

## Extracorporeal Shock Wave Lithotripter **ASADAL-M1**

### **INTRODUCTION**

ESWL ASADAL-M1 will minimize burden of surgery and hospitalization.

It can provide comforts to patients and, at the same time, provide convenience to operators.

ASADAL-M1 is composed of high voltage generator and X-ray emitter for calculus diagnosis with shockwave generator for treatment. Operating table is carefully designed, considering region of treatment, to maximize convenience of operation.



### **FEATURES**

- Lens Electro-magnetic type of Shockwave.
- Powered –up generator for reduced treatment time and increased durability
- No need for Anesthesia
- Highly cost effective mechanism by long-lasting Coil and plate
- Powerful & dynamic range of shock wave
- High successful rate of stone disintegration
- High performance X-Ray image localization
- Simple and ergonomic design
- Database management for patient history
- Minimum room requirement for installation
- 2 division window in 24 Inch wide monitor
- Left and right C-arm movement for Easy Location of shockwave
- Remote controller of 6 way table top
- Dicom 3.0 compatible
- Manual holder for Ultrasound localization probe
- ABS (Auto Brightness System)

**SYSTEM CONFIGURATION****Standard Configuration**

Unit	Model Name	Remarks
Extracorporeal Shock Wave Lithotripter	ASADAL-M1	C-arm & Shock Wave body 6-way motorized BED Operation console

**Option**

Unit
DICOM 3.0 interface software Manual Ultrasound probe guide

**INSTALLATION CONDITIONS****Power Requirements**

- Line voltage: ~220-230 VAC 50/60 Hz
- Line phase: Single Phase
- Line code: 26.3feet
- Line plug: 250VAC, 63A LEGRAND NO.LV-63A-58700
- Rated Capacity: 5000VA
- Protected mode: Class IIb, Type BF

**Grounding Requirements**

Grounding must be provided in compliance with all applicable legal requirements for medically used electrical equipment.

- 2 type of grounds are required.
- 1st class ground for Shock wave generating. 3rd class ground for ordinary system operation.
- 1st class ground has to be connected more than 22SQ wire.
- 3rd class ground has to be connected more than 5.5SQ wire..

**Ambient Conditions (operation)**

- Ambient temperature: 10°C to 40°C
- Relative humidity: 30% to 75%(No condensation)
- Atmospheric pressure: 700 hPa to 1060 hPa
- Ambient atmosphere: Use the system in an operation room that is free from flammable gases.

**Storage Conditions**

- Ambient temperature: -40°C - 70°C
- Relative humidity: 10% to 85% (No condensation)
- Atmospheric pressure: 500 hPa to 1060 hPa

**COMPLIANCE**

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EN 60601-1: 1990 + A1 + A2 + A12 +A13

EN 60601-1-3: 1994

EN 60601-2-7: 1998

EN 60601-2-28: 1993

EN 60601-1-2: 2001

**SPECIFICATION****System Power**

Type	High frequency type
Power output (kW)	3kW @ 220VAC
Input line voltage	220 – 230 VAC Single phase
Input line frequency	50 / 60 Hz

**Fluoroscopy Mode**

Item	40-120kV (1kV step) 0.5-5mA (0.1mA step) Rate : 30images/sec
Input power	40-120kV (1kV step) 20mA (fixed) Operation Rate: 10 sec

**ABS (Auto Brightness System)**

kV Range	40 ~ 120 kV
kV Step	1kV
kV Accuracy	±10%
mA Range	0.5 ~ 5.0 mA
mA Step	0.1 mA
mA Accuracy	±10% FLUORO.

**X-ray Tube**

Type of X-ray tube	Rotating anode
Target angle	10°
Maximum Rated Tube Potential (kV)	40 ~ 125kV
Focal spot	0.3 / 0.6mm (IEC336)
Inherent filtration	0.5 mmAl @ 75kV (IEC 60522)
Anode heat storage	300kHU
Anode heat cooling	6kHU/min
Maximum housing cooling rate	15kHU
Housing heat storage capacity	1,600kHU
Filament current	Large focus 4.3 ~ 5.0A Small focus 3.5 ~ 4.1A
Filament voltage	Large focus 4 ~ 12V Small focus 4 ~6V
Weight	43 LBS without cables or accessories
Cable permanent filtration	0.7 mmAl @ 75kV (IEC 60522)

**C-arm**

SID	950 mm
Rotation range	30°(Left and Right both)
Rotation speed	Under 10sec by complete

**Shock Wave Generator**

Shock Wave generating method	Electro-magnetic type
Shock Wave focusing type	Lens focus type
Shock Wave pressure	560 Bar
Level range	10 ~ 20kV
Energy density(mJ/mm <sup>2</sup> )	0.02 ~ 1.0012
Shock Wave	0.6 ~ 10 sec
Trigger Auto	Auto 4step / Manual (1kV)
Localization method	Fluoroscopy X-ray Ultrasound (optional)
Water capacity	10L

**Image Intensifier**

Field number	3 field (9"/6"/4.5")
Input nominal diameter	230 mm
Output Image diameter	20 mm
Output Window thickness	3,6 mm
Useful input fields size	215 / 160 / 120 mm
Resolution (Central)	48 / 56 / 64 lp/cm
Resolution 70% radius	44 / 52 / 58 lp/cm
Resolution 93% radius	42 / 50 / 54 lp/cm
Conversion factor (Cd/m <sup>2</sup> /mR/s-1)	240 / 120 / 60
Contrast ratio	23:1 / 25:1 / 30:1
Integral Image Distortion	4% / 2% / 1%
Differential distortion at 90% radius	15% / 6% / 3%
DQE at 59.5 kV	65%
"All metal" technology	Yes
Input screen "Hi-Res"	Yes
MTF at 10 Lp/cm	60 / 65 / 70%
MTF at 20 Lp/cm	25 / 30 / 40%
Low frequency drop LFD	7 / 6 / 5%
Anti-scatter grid Interspace material	Al
Grid ratio	8:1
Grid density	60L/cm
Focusing distance	100cm

**CCD Camera**

Model	Guppy F-080
Interface	IEEE 1394a - 400 Mb/s, 1 port
Resolution	1032 x 778
Sensor	Sony ICX204
Sensor type	CCD Progressive
Sensor size	Type 1/3
Cell size	4.65 μm
Lens mount	C
Max frame rate at full resolution	30 fps
A/D	12 bit
Bit depth	Output
Mono modes	12 bit
Raw modes	Mono8
TTL I/Os	Raw8
RS-232 1	General purpose inputs/outputs (GPIOs)
Power requirements	(GPIOs)
Power consumption (12 V)	1 input, 3 outputs
Mass	8 V - 36 V
Regulations	<2 W

**Patient Table**

Operation	24VDC motor control
Dimension for BED	2000mm X 800mm
Input power	230VAC 50/60Hz
Vertical Movement	Elevator method
Left-Right movement range	150mm
Forward-Backward movement range	150mm
Vertical movement range	300mm
Max limit load	200Kg

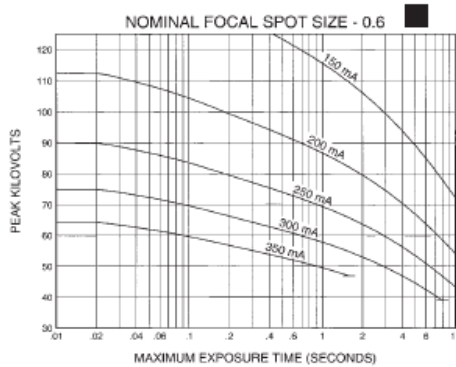
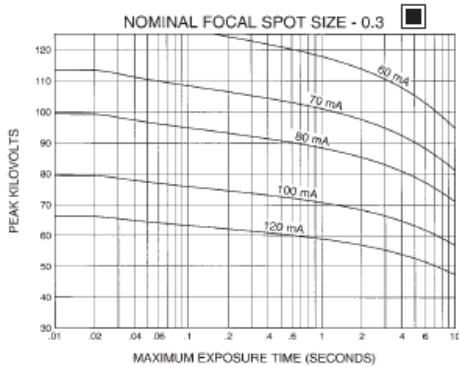
**Operation Desk**

Operation software	DIS(Digital Image System)
Input power	EM view program
CD recorder	230VAC 50/60Hz
Weight	DVD multi
Workstation	150Kf
PC performance	Pentium Dual 2.4G or more
Data storag	HDD 320G
RAM	2G
DIS program	PACS(DICOM 3.0-Optional) Patient Management, Image W/L Flip/Reverse image Gamma adjustment LIH image Rotate, Up to 3X3 images display at LIH side.

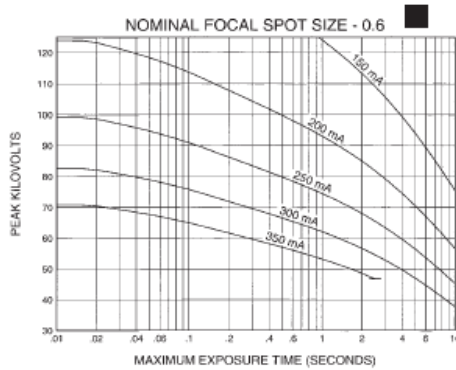
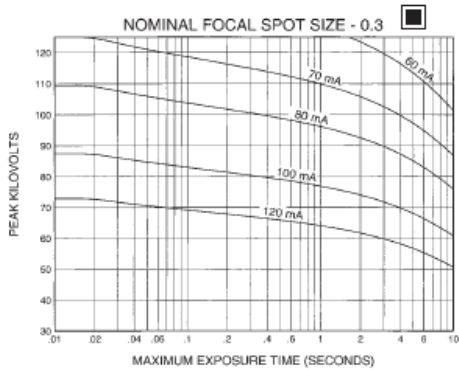
*\*Specifications are subject to change without any notice.*

**Tube Insert Table**

**50 HZ - 2,850 RPM**



**60 HZ - 3,450 RPM**

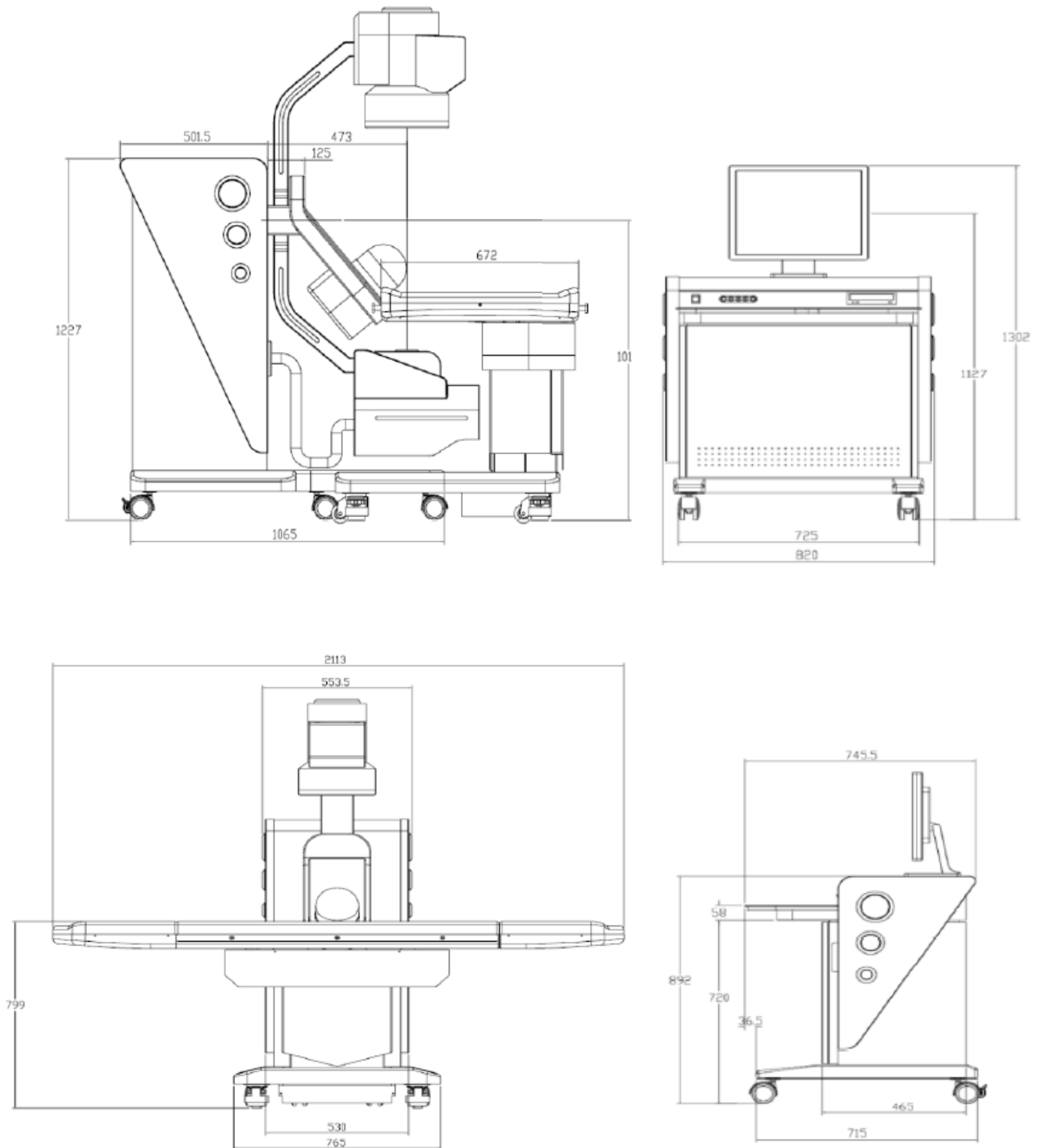


Selector (mA)	20.0	100	150
mAs	0.4-5.0	8.0-100	8.00-500
kVp	40-120	60-120	40-59

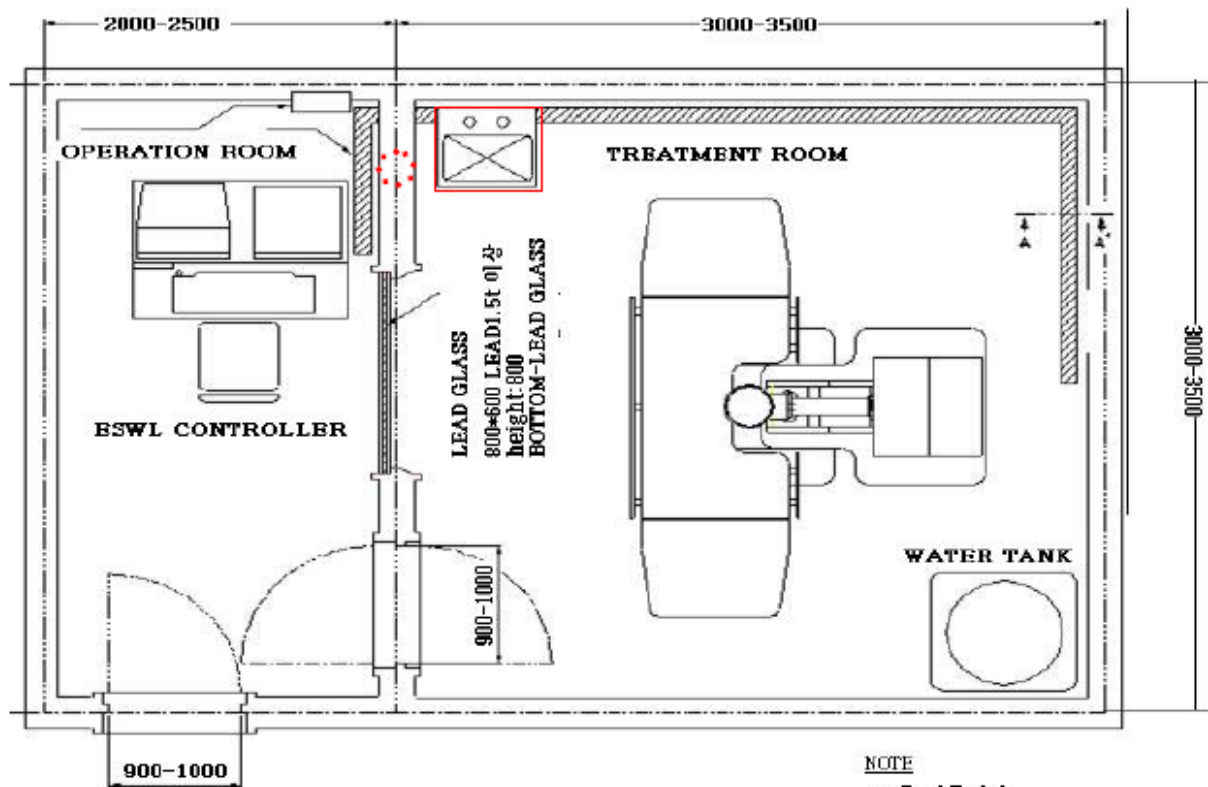
**mAs step Table**

0.4	0.6	0.8	1.0	1.6	2.0	3.0	5.0
8.0	10.0	12.0	15.0	20.0	25.0	30.0	40.0
50.0	60.0	70.0	80.0	90.0	100.0	120.0	140.0
160.0	180.0	190.0	200.0	250.0	300.0	400.0	500.0

Outer dimension



## Room Layout



## Pre-Installation Guide

- 1st isolated Ground lead: More than 22mm<sup>2</sup>
- 3rd isolated Ground lead: More than 5.5mm<sup>2</sup>
- Power supply input lead: More than 5mm<sup>2</sup>
- Power supply capacity: 220V 3kW
- Circuit breaker capacity: More than 35A
- Lead glass thickness: More than 1.5t
- OP console has utilized 5m power cable.

\* Shield room should be following standard regulation. (e.g. lead shield room )

\* Red square does stand for switchboard. If it is not able to be located above position, it should be installed at operating room. As long as switchboard is built at treatment room, room separating wall has a hole (Red hole)

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