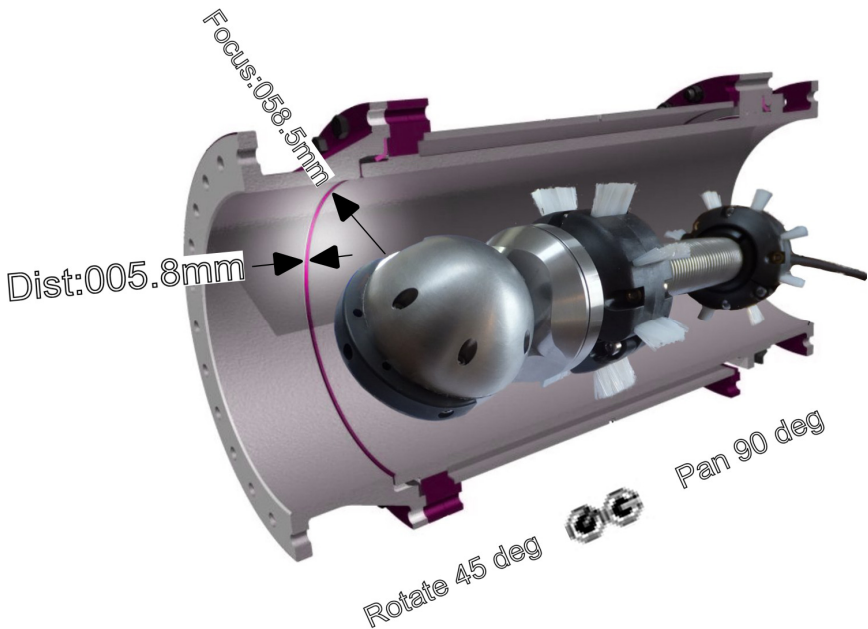




USER MANUAL – Digital Lens Measurements Making Accurate Measurements



QUICK START GUIDE 1



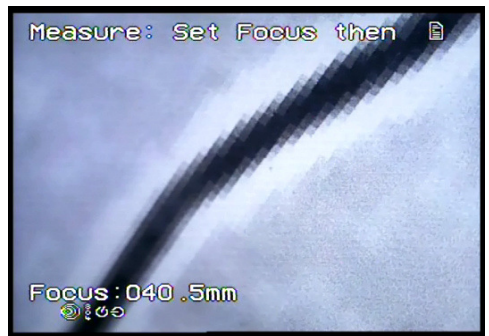
1) Push the camera to get as close as possible to the defect - start recording



2) Pan the camera to face the defect



3) Press '0' to start the measurement



4) Focus accurately on the defect



5) Press TEXT key to select the first marker



6) Use the controls ringed above to move the first marker

QUICK START GUIDE 2



7) Move the first marker to the point at which to start the measurement



8) Press TEXT key to select the second marker



9) Use the controls ringed above to move the second marker



10) The final measurement will be shown on-screen and saved to flash



11) Press TEXT key to end the measurement



12) Press 'CENTRE' to aim the camera down the pipe and automatically re-focus

PAN & TILT MIMICS

Using the Pan & Tilt Mimics:

The Digital Lens Measurement software includes two mimics that show which part of the pipe is being viewed. The Pan & Tilt camera uses an inclinometer to ensure that the mimics are accurate and measured against ground-level.

There are two mimics for the Pan & Tilt head as seen to the right here. These appear (along with the Troglotech T804 Logo) at the bottom-left of the picture and are recorded onto flash-card along with the video stream so that the camera orientation can be checked when reviewing the survey.



The right-hand mimic shows the Pan orientation as though the camera was viewed from above. The mimic is showing that the camera is pointing towards the right-hand side of the pipe at an angle of around 90 degrees from straight ahead. When measuring defects on the side of the pipe this angle is perfect for accuracy.



The left-hand mimic shows the Rotate orientation as though the camera was viewed from behind. It always shows the pipe section being viewed in relation to ground-level no matter how the camera is moved.

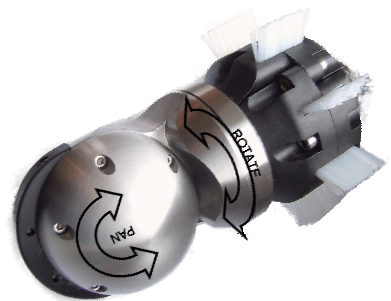


The Rotate mimic will show a cross in the middle if the camera is looking straight ahead or straight behind. The picture to the right shows that the camera is pointing directly forwards and the picture is upright.



If the Pan is facing forwards, operating the Rotate will make no difference to the picture as the 'Human Perspective View' always keeps the picture upright in respect to ground-level even though the camera head is rotating.

The following pages shows some examples of how the mimics show the real-world orientation of the camera head. The picture to the right defines 'Pan' and 'Rotate'



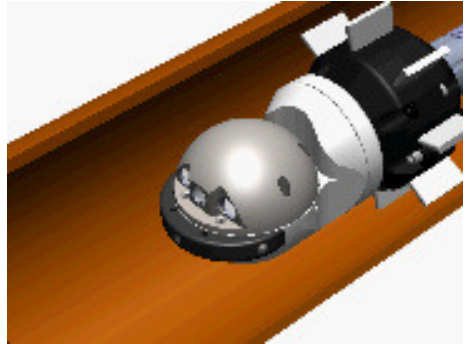
PAN & TILT MIMICS

Using the Pan & Tilt Mimics:



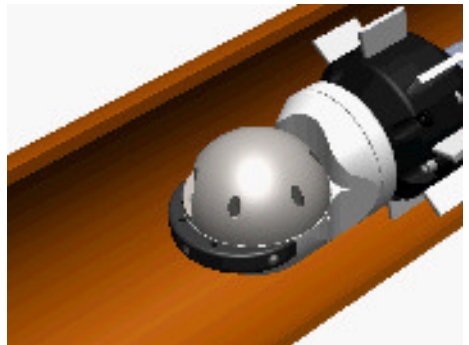
The camera is facing directly forwards and viewing straight down the pipe.

The camera will automatically move to this position when the 'centre' button is pressed. The video picture will be upright in respect to ground level



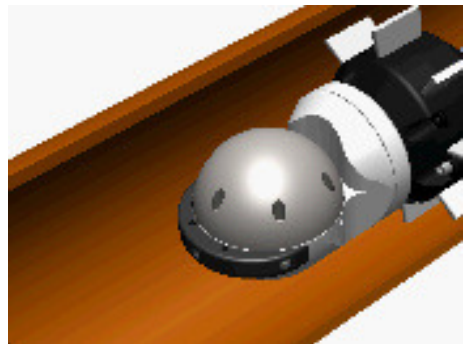
The camera has been panned 45 degrees to the right.

The Rotate mimic shows that we are viewing the right-hand side of the pipe and the Pan mimic shows that the camera is panned to 45 degrees. The picture will show an oblique view of the pipe



The camera has been panned 90 degrees to the right.

The Rotate mimic shows that we are viewing the right-hand side of the pipe and the Pan mimic shows that the camera is panned to 90 degrees



PAN & TILT MIMICS

Using the Pan & Tilt Mimics:



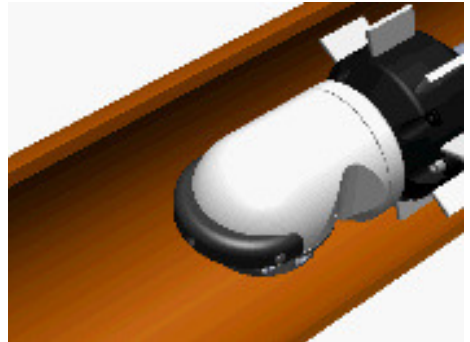
The camera has been rotated anti-clockwise to view the top of the pipe.

The Rotate mimic shows that we are viewing directly upwards
The Pan mimic shows that it is at 90 degrees and directly facing the pipe wall



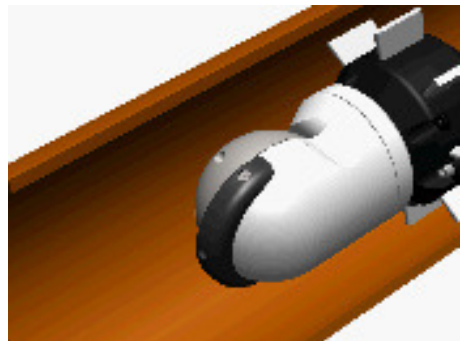
The camera has been rotated anti-clockwise to view the left of the pipe

The Rotate mimic shows that we are viewing the left-hand side of the pipe
The Pan mimic shows that it is at 90 degrees and directly facing the pipe wall



The camera has been rotated a further 90 degrees to view the bottom of the pipe.

The Rotate mimic shows that the camera is viewing the bottom of the pipe. The Pan mimic shows that it is at 90 degrees and directly facing the bottom of the pipe

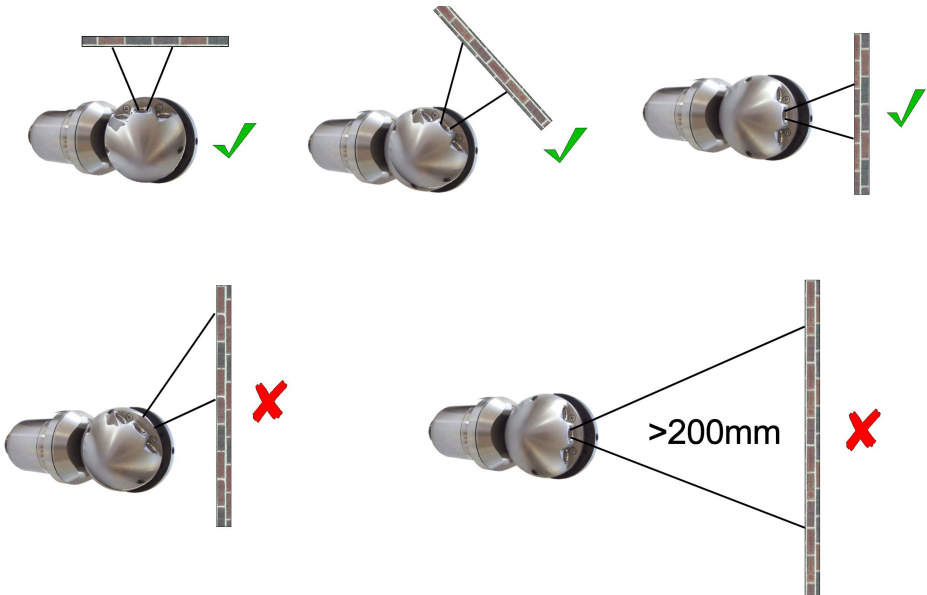


MAKING ACCURATE MEASUREMENTS

Making accurate measurements

The Digital Lens Measurement system is capable of high-precision measurements but errors can be introduced if the system is used incorrectly. There are a few rules that will increase the accuracy of the system:

- Position the Pan & Tilt camera so that the defect can be viewed flat to the lens as shown in the first three pictures below:



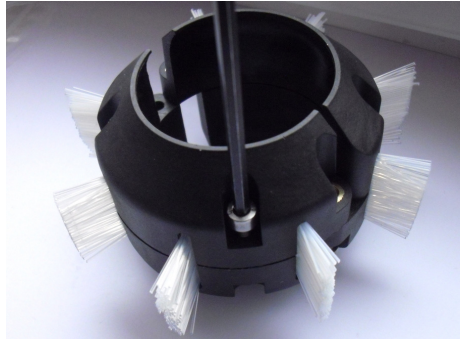
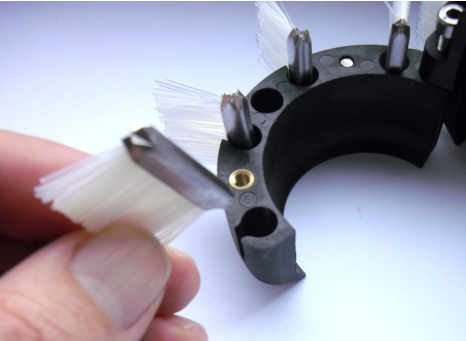
- Focus accurately on the defect, watch the screen so that the defect is shown as sharply as possible.
- Position the camera as close as possible to the defect, the closer the object is (to a minimum of 30mm) the more accurate the measurement will be
- Measurements taken at an angle (as seen in picture 4) will be less accurate. Measurements cannot be taken at a distance of more than 200mm of the camera (picture 5)

FITTING BRUSH SKID SET

Fitting Brush Skids

The T812 must always be used with the full skid set, whether or not the brushes are fitted. Using the T812 without skids may damage the camera.

The Troglotech skids can be adjusted from 3" (no brushes fitted), through 4" to 6" by selecting from the two brush sizes.



TECHNICAL SPECIFICATIONS

Mechanical

- Full Diameter Length 81mm
- Overall Length 97mm (149mm with rod adaptor)
- Diameter 60mm
- Material 300 series stainless steel
- Connector Various
- Weight TBA
- Rotate travel 360° Continuous
- Pan/Tilt travel 360° Continuous (285° useable)

Electrical

- Voltage 14.8v (head only) 24v(with rod adaptor)
- Consumption 13 watts
- Output Composite video
- Lighting 10 watts high power LED

Sensor

- Sensor “Digital Clarity” CMOS ¼”
- Pixels 640 x 480
- Sensitivity Better than 1 lux
- Horizontal Resolution 350 TVL lines per picture height

Lens

- Focal Length 5.1mm
- Angle of view 57° diagonal
- Iris Control Fixed iris, auto electronic shutter
- Focus range 20mm to ∞

Temperature

-20°C to +85°C (Storage)
0°C to +50°C (Operating)

Bump

(Environmental Testing Bump)

EN 60068-2-29

Sealing

IP68 11 Bar (160psi)

EMC

EN61000-6-4:2001 (Emissions)
EN61000-6-2:1999 (Immunity)



TECHNICAL SPECIFICATION

