Technical data

PS320
Fetal Simulator

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

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Specifications

Fetal ECG	
Static rates	0 BPM, 60 BPM, 90 BPM, 120 BPM, 150 BPM, 180 BPM, 210 BPM, and 240 BPM
ECG sensitivity	50 µV, 100 µV, 200 µV, 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 decelerationwave #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 notavailable 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 µV or 40 µV 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
General specifications	
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)

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Ordering information

Models/descriptions

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)]
2523995	Soft-Sided Carrying Case for kit
2462217	17291 RS-232 Cable, PS320/420
2462484	Corometrics Ultrasound Simulation Cable
4021537	Corometrics 120 Ultrasound cable
2462469	Corometrics IUP Simulation Cable
2462519	Corometrics 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)]
2523995	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 Simulation Cable PS320
2462537	HP (8040 SERIES) Ultrasound Simulation Cable PS320
2462543	HP (8040 SERIES) EXT TOCO Simulation Cable PS320
Standard accessories	
2631693	Printed-Version Users Manual
2647372	Battery Eliminator Universal 90 V to 240 V
2631717	Electronic-Version Users Manual (CD-ROM)
N/A	9 V Battery
Optional accessories	
2462478	HP/Ag/Philips 50 Series -Ultrasound Cable
2462491	HP/Ag/Philips 50 Series TOCO -External Cable
2462528	HP/Ag/Philips 50 & 8040 Series -IUP Cable
2462469	Corometrics -IUP Cable
2462484	Corometrics -Ultrasound Cable
4021537	Corometrics 120 Ultrasound Cable
2462519	Corometrics TOCO -IUP Cable
2462537	HP (8040 Series) Ultrasound Simulation Cable
2462543	HP (8040 Series) ext TOCO 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. Highly credentialed and equipped with a NVLAP Lab Code 200566-0 accredited laboratory, Fluke Biomedical also offers the best in quality and customer service for all your equipment calibration needs.

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 and ISO 13485 medical device certified and our products are:

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

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