



# FoamDDI

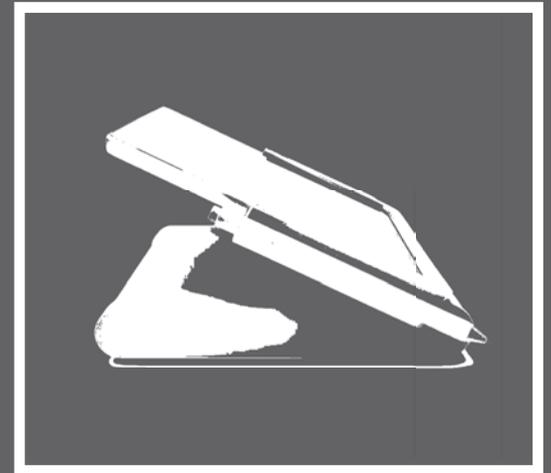
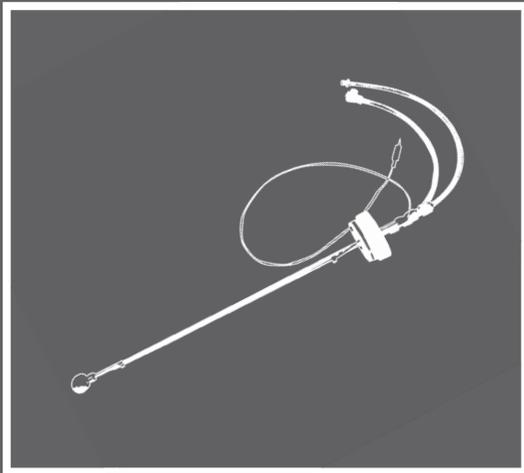
Foam Digital Detection Imaging



## Foam Digital Detection Imaging

Contamination products with strong surface tension and entrained air can create bubbles and foam. This phenomenon possess adverse effects in machinery and lubricants. Issues such as incomplete oil films, low oil pressures, accelerated oil degradation and additive depletion are all symptoms of high foam tendency, which can produce metal wear, inadequate lubrication, cavitation in pumps and mechanical failures.

Standard Test Method ASTM D892 was developed to determine the foaming characteristics of lubricants oils, by empirically rating their foaming tendency and foam stability. D892 determines a lubricant's ability to resist foam formation and dissipate foam creation. However, measuring foam heights is a challenge, as it relies on the human "eye" to measure foam heights which introduces significant and biased human errors causing poor repeatability and reproducibility.



The FOAM Digital Detection Imaging (FoamDDI) apparatus is unique in improving the determination of two of the most important performance parameters of lubricants: The Tendency to foam and the Stability of it. FoamDDI accurately controls the air flow, temperature and sequence, which is then augmented using a unique VISION algorithm to accurately determine the height of static and dynamic foam, while greatly improving the precision and accuracy.

## Principle

The all new patent-pending FoamDDI eliminates the need for sample manipulation and critical timing involved with manual foam height determinations. Using a patent pending heating and cooling system with a vision algorithm and automation, the FoamDDI, records, calculates and displays accurate results with little to no operation bias determinations in minutes!

## The FoamDDI Method

Foam digital detection imaging method is a simplified process requiring minimal steps that effect maximum efficiency and accuracy:

Step 1: Decant approximately 200 mL of the lubricant into the 1000 ML cylinder

Step 2: Bring it to the desired temperature and diffuse air following D892

Step 3: LED light source is automatically activated and regulated

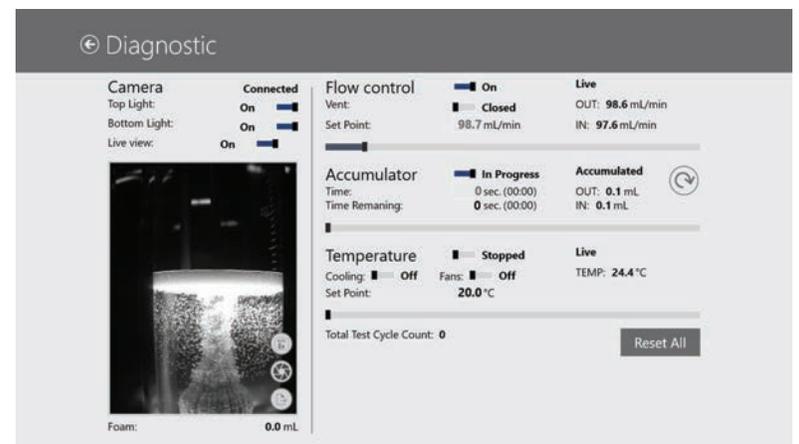
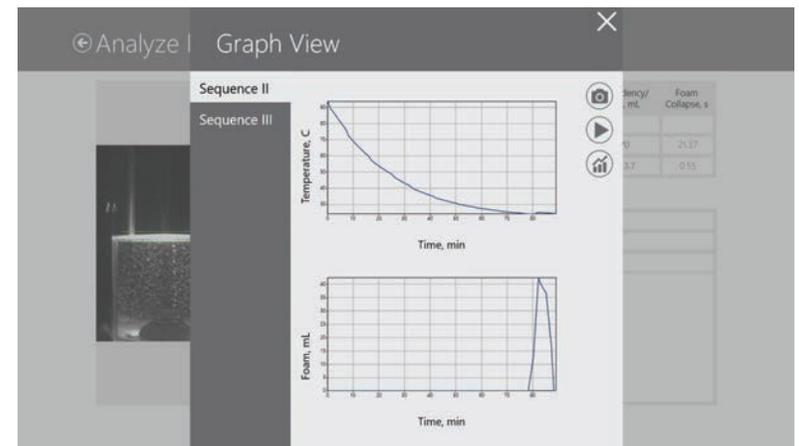
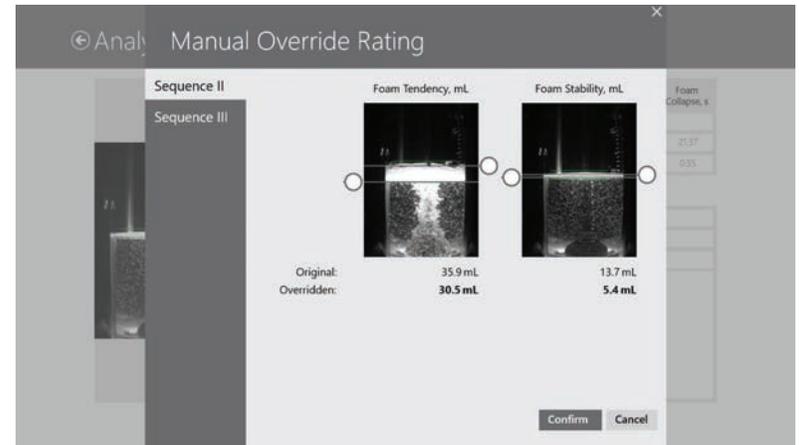
Step 4: Software identifies dimensional data

Step 5: VISION algorithm is activated and begins analysis

Step 6 Readings are tabulated and processed through FoamDDI algorithm

Step 7: Final results are displayed on a high-resolution touch screen

Final Results are Clear, Concise and Cutting-Edge.



## A Better Rating

FoamDDI's improvements over current test rating output and analysis include:

- Easy to Use Touch Screen Driven Software
- 1-2-3 Button Operation!
- Logs digital image and video for manual review
- Integrated Industrial Computer for Easy Interface with Network
- Direct LIMS Connectivity
- USB, Ethernet and HDMI Outputs
- Stores Results for Transfer to PDF reports & Email

## A Better Method

FoamDDI's improvements over current test procedures and end results include:

- Small foot print with integrated heating and cooling
- Automatic Detection of proper fill volume
- Graphing of FOAM and Temperature
- Ability to measure both Static and Dynamic Bubbles
- Long Lasting LED Light Source

## A Better Sample handling

FoamDDI's improvements over current test sample handling and errors include:

- Single module for both heating and cooling
- Less manual manipulation of sample
- Innovated Teflon Stopper for superior sealing
- Integrated temperature sensor.
- Integrated Mass Flow Totalizer for exit air



## Technical Specifications

Applicable Test Methods	ASTM D892, D6082 IP 146, BS 2000 Part 156, FTM 791 3211, ISO 6247
Operational Mode	Sequences 1, 2, 3 & 4
Display Units	mL Foam, Temperature °C, Time min., Foam collapse rate seconds. Flow mL/min
Detection Method	Patent Pending CCD Digital Detection
Precision	+/- 0.27mL Foam, +/- 0.1°C
Optical Design	Patent Pending Optical Arrangement
Light Source	LED Red (600nm)
Measuring Time	Method and sequence dependent
Calibration	Temperature and Flow calibrations with probes and flowmeters
Display	10.1" Projective Capacitance Touch (Multi Touch)
Operating System	Modern Embedded Windows 10
Interface	Ethernet x2, USB 3.0 x1, USB 2.0 x4, HDMI, VGA Serial, USB Printer, USB Mouse, Keyboard
Memory / Storage	64 GB SSD Storage
Temperature Range	Capability 20° to 165° C(+/-0.1°) - Requires ambient temperature 15° to 25° C for proper operation
Humidity	Up to 85% Non-Condensing
Power Requirements	FoamDDI: 110/120VAC, 50/60Hz 3.2A or 220/230VAC 50/60 Hz 1.6A, IPC Logic Control Box: Auto-switching 90~264VAC, 47~63Hz, 280 Watt power Supply
Materials Requirements	40 psi Instrumental Grade air
Space Requirements	Sides 1", Back 6"
Dimensions (W x D x H) mm (inches)	FoamDDI: 470x180x725 (18.5"x7"x28.5") IPC Logic Control Box: 304x254x152 (12x10x6") FoamDDI: Weight 10Kg. (22lbs.)

FULL SPECS AND OPTIONS AVAILABLE AT [WWW.VISAYAINC.COM](http://WWW.VISAYAINC.COM)

## Accessories

### 1<sup>st</sup> Year

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FoamDDI - Graduated Cylinder with Glass Joint

PTFE Stopper & Temperature Sensor Assembly

Certified Cylindrical Gas Diffuser (Metal or Stone)

Teflon Sealing Washer - D892

Replacement Air Inlet Tube for FoamDDI

4 Position Test Cylinder Rack

Filter, Regulator and Dryer System for FoamDDI

Replacement Air Filters (Qty 2)

Automated Diffuser Stone Calibrator. Automated diffuser stone calibrator

### 2<sup>nd</sup> Year

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FoamDDI - Graduated Cylinder with Glass Joint

PTFE Stopper & Temperature Sensor Assembly

Certified Cylindrical Gas Diffuser (Metal or Stone)

Teflon Sealing Washer - D892

Replacement Air Filters (Qty 2)

# VISAYA Products

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## AgDDI Silver Digital Detection Imaging

AgDDI provides standardization to the current visual determination as referred in ASTM D7667, ASTM D7671 and gasoline fuel specification ASTM D4814 while using a four-step automated vision algorithm and classification process to eliminate user bias.

## CuDDI Copper Digital Detection Imaging

CuDDI's simplified, breakthrough procedure provides improved ratings, methodology and sample handling to ASTM D130. Using a corrosion detection range of 1a through 4C, outcomes are digitally recorded and seamlessly integrate with LIMS software.

## FeDDI Iron/Rust Digital Detection Imaging

FeDDI provides a complete automated method, which replaces the inherently difficult visual quantification referenced in NACE TM0172, ASTM D665 and ASTM D7548, while using a four-step automated vision algorithm and classification process to eliminate user bias and provide repeatable results.

## FoamDDI Foam Digital Detection Imaging

FoamDDI accurately controls the air flow, temperature and sequence, which is then augmented using a unique VISION algorithm to accurately determine the height of static and dynamic foam heights, while greatly improving the precision and accuracy of ASTM D892.

VISAYA



Ask for a Demo Today:  
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