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VetScan HM5 Hematology System Advanced Hematology Five-Part Differential

The VetScan HM5 is a fully automated five-part cell counter offering a comprehensive 22-parameter complete blood count (CBC) with cellular histograms in just minutes. Its superior performance, elegant design, ease of use, true database management capability, and minimal maintenance make it the optimal hematology system for veterinary clinics, research laboratories, pharmaceutical and biotech companies.

Features & Benefits

- Five-part differential on cat, dog, horse, cow, alpaca and llama; three-part differential on the nine other species
- Full CBC analysis on 15 common species in your practice
- 22 parameters, including direct eosinophil counts and eosinophil percentage
- Provides convenient, in-house CBCs for even allergic and parasitic cases
- Small, space-saving, elegant design with large LCD display
- Fits on nearly every clinic counter
- Advanced, integrated self-cleaning system
- Minimal maintenance facilitated by software reminders and step-by-step instructions
- Stores 2,000 records in database with simplicity, flexibility and usability
- Easy database backup and access
- 50-microliter sample size
- Allows analysis of low-volume samples and replicate runs for small or young animals
- Highly accurate, reproducible results comparable to reference lab analyzers
- High confidence in results

- Integrates with common practice management systems
- Solutions available to fit with your lab workflow
- Eco-friendly, cyanide-free reagents
- Simplified reagent handling
- Contains pre-dilute mode for challenging samples
- Get results for concentrated or low-volume samples
- CD drive and USB ports
- Easy loading of software upgrades or archiving of data
- Three to four minutes to results
- Fast turnaround for each sample - run nearly 20 samples per hour in five-part mode

VetScan HM5 Specifications

Analyzer Dimensions	Height	36.5 cm (14 in)
	Width	32 cm (12.5 in)
	Depth	25 cm (10 in)
Weight	Analyzer	12 kg (26.5 lbs)
Power Requirements	100-240 volts AC, 50-60 Hz; or 12 volts DC	
Reported Parameters	22 parameters:	WBC, LYM, MON, NEU, BAS, EOS, LYM%, MON%, NEU%, EOS%, BAS%, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, MPV, PCT, PDW
Sample Size	50-microliters (5-part diff.) 25-microliters (3-part diff.)	

Simple Operation, Easy As 1-2-3



1 Enter information.

Enter patient information in the measurement screen.



2 Insert sample and press start.

Insert a well-mixed blood sample into the tube adapter and press start.

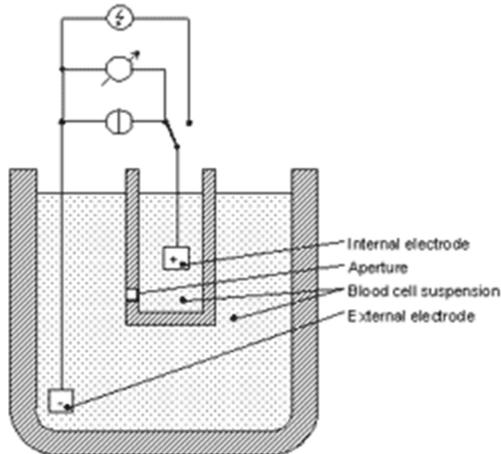


3 Read results.

The test results and three cellular histograms with parameter values will be displayed in just 2-3 minutes.

VetScan HM5 Technology

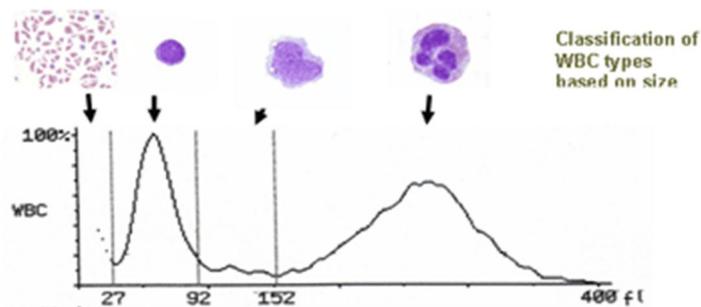
How it Works



The VetScan HM5 Hematology System produces accurate cell counts based on impedance technology. It delivers a 22-parameter CBC analysis, including a 5-part WBC differential and four cellular histograms.

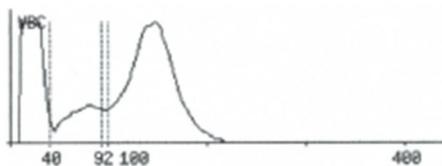
Impedance Technology

- Well tested technology considered so reliable for cell counting that it has long been used in human diagnostic instruments.
- Electrically neutral blood cells pass through an electrically charged aperture generating a "pulse".
- Cell counts are determined by the number of pulses measured in a given volume of blood over a set period of time.
- The decrease in electrical conductance (degree of intensity) as measured is directly proportional to the cell volume.
- This size discrimination along with susceptibility to various lysing agents distinguishes the basic cell types (red, white, and platelet).



Histograms

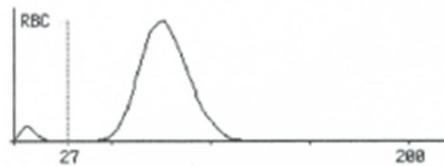
- WBC Histogram (differential results generated by size determination)



- EOS Histogram (displays a direct EOS count)



- RBC/PLT histogram



Hemoglobin Determination

Hemoglobin is measured directly through a spectrophotometric reading.

VetScan HM5 FAQ

1. What technology does the VetScan HM5 utilize?

The VetScan HM5 uses a combination of chemical differentiation and impedance technology to provide the 5-part WBC differential. With impedance technology, electrically neutral blood cells generate an electrical pulse as they each pass through an electronically charged aperture. Cell counts are determined by the number of pulses measured in a given volume of blood over a set period of time. The size of the pulse generated is directly proportional to the volume of each cell. This size discrimination, along with susceptibility to various lysing agents, distinguishes the cell types and provides basis for the 5-part differential. The size of the VetScan HM5 aperture was specifically designed to accommodate veterinary blood cells, thereby providing optimal differentiation.

2. What type of sample is used?

Hematology analyses require EDTA-treated blood (from lavender or purple top tubes containing potassium EDTA only). It is important to ensure that your sample is well mixed and contains optimal proportions of blood and EDTA. The following guidelines should be followed: Fill each tube at least half-full with blood to eliminate dilution errors. Thoroughly mix each sample by gently inverting the filled potassium EDTA sample tube by hand 10 to 15 times to avoid clot formation. If possible, run the sample immediately after mixing. If testing is delayed and the sample is placed on a rocker, be sure to mix it thoroughly again before analysis by gently inverting the tube 10 to 15 times. This ensures the homogeneity of the sample. Do not shake samples. Doing so can damage the blood cells, and can form micro-bubbles that will cause inaccurate results. Never use a rocker for samples smaller than 1.0 ml. Rockers do not mix samples. Feline samples frequently demonstrate platelet aggregations (clumps). Vortex mixing for up to 10 seconds can disaggregate these clumps with no adverse effect on the sample. Some practitioners find that collecting blood from the medial saphenous vein using a vacutainer minimizes platelet clumping.

For further information on sample collection and handling, refer to our Tech Brief, "[Sample Collection and Handling](#)".

3. What species are supported?

Fifteen species are supported on the VetScan HM5. In 5-part differential mode: Dog, Cat, Horse, Cow, Alpaca and Llama. In the 3-part differential mode, currently validated species are: mouse, rabbit, rat, ferret, pig, goat, monkey, sheep and guinea pig.

4. What maintenance is recommended for the VetScan HM5?

As with any cell counter, the analyzer must be kept clean to avoid build-up of debris and particle interference in the system. Performing the simple and easy preventative maintenance will keep the HM5 in optimal operating condition, thus ensuring peak performance, and high quality results.

5. What is the shelf-life of the VetScan HM5 hematology reagents?

Shelf life is 24 months from date of manufacture. Open reagent packs should be used within 26 weeks (-5 months).

6. **What parameters are reported with the VetScan HM5?**

22 parameters complete blood with cellular histograms are provided:

WBC

WBC: Total White Blood Cell Count Graphical WBC and EOS histograms provide added information about sample integrity and contents.

LYM: lymphocytes and lymphocyte percentage

MON: monocytes and monocyte percentage

NEU: neutrophil and neutrophil percentage

EOS: eosinophil and eosinophil percentage

BAS: basophil and basophile percentage

RBC

HGB: Hemoglobin

HCT: Hematocrit

RBC: Red Blood Cell count and indices:

MCV: Mean Cell Volume

MCH: Mean Corpuscular Hemoglobin

MCHC: Mean Corpuscular Hemoglobin Concentration

RDW: Red Cell Distribution Width

Graphical RBC Histogram is included.

PLT

PLT: Platelet, or thromobocyte, count and parameters:

MPV: Mean Platelet Volume

PCT: Platelet hematocrit

PDW: Platelet Distribution Width

Graphical Platelet Histogram is included.

7. **How can I avoid platelet clumping?**

Platelet clumping is a fairly common occurrence, especially in feline samples. This clumping may prevent accurate counting by both automated systems and manual slide counting. There are, however, a number of methods you may employ to minimize platelet clumping.

Preventative Measures

- a. Draw sample from medial saphenous vein while the cat is held in a lateral recumbent position; stroke gently to reduce stress.
- b. Draw sample directly into EDTA tube (e.g. Monovette system) and mix thoroughly, immediately (or transfer immediately to EDTA tube from syringe and mix thoroughly).

Even with these preventative measures, feline platelet clumping is not always avoidable but can be minimized.

8. **What are the power requirements needed to operate the system?**

The VetScan HM5 System requires 100-240 volts AC, 50-60 Hz or 12 volts DC. Abaxis recommends that the VetScan HM5 be plugged into a surge protector designed for use with a computer. Abaxis recommends the use of an uninterruptible power supply (UPS) if the VetScan HM5 will be used in an area prone to electrical surges or power outages.

9. **What is a blank and why is it needed?**

A blank measurement checks the cleanliness of the VetScan HM5 fluidics systems, and is used to establish a baseline for sample measurements. The results of a blank are used to determine if the background will affect the test results, and whether the analyzer needs cleaning or maintenance. A blank must be run every 12 hours. Each blank measurement remains valid for 12 hours of continuous operation, after which the analyzer displays "BLANK needed," and a new blank must be run. Acceptable blank measurement readings, which match the criteria below, must be accepted to reset the instrument.

WBC $<0.5 \times 10^3$ cells/ μ l
HB <10 g/l
RBC $<0.05 \times 10^6$ cells/ μ l
PLT $<25 \times 10^3$ cells/ μ l
EOS $<0.1 \times 10^3$ cells/ μ l

10. I just changed my reagent pack and my VetScan HM5 still says the reagents are empty or out of date.

The reagent status needs to be reset. Press Utilities, Maintenance, reagent status, change. This will reset the volume to 100% for the reagents and 0% for waste and change the install date to today's date.

11. My VetScan HM5 has the message, "One or more of your reagent sensors has been disabled." What should I do?

This message is informing you that one of the sensors used to detect the reagents flowing into the VetScan HM5 has been turned off. In order to achieve the most accurate test results, it is advised to turn on all the sensors and calibrate. To do this, select Utilities, Settings, Fluid Sensors. Ensure all the sensors are turned on by filling in the black box to the left of the sensor name; then calibrate the sensors.

12. Can my data be saved to an external disk?

The VetScan HM5 can store up to 2,000 complete test results in its internal database, results are stored chronologically by date and time. You can retrieve these results anytime. Please note: The CD drive is used to upgrade the software and is a read-only drive. Data can be downloaded to a USB flash drive or a compatible data-management system.

13. How many tests will I get from my reagent pack?

The throughput of the reagent pack varies depending on the number of tests you run a day. The more tests run in a day, the more you'll get from your reagent pack. Clinics that typically run 3-6 tests a day typically receive 90-120 tests from their reagent pack. However, running extra cleaning, priming, and blanking will increase the consumption of the reagent pack, therefore decreasing the reagent pack yield. Properly maintaining the VetScan HM5 will help increase the yield of the reagent pack.

14. What kind of external printer can I use with my VetScan HM5?

For a current list of compatible printers, contact Technical Support or refer to your operators' manual for a complete list (see page 3-3).

15. Can I use my VetScan HM5 to communicate with my lab management software?

Please check with your practice management software supplier for updates/details.

16. What is the purpose of the different reagents in a reagent pack?

Diluent: Isotonic saline solution is used to dilute whole blood specimens and to rinse the analyzer's fluidic system between analyses. **Rinse:** Used to rinse the analyzer after a sample run. **Cleaner:** Used in the fluidic system cleaning process. **Lyse:** Used to create hemolysate for three-part WBC differential and for total WBC and HGB. **Lyse2:** Used to dilute whole blood and differentially lyse white blood cells, leaving eosinophils for the EOS count.

