

PS320

Fetal Simulator



Technical Data

The PS320 simulates fetal and maternal ECG as well as uterine activity to test and troubleshoot fetal electronic monitors and to train clinical staff.

The unit is battery operated and small enough to fit in a pocket so mobile technicians and clinical instructors can take it anywhere.

The PS320 simulates several fetal parameters including twins, and it simulates a wide range of clinical scenarios for training labor-and-delivery staff in how to recognize normal and abnormal responses. An optional mechanical heart creates fetal heart sounds for testing fetal monitors' ultrasound cables and transducers.

PS320 offers an easy user interface providing a 2 x 16-character LCD display with adjustable contrast. The unit operates on a 9 V battery with low-battery monitoring or functions with the supplied battery eliminator.

Key Features

- TOCO simulation
- Ultrasound simulation (including twins)
- Maternal ECG simulation
- Fetal ECG (tracks ultrasound #1)
- Internal (DECG) and external fetal ECG
- Uterine-activity selections
- Fetal beat-to-beat variability
- Periodic and non-periodic fetal ECG changes
- Arrhythmia selections
- Compact, lightweight, pocket-size plastic housing
- Battery operated with status indications
- Optional mechanical heart for ultrasound simulation

Technical Specifications

Fetal ECG

Static Rates: 30, 60, 90, 120, 150, 180, 210, and 240 BPM
ECG Sensitivity: 50 μ V, 100 μ V, 200 μ V, 0.5 mV, 1 mV, and 2 mV

US-1 tracks primary fetal ECG rates. US-2 tracks secondary fetal activity for either independent "normal" or "twins" simulation.

Fetal Patterns

Note: US-1 and fetal ECG track these selections. US-2 is in normal pattern, except during TREND #1 selection.

Trend #1: Twin Fetal Patterns

Normal: Normal pattern

Tachycardia: Tachycardia pattern

Bradycardia: Bradycardia pattern

Arrhythmias: Arrhythmia pattern

Late Deceler.: Late deceler.

Early Deceler.: Early deceler.

Moderate Deceler.: Moderate variable deceler.

Acceler. #1: Acceler. wave #1

Acceler. #2: Acceler. wave #2

Sinusoidal (high): Sinusoidal pattern, large change

Sinusoidal (low): Sinusoidal pattern, small change

Severe var. Deceler. #1: Severe deceler. wave #2

Severe var. Deceler. #2: Severe variable deceler.

Prolonged Deceler.: Prolonged deceler.

Biphasic Deceler.: Biphasic deceler.

Exaggerated Deceler.: Exaggerated deceler.

Non-uniform Deceler.: Non-uniform deceler.

Var. Deceler. (u): Variable deceler. "U" shaped

Var. Deceler. Tach: Variable deceler. with high-rate BPM

Var. Deceler. (v): Variable deceler. "V" shaped

Var. Deceler. (post): Variable deceler. post exaggerated

Var. Deceler.: Variable deceler.

Deceler. (position): Variable deceler. with position changes

Long Deceler.: Long deceler.

Compensatory Acceler.: Compensatory acceler.

Variability Selections (Added To Fetal ECG)

Absent variability, low variability, mild variability, high variability, severe variability, and long-term variability

Note: These patterns repeat and toco channel will perform toco wave selected.

About Fluke Biomedical

Fluke Biomedical is the world's leading manufacturer of quality biomedical test and simulation products. In addition, Fluke Biomedical provides the latest medical imaging and oncology quality-assurance solutions for regulatory compliance.

Today, biomedical personnel must meet the increasing regulatory pressures, higher quality standards, and rapid technological growth, while performing their work faster and more efficiently than ever. Fluke Biomedical provides a diverse range of software and hardware tools to meet today's challenges.

Fluke Biomedical Regulatory Commitment

As a medical device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 certified and our products are:

- FDA Compliant
- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required

Optional Mechanical Heart

Provides a mechanical interface to the ultrasound transducer; can be connected to either ultrasound channels. This option, due to its power consumption, requires an AC adapter to be connected.

Maternal ECG

ECG Static Rates: 60, 80, 100, 120, 140, and 160 BPM
ECG sensitivity: 0.5 mV, 1 mV, and 2 mV
Pattern selected during Trend #1 selection

Uterine Activity

Note: Toco waveform selection not available during Trend #1.

Execute Waveform: Start toco waveform

Uterine Wave Off: Stop toco waveform

Analog 0 V TO 1 V: Analog range 0 V to 1 V

(1 V = 100 mmHg)

Uterine Wave 0 to 25: Range of toco waveform

Uterine Wave 0 to 50: Range of toco waveform

Uterine Wave 0 to 100: Range of toco waveform

Short Duration: Toco waveform of short duration

Normal Duration: Normal duration of toco waveform

Increased Duration: Long duration of toco waveform

Uterine Level = Zero: Zero toco channel (automatic on power up)

Uterine Static + 20: Increase toco static level by 20 mmHg (0 mmHg to 100 mmHg)

Incr. Resting Tone: Resting tone increases

Coupling: 2 close toco waves

Tripling: 3 close toco waves

Uterine Pressure Sensitivity: 5 μ V or 40 μ V on power up

Important Notes

US-1 tracks the fetal ECG rates. US-2 is the second ultrasound channel with a normal fetal ECG pattern. On the fetal and maternal ECG, the fetal ECG is 1/4 the size of the maternal ECG.

The PS320 turns on in the following state:

- Fetal ECG static rate @ 150 BPM
- US-1 tracks @ 150 BPM
- US-2 normal pattern
- Pressure sensitivity @ 5 μ V/mmHg
- Pressure/Toco set to zero
- Maternal ECG rate @ 80 BPM
- ECG sensitivity @ 1 mV
- Toco wave is normal duration @ 0 to 50 divisions (i.e. 0 mmHg to 50 mmHg)

Controls

Display: 2-line x 16-character LCD with keypad

RS232: Bidirectional interface, 9600 Baud

Power

9 V battery/battery eliminator; low battery indication set at 6 V

Housing

Plastic case

Dimensions

6.1 in L x 3.7 in W x 1.3 in H
(15.6 cm L x 9.4 cm W x 3.4 cm H)

Weight

0.9 lb (0.4 kg)

Temperature

Operating: 59 °F to 95 °F (15 °C to 35 °C)

Storage: 32 °F to 122 °F (0 °C to 50 °C)

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Ordering Information

Model

2583030: PS320 Fetal Simulator

Standard Accessories

2631717: Electronic-version users manual (CD-ROM)

2631693: Printed-version users manual

2647372: Battery eliminator universal 90 V to 240 V

N/A: 9 V battery

Optional Accessories

2647372: Battery eliminator 100 VAC to 240 VAC

2462177: Carrying case, double pocket

2462478: Philips 50 Series - Ultrasound cable

2462491: Agilent 50 Series TOCO - External cable

2462528: Agilent 50 & 8040 Series TOCO - IUP cable

2462469: Corometrics TOCO - External cable

2462484: Corometrics - Ultrasound cable

2462519: Corometrics TOCO - IUP cable

2462528: HP/AG/PHILIPS IUP TOCO simulation cable

2462537: HP (8040 Series) ultrasound simulation cable

2462543: HP (8040 Series) ext TOCO simulation cable

2462555: Oxford ultrasound simulation cable 1.5 MHz (yellow)

2462562: Oxford ultrasound simulation cable 2.0 MHz (blue)

2462570: Oxford IUP simulation cable

2462217: RS232 cable

2651757: Mechanical fetal heart probe

2462123: Mechanical fetal heart cable

2670221: PS320 service & calibration manual

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