



GE HealthCare

LOGIQ Fortis™

The LOGIQ Fortis is GE HealthCare's premium ultrasound imaging system designed for general imaging applications including abdominal, vascular, obstetric, gynecologic, neonatal, pediatric, urological, transcranial, cardiac, and small parts applications.



General specifications

Dimensions and weight

(Dimensions given with floating keyboard stowed and display tilted for transport with no options installed)

Height	1250 – 1800 mm, 49 – 71"
Width	530 mm, 20.9" (Caster) 565 mm, 22.2" (Monitor)
Depth	885 mm, 34.8"
Weight	85 kg (187.4 lb)

Electrical power

Voltage 100 – 240 VAC

Frequency 50/60 Hz

Power consumption maximum of 0.9 KVA with peripherals

Console design

4 active probe ports

1 inactive probe storage port

Wireless probe connection, capable of connecting Vscan Air™ wireless and linear probes

Integrated SSD (1 TB)

Integrated DVD-R Multi Drive

On-board storage of thermal printer

Integrated speaker

Integrated locking mechanism that provides rolling lock and caster swivel lock

Integrated cable management

Front and rear handles

Easily removable air filters

User interface

Operator keyboard

Operating keyboard, adjustable in height and rotation

Ergonomic hard key layout

Interactive back-lighting

Integrated recording keys for remote control of up to 4 peripheral or DICOM® devices

Integrated gel warmer

Touch screen

12.1" High-resolution, color, touch display screen

Interactive dynamic software menu

Brightness adjustment

User-configurable layout

Display monitor

23.8" Widescreen high-resolution HDU Display

Display translation (independent of console)

350 mm (13.7") horizontal (both directions)

150 mm (5.9") vertical

90° swivel (both directions)

Fold-down and lock mechanism for transportation

Resolution: 1920 x 1080

Anti-glare

Viewing angle 89/89/89/89°

System overview

Applications

Abdominal

Obstetrical

Gynecological

Breast

Small Parts

Peripheral Vascular

Transcranial (adult and neonatal)

Pediatric and Neonatal

Musculoskeletal (general and superficial)

Urological

Cardiac (adult and pediatric)

Interventional

Pleural

System overview *(cont.)*

Operating modes

B-Mode

M-Mode

Color Flow Mode (CFM) and Microvascular Imaging (MVI)

Power Doppler Imaging (PDI)

B-Flow (Option)

Extended Field of View (LOGIQ View)

PW Doppler

CW Doppler (Option)

Volume Modes (3D/4D)
(Option)

- 3D Static
- 4D Real Time

Anatomical M-Mode

Contrast Imaging (Option)

Strain Elastography (Option)

Shearwave Elastography (Option)

UGAP (Option)

Scanning methods

Electronic sector

Electronic convex

Electronic linear

Mechanical volume sweep

Probe types

Sector/Phased array

Curved Linear array

Microcurved linear array

Linear array

Matrix array (Linear)

Volume probes (4D)

Split crystal

TEE probe

System standard features

Advanced user interface with high-resolution 12.1" display touch panel

Automatic optimization

CrossXBeam™

Speckle Reduction Imaging (SRI-HD, Advanced SRI Type 1)

Fine angle steer

Coded harmonic imaging

Virtual convex

Patient information database

Image archive on integrated CD/DVD and hard drive

Advanced 3D

Real-time automatic Doppler calculations

OB calculations

Fetal trending

Multigestational calculations

Hip dysplasia calculations

Gynecological calculations

Vascular calculations

Urological calculations

Renal calculations

Cardiac calculations

InSite™ capability

On-board electronic documentation

Auto CF/PW positioning feature

Privacy and security, including user and rights management

LOGIQView

Breast productivity package (Option)

Thyroid productivity package (Option)

External USB printer connection

Network printer support

HDMI output (available for compatible devices)

DICOM

App Launchpad

System overview *(cont.)*

Options

Tricefy®

B-Flow

Auto IMT

Compare assistant

Scan assistant

OB measure assistant

Color quantification

Strain Elastography

Elastography quantification

Advanced privacy and security (vulnerability scan)

Power assistant and scan on battery

Storage bins

Shear wave elastography

Volume navigation

UGAP

Hepatic assistant

Coded Contrast Imaging

Stress echo

Cardiac Strain (Automatic Function Imaging)

On-board reporting

TVI

Wireless LAN

CW

DVR

Tablet tools

Advanced probes

Breast Assistant, Powered by Koios DS™

Thyroid Assistant, Powered by Koios DS™

SonoNT SonoIT

Advanced SRI Type 2

Auto Preset Assistant

Auto Abdominal Color Assistant

Auto Renal Measure Assistant

Contrast LI-RADS®

Raw Data Streaming

DVD Drive

Peripheral options

Integrated options for

- Digital B&W thermal printer
- DVD video recorder
- DVD Drive

Digital color thermal printer

Digital A6 color thermal printer

Foot switch with programmable functionality

Console protective cover

LOGIQ smart device apps

- Photo Assistant
- Remote Control

CRF-200U card reader (for Japan)

Vscan Air™ On-System Charger

Display modes

Live and stored display format

- Full size and split screen – both w/ thumbnails. For still and CINE.

Review image format

- 4x4, and thumbnails. For still and CINE.

Timeline display

- Independent Dual B or CrossXBeam/PW Display
- CW
- Top/bottom selectable display format
- Side/side selectable format

Virtual convex

Simultaneous capability

B or CrossXBeam/PW

B or CrossXBeam/CW (Option)

B or CrossXBeam/CFM or PDI

B/M

B/CrossXBeam

B-Flow/PW

Real-time Triplex Mode

B or CrossXBeam + CFM or PDI/PW

Selectable alternating modes

B or CrossXBeam/PW

B or CrossXBeam + CFM (PDI)/PW

B/CW (Option)

System overview *(cont.)*

Multi-image (split/quad screen)

Live and/or frozen

B or CrossXBeam + B or CrossXBeam/CFM or PDI

PW/M

Independent CINE playback

Display annotation

Patient name: first, last, and middle

Patient ID

Alternate patient ID

Age, sex, and date of birth

Hospital name

Date format: three types selectable

- MM/DD/YY
- DD/MM/YY
- YY/MM/DD

Time format: two types selectable

- 24 hours
- 12 hours

Gestational age from

- LMP
- EDD
- GA
- BBT

Probe name

Map names

Probe orientation

Depth scale marker

Lateral scale marker

Image depth

Zoom depth

B-Mode

- Gain
- Imaging frequency
- Gray map
- SRI-HD
- Dynamic range
- Frame averaging

M-Mode

- Gain
- Time scale
- Dynamic range

Doppler Mode

- Gain
- Sample volume depth and width
- Spectrum inversion
- Time scale
- Doppler frequency
- Angle
- Wall filter
- Velocity and/or frequency scale
- PRF

Display annotation *(cont.)*

Color Flow Doppler Mode

- Line density
- Frame averaging
- Color Scale, 3 types: power, directional PDI, and symmetrical velocity imaging
- Color velocity range and baseline
- Color threshold marker
- Color gain
- PDI
- Spectrum inversion
- Doppler frequency

TGC curve

Acoustic frame rate

CINE gauge, image number/frame number

Body pattern: multiple human and animal types

Application name

Measurement results

Operator message

Displayed acoustic output

- TIS: Thermal Index Soft Tissue
- TIC: Thermal Index Cranial (Bone)
- TIB: Thermal Index Bone
- MI: Mechanical Index

% of maximum power output

Biopsy guideline and zone

Heart rate

General system parameters

System setup

Pre-programmed categories

User programmable preset capability

Factory default preset data

Languages: English, French, German, Spanish, Italian, Brazilian Portuguese, Russian, Greek, Swedish, Danish, Dutch, Finnish, Norwegian

OB report formats including Tokyo Univ., Osaka Univ., USA, Europe, ASUM, and WHO

User defined annotations

Body patterns

Customized comment home position

EZ Imaging: Simplified user interface for high volume workflow

General system parameters *(cont.)*

Complete user manual available on-board through Help (F1)

User manual and service manual are included on USB with each system. A printed manual is available upon request.

CINE memory/image memory

1 GB of CINE memory

Selectable CINE sequence for CINE review

Prospective CINE mark

Measurements/calculations and annotations on CINE playback

Scrolling timeline memory

Dual Image CINE display

Quad Image CINE display

CINE gauge and CINE image number display

CINE review loop

CINE review speed

Image storage

On-board database of patient information from past exams

Storage formats:
DICOM

- Compressed/uncompressed
- Single/multi-frame
- Enhanced (3D/4D)
- With/without raw data

DICOM viewer available during image export

Export BMP, JPEG, JPEG 2000, PNG, AVI, MP4, WMV formats

Storage devices

- USB memory stick: 64 MB to 64 GB (for exporting individual images/clips)
- CD-R storage: 700 MB
- DVD storage: -R (4.7 GB)
- Hard drive image storage: ~730GB

Compare previous exam images with current exam

Reload of archived data sets

Connectivity

Ethernet network connection

Wireless LAN 802.11ac/a/b/g/n (Option)

DICOM 3.0

- Verify
- Print
- Store
- Modality worklist
- Storage commitment
- Modality performed procedure step (MPPS)
- Media exchange
- Off network/mobile storage queue
- Query/retrieve

Public SR template

Structured Reporting – compatible with vascular, OB, cardiac, and breast standard

InSite capability

Advanced privacy and security (Option)

Physiological input panel (Option)

Physiological input

- ECG, 1 channel
- PCG, 1 channel
- AUX, 1 channel
- Dual R-Trigger
- Pre-settable ECG R delay time
- Pre-settable ECG position
- Adjustable ECG gain control
- Pre-settable PCG position
- Adjustable PCG gain control
- Pre-settable AUX position
- Adjustable AUX gain control

Automatic heart rate display

Auto Ejection Fraction

Report writer (Option)

On-board reporting package automates report writing

Formats various exam results into a report suitable for printing or reviewing on a standard PC

Exam results include patient info, exam info, measurements, calculations, images, and comments with standard templates provided

Customizable templates

General system parameters *(cont.)*

Scanning parameters

Displayed imaging depth: 0 – 100 cm

Minimum depth of field: 0 – 2 cm (zoom) (probe dependent)

Maximum depth of field: 0 – 100 cm (probe dependent)

Continuous dynamic receive focus/continuous dynamic receive Aperture

Adjustable dynamic range Adjustable field of view (FOV)

Image reverse: right/left

Image rotation of 0°, 90°, 180°, 270°

Digital B-Mode

- | | | |
|------------|--|--|
| Adjustable | <ul style="list-style-type: none"> • Acoustic power • Dynamic range • Gray scale map • Speed of sound (application dependent) • Scanning size (FOV or Angle) <ul style="list-style-type: none"> – Probe type dependent; consult individual probe specifications | <ul style="list-style-type: none"> • Gain • Frame averaging • Frequency • Frame rate • CrossXBeam • B colorization • Rejection • Suppression • SRI-HD |
|------------|--|--|

Digital M-Mode

- | | | |
|------------|---|---|
| Adjustable | <ul style="list-style-type: none"> • Acoustic power • Dynamic range • Frequency • M colorization • Rejection | <ul style="list-style-type: none"> • Gain • Gray scale map • Sweep speed • M display format |
|------------|---|---|

Anatomical M-Mode

M-Mode cursor adjustable at any plane

Can be activated from a CINE loop from a live or stored image

M & A capability

Available with Color Flow Mode

Digital Spectral Doppler Mode

- | | | |
|------------|---|---|
| Adjustable | <ul style="list-style-type: none"> • Acoustic power • Dynamic range • Transmit frequency • PW colorization • Sweep speed • Sample volume length • Spectrum inversion • Baseline shift • Time resolution • Trace direction | <ul style="list-style-type: none"> • Gain • Gray scale map • Wall filter • Velocity scale range • Angle correction • Steered linear • Trace method • Doppler auto trace • Compression • Trace sensitivity |
|------------|---|---|

Digital Color Flow Mode

- | | | |
|------------|--|--|
| Adjustable | <ul style="list-style-type: none"> • Acoustic power • Gain • Velocity scale range • Wall filter • Packet size • Spatial filter • Frame average • Accumulation mode • Flash suppression • Shortcuts | <ul style="list-style-type: none"> • Color maps, including velocity-variance maps • Line density • Steering angle • Threshold • Auto ROI placement and steering on linear |
|------------|--|--|

Digital Power Doppler Imaging

- | | | |
|------------|---|--|
| Adjustable | <ul style="list-style-type: none"> • Acoustic power • Gain • Velocity scale range • Wall filter • Packet size • Spatial filter • Frame average | <ul style="list-style-type: none"> • Accumulation mode • Shortcuts • Color maps • Line density • Steering angle • Threshold • Flash suppression |
|------------|---|--|

Continuous Wave Doppler (Option)

Available on the following probes: M5Sc-D, P2D, P6D, P8D, 6S-D, 6Tc -RS

Steerable CW mode included

- | | | |
|------------|---|--|
| Adjustable | <ul style="list-style-type: none"> • Acoustic power • Dynamic range • Transmit frequency • CW colorization • Sweep speed • Angle correction • Trace method • Baseline shift • Compression • Trace direction | <ul style="list-style-type: none"> • Gain • Gray scale map • Wall filter • Velocity scale range • Spectrum inversion • Doppler auto trace • Trace sensitivity |
|------------|---|--|

General system parameters *(cont.)*

Automatic optimization

Optimize B-Mode image to help improve contrast resolution

Selectable amount of contrast resolution improvement (low, medium, high)

CTO (Continuous Tissue Optimization) – continuously adjusts B-Mode axial and lateral gain uniformity and overall gain level, suppressing the noise

Auto-spectral optimize – adjusts baseline, invert, PRF (on live image), and angle correction

Auto CF and PW positioning – adjusts ROI position, sample volume position, and steering

Coded Harmonic Imaging

Available on all 2D and 4D probes

B-Flow (Option)

Available on the following probes: C1-6-D, C1-6VN-D, C2-7-D, C2-7VN-D, C2-9-D, C2-9VN-D, C3-10-D, L2-9-D, L2-9VN-D, L3-12-D, ML6-15-D, M5Sc-D, L8-18i-D, L6-24D

Background

Sensitivity/PRI

Acoustic power

Frequency

Line density

Frame average

Gray scale map

Tint map

Dynamic range

Rejection

Gain

Flash suppression

SRI-HD

Accumulation

Visualization

Radiantflow™

Easy, fast visualization of tiny vessels, displaying as a 3D effect

B Steer+

Available on the following probes: C1-6-D and all linear probes

Coded contrast imaging (Option)

Available on the following probes: C1-6-D, C1-6VN-D, C2-9-D, C2-9VN-D, C2-7-D, C2-7VN-D, C3-10-D, IC5-9-D, L2-9-D, L2-9VN-D, L3-12-D, M5Sc-D, ML6-15-D, RAB6-D, RIC5-9-D, L3-9i-D, BE9CS-D

2 contrast timers

Timed updates: 0.05 – 10 seconds

Accumulation mode, seven levels

Maximum enhance mode

Flash

Time intensity curve (TIC) analysis

Parametric imaging

The LOGIQ Fortis is designed for compatibility with most commercially available ultrasound contrast agents. Because the availability of these agents is subject to government regulation and approval, product features intended for use with these agents may not be commercially marketed nor made available before the contrast agent is cleared for use. Contrast related product features are enabled only on systems for delivery to an authorized country or region of use.

LOGIQView

Extended field of view Imaging

Up to 160 cm (63") scan length

Available on all 2D imaging probes

For use in B-Mode

CrossXBeam is available on linear probes

Auto detection of scan direction

Pre-or post-process zoom

Rotation

Auto best fit on monitor

Measurements in B-Mode

3D

Allows unlimited rotation and planar translations

3D reconstruction from CINE sweep

Advanced 3D

Acquisition of color data

Automatic rendering

3D landscape technology

3D movie

General system parameters *(cont.)*

Real Time 4D (Option)

Acquisition modes

- Real Time 4D
- Static 3D
- Spatio-Temporal Image Correlation

Visualization modes

- 3D rendering (diverse surface and intensity projection modes)
- Sectional planes (3 section planes perpendicular to each other)
- Omniview
- Volume contrast imaging – static
- Volume contrast imaging – Omniview
- Tomographic ultrasound imaging
- Volume Analyses
 - VOCAL: semi-auto/manual segmentation tool (segmentation using touch screen)
 - 3D static only
 - Threshold Volume: measure volume above and below a threshold

Render mode

- Surface texture, surface smooth, max- min- and X-ray (average intensity projection), mix mode of two render modes
- HD*live*™

SonoRender*live*

Curved 3-point render start

3D movie

Scalpel: 3D cut tool

Display format

- Quad: A-/B-/C-Plane/3D
- Dual: A-Plane/3D
- Single: 3D or A- or B- or C-Plane

Automated volume calculation – VOCAL II

Betaview

Volume navigation (Option)

Available on the following probes: C1-6VN-D, C2-9VN-D, C2-7VN-D, C3-10-D, L2-9VN-D, ML6-15-D, IC5-9-D, L8-18i-D, M5Sc-D

Sensor-based acquisition

Position markers

Needle tip tracking

Virtual tracking

Auto image registration

Tru3D feature includes: Display of data in: main-, parallel-, angular-mode

Render modes: gray surface, texture, min-, max-, average-intensity

Measurements: distance, angle, area, volume

3D movie

Scan assistant (Option)

Factory programs

User-defined programs

Steps include image annotations, mode transitions, basic imaging controls, and measurement initiation

Compare assistant (Option)

Allows side-by-side comparison of previous ultrasound and other modality exams during live scanning

Breast productivity package

Auto measurement

Worksheet summary includes measurements and locations for lesions and lymph nodes

Feature assessment

BI-RADS® assessment

User editable

Thyroid productivity package

Auto measurement

Worksheet summary includes measurements and locations for nodule, parathyroid, and lymph node

Feature assessment

TI-RADs assessment

User editable

Start Assistant

Automatically select category, probe, preset, or scan assistant from worklist exam description

Learn the category, probe, preset, and scan assistant based on exam description

Shear Wave Elastography (Option)

Available on the following probes: C1-6-D, C1-6VN-D, IC5-9-D, L2-9-D, L2-9VN-D, L3-12D, ML6-15-D, L8-18D, L6-24-D

User programmable measurement display in kPa and meters per second

Single and dual view display

General system parameters *(cont.)*

Strain Elastography (Option)

Available on the following probes: ML6-15-D, L2-9-D, L2-9VN-D, L3-12-D, IC5-9-D, C2-9-D, C2-9VN-D, C1-6-D, C1-6VN-D, L8-18i-D, BE9CS-D, L6-24-D

Relative analysis tool

UGAP (Option)

Available on the following probes: C1-6-D, C1-6VN-D, C2-9D, C2-9VN-D

Measures liver attenuation* (attenuation coefficient [dB/cm/MHz]) by auto measure algorithm with reference B-mode

Simple and 2D color map (attenuation color map and Measurement Position Indicator Map)

Quantitative flow analysis (Option)

Available in color and power Doppler

TVI (Option)

Available on the following probes: M5Sc-D, 6S-D, 6TC-RS, 6Tc-RS

Myocardial Doppler imaging with color overlay on tissue image

Tissue color overlay can be removed to show just the 2D image, still retaining the tissue velocity information

Curved anatomical M-Mode: free (curved) drawing of M-Mode generated from the cursor independent of the axial plane

Q-Analysis: multiple time-motion trace display from selected points in the myocardium

Stress echo (Option)

Advanced and flexible stress echo examination capabilities

Provides exercise and pharmacological protocol templates

6 default templates

Template editor for user configuration of existing templates or creation of new templates

Reference scan display during acquisition for stress level comparison (dual screen)

Baseline level/previous level selectable

Raw data continuous capture

Over 100 sec. available

Wall motion scoring (bull's-eye and segmental)

Smart stress: Automatically set up various scanning parameters (e.g. geometry, frequency, gain) according to same projection on previous level

Auto EF (Option)

Allows semi-automatic measurement of the global EF (Ejection Fraction)

User editable

Cardiac AFI (Option)

Allows assessment of the complete left ventricle with all segments at a glance by combining three longitudinal views into one comprehensive bulls-eye view

2D strain-based data moves into clinical practice

App Launchpad

The App Launchpad is a tab available on the Utilities+ screen – when selected, various applications (“Apps”) can be launched. This is hidden if no apps are installed.

Only validated and released Apps are supported

3rd-party Apps can be purchased through an AppStore on a GE HealthCare (GEHC) website

Consult with a GE HealthCare (GEHC) representative for more details

Raw Data Streaming (Option)

Provides streaming of raw data out to 3rd-party devices designed to process this data

Virtual convex

Provides a convex field of view

Compatible with CrossXBeam

Available on all linear and sector probes

SRI-HD and Advanced SRI

Speckle reduction imaging

Provides multiple levels of speckle reduction

Compatible with side-by-side DualView display

Advanced SRI:
two types

- Type 1
 - Compatible with all linear, convex, and sector probes
- Type 2 (Option)
 - Compatible with OB/GYN application

General system parameters *(cont.)*

CrossXBeam

Provides variable angle spatial compounding

Live side-by-side DualView display

- | | | |
|-----------------|------------------|--------------------------|
| Compatible with | • Color mode | • PW |
| | • SRI-HD | • Coded harmonic imaging |
| | • Virtual convex | |

Available on all curved and linear probes

Controls available while “live”

Magnification Zoom: Magnifies the entire image on the screen without zoom ROI

Pan Zoom: Magnifies the display of the data within the ROI

HD Zoom: Magnifies the image within the zoom ROI with higher spatial resolution than original images

- | | | |
|-------------------------|---------------------|--------------------------|
| B/M/
CrossXBeam-Mode | • Gain | • TGC |
| | • Dynamic range | • Acoustic output |
| | • Framerate control | • Sweep speed for M-Mode |
| | • CrossXBeam angle | |

- | | | |
|---------|-------------------------------------|--------------------------|
| PW-Mode | • Gain | • Dynamic range |
| | • Acoustic output | • Transmission frequency |
| | • PRF | • Spectral averaging |
| | • Wall filter | • Velocity scale |
| | • Sample volume gate: length, depth | |

- | | | |
|-----------------|-------------------------------------|-----------------------|
| Color Flow Mode | • CFM gain | • CFM velocity range |
| | • Acoustic output | • Packet size |
| | • Wall echo filter | • CFM spatial filter |
| | • Frame rate control | • CFM line resolution |
| | • CFM frame averaging | |
| | • Frequency/velocity baseline shift | |

Controls available on “freeze” or recall

Automatic optimization

SRI-HD

CrossXBeam – display non-compounded and compounded image simultaneously in split screen

3D reconstruction from a stored CINE loop

- | | |
|---------------------|------------------------------|
| B/M/CrossXBeam mode | • Gray map optimization |
| | • TGC |
| | • Colorized B and M |
| | • Frame average (loops only) |
| | • Dynamic range |

Anatomical M-Mode

Magnification zoom

Controls available on “freeze” or recall *(cont.)*

Pan zoom

Baseline shift

Sweep speed

- | | | |
|---------|-----------------------------|----------------------|
| PW mode | • Gray map | • Post gain |
| | • Baseline shift | • Sweep speed |
| | • Invert spectral wave form | • Compression |
| | • Colorized spectrum | • Display format |
| | • Quick angle correct | • Angle correct |
| | | • Auto angle correct |

- | | |
|------------|-------------------------------------|
| Color flow | • Overall gain (loops and stills) |
| | • Color map |
| | • Transparency map |
| | • Frame averaging (loops only) |
| | • CFM display threshold |
| | • Spectral invert for color/Doppler |

Anatomical M-Mode on CINE loop

- | | |
|----|---|
| 4D | • Gray map, colorize |
| | • Post gain |
| | • Change display – single, dual, quad sectional or rendered |

Measurements/calculations

General B-Mode

Depth and distance

Circumference (ellipse/trace)

Area (ellipse/trace)

Volume (ellipsoid)

% Stenosis (area or diameter)

Angle between two lines

Dual B-Mode capability

General M-Mode

M-Depth

Distance

Time

Slope

Heart rate

Measurements/calculations *(cont.)*

General Doppler measurements/calculations

Velocity

Time

A/B ratio (velocities/frequency ratio)

PS (Peak Systole)

ED (End Diastole)

PS/ED (PS/ED Ratio)

ED/PS (ED/PS Ratio)

AT (Acceleration Time)

ACCEL (Acceleration)

TAMAX (Time Averaged Maximum Velocity)

Volume flow (TAMEAN and vessel area)

Heart rate

PI (Pulsatility Index)

RI (Resistivity Index)

Real-time Doppler auto measurements/calculations

PS (Peak Systole)

ED (End Diastole)

MD (Minimum Diastole)

PI (Pulsatility Index)

RI (Resistivity Index)

AT (Acceleration Time)

ACC (Acceleration)

PS/ED (PS/ED Ratio)

ED/PS (ED/PS Ratio)

HR (Heart Rate)

TAMAX (Time Averaged Maximum Velocity)

PVAL (Peak Velocity Value)

Volume Flow (TAMEAN and Vessel Area)

Abdominal measurements/calculations

Shear Elasto velocity

Shear Elasto stiffness

Attenuation rate

Attenuation coefficient

Summary reports

Small Parts measurements/calculations

Breast Lesion

Thyroid

Parathyroid

Lymph Node

Nodule

Isthmus AP

Shear Elasto velocity

Shear Elasto stiffness

Summary reports

OB measurements/calculations

Gestational age by

- GS (Gestational Sac)
- CRL (Crown Rump Length)
- FL (Femur Length)
- BPD (Biparietal Diameter)
- AC (Abdominal Circumference)
- HC (Head Circumference)
- APTD x TTD (Anterior/Posterior Trunk Diameter by Transverse Trunk Diameter)
- FTA (Fetal Trunk Cross-sectional Area)
- HL (Humerus Length)
- BD (Binocular Distance)
- FT (Foot Length)
- OFD (Occipital Frontal Diameter)
- TAD (Transverse Abdominal Diameter)
- TCD (Transverse Cerebellum Diameter)
- THD (Thorax Transverse Diameter)
- TIB (Tibia Length)
- ULNA (Ulna Length)
- OOD (Outer Orbital Diameter)
- IOD (Inner Orbital Diameter)
- FIB (Fibula length)
- Radius (Radius length)
- LV (Lateral Ventricle width) (= SL)

Fetal graphical trending

Growth percentiles

Multi-gestational calculations (4)

Fetal qualitative description (anatomical survey)

Fetal environmental description (biophysical profile)

Programmable OB tables

Over 20 selectable OB calculations

Expanded worksheets

Measurements/calculations *(cont.)*

Estimated fetal weight (EFW) by:

AC, BPD

AC, BPD, FL

AC, BPD, FL, HC

AC, FL

AC, FL, HC

AC, HC

BPD, APTD, TTD, FL

BPD, APTD, TTD, SL

Calculations and ratios

FL/BPD

FL/AC

FL/HC

HC/AC

CI (Cephalic Index)

AFI (Amniotic Fluid Index)

CTAR (Cardio-Thoracic Area Ratio)

Measurements/calculations by: Alexander, ASUM, ASUM 2001, Bahlmann, Baschat, Berkowitz, Bertagnoli, Brenner, Campbell, CFEF, Chervenak, Chitty, Doubilet, Ebing, Eik-Nes Goldstein, Hadlock, Hansmann, Hellman, Hill, Hohler, Jeanty, JSUM, Kramer, Kurmanavicius, Kurtz, Mari, Mayden, Mercer, Merz, Moore, Nelson, Osaka University, Paris, Pexsters, Rempen, Robinson, Shepard, Shepard/Warsoff, Sonek, Tokyo University, Tokyo/Shinozuka, WHO, Williams, Yarkoni

OB measure assistant

Allows automatic measurement of BPD, HC, FL, AC, and HL

User editable

SonoNT and SonoIT

SonoNT measures the contour detection of the NT border

SonoIT is a system supported measurement for Intracranial Translucency

GYN measurements/calculations

Right ovary length, width, height

Left ovary length, width, height

Uterus length, width, height

Cervix length, trace

Ovarian volume

ENDO (Endometrial thickness)

Ovarian RI

Uterine RI

Follicular measurements

Fibroid measurements

Summary reports

Mean Uterine Artery (Gomez) Doppler Measurement and graph

Qualitative description (anatomical survey)

Vascular measurements/calculations

SYS DCCA (Systolic Distal Common Carotid Artery)

DIAS DCCA (Diastolic Distal Common Carotid Artery)

SYS MCCA (Systolic Mid Common Carotid Artery)

DIAS MCCA (Diastolic Mid Common Carotid Artery)

SYS PCCA (Systolic Proximal Common Carotid Artery)

DIAS PCCA (Diastolic Proximal Common Carotid Artery)

SYS DICA (Systolic Distal Internal Carotid Artery)

DIAS DICA (Systolic Distal Internal Carotid Artery)

SYS MICA (Systolic Mid Internal Carotid Artery)

DIAS MICA (Diastolic Mid Internal Carotid Artery)

SYS PICA (Systolic Proximal Internal Carotid Artery)

DIAS PICA (Diastolic Proximal Internal Carotid Artery)

SYS DECA (Systolic Distal External Carotid Artery)

DIAS DECA (Diastolic Distal External Carotid Artery)

SYS PECA (Systolic Proximal External Carotid Artery)

DIAS PECA (Diastolic Proximal External Carotid Artery)

VERT (Systolic Vertebral Velocity)

SUBCLAV (Systolic Subclavian Velocity)

Automatic IMT

Summary reports

Measurements/calculations *(cont.)*

Urological calculations

Bladder volume

Prostate volume

Left/right renal volume

Generic volume

Post-void bladder volume

Pelvic floor measurements

Probes *(All Optional)*

BE9CS-D

Applications: urology

Biopsy guide: single angle, disposable (E8387M);
single angle, reusable (E8387MA)

6S-D, sector probe

Applications: cardiac, pediatric cardiac

6Tc-RS, trans-esophageal probe

Applications: cardiac

TEE RS-DLP Adapter (H46352LK)

C1-6-D, XDclear™ convex probe

Applications: abdomen, OB/GYN, pediatric, peripheral
vascular, general musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket
(H4917VB)

C1-6VN-D, VNav inside XDclear convex probe

VNav sensor inside probe for Volume Navigation tracking without
sensor cables

Applications: abdomen, OB/GYN, pediatric, peripheral
vascular, general musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket
(H4917VB)

C2-7-D, micro convex biopsy probe

Applications: abdomen, pediatric

Biopsy guide: multi-angle, disposable with a reusable
bracket (H40482LK); multi-angle, with a reusable stainless bracket
(H40482LL)

C2-7VN-D, VNav inside micro convex biopsy probe

VNav sensor inside probe for Volume Navigation tracking without
sensor cables

Applications: abdomen, pediatric

Biopsy guide: multi-angle, disposable with a reusable
bracket (H40482LK); multi-angle, with a reusable stainless bracket
(H40482LL)

C2-9-D, XDclear convex probe

Applications: abdomen, OB/GYN, pediatric, peripheral vascular,
neonatal, neonatal transcranial, general musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket
(H4913BA)

C2-9VN-D, VNav inside XDclear convex probe

VNav sensor inside probe for Volume Navigation tracking without
sensor cables

Applications: abdomen, OB/GYN, pediatric, peripheral vascular,
neonatal, neonatal transcranial, general musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket
(H4913BA)

C3-10-D, XDclear micro convex probe

Applications: abdomen, neonatal, pediatric, peripheral vascular,
neonatal transcranial, small parts

IC5-9-D, micro convex probe

Applications: OB/GYN, urology

Biopsy guide: single angle, disposable with a disposable bracket
(E8385MJ) or a reusable bracket (H40412LN)

L2-9-D, XDclear linear probe

Applications: peripheral vascular, small parts, pediatric,
abdomen, OB/GYN, general musculoskeletal, superficial
musculoskeletal, neonatal, neonatal transcranial

Biopsy guide: multi-angle, disposable with a reusable bracket
(H44901AM)

Probes *(cont.)*

L2-9VN-D, VNav inside XDclear linear probe

VNav sensor inside probe for Volume Navigation tracking without sensor cables

Applications: peripheral vascular, small parts, pediatric, abdomen, OB/GYN, general musculoskeletal, superficial musculoskeletal, neonatal, neonatal transcranial

Biopsy guide: multi-angle, disposable with a reusable bracket (H44901AM)

L3-9i-D, linear probe

Applications: abdomen, intraoperative

L3-12-D, linear probe

Applications: abdomen, OB, general musculoskeletal, superficial musculoskeletal, neonatal, neonatal transcranial, small parts, vascular

Biopsy guide: multi-angle, disposable with a reusable bracket (H78652PA)

L4-20t-D, XDclear linear probe

Applications: general musculoskeletal, superficial musculoskeletal, vascular

Biopsy guide: multi-angle, disposable with a reusable bracket (H45201BLF)

L6-24-D, linear probe

Applications: abdomen, general musculoskeletal, superficial musculoskeletal, breast, peripheral vascular, neonatal, small parts

L8-18i-D, linear probe

Applications: small parts, peripheral vascular, neonatal, neonatal transcranial, general musculoskeletal, superficial musculoskeletal, intraoperative

M5Sc-D, XDclear sector probe

Applications: adult cardiac, pediatric cardiac, adult cephalic, abdominal

Biopsy guide: multi-angle, disposable with a reusable bracket (H45561FC)

ML6-15-D, matrix array linear probe

Applications: abdomen, small parts, peripheral vascular, neonatal, pediatric, neonatal transcranial, general musculoskeletal, superficial musculoskeletal

Biopsy guide: multi-angle, disposable with a reusable bracket (H40432LJ)

P2D, CW split crystal probe

Applications: adult cardiac, pediatric cardiac, peripheral vascular, adult cephalic

P6D, CW split crystal probe

Applications: adult cardiac, pediatric cardiac, peripheral vascular, adult cephalic

P8D, CW split crystal probe

Applications: adult cardiac, pediatric cardiac, peripheral vascular, adult cephalic

RAB6-D, convex volume probe

Applications: abdomen, OB/GYN, pediatric, neonatal

Biopsy guide: single angle, reusable bracket (H46701AE)

RIC5-9-D, convex volume probe

Applications: OB/GYN, urology

Biopsy guide: single angle, reusable (H46721R)

Vscan Air™ CL, convex probe

Applications: abdomen, OB, peripheral vascular, general musculoskeletal, superficial musculoskeletal, cardiac, pleural

Vscan Air CL, linear probe

Applications: peripheral vascular, thyroid, scrotal, breast, general musculoskeletal, superficial musculoskeletal, pediatric cephalic, pleural

External Inputs and outputs (not including on-board peripherals)

HDMI

Ethernet

Multiple USB 3.0 ports

Safety conformance

The LOGIQ Fortis is:

Classified to ANSI/AAMI ES60601-1 Medical Electrical Equipment, Part 1: General Requirements for Safety by a Nationally Recognized Test Lab

Certified to CSA CAN/CSA-C22.2 NO. 60601-1 General requirements for safety

CE Marked to Regulation (EU) 2017/745 on Medical Devices Conforms to the following standards for safety:

- IEC/EN 60601-1 Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
- IEC/EN 60601-1-2 Medical electrical equipment – Part 1-2: General requirements for safety – Collateral Standard: Electromagnetic compatibility – requirements and tests
- IEC/EN 60601-1-6 Medical electrical equipment Part 1 -6: General requirements for basic safety and essential performance – Collateral Standard: Usability
- IEC/EN 60601-1-9 Medical electrical equipment Part 1 -9: General requirements for basic safety and essential performance – Collateral Standard: Requirements for environmentally conscious design
- IEC/EN 60601-2-37 Medical electrical equipment – Part 2-37: Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment
- IEC/EN 62366-1 Application of usability engineering to medical devices
- IEC/EN 62304 Software Life Cycle Processes
- IEC/EN 62359 Ultrasonic – Field characterization – Test methods for the determination of thermal and mechanical indices related to medical diagnostic ultrasonic fields
- EN ISO 15223-1: Symbols to be used with medical device labels, labelling and information to be supplied
- ISO 10993-1 Biological evaluation of medical devices – Part 1 Evaluation and testing
- ISO 17664-2 : Processing of health care products – Information to be provided by the medical device manufacturer for the processing of medical devices
- ISO14971 (Medical devices – Application of risk management to medical devices)
- EMC Emissions Group 1, class A device requirements as per Sub clause 4.2 of CISPR 11
- WEEE (Waste Electrical and Electronic Equipment)
- RoHS according to 2011/65 EU 2015/863 EU Including national deviations
- Wireless equipment shall be certified to FCC, RED and Japan Radio Law
- Medical Device Good Manufacturing Practice Manual issued by the FDA (Food and Drug Administration, Department of Health, USA)

Supplement: cardiac measurements/calculations

B-Mode measurements

Aorta	<ul style="list-style-type: none"> • Aortic Root Diameter (Ao Root Diam) • Aortic Arch Diameter (Ao Arch Diam) • Ascending Aortic Diameter (Ao Asc Diam) • Descending Aortic Diameter (Ao Desc Diam) • Aorta Isthmus (Ao Isthmus) • Aorta (Ao st junct)
Aortic valve	<ul style="list-style-type: none"> • Aortic Valve Cusp Separation (AV Cusp) • Aortic Valve Area Planimetry (AVA Planimetry) • Trans AVA
Left atrium	<ul style="list-style-type: none"> • Left Atrium Diameter (LA Diam) • LA Length (LA Major) • LA Width (LA Minor) • Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao ratio) • Left Atrium Area (LAA(d), LAA(s)) • Left Atrium Volume, Single Plane, Method of Disk (LAEDV A2C, LAESV A2C) (LAEDV A4C, LAESV A4C), (LAEDV A-L, LAEDV Index A-L, LAESV A-L, LAESV Index A-L)
Left ventricle	<ul style="list-style-type: none"> • Left Ventricle Mass (LVPWd, LVPWs) • Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds) • Left Ventricle Internal Diameter (LVIDd, LVI Ds) • Left Ventricle Length (LVLd, LVLs) • Left Ventricle Outflow Tract Diameter (LVOT Diam) • Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs) • Left Ventricle Length (LV Major) • Left Ventricle Width (LV Minor) • Left Ventricle Outflow Tract Area (LVOT) • Left Ventricle Area, Two Chamber/Four Chamber/Short Axis (LVA (d), LVA (s)) • Left Ventricle Endocardial Area, Width (LVA (d), LVA(s)) • Left Ventricle Epicardial Area, Length (LVAepi (d), LVAepi (s)) • Left Ventricle Mass Index (LVPWd, LVPWs) • Ejection Fraction, Teichholz/Cube (LVIDd, LVIDs) • Left Ventricle Posterior Wall Fractional Shortening (LVPWd, LVPWs) • Left Ventricle Stroke Index, Teichholz/Cube (LVIDd, LVIDs and Body Surface Area) • Left Ventricle Fractional Shortening (LVIDd, LVIDs) • Left Ventricle Stroke Volume, Teichholz/Cubic (LVIDd, LVIDs)

Supplement: cardiac measurements/calculations *(cont.)*

B-Mode measurements *(cont.)*

- Left ventricle *(cont.)*
- Left Ventricle Stroke Index, Single Plane, Two Chamber, Method of Disk (LVI Dd, LVIDs, LVSD, LVSS)
 - Left Ventricle Stroke Index, Single Plane, Four Chamber, Method of Disk (LVI Dd, LVIDs, LVSD, LVSS)
 - Left Ventricle Stroke Index, Bi-Plane, Bullet, Method of Disk (LVAd, LVAs)
 - Interventricular Septum (IVS)
 - Left Ventricle Internal Diameter (LVI D)
 - Left Ventricle Posterior Wall Thickness (LVPW)

- Mitral valve
- Mitral Valve Annulus Diameter (MV Ann Diam)
 - E-Point-to-Septum Separation (EPSS)
 - Mitral Valve Area Planimetry (MVA Planimetry)

- Pulmonic valve
- Pulmonic Valve Area (PV Planimetry)
 - Pulmonic Valve Annulus Diameter (PV Annulus Diam)
 - Pulmonic Diameter (Pulmonic Diam)

- Right atrium
- Right Atrium Diameter, Length (RAD Ma)
 - Right Atrium Diameter, Width (RAD Mi)
 - Right Atrium Area (RAA)
 - Right Atrium Volume, Single Plane, Method of Disk (RAAd)
 - Right Atrium Volume, Systolic, Single Plane, Method of Disk (RAAs)

- Right ventricle
- Right Ventricle Outflow Tract Area (RVOT Planimetry)
 - Left Pulmonary Artery Area (LPA Area)
 - Right Pulmonary Artery Area (RPA Area)
 - Right Ventricle Internal Diameter (RVIDD, RVIDs)
 - Right Ventricle Diameter, Length (RVD Ma)
 - Right Ventricle Diameter, Width (RVD Mi)
 - Right Ventricle Wall Thickness (RVAWd, RVAWs)
 - Right Ventricle Outflow Tract Diameter (RVOT Diam)
 - Left Pulmonary Artery (LPA)
 - Main Pulmonary Artery (MPA)
 - Right Pulmonary Artery (RPA)

B-Mode measurements *(cont.)*

- System inferior vena cava
- Systemic Vein Diameter (Systemic Diam)
 - Patent Ductus Arteriosus Diameter (PDA Diam)
 - Pericard Effusion (PEs)
 - Patent Foramen Ovale Diameter (PFO Diam)
 - Ventricular Septal Defect Diameter (VSD Diam)
 - Interventricular Septum (IVS) Fractional Shortening (IVSd, IVSS)

- Tricuspid valve
- Tricuspid Valve Area (TV Planimetry)
 - Tricuspid Valve Annulus Diameter (TV Annulus Diam)

M-Mode measurements

- Aorta
- Aortic Root Diameter (Ao Root Diam)
 - Aortic Valve
 - Aortic Valve Diameter (AV Diam)
 - Aortic Valve Cusp separation (AV Cusp)
 - Aortic Valve Ejection Time (LVET)

- Left atrium
- Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao Ratio)
 - Left Atrium Diameter (LA Diam)

- Left ventricle
- Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds)
 - Left Ventricle Internal Diameter (LVIDd, LVI Ds)
 - Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs)
 - Left Ventricle Ejection Time (LVET)
 - Left Ventricle Pre-Ejection Period (LVPEP)
 - Interventricular Septum (IVS)
 - Left Ventricle Internal Diameter (LVI D)
 - Left Ventricle Posterior Wall Thickness (LVPW)

- Mitral valve
- E-Point-to-Septum Separation (EPSS)
 - Mitral Valve Leaflet Separation (D-E Excursion)
 - Mitral Valve Anterior Leaflet Excursion (D-E Excursion)
 - Mitral Valve D-E Slope (D-E Slope)
 - Mitral Valve E-F Slope (E-F Slope)
 - Mitral Annular Plane Systolic Excursion (MAPSE)

- Pulmonic valve
- QRS Complex to End of Envelope (Q-PV close)

Supplement: cardiac measurements/calculations *(cont.)*

M-Mode measurements *(cont.)*

- | | |
|-----------------|--|
| Right ventricle | <ul style="list-style-type: none"> • Right Ventricle Internal Diameter (RVIDd, RVIDs) • Right Ventricle Wall Thickness (RVAWd, RVAWs) • Right Ventricle Outflow Tract Diameter (RVOT Diam) • Right Ventricle Ejection Time (RVET) • Right Ventricle Pre-Ejection Period (RVPEP) |
|-----------------|--|

- | | |
|--------|--|
| System | <ul style="list-style-type: none"> • Pericard Effusion (PE (d)) |
|--------|--|

- | | |
|-----------------|---|
| Tricuspid valve | <ul style="list-style-type: none"> • QRS Complex to End of Envelope (Q-TV close) • Tricuspid Annular Plane Systolic Excursion (TAPSE) |
|-----------------|---|

Doppler Mode measurements

- | | |
|--------------|--|
| Aortic valve | <ul style="list-style-type: none"> • Aortic Insufficiency Mean Pressure Gradient (AR Trace) • Aortic Insufficiency Peak Pressure Gradient (AR Vmax) • Aortic Insufficiency End Diastole Pressure Gradient (AR Trace) • Aortic Insufficiency Mean Velocity (AR Trace) • Aortic Insufficiency Velocity Time Integral (AR Trace) • Aortic Valve Mean Velocity (AV Trace) • Aortic Valve Velocity Time Integral (AV Trace) • Aortic Valve Mean Pressure Gradient (AV Trace) • Aortic Valve Peak Pressure Gradient (AR Vmax) • Aortic Insufficiency Peak Velocity (AR Vmax) • Aortic Insufficiency End-Diastolic Velocity (AR Trace) • Aortic Valve Peak Velocity (AV Vmax) • Aortic Valve Peak Velocity at Point E (AV Vmax) • Aorta Proximal Coarctation (Coarc Pre-Duct) • Aorta Distal Coarctation (Coarc Post-Duct) • Aortic Valve Insufficiency Pressure Half Time (AR PHT) • Aortic Valve Flow Acceleration (AV Trace) • Aortic Valve Pressure Half Time (AV Trace) • Aortic Valve Acceleration Time (AV Acc Time) • Aortic Valve Deceleration Time (AV Dec Time) • Aortic Valve Ejection Time (AVET) • Aortic Valve Acceleration to Ejection Time Ratio (AV Acc Time, AVET) • Aortic Valve Area(VTI): AVA (Vmax) |
|--------------|--|

Doppler Mode measurements *(cont.)*

- | | |
|----------------|---|
| Left ventricle | <ul style="list-style-type: none"> • Left Ventricle Outflow Tract Peak Pressure Gradient (LVOT Vmax) • Left Ventricle Outflow Tract Peak Velocity (LVOT Vmax) • Left Ventricle Outflow Tract Mean Pressure Gradient (LVOT Trace) • Left Ventricle Outflow Tract Mean Velocity (LVOT Trace) • Left Ventricle Outflow Tract Velocity Time Integral (LVOT Trace) • Left Ventricle Ejection Time (LVET) |
|----------------|---|

- | | |
|--------------|--|
| Mitral valve | <ul style="list-style-type: none"> • E' Early diastolic mitral valve annular velocity (E') • E' Averaged Early diastolic mitral valve annular velocity (E' Avg) • E' Lat Early diastolic mitral valve lateral annular velocity (E' Lat) • E' Medial Early diastolic mitral valve medial annular velocity (E' Medial) • E' Sept Early diastolic mitral valve septal annular velocity (E' Sept) • Mitral inflow E velocity to E' ratio (E/E') • Mitral inflow E velocity to E' Avg ratio (E/E' Avg) • Mitral inflow E velocity to E' Lat ratio (E/E' Lat) • Medial Mitral inflow E velocity to E' Medial ratio (E/E') • Mitral inflow E velocity to E' Sept ratio (E/E' Sept) • Mitral Valve Regurgitant Flow Acceleration (MR Trace) • Mitral Valve Regurgitant Mean Velocity (MR Trace) • Mitral Regurgitant Mean Pressure Gradient (MR Trace) • Mitral Regurgitant Velocity Time Integral (MR Trace) • Mitral Valve Mean Velocity (MV Trace) • Mitral Valve Velocity Time Integral (MV Trace) • Mitral Valve Mean Pressure Gradient (MV Trace) • Mitral Regurgitant Peak Pressure Gradient (MR Vmax) • Mitral Valve Peak Pressure Gradient (MV Vmax) • Mitral Regurgitant Peak Velocity (MR Vmax) • Mitral Valve Peak Velocity (MV Vmax) |
|--------------|--|

Supplement: cardiac measurements/calculations *(cont.)*

Doppler Mode measurements *(cont.)*

- | | |
|-----------------------------|--|
| Mitral valve <i>(cont.)</i> | <ul style="list-style-type: none"> • Mitral Valve Velocity Peak A (MV A Velocity) • Mitral Valve Velocity Peak E (MV E Velocity) • Mitral Valve Area According to PHT (MV PHT) • Mitral Valve Flow Deceleration (MV DecT) • Mitral Valve Pressure Half Time (MV PHT) • Mitral Valve Flow Acceleration (MV AccT) • Mitral Valve E-Peak to A-Peak Ratio (A-C and D-E) (MV E/ARatio) • Mitral Valve Acceleration Time (MV Acc Time) • Mitral Valve Deceleration Time (MV Dec Time) • Mitral Valve Ejection Time ((MVET) • Mitral Valve A-Wave Duration (MV A Dur) • Mitral Valve Time to Peak (MV TTP) • Mitral Valve Acceleration Time/Deceleration Time Ratio (MV Acc/Dec Time) • Stroke Volume Index by Mitral Flow (MVA Planimetry, MVTrace) |
| Pulmonic valve | <ul style="list-style-type: none"> • Pulmonic Insufficiency Peak Pressure Gradient (PR Vmax) • Pulmonic Insufficiency End-Diastolic Pressure Gradient (PR Trace) • Pulmonic Valve Peak Pressure Gradient (PV Vmax) • Pulmonic Insufficiency Peak Velocity (PR Vmax) • Pulmonic Insufficiency End-Diastolic Velocity (Prend Vmax) • Pulmonic Valve Peak Velocity (PV Vmax) • Pulmonary Artery Diastolic Pressure (PV Trace) • Pulmonic Insufficiency Mean Pressure Gradient (PR Trace) • Pulmonic Valve Mean Pressure Gradient (PV Trace) • Pulmonic Insufficiency Mean Square Root Velocity (PR Trace) • Pulmonic Insufficiency Velocity Time Integral (PR Trace) • Pulmonic Valve Mean Velocity (PV Trace) • Pulmonic Valve Velocity Time Integral (PV Trace) • Pulmonic Insufficiency Pressure Half Time (PR PHT) • Pulmonic Valve Flow Acceleration (PV Acc Time) • Pulmonic Valve Acceleration Time (PV Acc Time) • Pulmonic Valve Ejection Time (PVET) • QRS Complex to End of Envelope (Q-to-PV Close) • Pulmonic Valve Acceleration to Ejection Time Ratio (PV Acc Time, PVET) |

Doppler Mode measurements *(cont.)*

- | | |
|-----------------|--|
| Right ventricle | <ul style="list-style-type: none"> • Right Ventricle Outflow Tract Peak Pressure Gradient (RVOT Vmax) • Right Ventricle Outflow Tract Peak Velocity (RVOT Vmax) • Right Ventricle Outflow Tract Velocity Time Integral (RVOT Trace) • Right Ventricle Ejection Time (RV Trace) • Stroke Volume by Pulmonic Flow (RVOT Planimetry, RVOT Trace) • Right Ventricle Stroke Volume Index by Pulmonic Flow (RVOT Planimetry, RVOT Trace) |
| System | <ul style="list-style-type: none"> • Pulmonary Artery Peak Velocity (PV Vmax) • Pulmonary Vein Velocity Peak A (Reverse) (P Vein A) • Pulmonary Vein Peak Velocity (P Vein D, P Vein S) • Systemic Vein Peak Velocity (PDA Diastolic, PDA Systolic) • Ventricular Septal Defect Peak Velocity (VSD Vmax) • Atrial Septal Defect (ASD Diastolic, ASD Systolic) • Pulmonary Vein A-Wave Duration (P Vein A Dur) • IsoVolumetric Relaxation Time (IVRT) • IsoVolumetric Contraction Time (IVCT) • Pulmonary Vein S/D Ratio (P Vein D, P Vein S) • Ventricular Septal Defect Peak Pressure Gradient (VSD Vmax) • Pulmonic-to-Systemic Flow Ratio (Qp/Qs) |
| Tricuspid valve | <ul style="list-style-type: none"> • Tricuspid Regurgitant Peak Pressure Gradient (TR Vmax) • Tricuspid Valve Peak Pressure Gradient (TV Vmax) • Tricuspid Regurgitant Peak Velocity (TR Vmax) • Tricuspid Valve Peak Velocity (TV Vmax) • Tricuspid Valve Velocity Peak A (TV A Velocity) • Tricuspid Valve Velocity Peak E (TV E Velocity) • Tricuspid Regurgitant Mean Pressure Gradient (TR Trace) • Tricuspid Valve Mean Pressure Gradient (TV Trace) • Tricuspid Regurgitant Mean Velocity (TR Trace) • Tricuspid Regurgitant Velocity Time Integral (TR Trace) |

Supplement: cardiac measurements/calculations *(cont.)*

Doppler Mode measurements *(cont.)*

- | | |
|-----------------|--|
| Tricuspid valve | <ul style="list-style-type: none"> • Tricuspid Valve Mean Velocity (TV Trace) • Tricuspid Valve Velocity Time Integral (TV Trace) • Tricuspid Valve Time to Peak (TV TTP) • Tricuspid Valve Ejection Time (TV Acc/Dec Time) • Tricuspid Valve A-Wave Duration (TV A Dur) • QRS Complex to End of Envelope (Q-TV Close) • Tricuspid Valve Pressure Half Time (TV PHT) • Stroke Volume by Tricuspid Flow (TV Planimetry, TV Trace) • Tricuspid Valve E-Peak to A-Peak Ratio (TV E/A Velocity) |
|-----------------|--|

Color Flow Mode measurements

- | | |
|--------------|---|
| Aortic valve | <ul style="list-style-type: none"> • Proximal Isovelocity Surface Area: Regurgitant Orifice Area (AR Radius) • Proximal Isovelocity Surface Area: Radius of Aliased Point (AR Radius) • Proximal Isovelocity Surface Area: Regurgitant Flow (AR Trace) • Proximal Isovelocity Surface Area: Regurgitant Volume Flow (AR Trace) • Proximal Isovelocity Surface Area: Aliased Velocity (AR Vmax) |
|--------------|---|

- | | |
|--------------|---|
| Mitral valve | <ul style="list-style-type: none"> • Proximal Isovelocity Surface Area: Regurgitant Orifice Area (MR Radius) • Proximal Isovelocity Surface Area: Radius of Aliased Point (MR Radius) • Proximal Isovelocity Surface Area: Regurgitant Flow (MR Trace) • Proximal Isovelocity Surface Area: Regurgitant Volume Flow (MR Trace) • Proximal Isovelocity Surface Area: Aliased Velocity (MR Vmax) |
|--------------|---|

Combination Mode measurements

- | | |
|--------------|---|
| Aortic valve | <ul style="list-style-type: none"> • Aortic Valve Area (Ao Root Diam, LVOT Vmax, AV Vmax) • Aortic Valve Area by Continuity Equation by Peak Velocity (Ao Root Diam, LVOT Vmax, AV Vmax) • Stroke Volume by Aortic Flow (AVA Planimetry, AV Trace) • Cardiac Output by Aortic Flow (AVA Planimetry, AV Trace, HR) • Aortic Valve Area by Continuity Equation VTI (Ao Root Diam, LVOT Vmax, AV Trace) |
|--------------|---|

- | | |
|----------------|---|
| Left ventricle | <ul style="list-style-type: none"> • Cardiac Output, Teichholz/Cubic (LVIDd, LVI Ds, HR) • Cardiac Output Two-Chamber, Single Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs, HR) • Cardiac Output Four-Chamber, Single Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs, HR) • Ejection Fraction Two-Chamber, Single Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs) • Ejection Fraction Four-Chamber, Single Plane, Area-Length/Method of Disk (Simpson) (LVAd, LVAs) • Left Ventricle Stroke Volume, Single Plane, Two-Chamber/Four-Chamber, Area-Length (LVAd, LVAs) • Left Ventricle Stroke Volume, Single Plane, Two-Chamber/Four-Chamber, Method of Disk (Simpson) (LVIDd, LVIDs, LVAd, LVAs) • Left Ventricle Volume, Two-Chamber/Four-Chamber, Area-Length (LVAd, LVAs) • Ejection Fraction, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH) • Left Ventricle Stroke Volume, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH) • Left Ventricle Volume, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH) • Left Ventricle Stroke Index, Single Plane, Two-Chamber/Four-Chamber, Area-Length (LVSD, LVSS and BSA) • Left Ventricle Volume, Single Plane, Two-Chamber/Four-Chamber, Method of Disk (LVAd, LVAs) • Left Ventricle Volume, Apical View, Long Axis, Method of Disk (LVAd, LVAs) |
|----------------|---|

Supplement: cardiac measurements/calculations *(cont.)*

Combination Mode measurements *(cont.)*

Mitral valve	<ul style="list-style-type: none">• Stroke Volume by Mitral Flow (MVA Planimetry, MV Trace)• Cardiac Output by Mitral Flow (MVA Planimetry, MV Trace, HR)
Pulmonic valve	<ul style="list-style-type: none">• Stroke Volume by Pulmonic Flow (PV Planimetry, PV Trace)• Cardiac Output by Pulmonic Flow (PV Planimetry, PV Trace, HR)
Tricuspid valve	<ul style="list-style-type: none">• Cardiac Output by Tricuspid Flow (TV Planimetry, TV Trace, HR)

Cardiac worksheet

Parameter: lists the mode, the measurement folder, and the specific measurement

Measured Value: Up to six measurement values for each item. Average, maximum, minimum, or last

Generic study in cardiology

Stroke Volume (SV)

Cardiac Output (CO)

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