



Test Monitoring Center

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Sequence VH Information Letter 24-4
Sequence Number 10
September 12, 2024

ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.

TO: Sequence V Surveillance Panel

SUBJECT: 1. Updated Part Numbers for Ring Grinder Burr and Honing Brushes.
2. Specified Surface Finish Analyzer and Analyzer Mounting Bracket.
3. Reporting Final Sludge and Varnish Results Greater than 10.0
4. Addition of Fuel Rail Temperature as a Non-controlled Parameter

During the July 11, 2024, Sequence V Surveillance Panel conference call, the panel agreed to the following procedure changes and/or updates:

- 1) The part numbers for the burr used for the piston ring cutting device and the brushes used for plateau honing have changed. Sections 7.8.4.1 (5) and Footnote 21 have been revised to include these part numbers. Section A12.2 has also been updated to show OHT as the supplier of the honing brushes.
- 2) Recently, it was noted that with the application of severity adjustments, some sludge and varnish results may adjust beyond the upper limit of the scale of 10.0. Sections 13.2.2.4 and 13.3.2.3 Have been added to require final adjusted results greater than 10.0 be reported as 10.0

As the result of a recent eballot the panel agreed to the following changes/additions to the VH test method:

- 3) The panel agreed to specify a surface finish analyzer and mounting fixture to properly orient the surface analyzer. Section 7.8.4 has been modified, new section 7.8.4.1 (6) and footnote 22, as well as Annex A17 have been added to address the required surface finish analyzer and its proper use.

During the September 5, 2024, conference call the panel agreed to the following change to the Sequence VH test method:

- 4) The panel agreed to add Fuel Rail Temperature as a non-controlled parameter. Section 9.1.8 has been revised to show and locate this thermocouple and existing section 9.1.8 has been renumbered as 9.1.9

Revised sections 7.8.4, 7.8.4.1, 7.8.5.2 (5), Footnote 21 and A12.2 and new sections 7.8.5.2 (6), 9.1.9 13.2.2.4, 13.3.2.3, new footnote 22 and Annex A17 are attached. These changes are effective upon the issuance of this information letter. Revised section 9.1.8 and new section 9.1.9 may be used any time before October 31, 2024 but must be implemented by October 31, 2024

/s/ M. D. Deegan

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Attachment

c: https://www.astmtmc.org/ftp/docs/gas/sequencev/procedure_and_ils/Sequence%20VH/il24-4-vh.pdf

Distribution: Email

Revises D8256-24a

7.8.4 Block Preparations—Inspect block, including oil galleries for debris and rust. Remove any debris or rust that is found. Remove oil gallery plugs. Removal of coolant jacket plugs is left to the discretion of the laboratory. Enlarge the chamfers around the top of the cylinder bore. Spray the block with degreasing solvent (see 7.7.1). Spray block with a 50/50 mixture of degreasing solvent (see 7.7.1) and EF-411.^{19,13}

Use stress plates, modified by drilling and tapping holes to mount the surface finish analyzer fixture (See A17.1) Install the stress plates with cylinder head fasteners and torque to 37 N·m to 43 N·m with an additional 180° in two 90° rotation increments. Head bolts may be used for a maximum of five times. Install the main bearing caps and torque to 40 N·m, with an additional 90° rotation. Install the jackscrews and torque to 8 N·m to 11 N·m.

7.8.4.1 Honing:

(5) Install a plateau hone brush, **OHT OHT3G-096-1 (available from the supplier in A12.2)**, and hone at 25 to 30 units of pressure to obtain a **Ra** surface finish of 8 µin. to 13 µin. Typically 45 strokes have provided acceptable results. Perform all surface finish measurements with the torque plates in place.

(6) Perform surface finish measurements using a Mitutoyo SJ-410 Surface Analyzer²² with 1 µm stylus . Use a modified GMOD mounting bracket to properly align the measuring device. Take surface measurements approximately 30mm from the top of the cylinder wall (head gasket mating surface). Details for analyzer set up and mounting are shown in Appendix A17.

Renumber existing (6) and (7) as (7) and (8)

²¹ ~~The sole source of supply of the 3/16 in. carbide ring cutting burr, No. 74010020 known to the committee at this time is M. A. Ford-Monster Tool bit SA-81 CYL S/C ring cutting burr is available from most tool suppliers.~~

New footnote 22

²² Mitutoyo SJ-410 Surface Analyzer is available from most tool suppliers.

Renumber existing footnote 22-24 as 23 – 25.

9.1.8 Fuel Rail temperature —Insert the thermocouple into the center of a tee or cross fitting and locate it within 600 mm from the OEM fuel rail connection.

9.1.9 Calibration—Calibrate all thermocouples prior to a reference oil test. All measurement devices used for sensing temperature shall meet the minimum requirements as outlined in the DACA II reports and also conform to total system response requirements as outlined by the TMC.

13.2.2.4 The Special Case of the Sludge Result(s) Being Greater than 10.0—In this case, record 10.0 as the sludge result for the EOT result on Form 4 and note in the comment section that the final adjusted result was greater than 10.0.

13.3.2.3 The Special Case of the Sludge Result(s) Being Greater than 10.0—In this case, record 10.0 as the sludge result for the EOT result on Form 4 and note in the comment section that the final adjusted result was greater than 10.0.

A12.2 Various Materials:

RAC kits

Camshaft baffles

Oil filter housing, Modified Racor oil filter

Oil screen, LFS-6028WCF

Oil filter adapters

Dipstick assembly with tube

Oil pan and baffles

Oil Pan Insulation

Flywheel

EEC-IV flashed with special test calibration

Factory wire harnesses (if used, must be modified as shown
in 7.10.9)

Blowby measurement orifice plates and tubes

Plateau honing brushes

Are available from the following supplier:

OH Technologies

9300 Progress Pkwy.

Mentor, OH 44060

A17 Surface Finish Analyzer Set Up and Holding Fixture

A17.1 Mitutoyo Model SJ-410 Specifications:

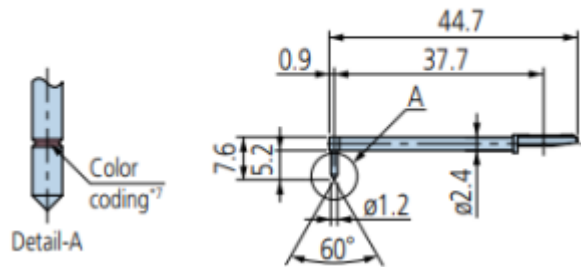
Manufacturer: Mitutoyo

Model: SJ-410

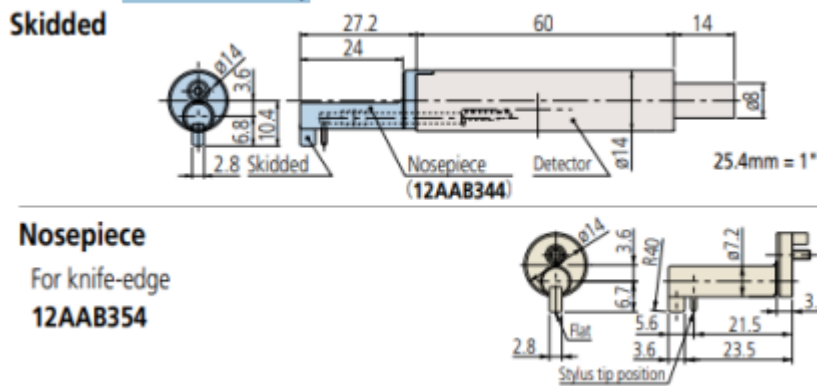
Hand tool: SJ-411 = 1" drag

Touch Screen Display: SJ-410

Stylus: (Part # 12AAE882) 1 um



Detector and Nose Piece: Skidded detector and knife-edge Nosepiece (Part #12AAB354)



A17.1.1 Configuration:

Analyzer type: Surface Roughness Measurement

Measurement principle: Contact Stylus Method (Skidded)

A17.1.2 Analyzer settings:

Measurement Units: um, mm, Inch

Calibration requirements: Regular Calibration As per Procedure using the Included Roughness Specimen W.

A17.1.3 Software and Filtering:

Software Version: Mitutoyo Proprietary software

Description of Software filtering: A GAUSS or Gaussian filter

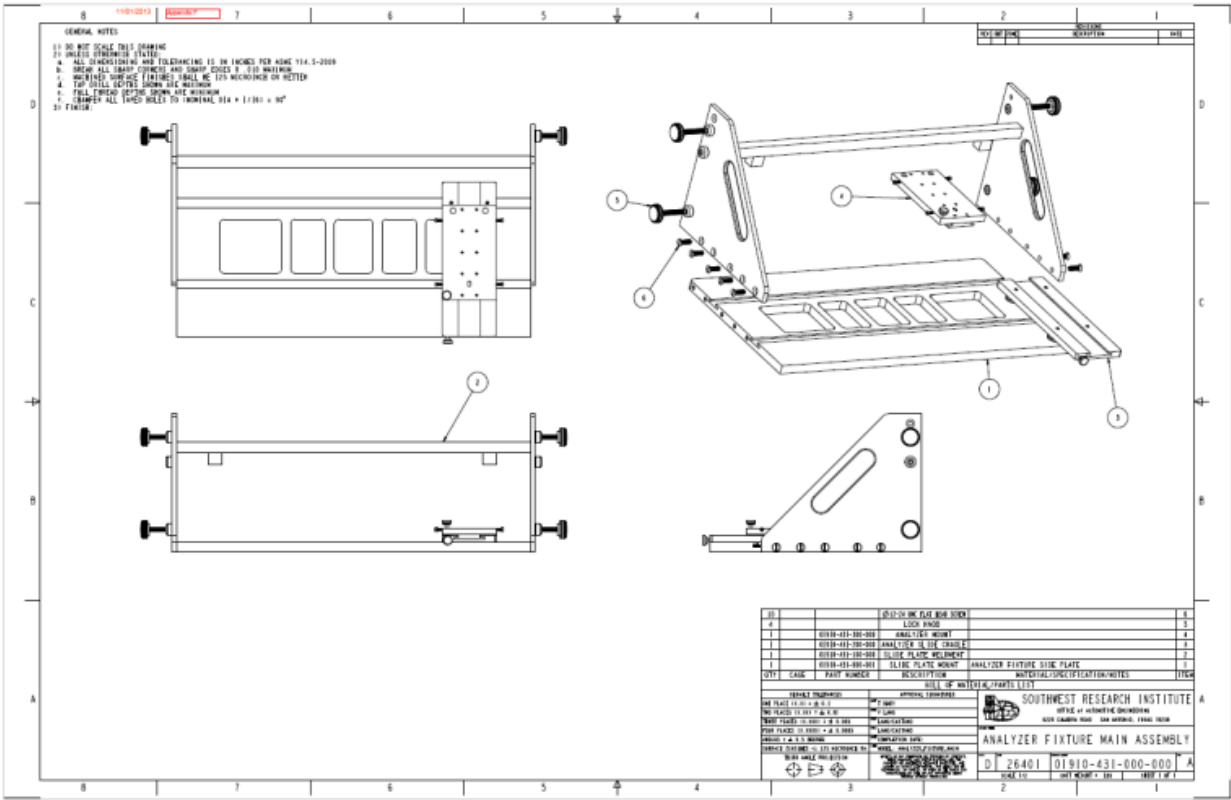


Fig A17.1 Surface Finish Analyzer Mounting Fixture



Fig A17.2 Modifications to Surface Finish Mounting Fixture