

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, as well as 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 monitor 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

- Mechanical heart for ultrasound simulation
- TOCO simulation (External or IUP)
- 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, and pocket-size plastic housing
- Battery operated with status indications
- Special kits available with all required accessories and cables to test fetal monitors for specified manufacturers

Technical specifications

Fetal ECG

Static rates

30 BPM, 60 BPM, 90 BPM, 120 BPM, 150 BPM, 180 BPM, 210 BPM, 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, US-2 rate is fixed at 140 BPM

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 deceleration: Late deceleration
Early deceleration: Early deceleration
Moderate deceleration: Moderate variable deceleration
Acceleration #1: Acceleration wave #1
Acceleration #2: Acceleration wave #2
Sinusoidal (high): Sinusoidal pattern, large change
Sinusoidal (low): Sinusoidal pattern, small change

Severe variable deceleration #1:
Severe deceleration wave #2
Severe variable deceleration #2:
Severe variable deceleration
Prolonged deceleration:
Prolonged deceleration
Biphasic deceleration: Biphasic deceleration
Exaggerated deceleration:
Exaggerated deceleration
Non-uniform deceleration:
Non-uniform deceleration
Variable deceleration (u): Variable deceleration "U" shaped
Variable deceleration tach:
Variable deceleration with high-rate BPM
Variable deceleration (v): Variable deceleration "V" shaped
Variable deceleration (post):
Variable deceleration post exaggerated
Variable deceleration: Variable deceleration
Deceleration (position):
Variable deceleration with position changes
Long deceleration: Long deceleration
Compensatory acceleration:
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.

Optional mechanical fetal 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 power adapter to be connected

Maternal ECG

ECG static rates

60 BPM, 80 BPM, 100 BPM, 120 BPM, 140 BPM, 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 mm Hg)

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)

Increase resting tone: Resting tone increases

Couping: 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 µV/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

RS-232

Bidirectional interface, 9600 Baud

Power

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

Housing

Plastic case

Dimensions (LxWxH)

15.6 cm x 9.4 cm x 3.4 cm (6.1 in x 3.7 in x 1.3 in)

Weight

0.4 kg (0.9 lb)

Temperature

Operating

15 °C to 35 °C (59 °F to 95 °F),

Storage

0 °C to 50 °C (32 °F to 122 °F)

Ordering information

Model

2583030 PS320 Fetal Simulator

Kit #1: GE Corometrics

2794057 PS320 Fetal Monitoring Kit, GE Corometrics

Includes

- 2583030 PS320 Fetal Simulator (includes Operator Manual (2631693), Battery Eliminator (2647372), 9 V Battery)
- 2651757 MFH-1 Mechanical Fetal Heart Probe [includes Fetal Heart Cable (2462123)]
- 2397628 Soft-Sided Carrying Case for kit
- 2462217 17291 RS-232 Cable, PS320/420
- 2462484 Corometrics Ultrasound Simulation Cable
- 2462469 Corometrics EXT. TOCO Simulation Cable
- 2462519 Corometrics IUP TOCO Simulation Cable

Kit #2: Hewlett-Packard, Agilent, Philips Medical

2794069 PS320 Fetal Monitoring Kit, Series 50/8040 Philips Medical, Hewlett-Packard, Agilent

Includes

- 2583030 PS320 Fetal Simulator (includes Operator Manual (2631693), Battery Eliminator (2647372), 9 V Battery)
- 2651757 MFH-1 Mechanical Fetal Heart Probe [includes: Fetal Heart Cable (2462123)]
- 2397628 Soft-Sided Carrying Case for kit
- 2462217 RS-232 Cable, PS320/420
- 2462478 HP/AG/PHILIPS (50 SERIES) Ultrasound Simulation Cable PS320
- 2462491 HP/AG/PHILIPS (50 SERIES) EXT TOCO Simulation Cable PS320
- 2462528 HP/AG/PHILIPS (50 & 8040 SERIES) IUP TOCO Simulation Cable PS320
- 2462537 HP (8040 SERIES) Ultrasound Simulation Cable PS320
- 2462543 HP (8040 SERIES) EXT TOCO Simulation Cable PS320

Kit #3: Oxford Medical

2794078 PS320 Fetal Monitoring Kit, Oxford Medical

Includes

- 2583030 PS320 Fetal Simulator (includes Operator Manual (2631693), Battery Eliminator (2647372), 9 V Battery)
- 2651757 MFH-1 Mechanical Fetal Heart Probe [includes: Fetal Heart Cable (2462123)]
- 2397628 Soft-Sided Carrying Case for kit
- 2462217 RS-232 Cable, PS320/420
- 2462570 OXFORD TOCO IUP Simulation Cable PS320
- 2462562 OXFORD Ultrasound Simulation Cable 2 MHz (blue) PS320
- 2462555 OXFORD Ultrasound Simulation Cable 1.5 MHz (yellow) PS320

Kit #4: Spacelabs Medical

2794040 PS320 Fetal Monitoring Kit, Spacelabs Medical

Includes

- 2583030 PS320 Fetal Simulator (includes Operator Manual 2631693), Battery Eliminator (2647372), 9 V Battery)
- 2651757 MFH-1 Mechanical Fetal Heart Probe [includes Fetal Heart Cable (2462123)]
- 2397628 Soft-Sided Carrying Case for kit
- 2462217 17291 RS-232 Cable, PS320/420
- 2462581 SPACELABS Ultrasound Simulation Cable PS320
- 2462596 SPACELABS TOCO Simulation Cable PS320

Ordering information continued

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 V ac to 240 V ac

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 RS-232 cable

2651757 Mechanical Fetal Heart Probe

2462123 Mechanical Fetal Heart Cable

2670221 PS320 Service and Calibration Manual

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

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

Fluke Biomedical.

Better products. More choices. One company.

Fluke Biomedical

6045 Cochran Road
Cleveland, OH 44139-3303 U.S.A.

Fluke Biomedical Europe

Science Park Eindhoven 5110
5692EC Son, The Netherlands

For more information, contact us:

In the U.S.A. (800) 850-4608 or
Fax (440) 349-2307

In Europe/M-East/Africa +31 40 267 5435 or
Fax +31 40 267 5436

From other countries +1 (440) 248-9300 or
Fax +1 (440) 349-2307

Email: sales@flukebiomedical.com

Web access: www.flukebiomedical.com