sirona
The Dental Company

Vario DG

Operating Instructions

English

CE
0051

Vario^{DG} Operating Instructions
English Edition

Version 110803 August 2011
Code 69 553 00110 - D3567
Printed 03/08/2011 15:21:00

Manufactured by FONA S.r.l.
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1. INTRODUCTION

1.1 Congratulations

Congratulations! You have purchased a state of the art equipment which will assist in your profession day after day performing consistently for many years. The unit is manufactured under a Quality Control System which grants full compliance to specifications.

1.2 Purpose

The Vario^{DG} X-ray Equipment is designed to fulfil the needs for high resolution intra-oral radiography in the general dental practice. The systems can be configured for wall, mobile solutions.

The Operating Instructions the Service and Installation Manual supplied with the system are integral part of the product. The original language of the Operating Instructions is English.

1.3 Equipment Classification

- IEC: Vario^{DG} is a Class I, type B equipment
- FDA: Vario^{DG} is a Class II medical device equipment (21 CFR 872-1800).

1.4 Obligations of the User

It is the responsibility of the User:

- To follow the instructions and recommendations contained in the Operating Instructions.
- To maintain the equipment in compliance by following the manufacturer's recommended maintenance schedule. Failure of the user to properly maintain the equipment may relieve the Manufacturer, or his Agent, from responsibility for any injury, damage, or non-compliance which may result.
- To report promptly to the Health Authority in charge and to the Manufacturer or to its Agent any accident involving this medical device or any alteration in features and/or performances which could cause death, injuries or health hazard to Patient and/or Operator.
  Important information to be gathered and to be included in the report to the Manufacturer are the type and serial numbers of the involved items which can be retrieved from the technical labels.

1.5 Warning

Use the system only after proper assembly and installation as per manufacturer's instructions.

X-ray equipment produce ionising radiation that may be harmful if not properly controlled. It is recommended that the equipment be operated by trained personnel only and in accordance with the existing laws.

Even if compliant to specifications of electromagnetic compatibility, it is recommended not to use the equipment in presence of external electromagnetic fields, such as those generated by cellular phones, which might interfere with the electronic circuits of the system.

1.6 Safety Recommendations

- Electrical.
  - Trained and qualified service technicians only are authorized to remove covers and have access to power circuits.
  - Power supply lines must comply with safety legislation and have ground terminals for protective earth connection.
  - Switch the equipment OFF and disconnect it from line voltage supply (with the room switch) before cleaning or disinfecting the unit.
- Mechanical.
  - Check regularly (at least once a year) the status of supports and arms of the suspension system, in case having necessary maintenance performed by a service technician.
- Explosion.
  - The equipment cannot be used in presence of flammable gases or vapours.
- Radiation.
  - The statutory radiation protection equipment must be used.
  - Patient safety during operation has to be ensured by the operator.
  - The equipment has not to be left unattended.
- Environmental.
  - The equipment contains components which must be disposed-of following existing law.

2. TECHNICAL DATA

2.1 System Supply

Line Voltage	115 V (from 99 V to 132 V in sub-ranges depending on THA mounted) 230 V (from 198 V to 264 V in sub-ranges depending on THA mounted)
Line Voltage Range	108 - 132 V for type 93 253 01300, 207 - 253 V for type 93 253 01700
Line Fuse	Slow Blow: 6.3 A at 115 V, 4 A at 230 V, second fuse for two phases or cord
Line Frequency	50/60 Hz ± 1 Hz
Line resistance	≤ 0.4 Ohm at 115 V, ≤ 0.8 Ohm at 230 V

2.2 X-ray Head Assemblies

Nominal Line Voltage	120 V for type 62 80 270, 230 V for type 62 80 288
Nominal Line Current	6 A at 120 V for type 62 80 270, 4 A at 230 V for type 62 80 288
Line Voltage Range	108 - 132 V for 62 80 270, 207 – 253 V for 62 80 288
Anode Voltage (peak tube potential)	70 kVp ± 8% at nominal line voltage 66 kVp ± 8% at nominal line voltage – 10% 74 kVp ± 8% at nominal line voltage+ 10%
Anode Current (tube current)	3.5 mA ± 10% at nominal line voltage 3.0 mA ± 10% at nominal line voltage – 10% 4.0 mA ± 10% at nominal line voltage + 10%
Nominal Power	0.2 kW at 70 kVp, 3.5 mA, 0.1 s
X-ray Insert	CF4G070
Anode	Tungsten, angle 16° to the tube axis
Focal Spot	0.4 IEC 336)
Inherent Filtration	> 2.5 mm Al/70kVp IEC 60522/1999
Duty Cycle	1/15
Radiation Leakage	< 0.1 mGy/h a 1 m (< 11.5 mR/h a 1 m)

2.3 Beam Limiting Device

Beam Limiting Device	Focus skin distance 20.3 cm (8”)
	Round radiation field diameter 58 mm (2.3”) Adaptor for rectangular radiation field size 33x44 mm (1.3”x1.7”)

2.4 TipSet Timer

Supply Voltage	110-120 for type 62 80 296 220-240 for type 62 80 304					
Exposure factor	Time-current in mAs: 18 steps as per R10 scale from 0.21 to 11.2 mAs					
	0.21	0.28	0.35	0.42	0.56	0.70
	0.88	1.12	1.40	1.75	2.24	2.80
	3.50	4.40	5.60	7.00	8.75	11.2
Precision	± 0.04 mAs o 10% (whichever the greater) supplied at nominal line voltage					
Exposure factors	Automatic setting through tooth type selection and patient size, for use with traditional film or digital sensor, or manual setting with plus and minus keys.					
Irradiation signal	Yellow light on hand-switch and on control panel plus acoustic buzzer					
Hand-switch	Hand-switch with 3 m coiled cord, with remote mounting optional kit					
Overall size	15cm/6” width, 24cm/9”½ height, 9cm/3”½ depth					

2.5 Mechanical Suspension System

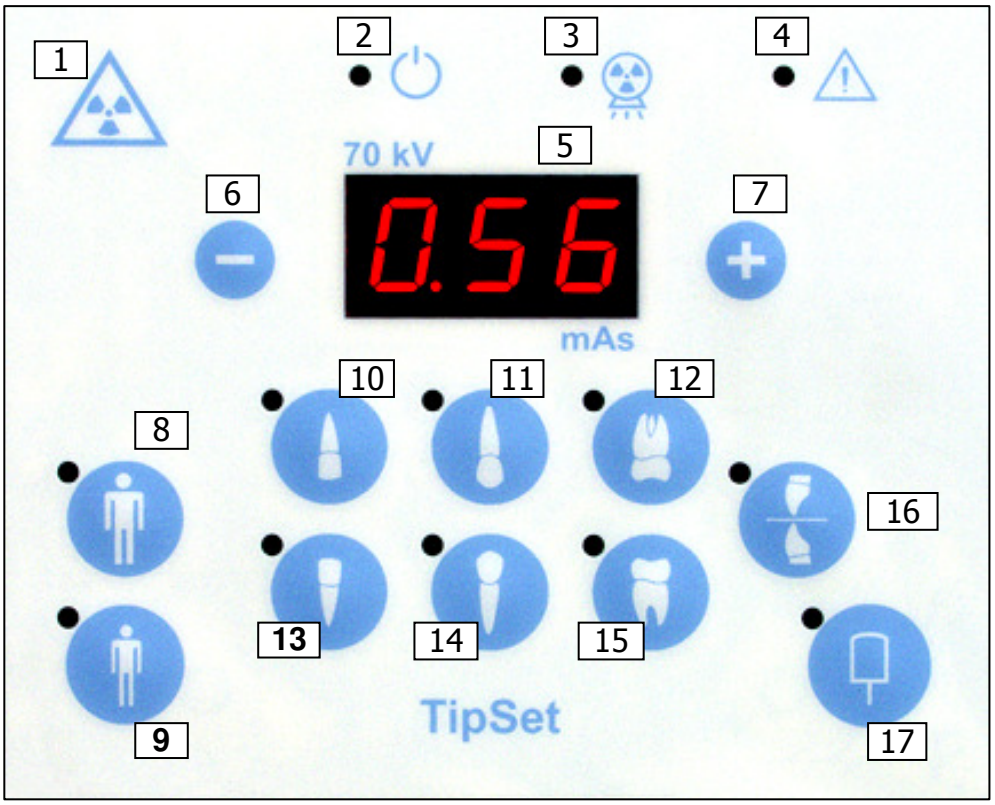
Wall Adaptor	12cm/4.7” width, 24cm/9.4” height, 9cm/3.5” depth
Arm Length	Short: 30cm/11.8”, Medium: 60cm/23.6”, Long: 80cm/31.5”
Useful Reach	Short arm: 138cm/54.3”, 168cm/66.1” with Medium, 74” (188cm) with Long arm
Mobile Stand	78 cm /30” ¾ width, 92 cm /36” ¼ depth, 112 cm /44” height, 186 cm /73” ¼ total height with folding arm

2.6 Weights

Timer	1.7 kg / 3.7 lb
X-ray Head with BLD	6.7 kg / 14.7lb
Scissor Arm	11.7 kg / 25.8 lb
Support Arm	Short: 2.8 kg / 6.2 lb , Medium: 4.0 kg) / 8.8 lb, Long: 4.8 kg / 10.6 lb
Wall Adaptor	1.3 kg / 2.9 lb
Mobile Stand	29.4 kg / 64.8 lb

3. OPERATING INSTRUCTIONS

3.1 The Control Panel



1	Device for emission of ionizing radiation on request		10	Maxillary incisor
2	Indication of system turned on and ready		11	Maxillary canine or premolar
3	Irradiation		12	Maxillary molar
4	Alarm		13	Mandibular incisor
5	mAs display, the controlled technique factor		14	Mandibular canine or premolar
6	Manual decrease of controlled technique factor		15	Mandibular molar
7	Manual increase of controlled technique factor		16	Bite-wing premolar
8	Patient size adult/large		17	Digital detector in use
9	Patient size child/small		18	Radiation exposure pushbutton

3.2 Beam Limiting Device

This device is suitable for either bisecting or paralleling radiographic techniques, once conveniently angled. Keep the rim of the collimator in touch with the film holder or with the face of the patient to reduce possible blur due to movement during irradiation.

3.3 User Functionality of TipSet Timer

Before using the timer make sure that the exposure indexes for film and sensor have been set in memory.

EXPOSURE INDEX											
0.32	0.4	0.5	0.64	0.8	1.0	1.25	1.6	2.0	2.5	3.2	4.0
	XIOS SENSOR			F FILM	E FILM			D FILM			
XIOS and XIOS^{PLUS} sensors are products of Sirona											

Exposure index 1 corresponds to film type E:

- 2.24 mAs for Upper Molar on Large Patient at 21 cm (8") distance.
- 0.70 mAs for Lower Incisor on Small Patient at 21 cm (8") distance.

For films which require twice the dose of film type E, move up three steps and double the index to 2.
Typical films are:

- Type D: Kodak Ultraspeed, Agfa Dentus M2
- Type E: Kodak Ektaspeed Plus/Insight

Similarly for a digital sensor requiring half the dose of film E, move down three steps to value 0.5.
Typical sensors are:

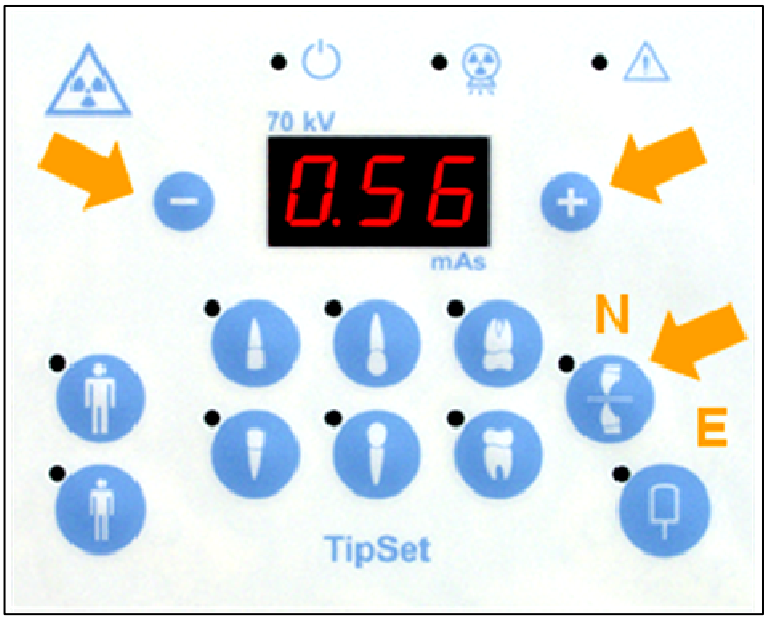
- XIOS and XIOS^{PLUS} of Sirona which feature exposure index 0.4.

For other brands of sensors refer to the own manufacturer for information about exposure sensitivity.
To set and store the desired working parameters follow the instructions below.

- SET UP MENU.
  Enter the set-up menu by switching on the unit while pressing all together and for 2 s the three keys plus (+), minus (−), and bitewing.

  The film speed selection modality is thus entered.

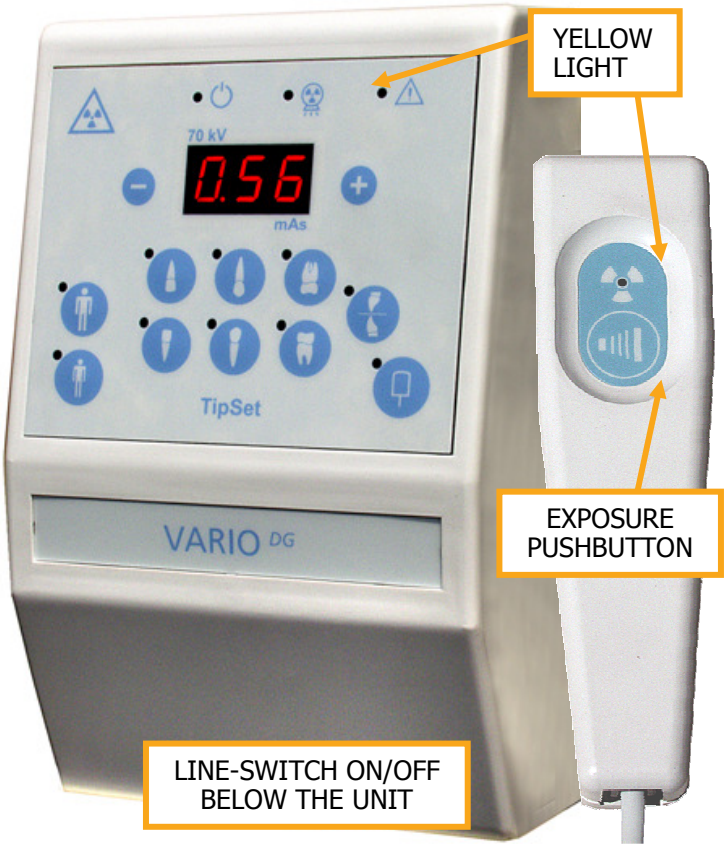
  - FILM SPEED. The number on the display represents the index of the speed of the film currently selected (see table above). Press plus (+) or minus (−) key to change the value.
    Press the sensor key to exit (E) input mode or bitewing key for next (N) selection.



  - DIGITAL SENSOR SPEED. The number on the display represents the index of the speed of the film currently selected (see table above). Press the plus (+) or minus (−) keys to change the value.
    Press the sensor key to exit (E) input mode or bitewing key for next (N) selection.
  - CORRECTED TECHNIQUE FACTOR. The message "ON" or "OFF" tells whether the actual corrected mAs value or the selected one will be displayed. Press the (+) or (−) keys to change the value.
    Press the sensor key to exit (E) input mode or bitewing key for next (N) selection.

3.4 Operation

Turn on the line voltage supply with the switch below the timer



1. Have the patient remove any provisional object in the mouth which may affect image quality.
   Position the image receptor where needed and orientate the tube-head accordingly.
   Operate with the rim of the collimator in touch with the film holder or with the face of the patient.
2. Select the desired time-current product (exposure factor) with keys for patient size, type of tooth and type of receptor (press sensor if required), or set the value manually changing it with plus or minor keys.
3. Take the exposure hand-switch and move to a convenient position of at least 2 m far from the patient.
4. Press the exposure pushbutton. The exposure yellow light and the buzzer indicate X-ray emission. Keep the exposure pushbutton pressed until the yellow light and the buzzer are switched OFF to indicate the end of the exposure.
5. Hook back the exposure hand-switch and process the image receptor exposed.
6. Warning: If the exposure pushbutton is released before the end of the requested time, the radiation emission is terminated and an alarm is generated.

Time-current normalized scale in mAs

0.21	0.28	0.35	0.42	0.56	0.70
0.88	1.12	1.40	1.75	2.24	2.80
3.50	4.40	5.60	7.00	8.75	11.2

3.5 Operational Remarks

- The given range of exposures comprises 18 steps from 0.21 to 11.2 mAs.
  Each step the time-current scale changes the radiation energy of a minimum level of blackening. Every 3 steps upward the energy is doubled, every 3 steps downward the energy is halved.
- When the functionality to correct the dose variation due to line voltage fluctuations is activated, the corrected mAs value is 1) reduced when the line voltage is over the nominal level or 2) increased when it is below.
- During the exposure the yellow light of X-ray On on the control panel and on the hand-switch are turned on and the internal buzzer sounds to indicate radiation emission.
- An independent back-up device (back-up timer) is provided as additional safety feature to cut-off radiation in case of failure of the main timer.
- Alarm conditions which may occur are signalled by the red light and a display message on the control panel, as listed in Appendix D.
- The timer implements the dead-man functionality with which radiation emission is stopped if the operator terminates the exposure by releasing the push-button before the requested exposure time has elapsed. An alarm message is generated.
- The timer offers the possibility to correct the exposure time to control radiation dose changes due to sudden and strong fluctuations of the line voltage supply for a consistent film blackening. This functionality can be enabled or disabled at time of installation with an internal switch.
- After each exposure the timer takes into account the cool-down period and prevents an immediate exposure which would exceed the energy allowed by the duty cycle, with a minimum waiting time of 3 s.
- During waiting time for cool-down the system is inhibited, and the digits on the display keep flashing, until the energy of the requested exposure fits the heat capacity of the tube head. Once the waiting time has expired, the display quit flashing and the system becomes ready.

3.6 The Timing Table

Here below the timing indications in s and in line pulses at 50 and 60 Hz.

mAs	s	Pulses 50 Hz	Pulses 60 Hz
0.21	0,06	3	4
0.28	0,08	4	5
0.35	0,10	5	6
0.42	0,12	6	7
0.56	0,16	8	10
0.70	0,20	10	12
0.88	0,25	12	15
1.12	0,32	16	19
1.40	0,40	20	24

mAs	s	Pulses @50 Hz	Pulses @60 Hz
1.75	0,50	25	30
2.24	0,64	32	38
2.80	0,80	40	48
3.50	1,00	50	60
4.40	1,25	62	75
5.60	1,60	80	96
7.00	2,00	100	120
8.75	2,50	125	150
11.2	3,20	160	192

3.7 Moving the mobile unit

The folding arm has to be closed in parking position every time the mobile unit is relocated.

4. CARE AND MAINTENANCE

4.1 Cleaning

Always disconnect the line voltage supply before cleaning the unit. Use a mild soap to remove finger or other dirty marks paying attention not to have liquids enter into the equipment. Plastic covers can be wiped with a soft cloth and light detergent. Avoid the use solvents or corrosive detergents.

4.2 Disinfecting

Parts in touch with the patient must be cleaned with a detergent (such as 2% solution of ammonia) and then disinfected making sure not to use solvents or corrosive disinfectants. which can cause cracks on the plastic covers.

4.3 Maintenance

Maintenance for the Vario^{DG} systems to be done regularly by a service technician at least once every 24 months, in addition to regular checks performed by the operator every year.

5. DISPOSING OF OBSOLETE EQUIPMENT

A radiological system is made of different materials which include many kinds of metals (iron, aluminium, lead, copper and others), plastic materials, electronic components and dielectric oil in the tank of the X-ray tube. The "crossed-out wheeled bin" symbol on the product indicates that the product at the end of its useful life must not be disposed of as unsorted municipal waste but has to be collected separately and delivered to specialized operators for recycling or disposal of waste of electrical and electronic equipment (WEEE), in compliance with existing laws.
By doing in this way possible negative effects on human health and environment are prevented, and recycling of the component materials is promoted. Penalties are applicable to illicit disposal.
Sirona Dental Systems and its local Dealers commit to fulfil obligations related to the management of WEEE of professional nature, according to the provisions of the European directives 2002/96/EC and 2003/108/EC.

6. ELECTROMAGNETIC COMPATIBILITY

6.1 Electromagnetic Emissions

The Vario^{DG} is suitable for use in the specified electromagnetic environment. The purchaser or user of the Vario^{DG} should assure that it is used in an electromagnetic environment as described below.

Emission Test	Compliance	Electromagnetic environment
Radiated and conducted RF emissions CISPR 11	Group 1	This Vario^{DG} uses RF energy only for its internal function. Therefore, the RF emission is very low and not likely to cause any interference in nearby electronic equipment.
	Class B	This Vario^{DG} is suitable for use in domestic establishments and in establishments directly connected to the low voltage power supply network which supplies buildings used for domestic purposes
Harmonic emissions EN 61000-3-2	Complies Class A	
Voltage fluctuations/ flicker emissions EN 61000-3-3	Complies	

6.2 Electromagnetic Immunity

The Vario^{DG} is suitable for use in the specified electromagnetic environment. The customer or user of the Vario^{DG} should assure that it is used in an electromagnetic environment as described below.

Immunity Test	EN 60601-1-2 Test level	Compliance level	Electromagnetic Environment
Electrostatic discharge (ESD) EN 6 1000-4-2	6 kV contact 8 kV air	EN 60601-1-2 Test level	Residential/Hospital
Radiated RF EN 61000-4-3 Conducted RF EN 61000-4-6	Non-life-supporting equipment: 3 V/m 80MHz to 2.5GHz. Life-supporting equipment: 10 V/m 80 MHz to 2.5 GHz Non-life-supporting equipment: 3Veff 150kHz to 80MHz Life-supporting equipment: 3Veff outside ISM band, 10Veff inside ISM band	EN 60601-1 -2 Test level	Residential/Hospital
Electrical fast transient/burst EN 6 1000-4-4	2 kV for power supply lines 1 kV for input/output lines > 3m	EN 6060 1-1 -2 Test level	Residential/Hospital
Surge EN 61000 4-5	1 kV differential mode 2 kV common mode	EN 60601-1 -2 Test level	Residential/Hospital
Voltage dips, short interruptions and voltage variations on power supply input lines EN 6 1000-4-11	0% U_T for 0.5 cycles 40 % U_T for 5 cycles 70 % U_T for 25 cycles 0% U_T for 5s	EN 60601 -1-2 Test level	Residential/Hospital
Power frequency (50/60 Hz) magnetic field EN 61000-4-8	3 A/m	EN 60601-1-2 Test level	Residential/Hospital

6.3 Non-Life Supporting Equipment

The Vario^{DG} is intended for use in the electromagnetic environment specified below. The customer or the user of the Vario^{DG} should assure that it is used in such an environment

Inimunity Test	EN 60601-1-2 Test level	Compliance level	Electromagnetic Environment
Radiated RF EN 61000-4-3	3V/m: 80MHz to 2.5GHz	3 V/m	Portable and mobile RF Communications equipment should be used no closer to any part of the Vario^{DG}, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter Recommended separation distance $d = 1.2 \times \sqrt{P}$ 80 MHz to 800MHz $d = 2.3 \times \sqrt{P}$ 800MHz to2.5GHz
Conducted RF EN 61000-4-6	3V: 150kHz to 80MHz	3V	

Where P is the maximum output rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths for fixed RF transmitter, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur close to equipment marked with the symbol at side.

6.4 Separation Distance for non-life supporting equipment

Vario^{DG} is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Vario^{DG} can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications equipment (transmitter) and the Vario^{DG} as recommended below, according to the maximum output power of the Communications equipment.

Rated maximum output power of the transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150KHz to 80MHz $d = 1.2 \times \sqrt{P}$	80MHz to 800MHz $d = 1.2 \times \sqrt{P}$	800MHz to2.5GHz $d = 2.3 \times \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at the maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note:

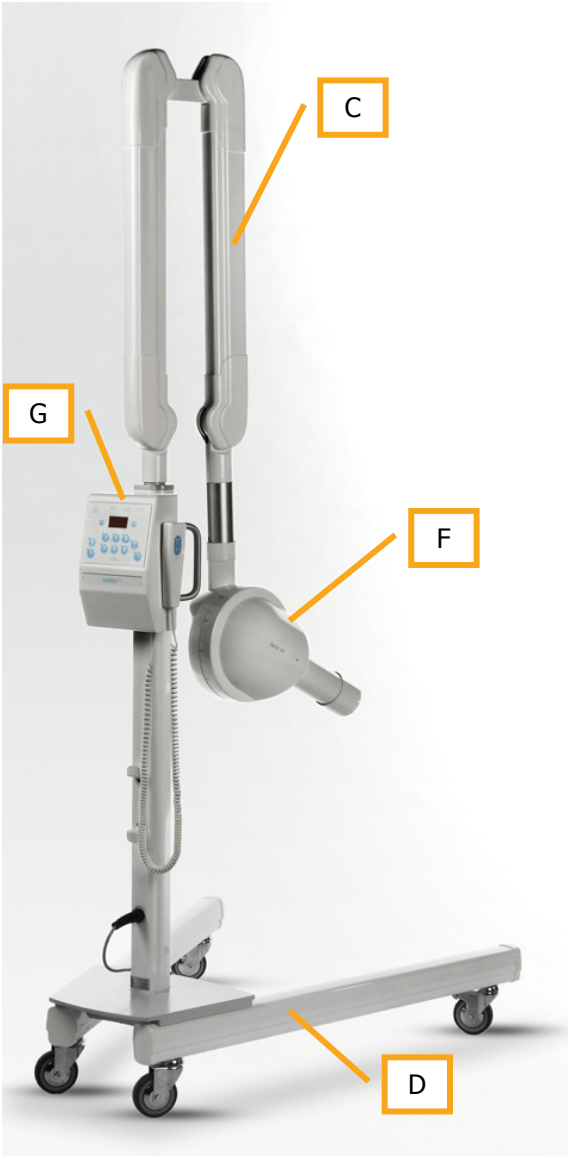
(1) at 80MHz and 800MHz, the separation distance for the higher frequency range applies

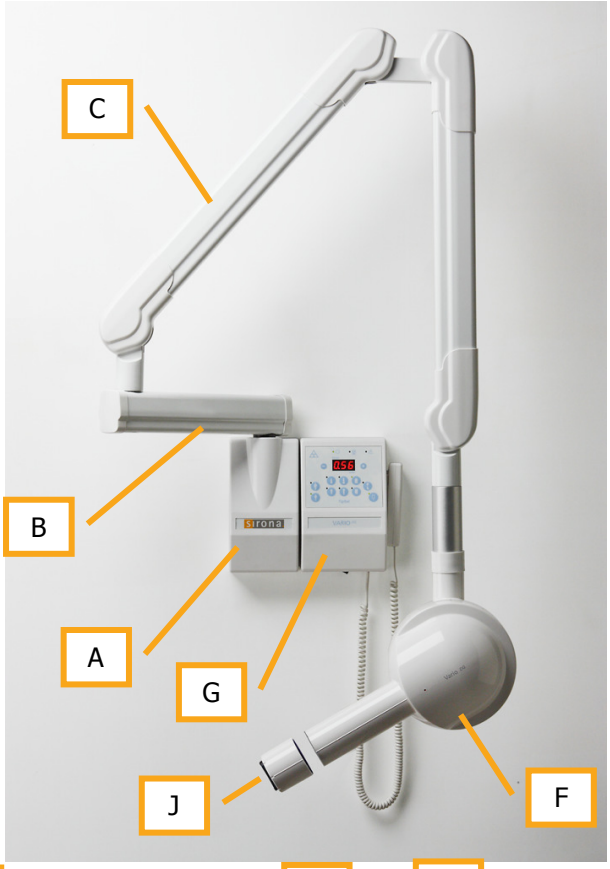
(2) These guidelines may not apply in all situations, Electromagnetic propagation is affected by absorption and reflection from structures, objects and people

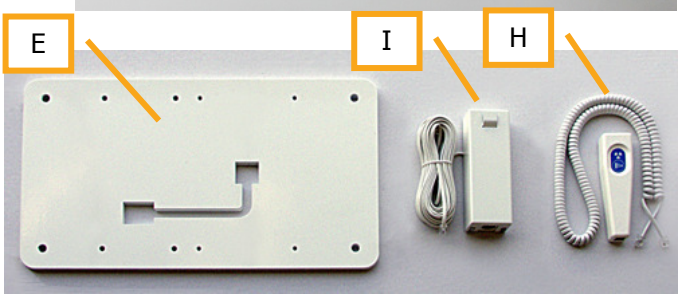
Appendix A
Systems and Spare Parts

Vario^{DG} Systems D3567 @ 230 V	
Code	Description
62 68 523	Vario DG Arm S 30 cm 230V
62 68 606	Vario DG Arm M 60 cm 230V
62 68 697	Vario DG Arm L 80 cm 230V
62 68 762	Vario DG Mobile 230V

Vario^{DG} Systems D3567 @ 120 V	
Code	Description
62 68 770	Vario DG Arm S 30 cm 120V
62 68 788	Vario DG Arm M 60 cm 120V
62 68 796	Vario DG Arm L 80 cm 120V
62 68 804	Vario DG Mobile 120V







Ref	Description	Code
A	Wall adaptor	62 80 213
B	Support arm S 30 cm	62 80 221
	Support arm M 60 cm	62 80 239
	Support arm L 80 cm	62 80 254
C	Scissor arm	62 80 262
D	Mobile stand	62 80 312
E	Wall plate 16”	62 80 320

Ref	Description	Code
F	X-ray head 120 V	62 80 270
	X-ray head 230 V	62 80 288
G	TipSet VDG 110-120 V	62 80 296
	TipSet VDG 220-240 V	62 80 304
H	Handswitch with cable	62 80 338
I	Kit remote handswitch	62 80 346
J	3x4 cm collimator blue	62 14 055

Appendix B
Icons

	IEC Type B Equipment		Compliance to European Community Requirements
	X-ray On Irradiation		Compliance to Canadian and US Standards
	Examine Annexed Documentation		Line voltage supply On - System Ready
	Increase Exposure Time (one step)		Off (Disconnected from Line voltage Supply)
	Decrease Exposure Time (one step)		On (Connected to Line voltage Supply)
	Child – Small Patient	~	Alternate Current
	Adult – Large patient		Fuse
	Upper Incisor		Protective Earth
	Upper Canine/Premolar	N	Neutral Point (for equipment permanent connected to line)
	Upper Molar	L	Live Point (for equipment permanent connected to line)
	Lower Incisor		Inherent Filtration
	Lower Canine/Premolar	■	Focal Spot
	Lower Molar		Fragile, Handle With Care
	Bite Wing - Interproximal		Fear of Humidity
	Digital Receptor		Up Do Not Overturn
	Radiography Push Button		Stacking Limit
	Ionizing Radiation		Separate Collection, Do Not Dispose

Appendix C
Exposure Table

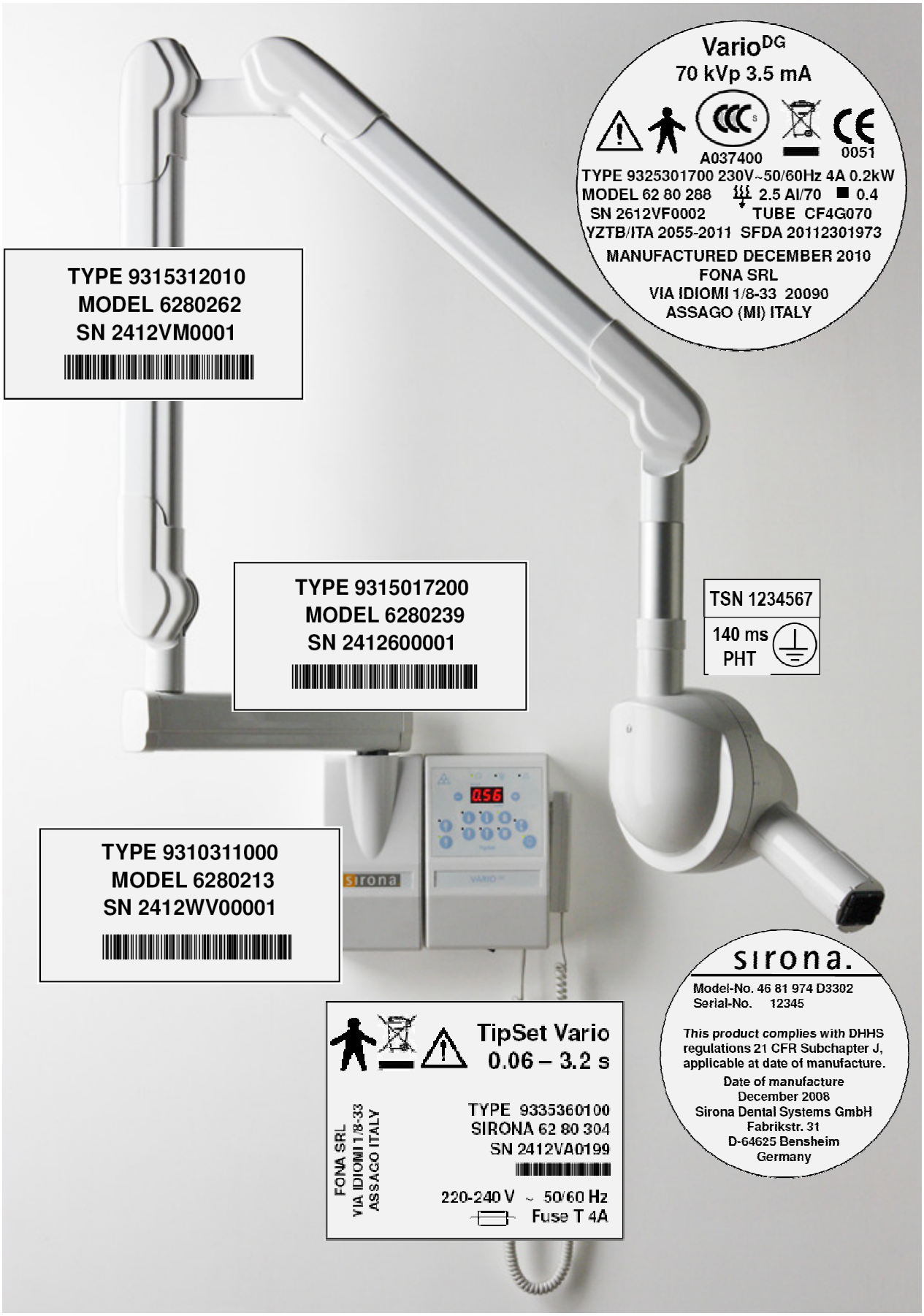
	Large Patient ↓	Lower Incisor ↓	Upper Incisor	Lower Canine/ Premolar ↓	Upper Canine/ Premolar	Lower Molar or Bitewing	Upper Molar ↓	Small Patient ↓	
		0.21	0.28	0.28	0.35	0.35	0.42	← 0.32	
		0.28	0.35	0.35	0.42	0.42	0.56	← 0.40	XIOS SENSOR
	0.32 →	0.35	0.42	0.42	0.56	0.56	0.70	← 0.50	
XIOS SENSOR	0.40 →	0.42	0.56	0.56	0.70	0.70	0.88	← 0.64	
	0.50 →	0.56	0.70	0.70	0.88	0.88	1.12	← 0.80	
	0.64 →	0.70	0.88	0.88	1.12	1.12	1.40	← 1.00	E FILM
	0.80 →	0.88	1.12	1.12	1.40	1.40	1.75	← 1.25	
E FILM	1.00 →	1.12	1.40	1.40	1.75	1.75	2.24	← 1.60	
	1.25 →	1.40	1.75	1.75	2.24	2.24	2.80	← 2.00	D FILM
	1.60 →	1.75	2.24	2.24	2.80	2.80	3.50	← 2.50	
D FILM	2.00 →	2.24	2.80	2.80	3.50	3.50	4.40	← 3.20	
	2.50 →	2.80	3.50	3.50	4.40	4.40	5.60	← 4.00	
	3.20 →	3.50	4.40	4.40	5.60	5.60	7.00	EXPOSURE INDEX	
	4.00 →	4.40	5.60	5.60	7.00	7.00	8.75		
	EXPOSURE INDEX	5.60	7.00	7.00	8.75	8.75	11.20		
		3.50	4.40	4.40	5.60	5.60	7.00		
		4.40	5.60	5.60	7.00	7.00	8.75		
		5.60	7.00	7.00	8.75	8.75	11.20		

Vario^{DG} Exposure Factors in mAs

Appendix D
Alarm Conditions

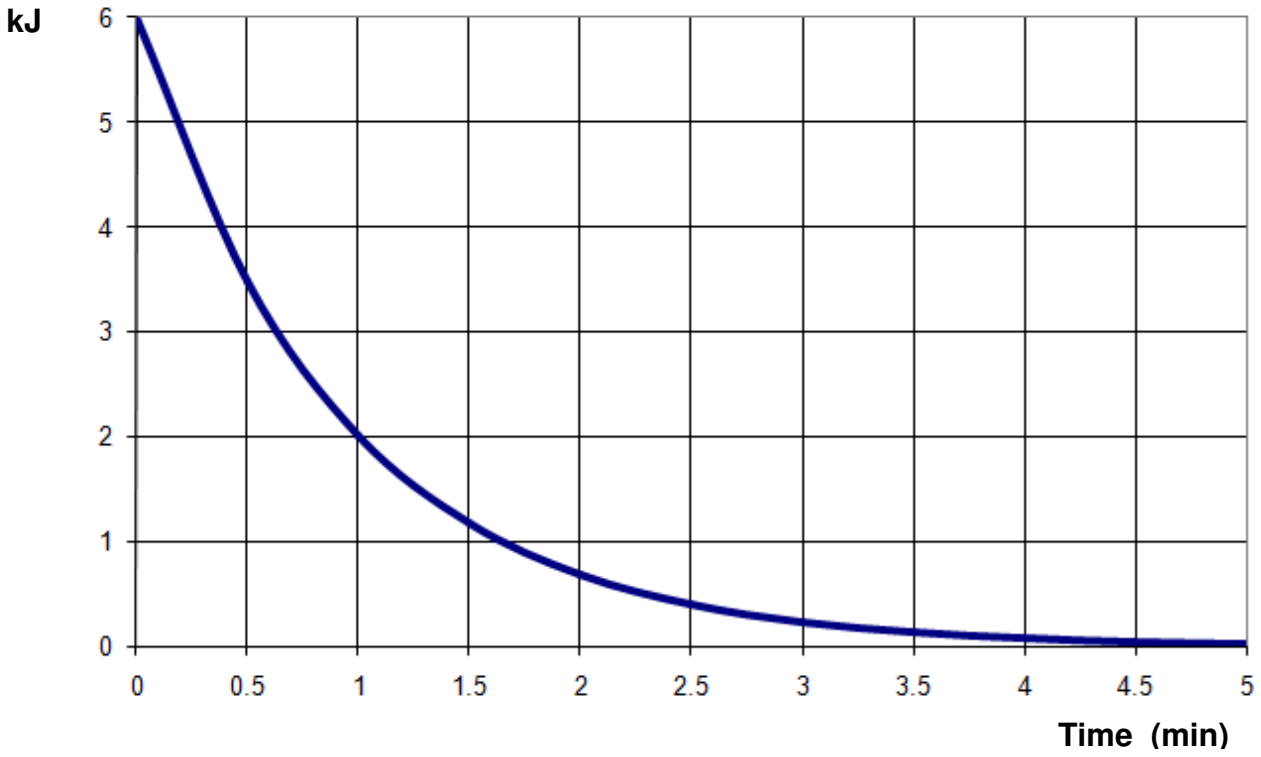
TipSet Timer Alarm Conditions			
Code	Fault /Error	Signal	Reset
A 01	X-ray requested during cool-down period	Green light (System Ready) flashing. The energy of the requested exposure would exceed the available heat capacity of the X-ray head	By acknowledgement on the panel or when system has cooled down
A 02	Line voltage below lower limit (-10%) of nominal line voltage of X-ray head as set	Green light (System Ready) and red light (Alarm) flash-ing	Automatic reset when line voltage comes back into range
A 03	Line voltage above upper limit (+10%) of nominal line voltage of X-ray head as set	Green light (System Ready) and red light (Alarm) flash-ing	Automatic reset when line voltage comes back into range
A 06	Line frequency detection failure or memory error	System Ready (green) l light and Alarm (red) light flash-ing	By switching system OFF and ON again
A 07	Exposure push button pressed at power on	Red light (Alarm) flashing	By acknowledgement on the panel
A 08	Exposure stopped by the operator	Red light (Alarm) flashing	By acknowledgement on the panel or after 1 minute
A 09	Exposure stopped by the back-up timer. Main failure, call for ser-vice technician	Red light (Alarm) switched on	By switching system OFF and ON again
A 10	Relay failure (back-up circuit involved). Incongruent status. Main failure, call for ser-vice technician	Red light (Alarm) switched on	By switching system OFF and ON again
A 11	Power switching device failure. Incongruent status. Main failure, call for ser-vice technician	Red light (Alarm) switched on	By switching system OFF and ON again
A12	Line dips detected during the last exposure. Check for quality of mains line supply.	Red light (Alarm) switched on	By acknowledgement OFF and ON again

Appendix E
Identification Labels

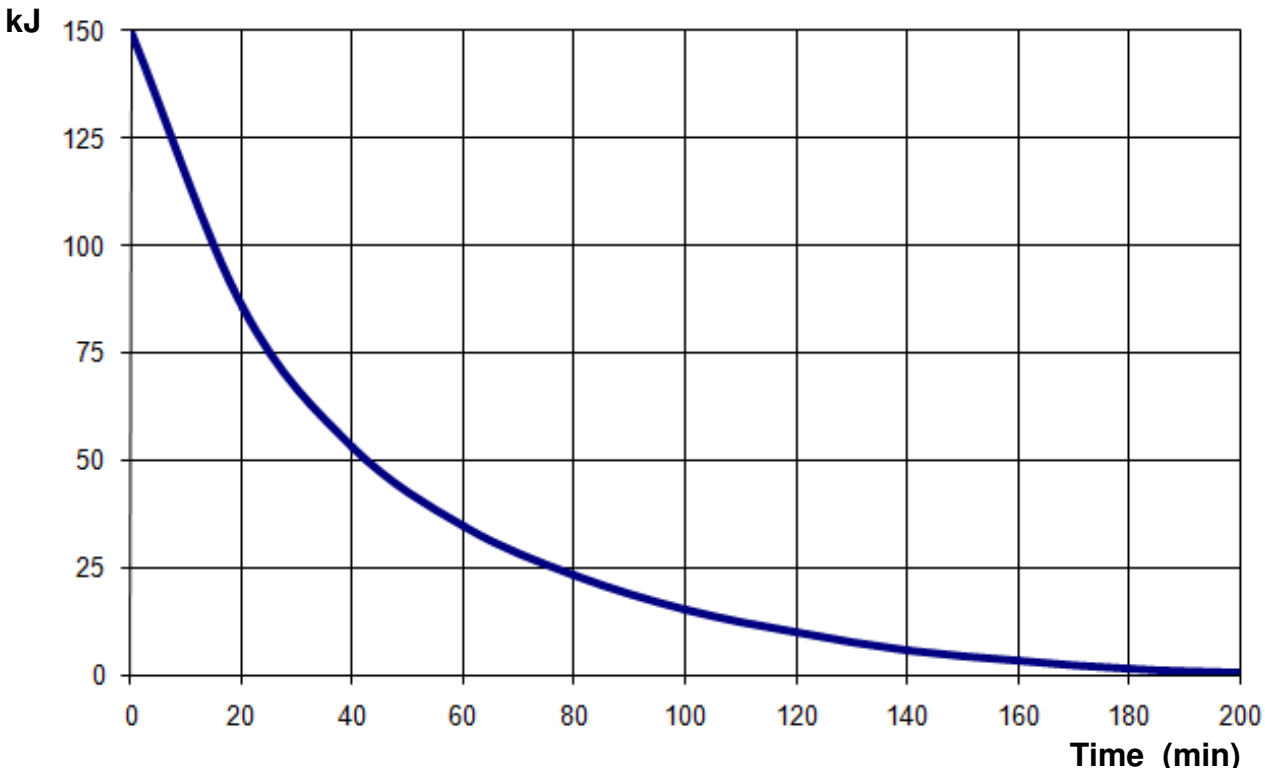


Appendix F
Cooling Curves

COOLING CURVE OF X-RAY INSERT



COOLING CURVE OF TUBE HOUSING ASSEMBLY



We reserve the right to make any alterations which may be required due to clinical improvements.

Vario DG Operating Instructions – English Edition 110803 - Code 69 69 553 00110 - D3567

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63 02 553 D3567.201.01.02.02 02.2012

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