J-334X Semen Evaluation LabScope

Applications
Semen evaluation - motility analysis
Live biological specimen analysis
Functions as standard brightfield microscope as well

Complete System Features
- J-334X complete laboratory binocular microscope
- 10X/20 High-point, oversized WF eyepieces
- Built-in heated stage with removable cord
- X-Y mechanical stage for precise slide movements
- Digital temperature control unit
- DIN PLAN flat-field objectives
- Phase 10x, Phase 40x, Phase 100x
- Turret condenser with Phase, Darkfield, and Brightfield
- Variable halogen 20 watt Koehler illumination
- 110v or 220v AC power
- Optional trinocular head with camera connections

Heated Stage Specifications
- Variable digital temp. control from 25-50 degrees C.
- Set temperature in 1 degree increments
- Displays actual temperature in 0.1 degree increments
- Accurate within 0.5 degrees C.
- Reaches temperature within 1-2 minutes
- Switchable power input 110v or 220v AC

Warranty
- Lifetime on mechanical and optical components
- 1 year on electrical components

Includes
- Spare 2 amp fuse, spare 12v/20w halogen bulb,
- blue-green-yellow filters, immersion oil, dust cover,
- manual, and warranty card

Digital Control Unit Dims:
- Height: 6.5" (153 mm)
- Length: 9" (225 mm)
- Width: 3.4" (84 mm)
- Weight: 5.5 lb. (2.5 kg)

Microscope Dims:
- Height: 16 1/2" (420 mm)
- Length: 10 5/8" (270 mm)
- Width: 7 7/8" (200 mm)
- Weight: 20 lbs. (9 kg)

Perfect for veterinarians interested in fertility evaluation, the Semen Evaluation LabScope is the complete package for live specimen microscopy. Motility analysis should be performed at 37 degrees Celsius to keep sperm active, and the heated stage has a digital temperature control unit which can be set for any temperature between 25 and 50 degrees Celsius. The heated stage will maintain accurate and stable temperatures within +/- 0.5 degrees during observation. Unplug the cord from the stage, and the J-334X looks and functions like a standard laboratory-grade microscope. The PLAN phase objectives and turret condenser allow flat-field, high-contrast viewing of live, unstained specimens, and easy magnification changes with the flip of the thumb. Simply turn the turret condenser wheel to switch between brightfield, darkfield, phase 10x, phase 40x, and phase 100x settings. The Semen Evaluation LabScope is a Jorgensen Laboratories exclusive.
The Semen Evaluation LabScope provides everything needed to perform motility analysis and to observe morphological abnormalities to determine the viability of sperm. Sperm concentration can be performed with the optional Neubauer Hemacytometer (counting chamber) pictured below.

**Motility**

Motility analysis is the best indicator of semen quality and viability, and is highly correlated with fertility rates. Progressive motility is the percentage of sperm moving forward in a straight line under their own power, which is a visual estimate under the microscope. It is very important to keep the sperm sample warm, and evaluate as soon as possible after collection.

- Connect the Digital Control Unit to the microscope stage
- Set temperature to 37 degrees celcius
- Allow several minutes for the “actual” temperature of the stage to reach 37 degrees
- Place blank slide and coverslip onto the side of the microscope stage to “pre heat”
- Place a drop of diluent onto the slide, then add small amount of semen (enough for 10 cells per field)
- Drop cover slip onto specimen, and examine 10 different fields under the 40x phase setting (400x magnification)
- Count number of cells **moving** in each field (average of 10 fields) - determine percentage motile
- Next count cells moving **Straight forward** in each field (average of 10 fields) - determine percentage straight forward
- Multiply the two percentages together to determine % **Progressively Motile**

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80\% \text{ motile x } 60\% \text{ straight forward} = 48\% \text{ Progressively Motile}
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**Morphology**

Morphological abnormalities are an important factor in fertility as well. However, this procedure is not as critical as the motility analysis above, because many of the abnormal sperm will have already been excluded due to lack of motility. Morphology examinations are done with the phase contrast setting on the microscope, but the heated stage is not necessary because the sperm cells are not live.

- Prepare the slide mount with formal-buffered saline and a small amount of semen, then drop a cover slip into place
- Set the microscope to 100x phase (1,000x magnification)
- Count 100 cells, and determine the percentage of abnormal sperm

**Concentration**

Sperm concentration is the number of sperm in a milliliter of semen. A hemacytometer (pictured to right), or counting chamber, is used to create a 1 x 1 x 0.1 mm cubic chamber for counting.

- Prepare a 1:100 dilution, add a droplet to each of the hemacytometer grids, then drop the cover slip into place
- Observe the grid initially under the 10x phase setting (100x magnification)
- You will see 25 squares, each with 16 smaller squares inside.
- Switch to 40x phase (400x magnification), count the sperm heads in 5 of the 25 squares, and multiply by 5.
- Next, multiply the number of sperm x 1,000,000 for the sperm count per ml.

Neubauer Hemacytometer

J-821