DC-35/DC-40/DC-45/DC-40S/DC-40 Pro/DC-41/DC-42/DC-40T/DC-33/DC-36/DC-38/DC-39

Diagnostic Ultrasound System

Operator’s Manual

[Advanced Volume]

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Intellectual Property Statement

Preface

NOTE:

NOTE:

8. **Pressing the <Clear> key will clear the measurement caliper and all data in the result window, such as comments and body marks.**
9. **In dual-B imaging mode, the measurement results of the merged image can be inaccurate. Therefore, the results are provided for reference only, not for confirming diagnoses.**
10. **The quality of the extended image constructed in iScape (panoramic imaging) is dependent on the skill of the operator. Extra attention should be paid during the iScape measurement since the results could be inaccurate.**
11. **Ensure that measurement data correctly corresponds to the fetus during the Obstetric Measurement.**
12. **Fully understand the functionality of this system by referhe op18(e)-11.2 (n**

1 Overview

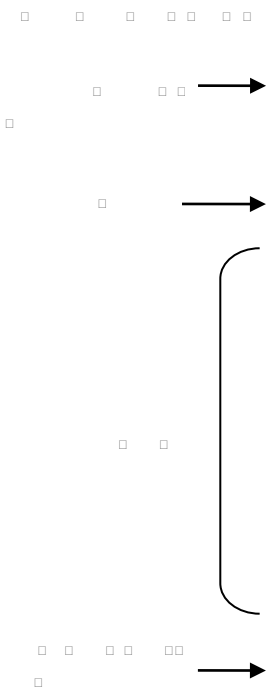
1.1 Basic Operations and Buttons

Tip:

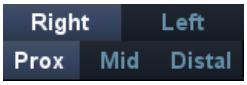
Keys	Basic Operations

c

1.2 Measurement Menu



1.2.1 Measurement Location



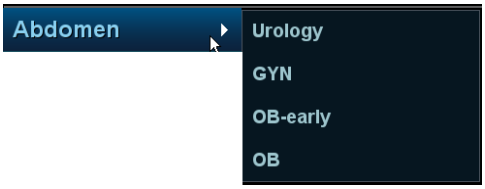
Tip:	

1.2.2 Measurement Tool

Tip:

To Activate the Measurement Tool

Select Measurement Method Online



1.3 Measurement, Calculation and Study

Measurement

Calculation

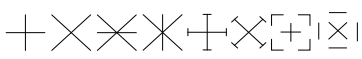
Study

1.4 Measurement Caliper

Fixed/Active End

Caliper Color

Caliper End Symbols



NOTE:

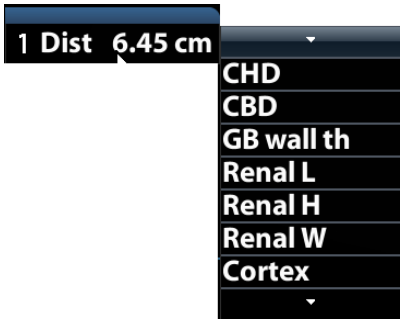
1.5 Results Window

1.5.1 Results Display

1.5.2 Moving the Results Window

1.5.3 Results Window Assignment

Assigning an Existing Application Item



-
-

Tip:

Assigning a New Application Item

NOTE:

Exiting Result Assignment

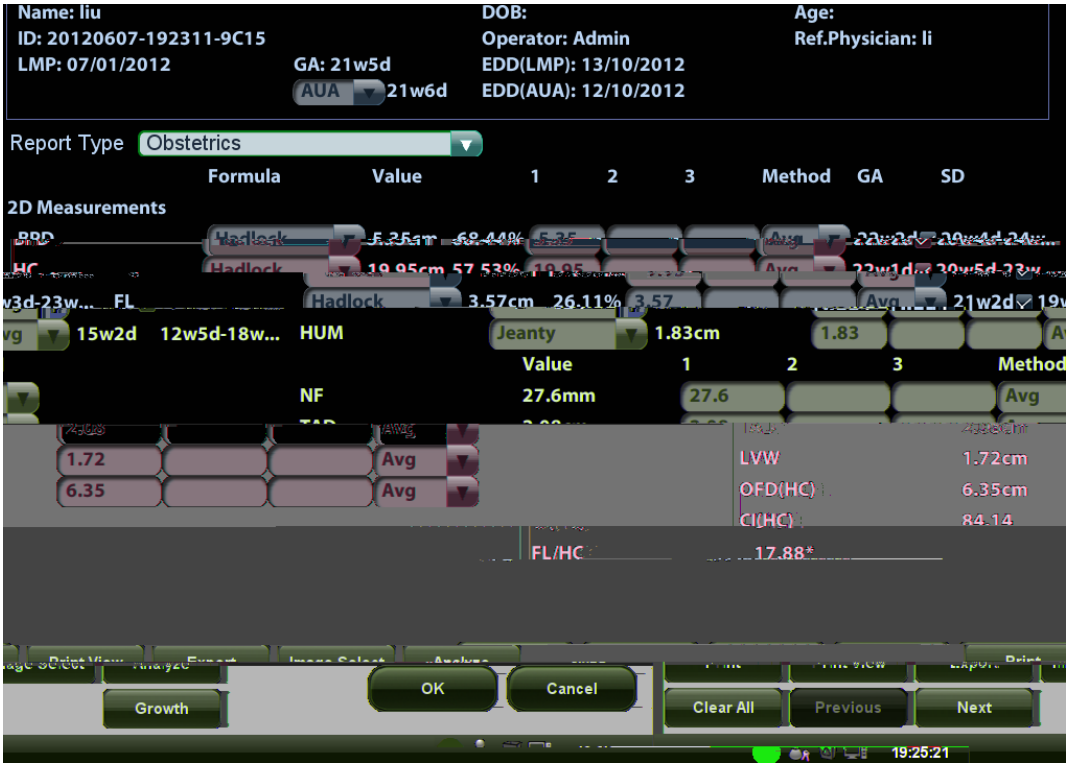
Auto-Spectrum Calculation Assignment

NOTE:

1.6 Cross-window Measurement

1.7 Report

1.7.1 Viewing Reports



1.7.2 Editing Reports

Editing Measurement Data

Selecting Images

Analyzing Report Data

Tip:

1.7.3 Viewing History Reports

NOTE:

1.7.4 Printing Reports

Print report:

Page up/down:

Zoom in/out:

Exit the preview:

1.7.5 Fetal Growth Curve

2 Measurement Preset

2.1 Basic Preset Procedures

NOTE:

2.2 Measurement Parameters Preset

Measurement Ruler

Tools	Descriptions

Left Ventricle Function Study Tool Setting

Follicle

Follicle

2.3 Obstetric Preset

2.3.1 Obstetric Formula

GA and FG Formulae

Tip:

Tools	GA	FG

Tools	GA	FG
□	□ □ □ J nt H n nn h tt D r h tt P L □ □ □	H dl □□ □ □ □ □ □ □ □ h tt P L h tt D r N l d
	H dl J nt rz h tt N □ d □ □ □ □	H dl □ □ □ □□ h tt N l d □ □ □ □
□	H dl □ J nt H hl r rz H n nn rd h tt □ □ □ □ □	H dl □ □ □ □ □□ H n nn □ □ □ □□ h tt N l d
D	H □ nn N l d	H n n □ □□ N l d □ □ □
P D		□□
T D		□□
□		
THD	H n nn	H n nn
H	J nt	□ □ □ □□

Tip:

Formulae	Descriptions	Units	
		EFW	Item

Weight Percentile for Age

2.3.2 Obstetric Preset Operations

2.3.2.1 Basic Procedures

The default formula is marked with a √.

Import/Export an OB Table or Formula

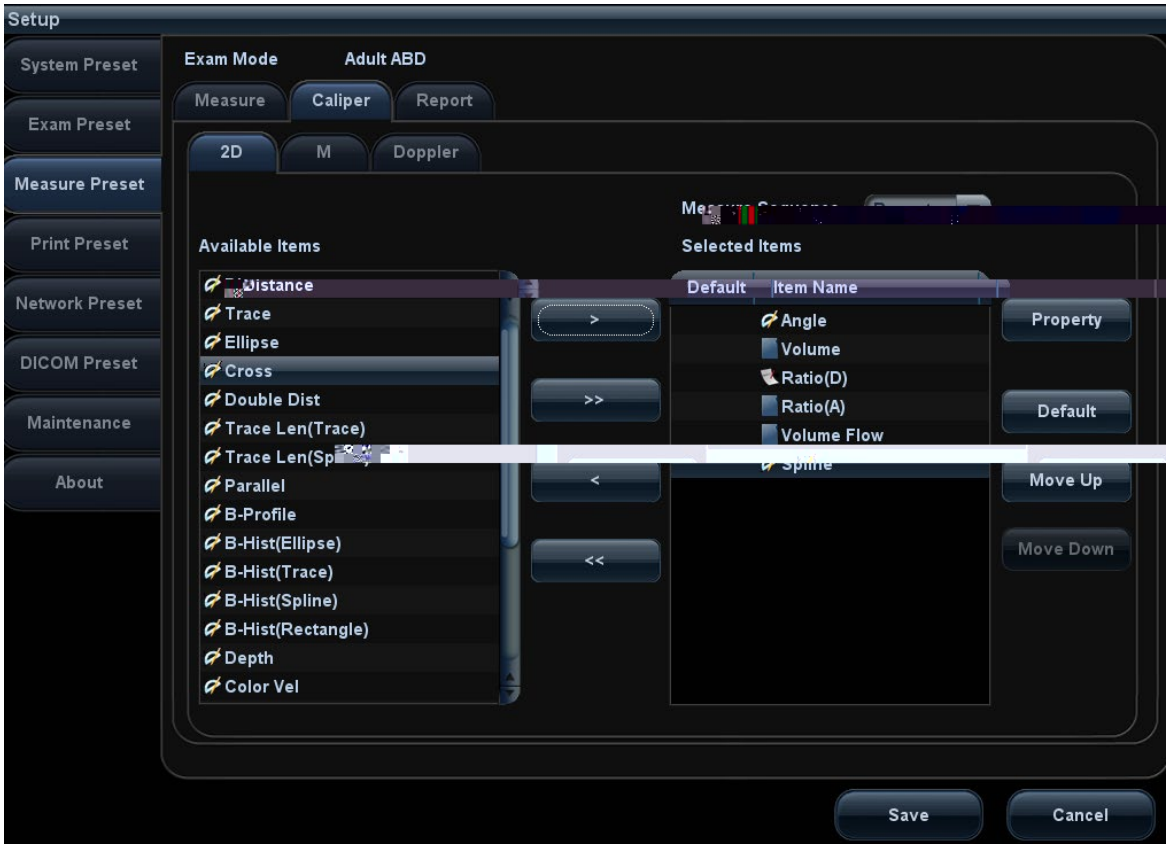
Table Type	Author Name	SD Type	Meas. Value Unit	SD Unit
FG				
Row Num.				
No.	**GA**	**Min.**	**Meas. Value**	**Max.**

-
-
-
-
-
-

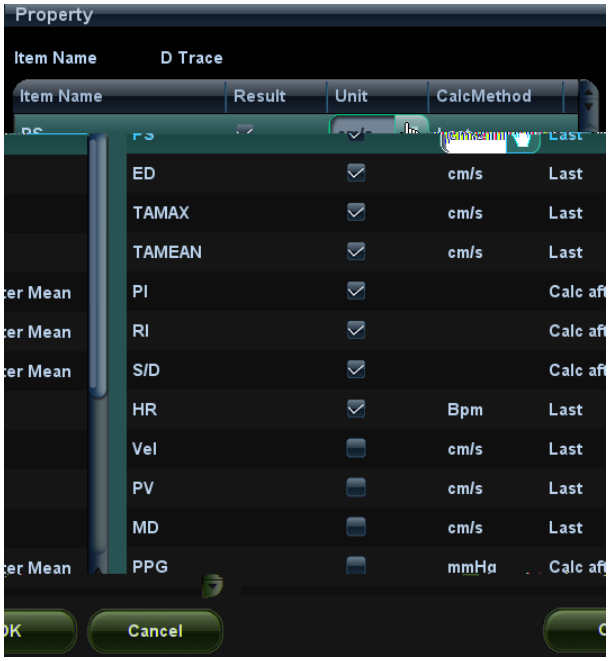
2.4 Measurement Preset

Note:

2.4.1 General Measurement Preset



tem is marked with a √.



Attributes	Descriptions

2.4.2 Application Measurement Preset

2.4.2.1 Basic Procedures

➤ □ □ □C□ □□ □ □□ □□ □ □ □

Adding/Removing Packages

Deleting Packages

Tip:

Setting Default Packages

he default package is marked with a √.

Tip:

Adjusting Package Positions

2.4.2.3 Measurement Menu Preset

Adding/Removing Items

□ □ C □ □ □ □□ □ □ □ □□ □ □ □ □ □ C □ □□ □ □ □ □ □ C

□ □ □ □□ □ □ □ □ □ □□ □□ □ □ □ □ □ C □ □□ □ □ □ □ □
□ C
□ C

□ □ □ □□ □ □ □□ □□ □ □ □ □ □ C □ □□ □ □ □ □ □ C □
□ C
□ □□ □ □ □ □ □ □ □ □ □ □ □ □ □ □

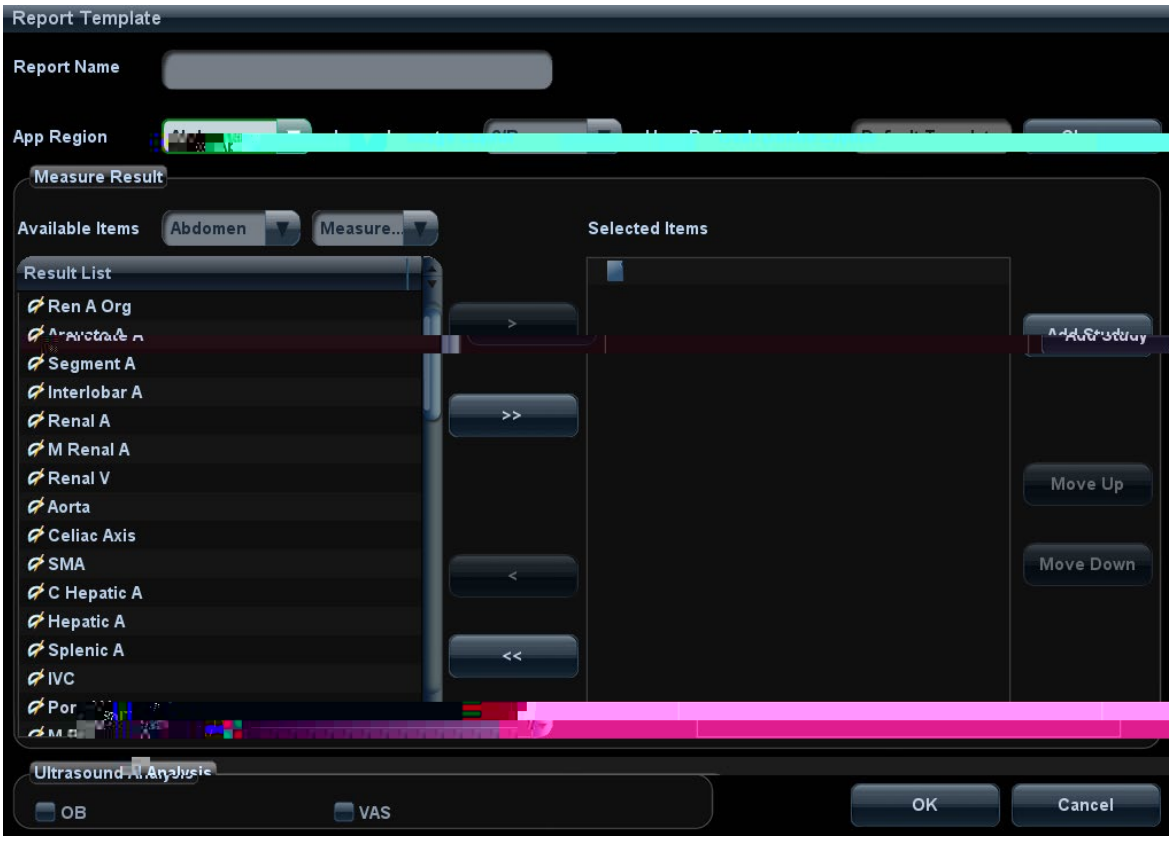
□□□ □ □ □□ □

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □

2.4.3 Report Preset

NOTE:

2.4.3.1 Creating Report Templates



Item	Description

Item	Description

Tips:

2.4.3.2 Deleting Report Templates

2.4.3.3 Editing Report Templates

2.4.3.4 Setting Default Templates

2.5 Fast Measurement

3 General Measurement

3.1 Basic General Measurement Procedures

Tip:

3.2 2D General Measurements

3.2.1 Depth

Tip:

3.2.2 Distance

Function:

3.2.3 Angle

3.2.4 Area & Circumference

□□□ □ □ □ □ □□□ □ □ □ □ □ □□ □□ □□ □ □ □ □
□□ □ □ □ □ □ □ □ □ □□ □□ □ □ □ □ □
□ □ □ □ □ □ □ □ □ □

Cross

3.2.5 Volume

$$olume\ cm \quad — \quad D\ \ cm \quad D\ \ cm \quad D\ \ cm$$

$$olume\ cm \quad — \quad a\ cm \quad b\ \ cm$$

Volume

Volume (Ellipse)

Volume (Ellipse Dist.)

3.2.6 Double Dist.

3.2.7 Parallel

3.2.8 Curve Length

Trace

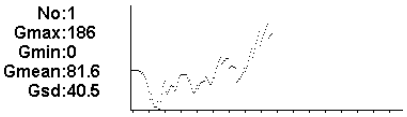
Spline

3.2.9 Ratio (D)

3.2.10 Ratio (A)

3.2.11 B-Profile

Tip:



No:

Gmax:

Gmin:

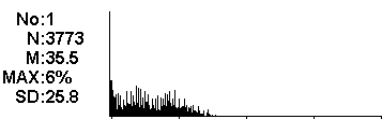
Gmean:

Gsd:

3.2.12 B-Hist

Tip:

Rectangle



∑Di / N

Standard deviation. SD = (∑Di (∑Di/N)

∑Di: the total grays of all pixels.

Ellipse

Trace

Spline

3.2.13 Color Vel.

Tip:

3.2.14 Volume Flow

3.2.15 IMT

Tip:

3.3 M General Measurements

3.3.1 Distance

3.3.2 Time

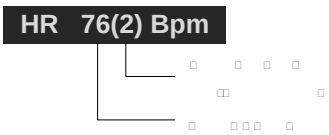
3.3.3 Slope

3.3.4 Velocity

3.3.5 HR

of n (n≤8) cardiac cycles on the M Mode image and

⚠CAUTION:	**During the measurement, the number of cardiac cycles between the measurement start and end points must be exactly the same as preset ([Setup] [System Preset] [Application]). Otherwise, misdiagnosis may occur.**



3.4 Doppler General Measurements

3.4.1 Time

3.4.2 HR

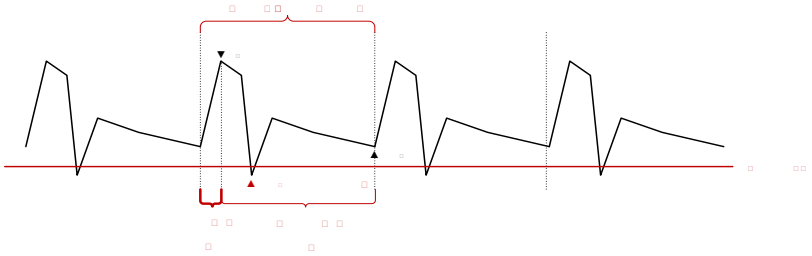
ures the time interval between n (n≤8) cardiac cycles on the

3.4.3 D Vel.

Tip:	

3.4.4 Acceleration

3.4.5 D Trace



NOTE:

Result parameters

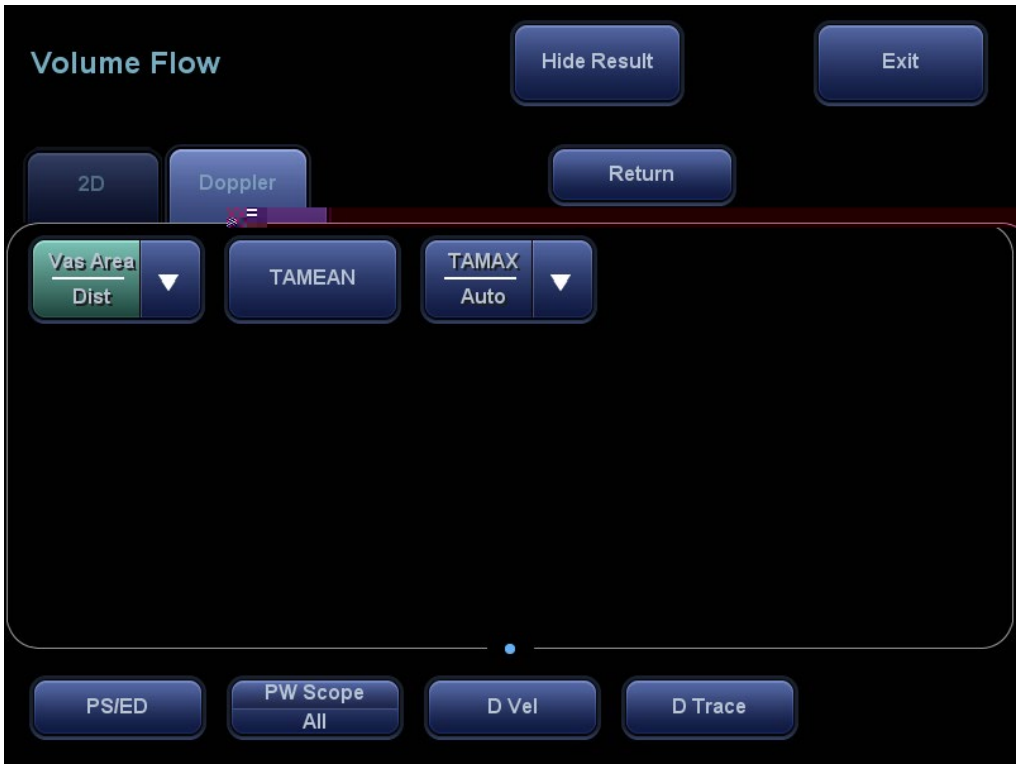
Parameters	Descriptions	

Parameters	Descriptions	
□ □		□ □ □ □
□ □ □ □ □		□□ □ □ □□ □ □ □

Parameters	Descriptions
θ	

3.4.6 PS/ED

3.4.7 Volume Flow



Item		Description	Method or formula
			Vas. Area = π × Vas Diam (cm)

Item	Description	Method or formula

4 Abdomen

4.1

4.3 Abdomen Measurement Tools

NOTE:

2D Abdomen Measurements

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae
r nt	r t r		□ □ □ □ □ □ □ □ □ □ □ □
□ □ □ □	□ n l V l	R n l □ □	R n □ V l
	□ □ B L V l	P r v d B l dd r V l	P r □ □ □ .
	□ □□ □ □ □	□ □ □ □ □ □ □ □ □	□ □□ □ □ □
	□ □ □ .	□ □ □ □ □	t r. □ .
□ □	dn		dn
	□ □ □ □		□ □ □ □
	B l dd r		B □ dd r

Doppler Abdomen Measurements

Types	Tools	D r p t n	Methods or formulae
□ □ □	R n □ □ .	R n l □ □ □ □ □	□ □ □ □ □ □ □ □ □ □
	□ □	□ □ □ □ □	
	nt	nt l □ □ □	
	nt r □ b r	nt rl b r □ □ □	
	□ □ □	□ □ □ □ □ □	
	R n l	n R n l □ □ □	
	R n l □	R n l V n	
	□ □		
	□ □		
		p r r nt r rt r	
	H p t	□ H p t rt r	
	□ □ □	□ □ □ □ □ □	
	p l n	p l n □ □ □	
	V	nf r r V n □	
	□ □ □ □ □	□ □ □ □ □ □	
	P rt l V	n P rt l V n	
	H p t V	H p t V n	
	□ □ □ □ □ □	□ □ □ □ □ V n	
	R t H p t V	R ht H p t V n	
	H p t □	ddl H p t V n	
	□ □ □ □	□ □ □ □ □	
	V	p r r nt r □ □	
t d			

4.4 Abdomen Measurement Operations

Tip:

4.5 Abdomen Exam Report

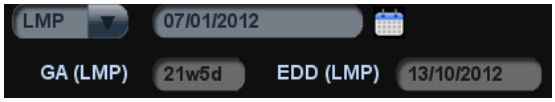
5 Obstetrics

5.1 Obstetric Exam Preparations

⚠

5.3 GA

5.3.1 Clinical GA

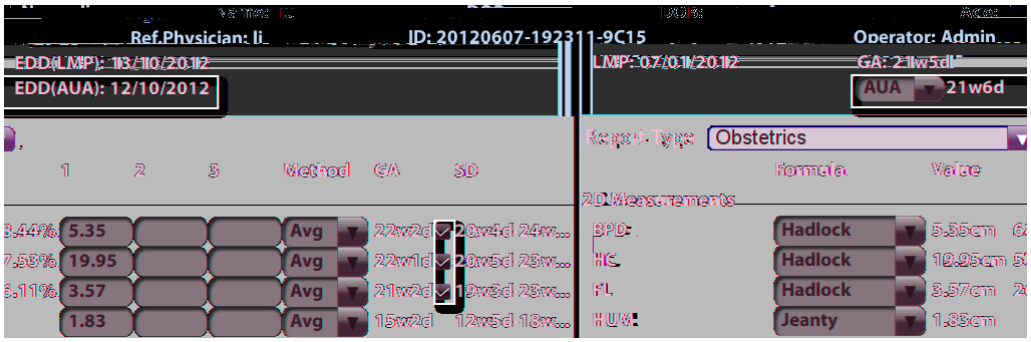


Tip:

5.3.2 Ultrasound GA

GA in OB Items

AUA



CUA

OB Growth Percentile

5.4 Obstetric Measurement Tools

NOTE:

2D Obstetric Measurements

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae
	H	H r □ □ □	
	□□	□□ □ □ □	
	□ □	R d L n t	
	T b	T b L n t	
	B	b l □ □ □	
	□ □	□ □ □ L n t	
	□ □ □ □ □	L n h f V rt br	
	P	ddl P h l nx L n h	
	t	t □ □ □	
	r	□ □ □ □	
	P TD	nt r p t r r □ □ d t r	
	TT □	Tr n v r □ □ □ □ □	
	□	□ □ □□ □ □ □ □ □ □	□ □ 2 □ □ □ □ □ □
	T □ D	Th r D t r	D t n n 2D n r l □ □ □
	Hrt	H rt □ □ □ □	□ n 2D □ □ □ r nt
	□	Th r □ □ □ □	
	b □ □ □	b l l V n □ □ □	
	dn	t l dn □ □ □	
	t dn	□ □ dn □ □ □	
	□□ □ L	□□ □ □ □ □	
		□ □ □ □	
	N	N h l □	
	□□ □	□□ □	
	P L Th n	P l nt l Th n	
	D	□ □ □ □ □ □ □	D t n n 2D n r l r nt
	D 2	□ □ □ □ □ □ □ □	
	D	□ □ □ □ □ □ □	
		□ □ l d	
	□	□ □ □ □ □	
		□ □ □ □	
	4	□ □ l d 4	
	□ □ □ □	L ft □ □ □ □ □ nt rn l D t r t nd d t l	
	□ V D	L ft □ □ □ □ □ nt rn l D t r t nd t l	

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

M Obstetric Measurements

Types	Tools	Descriptions	Methods or formulae

Doppler Obstetric Measurements

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

5.5 Obstetric Measurement Operations

Tip:

5.5.1 Measurement Tool Operations

5.5.2 Calculation Tool Operations

5.5.3 Study Tool Operations

5.6 Multi-Fetus Exam

NOTE:

5.7 Obstetric Exam Report

5.7.1 Fetal Biophysical Profile

Fetal growth index	Score 0	Score 2	Observation time	Remarks
	≤15 bpm	Reactive FHR ≥ 15 bpm, duration ≥ 15s, ≥ 2 times		
	≥ 2 fetal movements	FM ≥ 3 times (continuous		
	≤ 30s	FBM ≥ 1 times; duration ≥		
		stretch/bend ≥ 1 times		

Total scores	Growth condition

5.7.2 Z-Score

5.7.3 Fetal Growth Curve

CRL

BPD

OFD

HC

AC

FL

TAD

APAD

THD

FTA

HUM

CLAV

TCD

GS

Ulna

Tibia

RAD

FIB

OOD

Ultrasound GA

Cist Magna

FL/HC (Hadlock)

HC/AC(Campbell)

Estimated Fetal Weight (EFW)

Fetal Biophysical Profile

Weight Percentile for Age

AFI

6 Cardiology

6.1 Cardiac Exam Preparations

6.2 Basic Cardiac Measurement Procedures

6.3 Cardiac Measurement Tools

NOTE:

6.3.1 2D Cardiac Measurements

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae
	□ n r	L ft n r D t r	
	□ □ □	□ □ □ □ □ □ □ □	
	R n r	R ht n r □ t r	
	LV j r	L ft □ □ □ □ j r D t r	
	LV n r	L ft □ □ □ □ n r D t r	
	LVLd □ □	L ft □ □ □ □ L n □ □ □ □ t nd □ □ □ n p l v	
	□ □ □ □ □	□ □□ □	
	R V j r	R ht □ □ □ □ j r D t r	□ □ □ □ 2D n r l r nt
	R V n r	R ht □ □ □ □ n r D t r	
	□ □	□ □□ □	□ n □ □ n r l r nt
	R □	R ht □ □	
	LV r d	L ft □ □ □ □ □ □ t □ □ d t l	
	LV □	L ft □ □ □ □ □ □ t nd □ □	
	□ □ □ □	R □ t □ □ □ □ □ □ □ □ □ □ □ □ □	
	R V □	R ht □ □ □ □ □ □ t nd □ □	
	LV d □ V	L ft □ □ □ □ □ □ t tr l V lv l v l □ nd d t l n □ □ □ □ □	
	□ □ □ □	□ □□ □	
	□ □ □ □ □	□ □□ □ □ □ □ □ □ □ □ □ □ □ □ □ nd □ □ □ □ □ □ □ □	
	□ □ p l	L ft □ □ □ □ □ L n □ □ t nd □ □ n p l □	□ n □ □ n r l r nt
	LV d x p	L ft □ □ □ □ □ p rd □ □ □ □ □ □ □ l v l □ nd □ □ □ n h rt □ v	
	LV d x □ □	L ft □ □ □ □ □ □ □d rd l □ t□ □ □□ □ □ l v l □ nd d t l n h rt □ v	
	LV Dd	L ft □ □ □ □ □ nt rn l D t r t nd d t l	
	□ □ □	□ □□ □	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
	R VDd	R ht □ □ □ □ □ □ □ t nd d t l	

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

6.3.2 M Cardiac Measurements

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

6.3.4 TDI Cardiac Measurements

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

$$\frac{}{cm \quad s}$$

6.4.1

Tools	Descriptions	Operations

B-P Ellipse

Tools	Descriptions	Operations

Tools	Descriptions	Formulae

$$ml \quad / \quad cm \qquad cm \quad \left/ LVIDd \; cm \right.$$

$$ml \quad / \quad cm \qquad cm \quad \left/ LVIDs \; cm \right.$$

□ □□ □ □ □

Mod.Simpson

Tools	Descriptions	Operations

Tools	Descriptions	Formulae

$$\sqrt{\qquad\qquad\qquad\qquad\qquad\qquad}$$

Tools	Descriptions	Operations

Tools	Descriptions	Formulae
		$ml \quad \frac{cm}{} \quad r_i \quad cm$ $_i$
		r_i

$LVLd_i$

$LVLs_i$

$LVLs_i$

r_i

r_i

⚠CAUTION: **When using Simpson BP to measure LV function, be sure to keep the apical four-chamber view and apical two-chamber view perpendicular. Otherwise the measurement result will be incorrect.**

Cube

Tools	Descriptions	Operations

Tools	Descriptions	Formulae

Tools	Descriptions	Formulae
□ □□ □	□ □□ □ □ □

Tools	Descriptions	Operations

Tools	Descriptions	Formulae
□ □	□□ □	
□ □ □	□ □	
□ □	□ □ □ □ □ □ □ □ □	

□ □ □□ □ □ □ □

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

Tools	Descriptions	Operations
x nd		
LVLd	L ft d t l n p l v	D t n 2D n r l r nt

t d R lt

Tools	Descriptions	Formulae
LV	L ft	
LV L		

n :

h r

$$\sqrt{\qquad}\qquad\sqrt{\qquad}$$

p r t n P r d r

. l t LV L C n r nt r t h r n.

2. n l n t nd d t l LVLd

n h rt v t nd l v l nd : LV d x p

Th LV L .

f LV .

LV Mass (T-E)

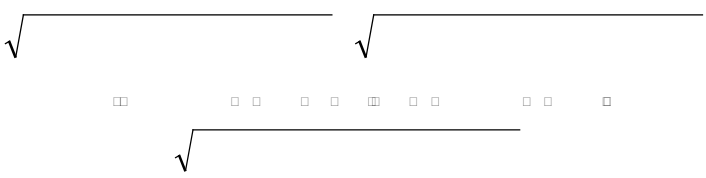
t d

Tools	Descriptions	Operations
LV d	L ft r t nd rt x v	n 2D n r l r nt
LV d x nd	rt v	
	p x	D t n n 2D n r l r nt
d	Tr n t d j r fr d t n r d r d nn l p l n	

t d R lt

Tools	Descriptions	Formulae
LV T	L ft	

Tools	Descriptions	Formulae

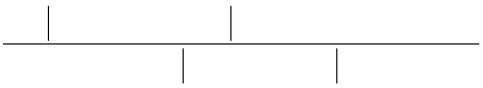


6.4.3.3 Mitral Valve Area (MVA)

Tip:

MVA(VTI)

Tools	Descriptions	Operations

Descriptions	Formulae
□ □ □□ □	

□ □

□ □ □ □□ □ □ □

Tools	Descriptions	Formulae
□ V l. L	L ft □	——— /
□ V l. nd x L	L ft □	□ V l. nd x □ V l B

□ □ □□ □ □ □ □

□ t □

LA Vol. (Simp)

□ □ □ □□ □ v l □ th p n th d. □ □□ □ □ t □ □ □ h □ r □ nd p lf r h b r v .

t d □ nd R lt

Tools	Descriptions	Operations
□ V l. □	L ft □ □ t □ □2 h b r v	□ □ □ □ □ □ □
□ V l. 4	L ft □ □ t □ □4 h b r v	
□ □ l. nd x 2 4	L ft □ □ □d x	L V l. □d x L V l B

p r t n P r d r

□ □ P □ □ □ □ □□ □ □ □ □

6.4.3.6 LVIMP (LV TEI)

Th LV □ L ft □ □ □ □ □ nd x f rd l P rf r n d □ □ □ □ □ □ □ □ □□ □ □ □ □ □ □ nd □ □ □ □ □ □ .

□ □ □

Tools	Descriptions	Operations
V □ □	□ V lv □ p n □ □ □ □	T n D pp l r □ □ □ r nt
LV T	L ft □ □ □ □ □ □ □ □ □	

□ □ R lt

x p t f r □ v l n □ pp r t b l □ □ □ r lt n b b t n □ n □ t d :

Tools	Descriptions	Formulae
LV P	L ft □ □ □ □ □ nd x f rd l P rf r n	_____

□ □ □□ □ □ □ □

□ □

6.4.3.7 RVSP

Th R V P □ □ □ □ □ □ ntr l r □ □ pr r .

Tools	Descriptions	Operations

Tools	Descriptions	Formulae
		$RAP\ mmHg$ TRV $m\ s$

Tools	Descriptions	Operations

Tools	Descriptions	Formulae

6.4.3.10 Qp/Qs

Tools	Descriptions	Operations

Item	Description	Operations

Item	Description	Operations

Qp ml

Qs ml

$$Qp \;\; Qs \;\; Nounit \quad \frac{ml}{ml}$$

Qp Qs Nounit ml ml

6.4.3.11 PISA

PISA MR

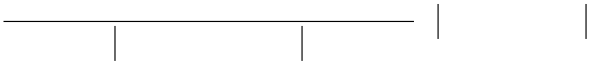
Tools	Descriptions	Operations

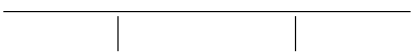
Tools	Descriptions	Operations
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

Tools	Descriptions	Formulae
[illegible]	[illegible]	[illegible]

[illegible]

Tools	Descriptions	Formulae
		

Tools	Descriptions	Formulae
□ □ □	□□ □ □ □ □□ □□ □□ □ □ □ □ □ □ □	

□ □ □□ □ □ □ □

□□ □ □ □ □ □ □

PISA PR

□ □ □ □ □ □ □□ □ □ □ □ □ □ □

6.4.3.12 TDI

Tools	Descriptions	Operations

Tools	Descriptions	Formulae
		$\frac{E \quad Ea \ medial \quad lateral \quad Nounit}{MVEa \ medial \quad cm \quad s \quad MVEa \ lateral \quad cm \quad s \quad /}$

Tools	Descriptions	Formulae
[illegible]	[illegible]	[illegible]

[illegible]

6.5 Cardiac Exam Report

[illegible]

6.6 References

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

7 Vascular

7.1 Vascular Exam Preparations

7.2 Basic Vascular Measurement Procedures

7.3 Vascular Measurement Tools

NOTE:

2D Vascular Measurements

Types	Tools	Descriptions	Methods or formulae

Doppler Vascular Measurements

Types	Tools	Descriptions	Methods or formulae

Types	Tools	Descriptions	Methods or formulae

7.4.1 Measurement Tool Operations

7.4.2 Calculation Tool Operations

Stenosis D

Stenosis A

ICA/CCA (PS)

7.4.3 Study Tool Operations

IMT

NOTE:

Tip

-
-
-
-
-
-
-

Tip:

-
-
-

ABI

ABI = ASP/BSP

7.5 Vascular Exam Report

7.6 References

Stenosis D:

Stenosis A:

8 Gynecology

8.1 Gynecology Exam Preparations

8.2 Basic Gynecology Measurement Procedures

8.3 Gynecology Measurement Tools

NOTE:

Modes	Types	Tools	Descriptions	Methods or formulae

8.4.3 Study Tool Operations

Uterus

Uterine Cervix

Ovary

Follicle

Results	Method	Formulae
		$Length \quad Width \;/$
		$Length \quad Width \quad Height \;/$
		$— \; Length$
		$— \; Length \quad Width$
		$— length \quad Width \quad Height$

8.5 Gynecology Exam Report

8.6 References

Uterus Body:

UT-L/ CX-L:

9 Urology

9.1 Urology Exam Preparations

9.2 Basic Urology Measurement Procedures

9.3 Urology Measurement Tools

NOTE:

Modes	Types	Tools	Descriptions	Methods or formulae

Modes	Types	Tools	Descriptions	Methods or formulae

Modes	Types	Tools	Descriptions	Methods or formulae

9.4 Urology Measurement Operations

Tip:

9.4.1 Measurement Tool Operations

9.4.2 Calculation Tool Operations

Renal Vol.

Prostate Vol.

Testiscular Vol.

Pre-BL Vol.

Post-BL Vol.

Mictur. Vol.

9.4.3 Study Tool Operations

Kidney

Adrenal

Prostate

Seminal Vesicle

Testis

Bladder

Mass

Epididymis

Smart Bladder

NOTE:

9.5 Urology Exam Report

9.6 References

PPSA:

10 Small Parts

10.1 Small Parts Exam Preparations

10.2 Basic Small Parts Measurement Procedures

10.3 Small Parts Measurement Tools

NOTE:

Modes	Types	Tools	Descriptions	Methods or formulae

Modes	Types	Tools	Descriptions	Methods or formulae
	□ □ □ □			
	□ □			

10.4 Small Parts Measurement Operations

Tip:

Mass

Testis

Epididymis

10.5 Small Parts Exam Report

10.6 References

Thyroid Vol: (k= 0.479)

Thyroid Vol: (k=0.523)

11 Pediatrics

11.1 Pediatrics Exam Preparations

11.2 Basic Pediatrics

α: the angle between BL and RL.

β: the angle between BL and IL

DISLOCATION TYPE	

11.6 References

12 Emergency&Critical

12.1 Basic Measurement Procedures

12.2 EM Measurement Tools

NOTE:

12.3 EM Exam Report

13 Nerve

13.1 Basic Measurement Procedures

13.2 Nerve Measurement Tools

NOTE:

13.3 Nerve Exam Report