

Product Specifications

Design

- Microprocessor-based system architecture
- Modular system consisting of display/control module and pneumatic drive unit

Electrical

- AC requirements:
 - 90-264 VAC 47-63 Hz
- Average power consumption: 245 watts
- Maximum power consumption: 480 watts
- Battery operating time:
 - 90 minutes minimum with full charge
 - 180 minutes with optional second battery
- Battery recharging time:
 - 80% in four hours from full discharge

Mechanical Dimensions

- Control module with monitor:
 - 9-1/4" high (23.5 cm) x 13-3/4" wide (35 cm) x 2" deep (5 cm)
- Pneumatic drive unit:
 - 28" high (71 cm) x 12" wide (30.5 cm) x 20" deep (51 cm)

Mechanical Weight

- Control module:
 - 5 lbs (2.3 kg)
- Pneumatic unit for AutoCAT[®]2 WAVE[™]:
 - 95.5 lbs (42.4 kg)
- Total weight for: AutoCAT[®]2 WAVE[™]:
 - 100.5 lbs (44.7 kg)
- Total weight for: AERO Series:
 - 91.5 lbs (40.7 kg)

Pneumatics

- Drive system: stepper motor-driven bellows
- Drive gas: USP-grade helium
- Helium tank:
 - Disposable canister (500 psi) or refillable (2000 psi) cylinder – U.S. Approval (2900 psi) cylinder – European Approval
- Pumping volume:
 - 0.5cc-50cc, adjustable in 0.5cc increments
- Counterpulsation rate: 40-200 pulsations/minute

Condensation Removal

- Thermoelectric system removes moisture continuously from pneumatic system without interrupting counterpulsation

System Modes

- AutoPilot[™]:
 - Automatically selects ECG/AP signal, sources, trigger mode and timing method as well as timing settings
 - Automatically changes settings to optimize assist
 - Proprietary software sets timing to correspond to individual patient needs
- Operator:
 - Allows user control of most pump functions

Trigger Modes

- ECG (PATTERN, PEAK, AFIB):
 - Microprocessor-based waveform trigger detection algorithms
- Pacer (VPACE, APACE):
 - Low level (skin) ECG input
 - Pulse width 0.1-0.5 ms and pulse amplitude => +5 mV
 - Pulse width => 0.5 ms and pulse amplitude => +2 mV
 - High level (Monitor) input
 - Pulse width 0.1-2 ms and pulse amplitude => 1 V
 - AV pacer detection is <250 msec between pacer pulses
- Arterial pressure (AP):
 - Microprocessor-based waveform trigger detection algorithm
- Internal:
 - Default to 80 bpm; adjustable 40-120 bpm
- Filtering:
 - Diathermy, 50/60 Hz notch, 30 Hz low pass

Trigger Selection Criteria (AutoPilot[™] Mode)

- ECG Trigger Modes
 - PATTERN: HR < 130 bpm no arrhythmia
 - PEAK: HR >130 bpm or arrhythmia detected and arrhythmia timing OFF
 - AFIB: Any HR with arrhythmia detected
 - VPACE: Single or dual pacer (< 250 msec apart) and no QRS or AP waveform detected
 - APACE: Single pacer with R wave > 100 msec later. Transition only
- AP Trigger Mode
 - No ECG signal or noisy ECG signal

Inflation/Deflation Timing Methods

INFLATION TIMING METHODS:

- Proprietary Software:
Physiologically based software sets the timing accurately beat to beat.
- Predictive: Arterial pressure waveform analysis to set inflation
- Weissler: ECG only, inflation timing based on systolic time intervals

DEFLATION TIMING METHODS;

- R Wave: Real time deflation on R wave
- Predictive: Deflation set to occur just prior to next systolic rise
- Weissler: ECG only, deflation timing based on diastolic intervals

MANUAL:

- User set inflation and deflation timing in Operator mode

Inflation/Deflation Timing Limits (Operator Mode)

- ECG:
 - Inflation, 20-80% of R-R interval
 - Deflation, 30-120% of R-R interval
- Arterial pressure:
 - Inflation, 0-35% of peak systole-peak systole interval
 - Deflation, 35-75% of peak systole-peak systole interval
- Atrial fibrillation:
 - Inflation 80-430 ms after trigger event
 - Deflation on R-wave

Display

- Type:
High resolution color LCD flat screen
- Channels:
Three-channel multicolor waveforms
 - ECG: Green trace with white highlight on assisted portion
 - Arterial pressure: Red trace calibrated for direct reading of arterial pressure, white highlight on assisted portions when in Operator mode
 - Balloon pressure: blue trace calibrated in mmHg and displayed continuously
- Timing reference display:
Numerical timing settings in both operating modes as well as a bar graph displaying inflate/deflate events in Operator Mode
- Cursor:
Measurement of arterial pressure and balloon pressure waveforms

Alphanumeric Data

- Patient hemodynamics: heart rate, arterial pressure – systolic, augmented, diastolic, and mean arterial. When in 1:2 or lower assist ratio the assisted values are displayed in white and the unassisted values are displayed in yellow
- Displayed parameters: ECG source and gain state, alarm status with timer, ON Battery indication, operation mode selection, AP alarm parameter and limit, timing settings, HE tank level, arrhythmia detection and timing status
- Operations status: operational mode, trigger mode, helium tank gauge, alarm/battery charge status, balloon volume
- Diagnostic alarm/help messages: preprogrammed troubleshooting prompts/help

Strip Chart Recorder

- Recorder:
Dual-channel dot matrix: dot density 400 dots/inch, 25 mm/s
- Waveforms:
ECG, arterial pressure, or balloon pressure (one or two recorded)
- Alphanumeric:
Operational mode, trigger mode, ECG lead/source, AP source, AP alarm status, timing settings, assist ratio, balloon volume, timing method, arrhythmia status, alarm condition, date, time, patient hemodynamics

Display Freeze

- Freezes approximately seven seconds of patient data on screen

Patient Signal Inputs

- ECG:
 - 5 lead Skin Cable (I, II, III, aVR, aVL, aVF and V)
 - High Level Monitor Input (0 to 5 V)
- Arterial pressure:
 - Fiber Optic Signal Input from LightWave IAB Catheter (WAVE)
 - AP Transducer (Spectramed or equivalent)
 - High Level Monitor Input (1V = 100 mmHg)

Note: Additional system specifications are available from Arrow upon request. Specifications are subject to change without notice.
Caution: U.S. Federal Law limits this device to sale by or on order of a physician. Contents of unopened, undamaged package are sterile. Disposable. Refer to package insert for current warnings, indications, contraindications, precautions, and instructions for use.
U.S. Patent Nos. 6,258,035 and 6,569,103



Ordering Information

Order No.	Description	Language
IAP-0500	AutoCAT®2 WAVE™ 1 (IABP) System includes: <ul style="list-style-type: none">- FiberOptix™ Sensor Technology.- Physiologically based, proprietary timing software.- AutoPilot™ operational mode.	-D, -E, -F, -I, -J
IAP-0535	AERO Series- AutoCAT®2 WAVE™	D, -E, -F, -I, -J

The products above are also available in the following languages. Add suffix noted for the language of your choice.
(-D) GERMAN, (-E) SPANISH, (-F) FRENCH, (-I) ITALIAN, (-J) JAPANESE. Contact Arrow for other languages

www.arrowintl.com

To locate an Arrow Distributor or for ordering information, contact Customer Service at:

United States

Tel: 800.523.8446

Fax: 800.343.2935

International

Tel: +1.610.655.8522

Fax: +1.610.655.8566

Distribution Worldwide:

Arrow Sales offices are located in Belgium, Canada, Czech Republic, France, Germany, Greece, India, Italy, Japan, Mexico, Netherlands, Slovakia, South Africa, Spain, and the United States.

Corporate Headquarters address: Arrow International, Inc., 2400 Bernville Road, Reading, PA 19605 U.S.A. Tel: 610-378-0131

