



Ransohoff

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5/21/08

Ransohoff Test Report # XXXX-09



Undisclosed Customer

Attn: Engineering Manager

Ransohoff Equipment: Lean-Jet RB-2

Subject Parts: Oil Engine Modules

We trust this test report meets with your requirements, however,
if you require any additional information, please call.

Matthew Baumet, Technical Center Process Engineer, (513) 870-1762



ISO-9001:2008
FN 64783



ISO-14001:2004
EMS 64508



A NM Group Global, LLC Company

Purpose:

- Determine if the Daimler Chrysler DBL 6516.10 cleanliness specification can be met using the Lean-Jet RB-2.

Parts and Equipment:

- Oil engine modules processed by Ransohoff for Company ABC, in our Lean-Jet RB-2.



Parts Tested



Lean-Jet RB-2

Lean- Jet RB-2	
Machine Type	Lean-Jet™ Rotary Basket Washer (RB-2)
Machine Serial Number	4538
Wash and Rinse Nozzles	(4) Spraying System 3/8 HU-SS-50120
Nozzle Flow Rate	48 gpm
Wash and Rinse Spray Pressure	40 psi
Line Rinse Nozzles	(5) Bex #F8008
Line Rinse Flow Rate	4 gpm
Eductors	(4) Bex #TOMP – 3/8
Eductor Flow Rate (Turbulation)	300 gpm
Blower Rating (Regenerative)	275 CFM @ 40" Static Pressure
Ultrasonic Specification	2000 watts @ 40kHz
Wash and Rinse Filters	50 micron bag filters

Process Parameters:

Lean-Jet RB-2	Test #1	Test #2
Wash Chemistry	5% Dubois Multi-Terj 2112 ES	5% Dubois Multi-Terj 2112 ES
Wash Temperature	140°F	140°F
Rinse Chemistry	3% Dubois Multi-Terj 2112 ES	3% Dubois Multi-Terj 2112 ES
Rinse Temperature	140°F	140°F
Blow Off Temperature	200 °F	200 °F
Turbulated Wash	120 sec	150 sec
Ultrasonic Wash	280 sec	320 sec
Open Air Wash	60 sec	30 sec
Tubulated Rinse	60 sec	30 sec
Ultrasonic Rinse	0	0
Open Air Rinse	60 sec	30 sec
Blow Off	90 sec	90 sec

- The parts were setup in the Lean-Jet RB-2 as shown below:



Results:

- After the cleaning processes, one part was cleanliness tested per Gravimetric / Millipore Cleanliness Procedure (WI-03-006). The solvent used was mineral spirits and the Millipore pad size was 5 microns. See below for the results.

Area	25-50 µm	50-100 µm	100-150 µm	150-200 µm	200-400 µm	400-600 µm	600-1000 µm	>1000 µm	Max Particle Size (µm)
Unfiltered Oil (Test#1)	619	356	94	36	32	2	1	0	602
Filtered Oil (Test #1)	199	110	25	9	10	2	1	0	681
Water Jacket (Test #1)	684	334	85	26	43	4	1	1	1131
Unfiltered Oil (Test #2)	475	247	72	19	28	0	1	0	615
Filtered Oil (Test #2)	63	22	4	5	5	1	0	0	459
Water Jacket (Test #2)	273	84	21	4	8	1	2	0	608

Conclusions:

- Upon review of the above results, it appears that test #2 did meet the cleanliness specification on the entire part. However, the unfiltered oil passage did contain one particle outside of the specification. With an ultrasonic rinse the particle sizes will be further reduced.
- Please note that the parts were not de-burred. This will contribute to the contaminant left on the part.

Please feel free to contact us with any further questions or concerns.

Sincerely,



Matthew Baumet
Applications Engineer – Technical Center
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