

CSI 5200 Machinery Health™ Oil Analyzer



The CSI 5200 allows for onsite testing of machinery oils and lubricants.

- *Comprehensive coverage of chemistry contamination and wear eliminates the need for multiple analyzers and constant off-site testing*
- *More accurate results and easier diagnosis*
- *Save steps for Wear Debris Analysis with integrated method of patch preparation*
- *Covered by ASTM Standard Practice ASTM D7416-08*

Overview

Unseen corrosion, contaminants, improper lubrication, and machine wear are a primary root cause of equipment failure. Testing machinery lubricants is a necessity but sending samples to an offsite laboratory can sometimes prove to be untimely and inefficient.

The CSI 5200 Machinery Health Oil Analyzer is a multi-functional analyzer that is uniquely capable of detecting most lubricant-related problems in gears, pumps, compressors, turbines, engines, hydraulics, and process machinery. The CSI 5200 allows you to test oils and lubricants onsite, eliminating the need to send samples to an offsite lab. This time-saving method delivers results efficiently and effectively.



The CSI 5200 is part of a complete minilab system that provides comprehensive oil analysis results.

Precise Wear Debris Analysis in less time

The CSI 5200 measures chemistry changes by comparing the dielectric of new and used oil samples. This process enhances Emerson's method of ferrous/non-ferrous separation through increased sensitivity to small particles. The CSI 5200 adds laser particle counting using a specialized method of delivering sample fluid that decreases the chance of missing larger particles as they settle. Wear debris analysis is made faster and easier with the ability to isolate ferrous, non-ferrous, large and small particles onto separate filter patches.

Color-coded LEDs and onscreen instructions prompt you through each step of the test sequence eliminating the possibility of skipping a step. Results are delivered in approximately eight minutes. Recorded data can then be viewed and analyzed in AMS Suite: Machinery Health Manager. AMS Machinery Manager diagnoses and communicates the health of mechanical and rotating machinery using data from several predictive maintenance technologies. The result

is a comprehensive view of each monitored machine and a more accurate diagnosis when developing problems are discovered.

Part of a Complete System

The CSI 5200 is part of a complete minilab system. The minilab provides comprehensive oil analysis results including particle count, parts per million distribution, ISO codes, ferrous density, oil chemistry, water-in-oil, viscosity, and detailed wear debris analysis. Along with the CSI 5200, the minilab contains the 52DV Digital Viscometer, the 52ZM Stereo Zoom Microscope, the 51CV Camera Video Capture kit, and AMS Machinery Manager.

ASTM D7416-08

The CSI 5200 Machinery Health Oil Analyzer is covered by ASTM Standard Practice ASTM D7416- 08. This ASTM Standard Practice ensures that users can follow standardized operating guidelines for repeatable results. The standard also describes the CSI 52DV Digital Viscometer, the CSI 52LM Lab Microscope, and AMS Machinery Manager software.

Specifications

Physical Dimensions

- Depth: 14.25 in (36.2 cm)
- Height: 17.87 in (45.4 cm)
- Width: 17.25 in (43.8 cm)
- Weight: 27.7 lbs (12.5 kg)

Power Supply

- 100-240 VAC, 6 A, 47-63 Hz input
- 15V DC, 7.5 A output

Interface

- Buttons located on the front panel of the CSI 5200 and simulated in the software control testing
- 9-pin sub-D cable to computers via RS-232C interface (cable provided with unit)
- Special 15 pin sub-D port for Digital Viscometer
- One 9 pin sub-D interface to electronic balance
- 9600 baud communication
- Multiple front panel LEDs indicate test status
- Two drain ports for output to waste containers

Solvent

A suitable solvent must be obtained for dilution and cleaning purposes. Extra pure lamp oil (such as clean low-odor kerosene) is inexpensive, widely available, and works well for most samples. Heptane is recommended for use when making filter patches, but mineral spirits can also be used. Isopropyl alcohol can be added to any of these to help deal with water contamination for test '3' and for making filter patches.

Outputs

Trivector plot summarizes wear, chemistry and contamination alarm status in both the software and on the face of the instrument with colored LEDs.

Chemistry:

- Chemistry Index - Lube degradation
- Dielectric - Absolute measurement of dielectric

Contamination:

- Contamination Index - Water and gross particle contamination
- Large non-ferrous indications
Non-ferrous particles > 60 microns
- Droplet indications - Free water droplets or other corrosive fluid droplets

Estimated water content:

- Percent total water content of the sample

Particle Count:

- ISO 4406 and Extended NAS 1638 Cleanliness Codes
- Particle distribution in parts per million (ppm): >4 µm, 4 to 6 µm, 4 to 14 µm, and >14 µm

Machine Wear:

- Ferrous Index - Ferrous particles > 5 µm
- Large ferrous indication - Ferrous particles > 60 µm

Wear Debris Analysis Filter Patches:

- Large Ferrous Particles
- Small Ferrous Particles
- Large Non-ferrous Particles
- Small Non-ferrous Particles

Hardware Conditions

- Storage: 32-120° F (0-50° C)
- Operation: 59-86° F (15-30° C), temperature constant within ± 5° F (3° C)
- Sample Prep and Test Time: about 8 minutes
- Sample Volume: about 50 ml is required (1/2 of a standard 4 oz. bottle)
- Lube types: all industrial lubricants
- Cleaning: flush using kerosene or lamp oil
- Calibration: Calibration of test 1 and 2 must be verified weekly with Emerson supplied calibration fluids

Ordering Information

| Part Number | Product Description |
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| Standard Accessories (Included with the CSI 5200) | |
| A5200TV | CSI 5200 Machinery Health Oil Analyzer |
| MHM-93030 or MHM-93038 | Electronic scale with RS232 interface for measuring dilution ratio |
| MHM-92610 | Pump for drawing samples from unpressurized systems |
| MHM-10647 | Polyethylene wash bottle for dispensing kerosene or other solvent |
| MHM-99519 | 1000 ml glass beaker for dilutions |
| MHM-99528 | Handheld magnetic retriever with sleeve (A5051MR-1) for separating ferrous/non-ferrous particles |
| MHM-92642 | Forceps for holding filter patch |
| B5051WC | Waste container system |
| MHM-10603 | Swabs |
| MHM-10605 | 10ml syringes |
| MHM-10610 | 30ml syringes |
| A50053 | Calibration fluids |
| MHM-92079 | Polyethylene tubing |
| MHM-92631 | 5 micron filter patches |
| MHM-10698 | Clear plastic sample bottles |
| A5051VP-DM or A5051VP-IN | Vacuum pump |

| Part Number | Product Description |
|-----------------------------|--|
| Required Accessories | |
| A475100 | AMS Machinery Manager OilView Minilab Module |

| Part Number | Product Description |
|--------------------------------|--|
| Recommended Accessories | |
| A0052DV | CSI 52DV Digital Viscometer |
| A510050 | Digital Viscometer calibration fluids |
| A5052ZM-DM or A5052ZM-IN | CSI 52LM Lab Microscope |
| A52XGA-USB | CSI 51CV Wear Debris Image Capture Kit |
| A475103 | Wear Debris Analysis Module software |
| A475101 | AMS Suite: Machinery Health Manager OilView LIMS (Lab Information Management Software) |
| CSI 5200 INSTALL | Tribology Program Startup Service |

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