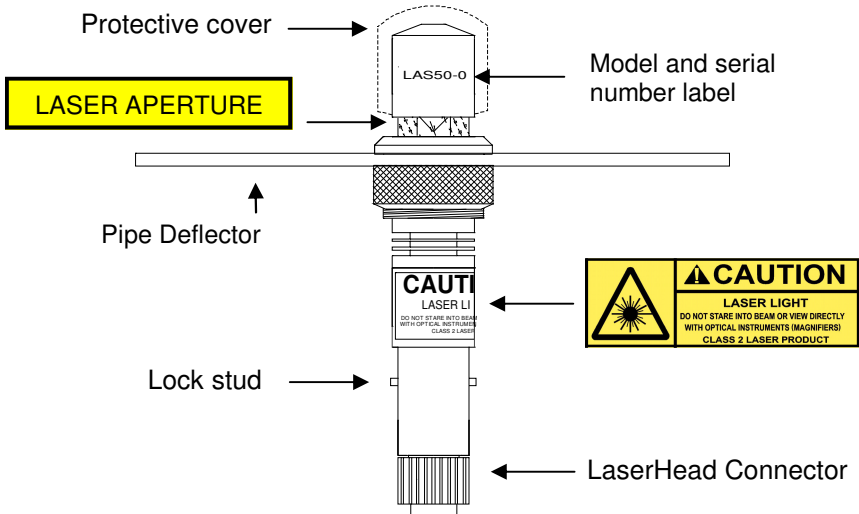
The CleanFlow Systems Profiler LaserHead has been tested and certified to conform to US requirements for CDRH Class 2 (not considered to be hazardous) laser products. Conforms to EU requirements for Class 2M laser products as per IEC 60825-1 standard.



LaserHead Use and Safety (Las50)



Profiler LaserHead (Las50 displayed)





Attaching LaserHead to Profiler

- Select and attach any 'Extenders'
(see Pipe Extender Matrix)
- Switch SnapOn Base to 'Off'
(see 'Operating Instructions' section)
- Screw the LaserHead firmly onto the selected Extender connector end

Important: DO NOT handle the LaserHead by the aperture end. Only handle by the connector end of the LaserHead.

Secure connection using the connection sleeve to prevent separation and to provide further mechanical support

- Remember to turn on the LaserHead before placing the assembled Profiler into the manhole or pipe.

After Each Use

- Ensure LaserHead Aperture window is cleaned with water based cleaner.
- Use clean cloth to clean window (to avoid scratching as this will disrupt laser beam and reduce its performance).
- Inspect LaserHead casing and window for damage (LaserHead is completely sealed and cannot be opened). Unit should not have any cracks, fogging in the window, be distorted, have any loose parts or be able to be pulled apart. If any such damage is found, contact the manufacturer and DO NOT use. Danger: 50mW Class 3b laser is present in the interior.

LaserHead Servicing

Note: There are no user-serviceable parts inside the LaserHead. LaserHead must be replaced as a unit if it fails. Contact your distributor.



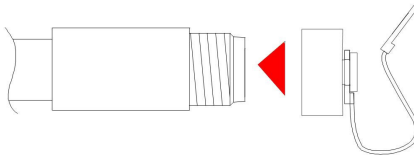
The Profiler

Models: *Cues OZII and OZIII*

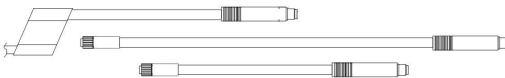
Note: Pictures displayed may vary slightly depending on SnapOn model:
See your Distributor for availability with other cameras

Assembly

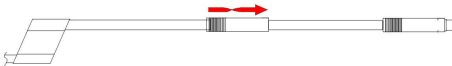
Please Note: Remember to turn on the LaserHead before placing the assembled Profiler into the manhole or pipe.



Unscrew protection end-cap from SnapOn Base (place cap in equipment case).



Select SnapOn Extender (depending on pipe size)



Screw Extender firmly onto SnapOn Base using the connectors and secure connection using the connection sleeve

Important: Ensure connectors are screwed tight and taped (eg electrical tape). This will stop separation and loss of LaserHead due to vibrations.

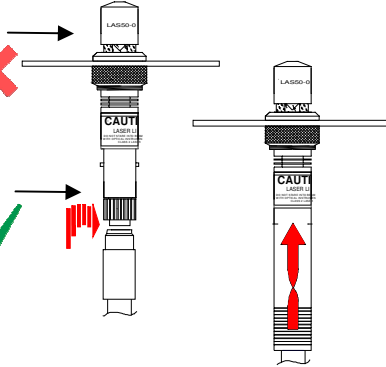


Assembly of Laser

NEVER
hold by the
cap end of the
LaserHead



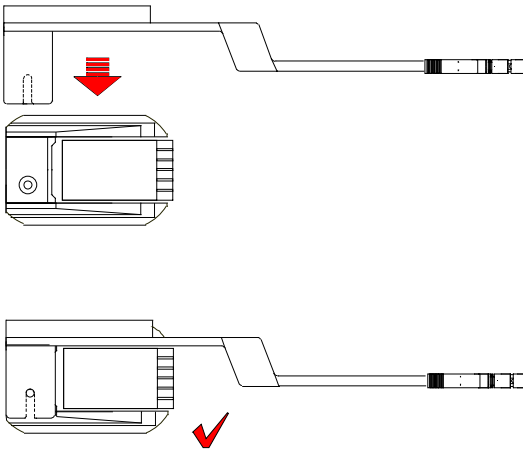
Handle only
by the
connector end of
the LaserHead



Screw the Laser-Head onto either SnapOn Base or SnapOn Extender connection

Important: Ensure to secure connection using the connection sleeve to prevent separation and to provide further mechanical

Attaching Profiler



• Push Profiler over camera head,

• Ensure valve is located in the slot,

• Stretch o-ring to secure fully,

Note: Remember to replace End-cap after inspection



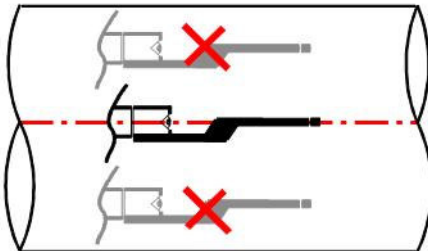
Operation of SnapOn Base



The power switch to power up the SnapOn Base must be switched to the 'I' (ON) position in order to activate the LaserHead. Switch to the 'O' (OFF) position to turn off the LaserHead.

Note: The On/Off direction (up/down) and switch location may be different on your SnapOn Base. Check 'I' and 'O' Labels

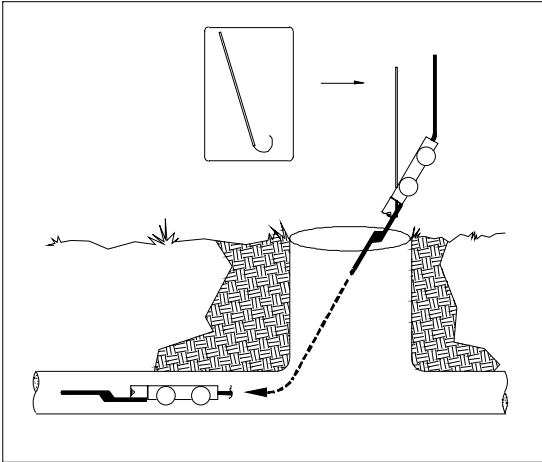
Camera Configuration



Camera head must be centred in the pipe.
This will ensure the laser is in the centre of the pipe.

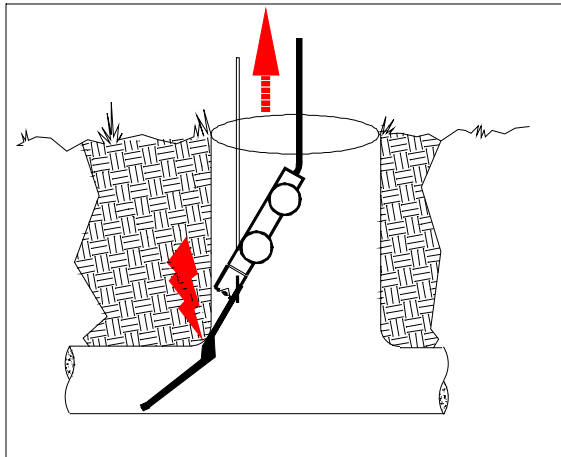


Inserting and Removing



Carefully lift camera and Profiler into and out of pipe frontwards. We recommend using a hooked pole (not provided).

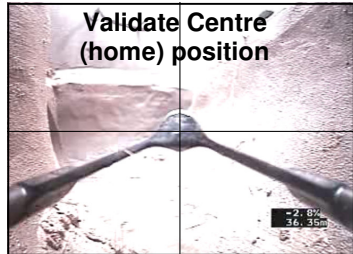
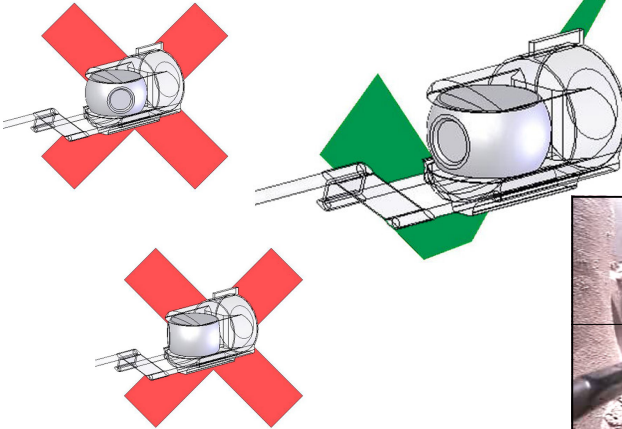
Caution: Do not lever Profiler against the pipe wall when inserting or removing as this may cause damage.





Camera head alignment

Set Camera head to home (0,0,0) position when profiling and calibrating



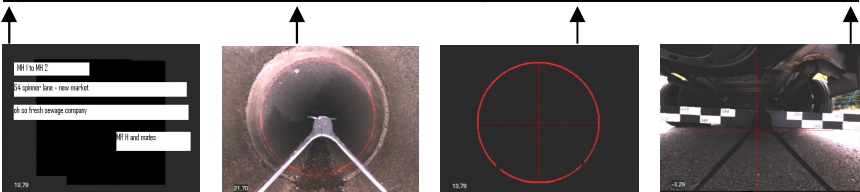
Camera Centering (0,0,0) calibration: Ensure the camera centre is calibrated by your service team.

Video Capture and format

We recommend each profiler video

Video start

Video end



Video header

+

Normal CCTV Video

+

Lights off Profiler Video

+

Profiler Calibration

Video files compatible with the Profiler are .mpg or .avi. Time stamped .vob files are also compatible.

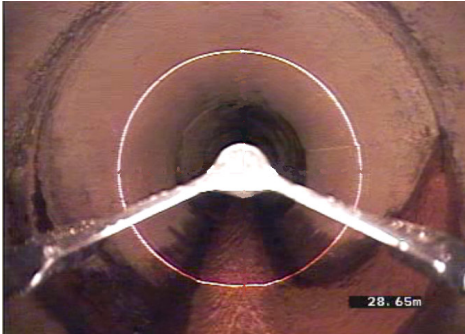
www.cleanflowsystems.com



Video Header

Record Video Header for 5 seconds.

Normal CCTV Video



Perform pre-inspection of pipe with camera lights on and Profiler laser on.

Note: Ensure camera distance counter is used.

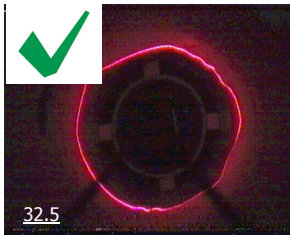
Lights Off Profiler Video—Preparation

- Position the distance counter into one of the four corners of the screen. The distance counter must not intercept or be positioned inside the laser ring at any time during inspection, as this will interfere with the software analysis.

Note: The distance counter position will be selected for exclusion during software analysis.

- Remove all other onscreen text (other than distance counter).
- Turn camera lights off
- Focus camera on laser light (if your camera has auto-focus this should be disabled)

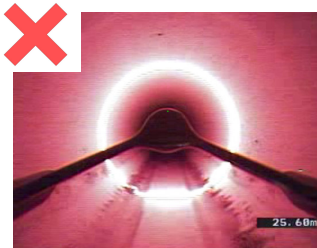
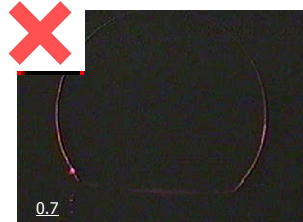
Laser ring should now be seen **clearly** with ring the camera lens on the taking up between approximately 2/3 and 3/4 of the vertical screen



- Good example of laser illumination through 360 degrees and size of laser ring takes up about 3/4 of screen



- Not enough light – open iris fully. If still not enough light, upgrade to more powerful laser. Speak to your distributor.
 - Image too large – see relevant Matrix for correct extender.
- Note - a smaller image may reduce quality of Profiler software analysis.



- Image too small - see relevant 'Matrix' for correct extender
- Too much light - close iris slightly

Lights Off Profiler Video—Recording

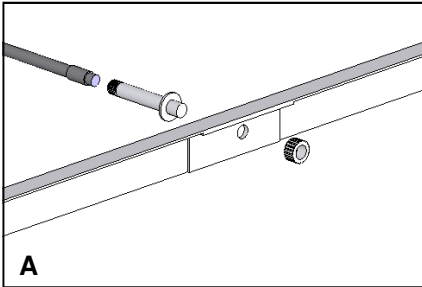
Important: Pipes should be clean/cleaned before laser profiling

- Start (or continue) to record the profiler laser image
- Begin moving the tractor through the pipe constant speed (no more than 10 meters or 30 feet per minute). The slower the camera/ tractor speed, the more profiles for the distance covered will be available.

Note: Do not stop in the pipe unless necessary. Panning and tilting should be performed during pre-inspection.

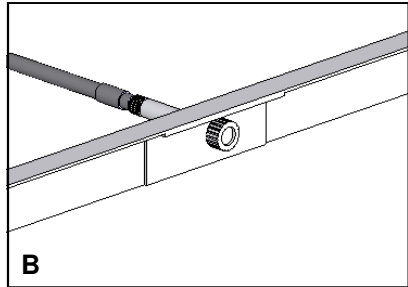
Note: Profiling can be performed in a forward or reverse direction.

- Stop the recording.
- Calibration must now be performed



A

Assemble calibrator as shown (diagram A)



B

Screw calibrator firmly onto Wand (diagram B).



C



D

- Calibrator is set to **horizontal** position (diagram C)
- Ensure camera is in its home (000) position
- Focus camera lens onto the calibration checkers.
- Record calibrator for 5—10 seconds
- Loosen the nut and the back of the calibrator and rotate the camera head 90°. Spin calibrator to **vertical** position (diagram D)
- Record calibrator for 5 –10 seconds
- Remove calibrator

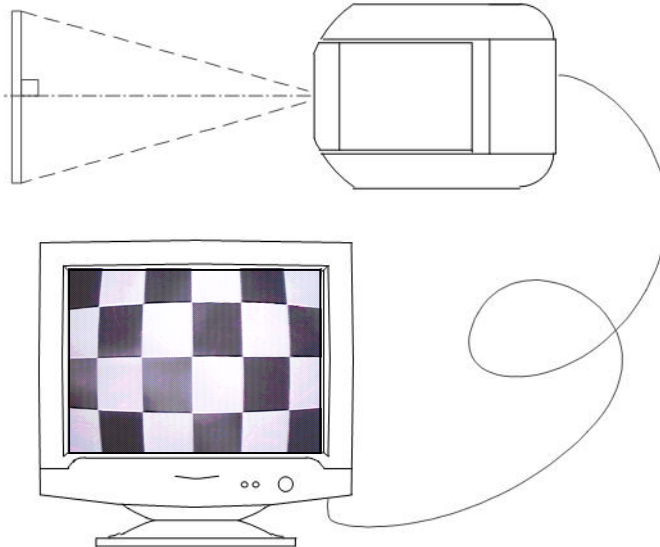
Note: Calibration is imperative for accurate pipe diameter measurements.



Lens Correction (removing fisheye lens distortion)

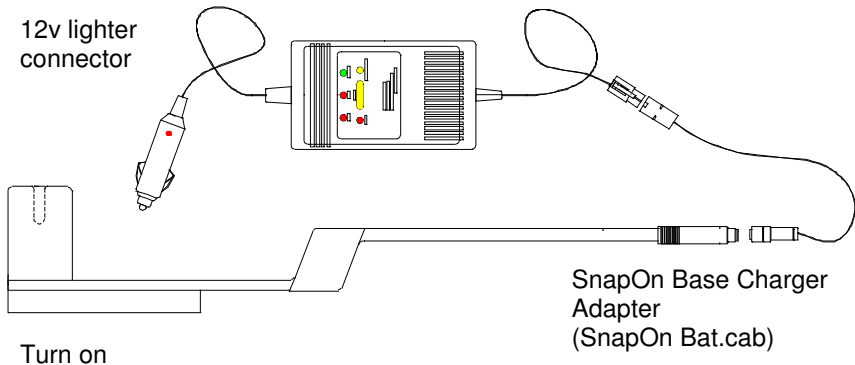
Most camera lenses have some level of distortion. There are default 'Lens Correction Settings' for your camera in the Profiler software. However the lens correction for your camera should be verified using a Profiler correction grid.

- Place the 'Lens correction checkers' perpendicular to camera lens
- Remove all text from the screen
- Ensure all checkers are viewed clearly (focussed) and without glare on screen (see diagram)
- Record video image for 5 seconds
- Load the video into the Profiler software and verify the lens correction using the snapshot functionality. If grid lines do not appear straight, the video should be sent to your distributor for analysis.





Charging the Battery (Base)



For recharging both the SnapOn Base;

1. Plug 12v lighter connector into cigarette lighter of surveying van
2. Plug the Profiler Base connector into the SnapOn Charger Adapter (SnapOn BatCab).
3. Turn on the Profiler
4. Flashing green light (on its own) signifies full battery power

The Deep Conditioning Mode: (to be performed each month)

- Perform steps 1-3 above
- Push and hold yellow button until the 'ready' led flashes, then release the button. The 'discharge' and 'Fast Charge' led's will show which cycle is being performed.
- Unit will charge and recharge three times When green 'Ready' led flashes with the other led's off, batteries have been fully conditioned (this will take a few hours).
- This will charge and recharge the unit three times



Troubleshooting

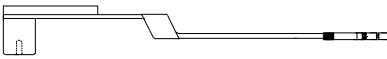
Problem	What to check
LaserHead appears damaged (eg cracks, fogging in the window, distorted, has any loose parts or is able to be pulled apart)	<ul style="list-style-type: none"> • If any such damage is found contact the manufacturer and DO NOT use. Danger: 50mW Class 3b laser is present in the interior.
Laser unit does not turn on	<ul style="list-style-type: none"> • Ensure that all connectors are correctly connected • Ensure batteries have been recharged. • Check that the power switch for the unit is set to 'On'.
Laser ring is not in focus, or does not appear 'crisp'	<ul style="list-style-type: none"> • Focus lens on laser ring.
Laser appears dim	<ul style="list-style-type: none"> • The laser unit lens window may be dirty. Clean with damp, clean cloth. • Ensure batteries have been recharged.
LaserHead is not projecting a clear ring around the entire interior of the pipe.	<ul style="list-style-type: none"> • Open Iris fully • Turn down lighting • The laser unit lens window may be dirty. Clean with damp, clean cloth. • Ensure batteries have been recharged. • Some surfaces if dirty or dark soak up the laser light. A more powerful LaserHead configuration may be required. Change LaserHead or please speak to your distributor. • If your Profiler has high low setting, set to setting 'II'
Laser ring appears too bright (bleeding of laser light)	<ul style="list-style-type: none"> • close iris slightly • If your Profiler has high low setting, set to setting 'I'
Laser ring appears too large (not ¾ screen optimal laser ring illumination)	<ul style="list-style-type: none"> • You may be using the wrong extender for the pipe size. See relevant Pipe Matrix for your camera
Laser ring appears too small (not ¾ screen optimal laser ring illumination)	<ul style="list-style-type: none"> • You may be using the wrong extender or distance from the camera for the pipe size. See relevant Pipe Matrix for your camera



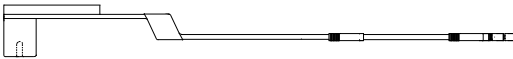
Pipe Extender Matrix (Suggested)

Note: Based on correct tractor/crawler set up for pipe size

Pipe Range	Extenders
6" - 7" (150-199mm)	None



Pipe Range	Extenders
8" - 10" (200-249mm)	Extender A (small)



Pipe Range	Extenders
11" - 12" (250-299mm)	Extender B (large)



Pipe Range	Extenders
13" - 15" (300-375mm)	Extenders A and B

