



## BEAM QUALITY ASSURANCE GUIDELINES – LOW ENERGY CLINACS

Beam energy and symmetry verification, can be performed by either the Varian engineer or the site physicist. In all cases, the final data must be approved by the physicist. Dose calibration is the sole responsibility of the site physicist. Varian employees should not adjust any dose calibration pots (MU1 or MU2).	Verify Light Field Vs. X-Ray Coincidence	Verify Beam Energy, including Dmax Horns	Full Profile Scanning Required [40 & 10 cm field sizes]	Verify Dose Calibration	Verify Symmetry Interlock Alignment	Verify Yield Servo Alignment	Verify AFC Alignment
<b>Part Replacements, Alignments &amp; Upgrades</b>							
Guide replacement	●	●	●	●	●	●	●
Guide Alignment	●	●	●	●	●	●	
Magnetron replacement		●*				●	●
Pulse Tank replacement		●*				●	●
Water Load replacement		●*					●
Circulator replacement		●*					●
Magnetron Magnet replacement or gauss adjustment		●*				●	
Electro-Magnet Power Supply replacement or adjustment		●*				●	
Magnetron Current adjustment (should be in pot table next page?)		●				●	
Pulse Tank Tap change		●				●	
Gun High Voltage adjustment (tap or resistor change)		●				●	
Ion Chamber replacement				●	●	●	
Ion Chamber cable(s) replacement				●	●		
Filter replacement (is this necessary or extremely uncommon?)		●		●	●	●	
RF Waveguide section replacement		●				●	●
Yield Servo Alignment		●*				●	
AFC Alignment		●*				●	●
Mirror replacement or Light Field alignments	●						
15V Console P/S replacement (adjust to exact previous value)				●			
Energy Change (4 to 6 or 6 to 4MV)	●	●	●	●	●	●	●
CD Upgrade	●	●	●	●	●	●	●
<b>Printed Circuit Board (PCB) Replacements</b>							
Symmetry Monitor & Dose Rate Integrator PCB (B1 & B4)				●	●		
AFC Miscellaneous PCB				●			●
Yield Servo PCB		●*				●	

\* Symbol in "Verify Beam Energy" column indicates that this check is only necessary if Target Current changes by > 5mA from original value.

## Individual Potentiometer Adjustment Requirements

All adjustments below require Basic Maintenance Course attendance

	Verify Beam Energy including DMAX horns	Full Profile Scanning Required (40 & 10cm)	Yield Servo Alignment	Dose Cal Verification	AFC Alignment
DeQing Reference pot	●	●	●		
AFC Balance pot			●		●
Electro Magnet Power Supply Current pot	●	●	●		
MU1 & MU2 dosimetry adjustment pots				●	

### Site Physicist should always be notified when making any of the following adjustments:

- ☛ All tasks listed in the preceding tables that require energy verification, full profile scanning and/or dose cal verification
- ☛ Light field, crosshair or rangefinder adjustments
- ☛ Patient Setup adjustments: Lasers, Position Readouts, Front Pointers, etc
- ☛ Accessory adjustments or replacements: Wedges, Front Pointers, Accessory Mount, etc

### Rules to Remember

- ❶ Always request assistance with guide replacement or alignment when in doubt or not properly trained.
- ❷ Thoroughly investigate beam quality (energy, symmetry & flatness) when dose cal shifts of > 2% occur.
- ❸ Always beam on in Clinical Mode (after completing any service work) just before leaving site to verify all is okay.
- ❹ Never adjust Magnetron current to align the Yield Servo interlock circuit.
- ❺ Any power adjustments on a Low Energy Clinac will result in a change to beam energy and therefore, must be verified.

\* This document is not all inclusive. Guideline requirements may also apply to other part replacements, alignments, adjustments and upgrades that are not listed.

## Varian Oncology Systems

### United States Centers

#### Headquarters

596 Alder Drive  
Milpitas, CA 95035  
Tel: 408-321-9400

#### Northeast

100 Walnut Avenue  
Suite 201  
Clark, NJ 07066  
Tel: 732-381-5300

#### Southeast

2250 Newmarket Parkway  
Suite 120  
Marietta, GA 30067  
Tel: 770-955-1775

#### Midwest

200 East Howard Street  
Suite 202  
Des Plaines, IL 60018  
Tel: 847-296-0660

#### Southwest

403 International Pkwy  
Suite 503  
Richardson, TX 75081  
Tel: 972-238-7017

#### West

650 East Parkridge Avenue  
Suite 109  
Corona, CA 92879-1092  
Tel: 1-909-280-4406

### International Centers

#### Australia

Unit 6, 81 Frenchs Forest Road (East)  
Frenchs Forest  
New South Wales 2086  
Tel: 61-2/9975-8830

#### Brazil

Rua Viradouro, 63-Conj. 131  
Itaim Bibi 04538-110  
Sao Paulo  
Tel: 55-11/829-6705

#### Denmark

Lyskaer 9  
DK-2730 Herlev  
Tel: 45-44/500-100

#### France

C.A.A. Tolbiac-Maséna  
5, rue Watt  
75644 - Paris Cedex 13  
Tel: 33-1-53.60.82.11

#### Germany

Alsfelder Strasse 6  
D-64289 Darmstadt  
Tel: 49-6151/7313-0

#### INDIA

Ground Floor, Municipal MKT  
behind Dinanath Mangeshkar Hall  
Tejpal Road, Vile Parle (E)

#### Italy

Via Brescia 28D1  
20063 Cernusco S/N (MI)  
Italy  
Tel: 39-02-921-351

#### Hong Kong

Room 1018-20, Tower A  
Mandarin Plaza  
14 Science Museum Road  
Tsimshatsui East, Kowloon  
Tel: 852/2724-2836

#### Netherlands

Nederland B.V  
Kokermolen 2  
3994 DH Houten  
Netherlands

#### P.R China

76 Zhichun Road  
Haidian District  
Beijing PRC 100086  
Tel: 86-10/6512-3667

#### Spain

Via dos Castillas, 33  
Compl. Atica, Edif. 7 Bajo  
28224 Pozuelo de Alarcon  
Madrid, Spain  
34 91 799-4530

#### Switzerland

Chollerstrasse 38  
Postfach 3363  
CH-6303 Zug  
Tel: 41-41/749-8844

#### United Kingdom

Gatwick Road  
Crawley, Sussex  
RH10 2RG-U.K.  
Tel: 44-1293/53 12 44

SHEET <b>4 OF 4</b>	<b>CTB-GE-144</b>	N/A DWG NO.	A REV	<b>ATTENTION:</b> This information is provided for use by qualified service technicians. Varian Medical Systems, Inc. makes no representation to the qualifications of any service technicians other than its own employees. Improper or uninformed maintenance or repair of the Product may expose a maintenance technician, operator and/ or patient to safety hazards including but not limited to one or more of the following: mechanical collision, electrical shock, and radiation. Any of these hazards could cause serious injury and even death. <b>Copyright © 2000</b> , Varian Medical Systems, Inc. All rights reserved.
------------------------	-------------------	----------------	----------	--