**icountACM20 Lab Unit**

*Aviation Fuel Contamination Monitoring*

Note: For information on icountPD for aviation fuels see page 369

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**A unique product with pedigree**

**DEFSTAN 91-91 Issue 6 Jet A-1 Fuel Specification, adopts particle counting.**

Development work carried out by the CMC engineers, in conjunction with Exxon Mobil Aviation, highlighted the need for an alternative test method to determine the levels of dispersed contamination in Jet fuel. 5 years of field testing and development of the already established and successful icountCM20 Hydraulic Laser Particle Counter saw the introduction of the Parker icountACM20 with enhanced software providing the user with a better understanding of the contamination present in a sample. As the benchmark particle counter for use in measuring the levels of contamination in fuels, the icountACM20, as per the UK’s Energy Institute Test Method IP564, has now been included in the DEFSTAN 91-91 Issue 6 Jet Fuel Specification as a report only test alongside the current Gravimetric test method (IP423 or ASTM D5452) and Clear & Bright Visual test method (IP216 or ASTM D2276).

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**Contact Information:**

Parker Hannifin
Hydraulic Filter Division Europe

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**Product Features:**

- Energy Institute Test Method IP 564.
- 2-minute test procedure.
- Fully manufactured by Parker with 20 years experience in the Particle Counter Measuring market.
- Laser optical scanning analysis.
- Multi-standard ISO cleanliness reporting.
- On-board, rear-mounted pump enables monitoring possibilities. For example: Fuel storage/vehicle tanks and fuel storage drums.
- Latest averaging software as standard.
- Downloader software.
icountACM20 Lab Unit
Aviation Fuel Contamination Monitoring

Features & Benefits

Test Time:
2 minutes

Repeat Test Time:
Every 2 minutes (Manual testing), every 6 minutes (automatic)

Principle of Operation:
Optical scanning analysis and measurement of actual particles and inference to water presence

Primary Output:
≥4µ(c), ≥8µ(c), ≥14µ(c), ≥21µ(c), ≥25µ(c), ≥30µ(c) counts per ml

Secondary Diagnostic Output:
% Volume Distribution, via graphical display on handset and printout

International codes:
ISO 7-22 in accordance with ISO 4406-1999

Data entry:
32 character two line dot matrix LCD. Full alpha numeric entry facility on keypad

Data retrieval:
Memory access gives test search facility for up to 300 saved tests

Calibration:
In accordance with Parker Calibration Procedure CM20-N, which complies to ISO11171:1999, Clause 6 (Omitting Annex F)

Re-calibration:
Every 12 months by a dedicated Parker Service Centre (Consult Parker) as required under strict EI methods

Max. working pressure:
420 bar

Operating Temperature:
+5°C to +30°C

Memory store:
300 test capacity

Computer compatibility:
Interface via RS 232 connection @ 9600 baud rate (USB serial cable to RS232 option available)

Laboratory sampling:
Utilizes on-board rear mounted pump

Portability:
Only 8 kg, icount ACM20 has its own battery pack and carry case with wheels 13kg total weight

Power requirement:
12VDC input, 6 x 'D' Cell batteries or rechargeable battery pack

Printer facility:
Integral 16 column printer for hard copy data

Certification:
Complies with all relevant EC declarations of conformity

icount ACM20 Case Mounted Pump
- Integrated Pump assembly incorporated onto the ACM20 unit.
- Powered directly from ACM20 unit, LED power indication with no additional power supplies required.
- Direct sampling from fuel sample bottles or tank via 3 metre inlet suction tube.
- Incorporated double speed flush and test sequence.
- Managed flow rate/correct volume sample as per IP 564 test method.

FACT: icountACM20 is fully compliant with the EI (Energy Institute) test method

Applications

The Parker icountACM20 Portable Particle Counter has been developed from existing technology for monitoring contamination in AvTur and other hydrocarbon fuels, in accordance with the Energy Institute (EI) Method IP 564.

In addition, the ACM can also be used to monitor various fuels from existing sampling points in locations from refineries, pipelines, distribution terminals, airport fuel supply systems all the way through to the point of uplift into aircraft*.

* Hot works permit required for online sampling (ATEX Zone 2 unit available). Page 14.

• Fuel Testing Laboratories – DEFSTAN 91-91 Issue 6
  In order to better understand dispersed contamination in jet fuel, particle counting is now included alongside existing laboratory techniques

• Bottle Sampling - Energy Institute (EI) - IP 564
  Laboratory determination of the level of dispersed contamination in aviation kerosine using an Automatic Particle Counter (APC)

• Replace Clear & Bright and Gravimetric
  With the introduction of the icount ACM20, all subjectivity surrounding Clear & Bright and Gravimetric methods can be removed

• Also for use on petroleum based hydraulic applications (Skydrol compatible available)
  Suitable for use with mineral oil and petroleum based fluid as per standard hydraulic particle counter, reporting fluid cleanliness to ISO 4406:1999

Parker Hannifin
Hydraulic Filter Division Europe
FDH@650UK
Specification

Construction:
ABS structural foam and injection moulded case
Hand-held display - ABS
Keypad fluoro silicone rubber

Mechanical Components:
Brass, plated steel, stainless steel and aluminium

Seals:
Fluorocarbon

Hoses:
Nylon (Kevlar braided microbore), St. steel armoured ends

Flow Rate:
25 - 28ml/min (dictated by CMP) 100ml/min with additional flush button

Fluid Compatability:
Hydrocarbon Fuel, Mineral Oil. For other fluids consult Parker

Fuse:
1.25 amp fast blow fuse included for overload protection (spare supplied)

icountACM20 Technology:
Patented flow cell, light obscuration

Repeatability/Accuracy:
As per or better than ISO 11171

Ordering Information

Standard products table - icount ACM20

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<thead>
<tr>
<th>Product number</th>
<th>Supersedes</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACM202022UK</td>
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<td>icountACM20 (UK)</td>
</tr>
<tr>
<td>ACM202022US</td>
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<td>icountACM20 (US)</td>
</tr>
<tr>
<td>ACM202022EUR</td>
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<td>icountACM20 (EUR)</td>
</tr>
<tr>
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<td>icountACM20 with lab kit - UK (DEFSTAN 9191)</td>
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<tr>
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<td>icountACM20 with lab kit - US (DEFSTAN 9191)</td>
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<td>ACM202024EUR</td>
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<td>icountACM20 with lab kit - EURO (DEFSTAN 9191)</td>
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<td>B84794</td>
<td>1 meter process cable</td>
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<tr>
<td>ACC6NE019</td>
<td>B84816</td>
<td>ParSmart downloader software</td>
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<tr>
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<td>B84746</td>
<td>Vapour/waste bottle assembly</td>
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<tr>
<td>ACC6N021</td>
<td>B84745</td>
<td>Millipore kit</td>
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<td>ACC6N001</td>
<td>B84645</td>
<td>Millipore adaptor kit</td>
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<td>B84609</td>
<td>Re-chargeable battery pack</td>
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<td>P843702</td>
<td>Printer ribbon (x1)</td>
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Note 1: Part numbers featured with bold highlighted codes will ensure a ‘standard’ product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.
Note 3: Selected spare parts - for a full list contact Parker.
* Hot works permit required for online sampling.

Field Monitoring - icountACM202022

For use in non-hazardous areas, the icountACM202022 is designed for online sampling of hydrocarbon fuels and hydraulic systems, utilising existing “quick connect” sampling points such as the Millipore Adaptor.
DEFSTAN 91-91 Issue 6
Defence Standard 91-91 is the specification for aviation turbine fuel, which the United Kingdom Civil Aviation Authority (CAA) has agreed is under the technical authority of the Director of the Defence Fuels Group.

IP 564
Laboratory determination of the level of dispersed contamination in aviation kerosene using an Automatic Particle Counter (APC). This standard describes a method for determining the level of dispersed contamination in aviation kerosene fuels, specifically dirt particles and water droplets in the range from ≥4μ(c) to ≥30μ(c). This method relates specifically to Aviation fuels but the equipment can be used on all fuels, petroleum and mineral based fluids.

Note:
The mandatory implementation date for IP 564 test method “Determination of the level of cleanliness of aviation turbine fuel - laboratory automatic particle counter” is July 1st 2009. It is the specification authorities intention to replace current test methods with particle counting at the earliest opportunity.

IP 564 Procedure
Step 1
The apparatus shall be set up in accordance with Parker’s operating instructions.

Step 2
Test Portion Preparation:
Decant a minimum of 450ml of the field sample into a clean test portion container.

Step 3
Prior to starting a test, tumble the test portion end over end for 60 seconds to ensure any settled particles are redistributed.

Step 4
Turn on the Case Mounted Pump and flush for 60 seconds. Do not press the fast flush button. While flushing, enter the test identifier (see manual).

Step 5
Following the flush, start a test by turning the blue valve in the direction indicated. Perform a further 3 tests. (4 in total).