

CERERE DE PARTICIPARE

Către **Administrația Națională a Penitenciarelor, mun. Chișinău, str. Nicolae Titulescu 35**
(denumirea autorității contractante și adresa completă)

Stimați domni,

Ca urmare a anunțului/invitației de participare/de preselecție apărut în Buletinul achizițiilor publice și/sau Jurnalul Oficial al Uniunii Europene, nr [ocds-b3wdp1-MD-1774616978570](#)

din 27 martie 2026, (privind aplicarea procedurii pentru atribuirea contractului COP privind achiziționarea Serviciilor de mentenanță și reparație a instalațiilor cu raze X (suplimentar), noi „**Media Security**”SRL (denumirea/numele ofertantului/candidatului), am luat cunoștință de condițiile și de cerințele expuse în documentația de atribuire și exprimăm prin prezenta interesul de a participa, în calitate de ofertant/candidat, neavând obiecții la documentația de atribuire.

Data completării 01.04.2026

Cu stimă,

Ofertant/candidat
„Media Security”SRL
Administrator _____ Victor Gaina

DECLARAȚIE
privind valabilitatea ofertei

Către **Administrația Națională a Penitenciarelor, mun. Chișinău, str. Nicolae Titulescu 35**
(denumirea autorității contractante și adresa completă)

Stimați domni,

Ne angajăm să menținem oferta valabilă, privind achiziționarea **Serviciilor de mentenanță și reparație a instalațiilor cu raze X (suplimentar)** prin procedura de achiziție **COP** ocds-b3wdp1-MD-1774616978570 pentru o durată de 60(sasezeci) zile, (durata în litere și cifre), respectiv până la data de 02.06.2026 (ziua/luna/anul), și ea va rămâne obligatorie pentru noi și poate fi acceptată oricând înainte de expirarea perioadei de valabilitate.

Data completării 01.04.2026

Cu stimă,

Ofertant/candidat
„Media Security” SRL
Administrator _____ Victor Gaina

Specificații tehnice

[Acest tabel va fi completat de către ofertant în coloanele 2, 3, 4, 6, 7, iar de către autoritatea contractantă – în coloanele 1, 5]

Numărul procedurii de achiziție: ocds-b3wdp1-MD-1774616978570
Obiectul achiziției: „ Servicii de mentenanță și reparație a instalațiilor cu raze x (Suplimentar) ”

Denumirea serviciilor	Denumirea modelului bunului/serviciului	Țara de origine	Producător	Specificarea tehnică deplină solicitată de către autoritatea contractantă	Specificarea tehnică deplină propusă de către ofertant	Standarde de referință
1	2	3	4	5	6	7
Lot nr. 1. Servicii de mentenanță și reparație a instalațiilor cu raze x						
Servicii de mentenanță preventivă și verificare tehnică pentru instalații de model Astrophysics XIS-6545	Servicii de mentenanță preventivă și verificare tehnică pentru instalații de model Astrophysics XIS-6545	Republica MOLDOVA	Media Security	Evaluarea stării de funcționare a generatorului de raze X, inclusiv a controllerului aferent, precum și a capacității de imagistică; verificarea completă a funcționării instalației în regim normal de exploatare; ajustarea (după caz) a parametrilor de funcționare conform recomandărilor producătorului; măsurarea nivelului de radiație în interiorul tunelului de scanare și în imediata apropiere a instalației; completarea checklist-ului de mentenanță preventivă conform reglementărilor producătorului; efectuarea testului de siguranță radiologică	Evaluarea stării de funcționare a generatorului de raze X, inclusiv a controllerului aferent, precum și a capacității de imagistică; verificarea completă a funcționării instalației în regim normal de exploatare; ajustarea (după caz) a parametrilor de funcționare conform recomandărilor producătorului; măsurarea nivelului de radiație în interiorul tunelului de scanare și în imediata apropiere a instalației; completarea checklist-ului de mentenanță preventivă conform reglementărilor producătorului; efectuarea testului de siguranță radiologică	

<p>Servicii de reparație și înlocuire de componente pentru instalații de model Astrophysics XIS- 6545 (după caz, în funcție de constatățile din etapa anterioară)</p>			<ol style="list-style-type: none"> 1. Înlocuirea mecanismului de rotație al benzii transportoare (manopera + piese de schimb și materiale consumabile); 2. Înlocuirea sursei de alimentare a PC-ului (manopera + piese de schimb și materiale consumabile); 3. Înlocuirea sursei de alimentare a generatorului (manopera + piese de schimb și materiale consumabile) 4. Înlocuirea sursei de alimentare a plăcii de bază (manopera + piese de schimb și materiale consumabile) 5. Înlocuirea sursei de alimentare 5V (manopera + piese de schimb și materiale consumabile) 6. Înlocuirea sursei de alimentare 12V (manopera + piese de schimb și materiale consumabile) 7. Înlocuirea controllerului generatorului (manopera + piese de schimb și materiale consumabile) 8. Înlocuirea butoanelor tastaturii (manopera + piese de schimb și materiale consumabile) 9. Înlocuirea butoanelor de oprire de urgență (manopera + piese de schimb și materiale consumabile) 10. Înlocuirea întrerupătoarelor de tip interlock (manopera + piese de schimb și materiale consumabile) 11. Înlocuirea perdelelor de protecție din tunelul de scanare (manopera + piese de schimb și materiale consumabile) 12. Înlocuirea monitoarelor de afișare (manopera + piese de schimb și materiale consumabile) 13. Înlocuirea senzorilor de detecție amplasați la intrarea, 	<ol style="list-style-type: none"> 1. Înlocuirea mecanismului de rotație al benzii transportoare (manopera + piese de schimb și materiale consumabile); 2. Înlocuirea sursei de alimentare a PC-ului (manopera + piese de schimb și materiale consumabile); 3. Înlocuirea sursei de alimentare a generatorului (manopera + piese de schimb și materiale consumabile) 4. Înlocuirea sursei de alimentare a plăcii de bază (manopera + piese de schimb și materiale consumabile) 5. Înlocuirea sursei de alimentare 5V (manopera + piese de schimb și materiale consumabile) 6. Înlocuirea sursei de alimentare 12V (manopera + piese de schimb și materiale consumabile) 7. Înlocuirea controllerului generatorului (manopera + piese de schimb și materiale consumabile) 8. Înlocuirea butoanelor tastaturii (manopera + piese de schimb și materiale consumabile) 9. Înlocuirea butoanelor de oprire de urgență (manopera + piese de schimb și materiale consumabile) 10. Înlocuirea întrerupătoarelor de tip interlock (manopera + piese de schimb și materiale consumabile) 11. Înlocuirea perdelelor de protecție din tunelul de scanare (manopera + piese de schimb și materiale consumabile) 12. Înlocuirea monitoarelor de afișare (manopera + piese de schimb și materiale consumabile) 13. Înlocuirea senzorilor de detecție amplasați la intrarea, respectiv ieșirea din tunelul de scanare (manopera + piese de schimb și materiale consumabile) 14. Înlocuirea releelor de alimentare (manopera + piese de schimb și materiale consumabile) 	
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				<p>respectiv ieșirea din tunelul de scanare (manopera + piese de schimb și materiale consumabile)</p> <p>14. Înlocuirea releelor de alimentare (manopera + piese de schimb și materiale consumabile)</p> <p>15. Înlocuirea sursei interne de alimentare de rezervă (manopera + piese de schimb și materiale consumabile)</p> <p>16. Înlocuirea ruloului de tensionare (manopera + piese de schimb și materiale consumabile)</p> <p>17. Înlocuirea cablurilor interne de interconectare deteriorate sau degradate (manopera + piese de schimb și materiale consumabile)</p> <p>18. Reinstalarea și/ sau actualizarea sistemului de operare, înlocuirea HDD/ SSD, cheii de securitate (manopera + piese de schimb și materiale consumabile).</p>	<p>15. Înlocuirea sursei interne de alimentare de rezervă (manopera + piese de schimb și materiale consumabile)</p> <p>16. Înlocuirea ruloului de tensionare (manopera + piese de schimb și materiale consumabile)</p> <p>17. Înlocuirea cablurilor interne de interconectare deteriorate sau degradate (manopera + piese de schimb și materiale consumabile)</p> <p>18. Reinstalarea și/ sau actualizarea sistemului de operare, înlocuirea HDD/ SSD, cheii de securitate (manopera + piese de schimb și materiale consumabile).</p>	
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Ofertantul "MEDI SECURITY" SRL Adresa: MUN.CHISINAU ,STR COLINA PUSKIN 4 Semnat ADMINISTRATOR

Numele, Prenumele: VICTOR GAINA

Specificații de preț

[Acest tabel va fi completat de către ofertant în coloanele 5,6,7,8 și 11 la necesitate, iar de către autoritatea contractantă – în coloanele 1,2,3,4,9,10]

Numărul procedurii de achiziție: ocds-b3wdp1-MD-1774616978570
Obiectul achiziției: „Servicii de mentenanță și reparație a instalațiilor cu raze x (Suplimentar)”

Cod CPV	Denumirea serviciilor	Un./m.	Cantitatea	Preț unitar (fără TVA)	Preț unitar (cu TVA)	Suma fără TVA	Suma cu TVA	Termenul de livrare	Clasificații bugetară (IBAN)	Discount %
1	2	3	4	5	6	7	8	9	10	11
Lot nr. 1. Servicii de mentenanță și reparație a instalațiilor cu raze x										
50610000-4	Servicii de mentenanță preventivă și verificare tehnică pentru instalații de model Astrophysics XIS-6545	servicii	11	13.181,81	15881.18	145000	174000	Pe parcursul anului 2026 Penitenciarul nr. 1-Taraclia; Penitenciarul nr. 3-Leova; Penitenciarul nr. 4-Cricova; Penitenciarul nr. 5-Cahul; Penitenciarul nr. 6-Soroca; Penitenciarul nr. 9-Pruncul; Penitenciarul nr. 11-Bălți; Penitenciarul nr. 13-Chișinău; Penitenciarul nr. 15-Cricova; Penitenciarul nr. 17-Rezina; Penitenciarul nr. 18-Brănești.		
	Servicii de reparație și înlocuire de componente pentru instalații de model Astrophysics XIS-6545 (după caz, în funcție de	servicii	1	Conform anexei				Pe parcursul anului 2026, conform situației de facto		

	constatările din etapa anterioară)								
	TOTAL:				145000	174000			

Ofertantul "MEDI SECURITY" SRL Adresa: MUN.CHISINAU ,STR COLINA PUSKIN 4 Semnat ADMINISTRATOR

Numele, Prenumele: VICTOR GAINA

NOMENCLATOR DE PREȚURI
pentru servicii de mentenanță preventivă și verificare tehnică,
inclusiv reparație și înlocuire de componente pentru instalații de model Astrophysics XIS-6545

Nr. d/o	Descrierea serviciilor	Preț unitar fără TVA (lei)	Preț unitar cu TVA (lei)	
Lot nr. 1. Servicii de mentenanță și reparație a instalațiilor cu raze x				
1.1	Servicii de mentenanță preventivă și verificare tehnică pentru instalații de model Astrophysics XIS-6545	145000	174000	
1.2	Servicii de reparație și înlocuire de componente pentru instalații de model Astrophysics XIS-6545 (după caz, în funcție de constatările din etapa anterioară)	1. Înlocuirea mecanismului de rotație al benzii transportoare (manopera + piese de schimb și materiale consumabile)	29570,0625	35484,075
		2. Înlocuirea sursei de alimentare a PC-ului (manopera + piese de schimb și materiale consumabile)	9856,6875	11828,025
		3. Înlocuirea sursei de alimentare a generatorului (manopera + piese de schimb și materiale consumabile)	114994,6875	137993,625
		4. Înlocuirea sursei de alimentare a plăcii de bază (manopera + piese de schimb și materiale consumabile)	7228,2375	8673,885
		5. Înlocuirea sursei de alimentare 5V (manopera + piese de schimb și materiale consumabile)	9856,6875	11828,025

	6. Înlocuirea sursei de alimentare 12V (manopera + piese de schimb și materiale consumabile)	6571,125	7885,35
	7. Înlocuirea controllerului generatorului (manopera + piese de schimb și materiale consumabile)	65711,25	78853,5
	8. Înlocuirea butoanelor tastaturii (manopera + piese de schimb și materiale consumabile)	4928,34375	5914,0125
	9. Înlocuirea butoanelor de oprire de urgență (manopera + piese de schimb și materiale consumabile)	2628,45	3154,14
	10. Înlocuirea întrerupătoarelor de tip interlock (manopera + piese de schimb și materiale consumabile)	3942,675	4731,21
	11. Înlocuirea perdelelor de protecție din tunelul de scanare (manopera + piese de schimb și materiale consumabile)	16427,8125	19713,375
	12. Înlocuirea monitoarelor de afișare (manopera + piese de schimb și materiale consumabile)	5914,0125	7096,815
	13. Înlocuirea senzorilor de detecție amplasați la intrarea, respectiv ieșirea din tunelul de scanare (manopera + piese de schimb și materiale consumabile)	9856,6875	11828,025
	14. Înlocuirea releelor de alimentare (manopera + piese de schimb și materiale consumabile)	2957,00625	3548,4075
	15. Înlocuirea sursei interne de alimentare de rezervă (manopera + piese de schimb și materiale consumabile)	8706,740625	10448,08875
	16. Înlocuirea ruloului de tensionare (manopera + piese de schimb și materiale consumabile)	9856,6875	11828,025
	17. Înlocuirea cablurilor interne de interconectare deteriorate sau degradate (manopera + piese de schimb și materiale consumabile)	3285,5625	3942,675
	18. Reinstalarea și/ sau actualizarea sistemului de operare, înlocuirea HDD/ SSD, cheii de securitate (manopera + piese de schimb și materiale consumabile)	32198,5125	38638,215

Ofertantul "MEDI SECURITY" SRL Adresa: MUN.CHISINAU ,STR COLINA PUSKIN 4 Semnat ADMINISTRATOR

Numele, Prenumele: VICTOR GAINA

DECLARAȚIE DE ELIGIBILITATE

Către Administrația Națională a Penitenciarelor, mun. Chișinău, str. Nicolae
Titulescu 35 (denumirea
autorității/entității contractante și adresa completă)

Stimați domni,

Subsemnatul, reprezentant împuternicit al „Media Security” SRL
(denumirea operatorului economic)

în calitate de ofertant, declar pe propria răspundere, sub sancțiunea excluderii din procedură și sub sancțiunile aplicate faptei de fals în acte publice, că nu mă aflu în una dintre situațiile prevăzute la art. 19 din Legea nr. 131/2015 privind achizițiile publice.

Mă oblig, la solicitarea autorității/entității contractante, în scopul verificării și confirmării declarației, să prezint orice document doveditor de care dispun.

Data completării 01.04.2026

Cu stimă,

Ofertant/candidat
„Media Security” SRL
Administrator _____ Victor
Gaina

I.P. "AGENȚIA SERVICII PUBLICE"
Departamentul înregistrare a unităților de drept (DÎUD)

Extras
din Registrul de stat al persoanelor juridice
nr. 201555 din 10.02.2026



Denumirea completă: **Societatea cu Răspundere Limitată "MEDIA SECURITY"**

Denumirea prescurtată: **"MEDIA SECURITY" S.R.L.**

Forma juridică de organizare: **Societate cu răspundere limitată**

Numărul de identificare de stat și codul fiscal: **1006600023985**

Data înregistrării de stat: **22.05.2006**

Sediu: **MD-2005, strada Colina Pușkin 4, mun. Chișinău, Republica Moldova**

Genurile de activitate:

- 1. Alte activități de servicii prestate întreprinderilor, neincluse în alte categorii;**
- 2. Tipărirea ziarelor;**
- 3. Publicitate;**
- 4. Tipărirea altor publicații (cărți, broșuri etc);**
- 5. Activitatea particulară de detectiv sau de pază;**
- 6. Montarea și (sau) reglarea, asistența tehnică a sistemelor automate de semnalizare și de stingere a incendiilor, precum și de protecție a clădirilor împotriva fumului și de înștiințare în caz de incendiu;**
- 7. Activitatea în domeniul televiziunii și radiodifuziunii;**

Capitalul social: **5400 Lei**

Administrator(i): **GAINA VICTOR IDNP 0961107011088**

Asociați:

- 1. GAINA VICTOR (IDNP 0961107011088), partea socială 5400 Lei, ce constituie 100%**

Beneficiari efectivi: **GAINA VICTOR (IDNP 0961107011088)**

Prezentul extras este eliberat în temeiul art. 34 al Legii nr.220/2007 privind înregistrarea de stat a persoanelor juridice și a întreprinzătorilor individuali și confirmă datele din Registrul de stat la data de 10.02.2026

Specialist coordonator

Diana Nasian-Nicolaev

tel. 022-20-7826

Digitally signed by Nasian-Nicolaev Diana

Date: 2026.02.10 08:23:45 EET

Reason: MoldSign Signature

Location: Moldova

MOLDOVA EUROPEANĂ





maib | confidential
este interzisă deținerea, sustragerea, multiplicarea, distrugerea sau
folosirea acestui act fără autorizarea băncii

nr. 5864/E00539
18 noiembrie 2022

CERTIFICAT

Tip Certificat: Cont

Banca comercială „MAIB” S.A., Sucursala Tighina confirmă că MEDIA SECURITY SRL, IDNO 1006600023985 este deținător al următoarelor conturi bancare:

Cod IBAN	Valuta contului
MD48AG000000022512901602	MDL USD EUR
MD21AG000000022512901603	
MD91AG000000022512901604	

Certificatul este eliberat la solicitarea titularului de cont, pentru a fi prezentat la cerere.
Prezentul certificat este eliberat în scop informativ și nu prezintă careva obligațiuni financiare din partea Băncii.

(semnatura)

Nume, Prenume, funcția

Astrophysics Inc. XIS Installation Manual



**XIS Security X-ray Machines
(non-pallet)**

Document Description

TITLE	XIS Installation Manual
DESCRIPTION	Installation Manual for non-pallet Astrophysics X-ray Imaging Systems.
REVISION	M-75-13-17, Rev. B
RELEASE	January 2014

Revision History

REV	AUTHOR	DESCRIPTION	CHANGES
A	Rob Tobin	2013.09 First Release	First Draft
B	Rob Tobin	2014.01	New Logo

Notice

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Conventions Used In This Manual

Throughout this manual, the Astrophysics *X-ray Imaging System* (XIS) is referred to as the *XIS*.

Operator console button presses are specified in “square” (“[”, “]”) brackets. For example, pressing the STOP button on the keypad operator console is represented as [STOP]

“Control” key characters are denoted with square bracket notation, [Ctrl-character]. For example, [Ctrl-x] refers to simultaneously pressing the [Ctrl] key and the [x] key on the PC keyboard.

“Alt” key characters are denoted with square bracket notation, [Alt-character]. For example, [Alt-x] refers to simultaneously pressing the [Alt] key and the [x] key on the PC keyboard.

[Alt-Ctrl-del] refers to simultaneously pressing the [Alt] key, the [Ctrl] key, and the [Del] key.

IMPORTANT

Very important notices are highlighted by the “IMPORTANT” text box. These messages involve critical safety issues and deserve special attention.

B/W refers to the Black & White (left side) video display monitor
[B/W] refers to the button *B/W* on the keypad operator console.

VERY IMPORTANT OPERATIONAL INFORMATION is highlighted in yellow and preceded by the word “NOTE” bolded and in caps.



WARNING!

Information related to **PERSONAL SAFETY** is placed in a red text box, and preceded by the word “CAUTION” or “WARNING,” and by the yellow triangle symbol.

Abbreviations

ACHE	Air Cooled Heat Exchanger
Astrophysics	Astrophysics, Inc.
CA	Cabinet A
CB	Cabinet B
CC	Cabinet C
CDRH	US FDA Center for Devices and Radiological Health
DAS	Data Acquisition System
ER	Entry Rollers
ER1	Entry Roller (Bed) #1
ER2	Entry Roller (Bed) #2
EX	Exit Rollers
EX1	Exit Roller (Bed) #1
EX2	Exit Roller (Bed) #2
FDA	United States Food and Drug Administration
LXDA	Linear X-ray Detector Assembly
M1	Module #1
M2	Module #2
M3	Module #3
M4	Module #4
M5	Module #5
OSHA	United States Dept of Labor, Occupational Safety and Health Administration
NRC	United States Nuclear Regulatory Commission
WI	Work Instructions
PPE	Personal Protective Equipment
XIS	X-ray Imaging System
XRG	X-ray Generator
XRT	X-ray Tube

Table of Contents

INTRODUCTION	9
SAFETY	11
CHAPTER OVERVIEW	11
<i>Safety Features</i>	11
<i>Safety Precautions</i>	13
<i>U.S. Federal Health and Safety Regulatory Compliance</i>	17
<i>Local Regulatory Compliance</i>	17
<i>Facility Safety</i>	18
DIFFERENCES BETWEEN DUAL- AND SINGLE-VIEW	19
LXDA ARRAYS AND PCs	19
<i>Single-View machines</i>	19
<i>Dual View machines</i>	19
SOFTWARE	21
<i>[Display]</i>	21
<i>[Options]</i>	21
<i>[Dual View]</i>	21
DAS 2.0 SYNCH BOARD CONFIGURATION IN DUAL-VIEW XIS	22
DUAL-VIEW CONFIGURATION POINTS	23
DUAL-VIEW PC NETWORK TROUBLESHOOTING	25
<i>Network:</i>	25
<i>Keyboard/Mouse Sharing:</i>	25
<i>Imaging Software:</i>	25
INSTALLATION	27
PRE-ARRIVAL WORK INSTRUCTIONS	27
REQUIRED RESOURCES	30
<i>Tools</i>	30
<i>Recommended Personal Protective Equipment</i>	32
ON-SITE WORK INSTRUCTIONS	32
<i>Uncrating/Unwrapping the XIS Machine</i>	34
<i>Assembly and Adjustment</i>	37
<i>Pre-Power Up Inspection</i>	39
<i>Initial AC PWR Connection and Checks</i>	40
XIS STARTUP / SHUTDOWN PROCEDURES.....	43
INTRODUCTION.....	43
STARTING THE XIS.....	43
LOGGING IN	45
<i>Operating System Version 2.0</i>	45
<i>Operating System Version 2.1</i>	48
X-RAY IMAGE SCREENING PROCEDURES	52
XIS SHUTDOWN	54
OPERATIONAL TESTING.....	55
FUNCTIONAL TESTING.....	55

X-RAY IMAGE QUALITY	57
RADIATION LEAKAGE SURVEY	58
PERFORMING THE X-RAY SAFETY SCAN.....	59
RADIATION “BACKGROUND”	60
BELT TENSION, TRACKING AND REPLACEMENT	65
TOOLS REQUIRED:	65
REMOVING A CONVEYOR BELT	67
ADJUSTING CONVEYOR BELT TENSION.....	67
MEASURING BELT TENSION	68
STYLE 1 CONVEYOR BRACKET.....	68
<i>Lateral Belt Displacement to the Right of the Conveyor.....</i>	<i>70</i>
<i>Lateral Belt Displacement to the Left</i>	<i>71</i>
<i>Stable</i>	<i>72</i>
STYLE 2 CONVEYOR BRACKET.....	73
<i>Lateral Displacement to the Right of the Conveyor.....</i>	<i>74</i>
<i>Lateral Displacement to the Left of the Conveyor</i>	<i>75</i>
<i>Stable</i>	<i>76</i>
STYLE 3 CONVEYOR BRACKET.....	77
<i>The Lateral Displacement to the Right of the Conveyor.....</i>	<i>79</i>
<i>Lateral Displacement to the Left of the Conveyor</i>	<i>79</i>
<i>Stable</i>	<i>81</i>
X-RAY COLLIMATION.....	83
COLLIMATION AND ALIGNMENT: DEFINITIONS	83
PURPOSE OF COLLIMATION.....	83
<i>WARNING!</i>	<i>83</i>
ADJUSTING GAP AND POSITION.....	84
COLLIMATOR BAR ADJUSTMENTS	86
LXDA BOARD ADJUSTMENT	87
<i>WARNING!</i>	<i>87</i>
REMOVING AND REPLACING LXDA BOARDS	89
DIAGNOSTICS.....	91
DIODE PLOT.....	92
<i>Diode Plot Program – Test Instructions</i>	<i>95</i>
<i>Diagnostics Screen</i>	<i>96</i>
<i>Error Log – Error Message List.....</i>	<i>97</i>

Table of Figures

Figure 1: XIS Safety Features	12
Figure 2: Normal DIP Switch Settings.....	22
Figure 3: Normal LED Indications: When configured according to Table 1	23
Figure 4: Abnormal LED Indications: Both configured as Master synch board in Table 1	23
Figure 5: Abnormal LED Indications: Both configured as Slave synch board in Table 123	123
Figure 6: XIS-6545VI Security X-ray Machine.....	27
Figure 7: Machine Dimensions (Uncrated).....	29
Figure 8: TiltWatch and Shockwatch Monitors	33
Figure 9: Uncrating an XIS-100X.....	34
Figure 10: XIS-100x Wrapped for Shipping	35
Figure 11: Leveling Feet	36
Figure 12: XIS 6545 with the top cover panel lifted up	37
Figure 13: XIS 6545 with the Side Panels Removed.....	37
Figure 14: Tracking mechanism for conveyor belt.....	39
Figure 15: AC Power Cord and Main Circuit Breaker Switch	43
Figure 16: AOCP (Advanced Operator Control Panel) Key-switch sequence	44
Figure 17: Please Log In Screen (Version 2.0 on left, 2.1 on right)	45
Figure 18: Operator Button	45
Figure 19: Version XIS 2.0.X.X - Login Steps	47
Figure 20: Advanced Operator Control Panel (AOCP).....	48
Figure 21: “Calibration Required” screen	49
Figure 22: “Warning X-rays” screen.....	49
Figure 23: Log In Screen Enabled	50
Figure 24: Entering User Information.....	50
Figure 25: “System Ready” screen	51
Figure 26: “System Ready” Screen – XIS Application Software Version 2.0.x.x.....	51
Figure 27: “System Ready” Screen – XIS Application Software Version 2.1.x.x.....	52
Figure 28: X-ray Radiation Safety Test Record.....	61
Figure 29: Site Acceptance Test (for XIS-6545).....	62
Figure 30: Commissioning Record for XIS-6545.....	63
Figure 31: Conveyor belt tension adjustment.....	65
Figure 32: Conveyor Bracket Style 1	66
Figure 33: Conveyor Bracket Style 2	66
Figure 34: Conveyor Bracket Style 3	67
Figure 35: Beginning Position	68
Figure 36: Reference Distance	68
Figure 37: Tighten Mounting Bolts	69
Figure 38: Belt Displacement to the Right.....	70
Figure 39: Left Bolt Counterclockwise, Right Bolt Clockwise	70
Figure 40: Displacement to the Right.....	71
Figure 41: Left Bolt Clockwise, Right Bolt Counterclockwise	71
Figure 42: Stable Conveyor Belt.....	72
Figure 43: Tighten Mounting Bolts	72
Figure 44: Style 2 Bracket Reference Distance	73
Figure 45: Style 2 Mounting Bolts	73
Figure 46: Belt Displacement to the Right.....	74
Figure 47: Left Bolt Counterclockwise, Right Bolt Clockwise	75
Figure 48: Displacement to the Left	75
Figure 49: Left Bolt Clockwise, Right Bolt Counterclockwise	76

Figure 50: Stable	76
Figure 51: Tighten Mounting Bolts	77
Figure 52: Style 3 Bracket Reference Distance	77
Figure 53: Style 3 Mounting Bolts	78
Figure 54: Belt Displacement to the Right.....	79
Figure 55: Left Bolt Counterclockwise, Right Bolt Clockwise	79
Figure 56: Displacement to the Left	80
Figure 57: Left Bolt Clockwise, Right Bolt Counterclockwise	80
Figure 58: Stable	81
Figure 59: Tighten Mounting Bolts	81
Figure 60: Generator, Inner Funnel, Collimator.....	84
Figure 61: Collimator Bars and Gap Adjustment Screw	85
Figure 62: Adjusting Gap.....	86
Figure 63: LXDA Board Adjustment Screw	87
Figure 64: Collimation screws for individual LXDA Boards.....	88
Figure 65: 320kV Diode Plot, X-ray Off, History Off	92
Figure 66: 320kV Diode Plot, X-ray on, History Off.....	93
Figure 67: 320kV Diode Plot with History.....	93
Figure 68: Diagnostics Screen.....	96

Introduction

The Astrophysics Inc line of XIS (X-ray Inspection Systems) machines consists of many models. There are, of course, differences between models and even different possible configurations for each model. It is not possible to write a single installation manual to cover every contingency, component or configuration. However this manual will cover generalities that apply across the line of Astrophysics x-ray inspection systems.

When possible, variations peculiar to specific models will be described. If your x-ray machine is a different model from the models shown in a particular figure, you can determine the location of a component using the appearance of the component shown in the figure and the relative location of other components shown in the figure.

The following pages show the Astrophysics XIS models covered by this manual. Please note that XIS pallet units are covered in a separate manual.

 <p>XIS-5878</p>	 <p>XIS-6040</p>	 <p>XIS-6040M (mobile)</p>
 <p>XIS-6545</p>	 <p>XIS-6545DV</p>	 <p>XIS-7858</p>
 <p>6545VI</p>	 <p>7858VI</p>	 <p>XIS-100X</p>



XIS 100XD



XIS-100XDV



XIS-100XDX



XIS-1080



XIS-1080D



XIS1210D



XIS 5335



XIS-5335S



XIS-5335DS

Safety



WARNING!

The Astrophysics X-ray Imaging System (XIS) produces and uses ionizing x-ray radiation. X-rays can be harmful to human health. They cannot be directly detected by any of the human senses. Please exercise the utmost safety.

Chapter Overview

This chapter provides important safety information on operating the Astrophysics X-ray Imaging System (XIS). It is intended for all users of the XIS.

Safety Features

The Astrophysics X-ray Imaging System (hereinafter referred to as the XIS) has many safety features to protect the operator and others including:

- Lead shielded construction to minimize radiation leakage.
- Lead fabric curtains at the inspection tunnel openings to help block scattered x-rays from escaping the tunnel.
- Interlock switches that stop (power off) the x-ray generator and conveyor belt when an access panel is opened or removed.
- Steel frame and heavy gauge steel panels that reduce any residual external x-ray radiation emissions.
- Infrared Photocells inside the inspection tunnels that sense when objects enter and exit the inspection tunnel. The x-ray generator is activated only for the minimum amount of time necessary to image items traversing the inspection tunnel. X-rays are NOT produced when the x-ray machine is idle, or when the conveyor is stopped, or when the inspection tunnel is empty.
- Emergency Stop switches (at both the entrance and exit of the x-ray tunnel), that can be pressed to immediately stop (power off) the x-ray generator and the conveyor belt.
- Green Power-ON LED lamps at each end of the x-ray tunnel and on both the Pedestal Control Panel (PCP) and the Advanced Operator Control Panel (AOCP) to indicate when the system is powered on and ready for use.

- Red warning X-ray ON LED lamps at each end of the x-ray tunnel and on both the Pedestal Control Panel (PCP) and the Advanced Operator Control Panel (AOCP) to indicate when x-rays are being generated.
- Circuit breakers that disconnect power from the main AC input into the XIS if the unit becomes overloaded.
- A key-switch that requires that a key be inserted and turned to the “ON” position to power up and operate the XIS unit.
- A foot-mat switch that requires the continuous presence of an operator, manning the controls, while the conveyor and x-ray generator are being used.
- Password protected access to the application software.
- Prominent labels that warn users to not insert any part of their body when the x-rays are produced.

The following diagram identifies the various safety features on a typical (non-pallet) Astrophysics X-ray Imaging System.

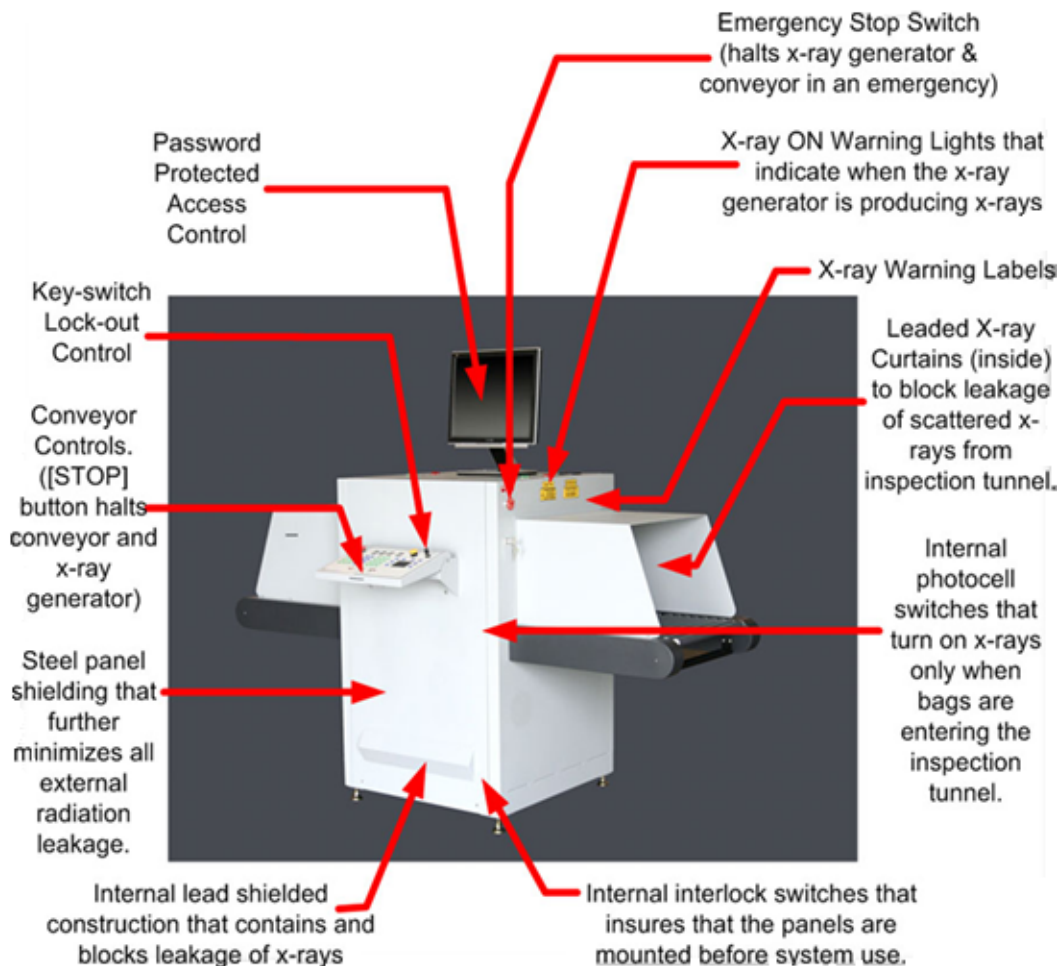


Figure 1: XIS Safety Features

Safety Precautions

The Astrophysics **X-ray Imaging System (XIS)** is designed to be safe and easy to use. However, all major electromechanical devices can be hazardous and should be treated with care and respect. When operating the XIS, follow the safety precautions below:

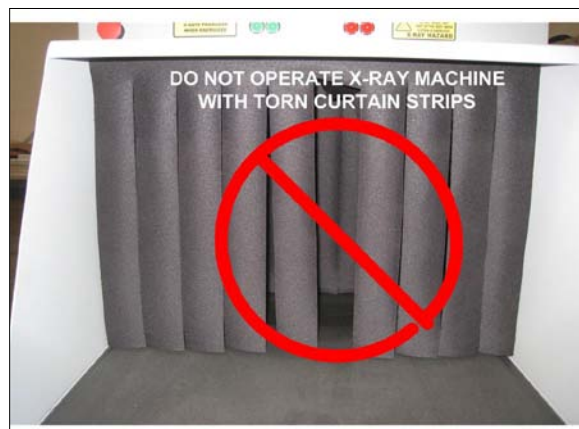
- Do NOT operate the unit outdoors. The XIS must be protected from moisture, precipitation, and extremes of temperature.



- Connect the unit to a well grounded power outlet. The XIS requires a reliable protective earth ground to operate.



- Do not operate an x-ray machine without a good earth (electrical) ground.
- Do NOT operate the unit when the x-ray curtains are torn or missing.



- Clear the x-ray tunnel of all items before starting the unit.

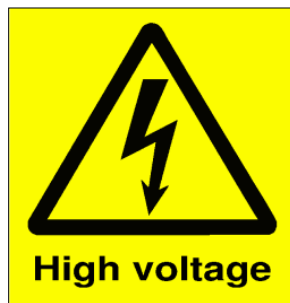
- Do NOT insert any part of the body into the inspection tunnel while x-rays are energized. Avoid all unnecessary radiation exposures.



- If material should become jammed during operation, the machine must be turned off before an attempt is made to clear the inspection tunnel area. To stop the machine, do one of the following:
 - Press the Emergency **Stop** button, or
 - Turn the main AC switch to the **OFF** position, or
 - Turn the key-switch to the **OFF** position **BEFORE** attempting to clear the tunnel.
- Although the system utilizes an extremely low x-ray dose, wait until scanned items are completely out of the inspection tunnel in order to avoid any unnecessary radiation exposure.
- Ensure that the conveyor and x-rays are off before reaching into the inspection tunnel. The X-ray **ON** warning lights is lit when x-rays are being produced. The X-ray **ON** lights are located above the entrances of the inspection tunnel, on the operator console, and on bottom right of the status bar on the x-ray imaging screen.
- If required, post appropriate signs around the XIS to warn people that they are in the vicinity of a device that produces and uses x-ray radiation.
- Check the *Power ON* and the *X-ray ON* lights for proper operation before using the baggage x-ray machine. The Power **ON** light becomes lit when the key-switch is turned to the **ON** position. The X-ray **ON** light will momentarily turn on and off when the conveyor belt is just started. (The momentary operation of the x-rays allows for “x-ray data normalization”). The X-ray **ON** light becomes lit again when the x-ray generator is producing x-rays for imaging. This occurs when objects are carried through the x-ray tunnel by the conveyor.



- The XIS internally uses high voltages. All cover panels must be closed and securely fastened before system operation.



- Be careful of sharp objects that can cut the x-ray curtains and conveyor belt.



- If a threatening object is identified, follow the procedures established at your facility for handling such objects.
- Always perform a comprehensive radiation survey and safety inspection after an XIS is serviced.
- Turn "OFF" the equipment as soon as an unsafe operating condition or procedure develops or might develop. Inform your supervisor who will contact the maintenance technician. The machine is a sophisticated piece of electronic equipment and must be treated with care. All service adjustments or repairs must be done only by qualified personnel.
- Do not open the access panels during operation. These panels are designed with safety switches to prevent exposure to high voltage and radiation.

- The foot mat switch is a design safety component that requires the operator to stand on it when operating the machine. Do not place heavy objects on the foot mat switch to defeat it.
- Keep hands, finger, clothing and hair away from conveyor rollers.
- Do not sit on or attempt to ride the conveyor. Never use the machine as a toy.
- Do not stand closer than necessary to the x-ray machine. Do not allow anyone to loiter within 2 meters of the x-ray chamber or conveyor belt at any time. Never leave the machine unattended.
- Do not place any objects such as plants, coffee cups, pop cans, bottles etc. on top of the machine. The liquid, if spilled from these containers, could create a potential shock hazard which may be fatal.
- Do not obscure or cover the x-ray "ON" warning lights or the x-radiation warning signs. These items must be clearly visible at all times.



WARNING!

Always turn off and disconnect power to the XIS BEFORE servicing the x-ray generator or removing any radiation shielding.

- Do NOT operate the XIS unless all radiation shielding is properly installed and functioning correctly. Ensure that all access panels are closed before operating the XIS.
- Perform a comprehensive radiation survey after servicing the XIS.
- Do NOT allow the XIS to operate if external radiation leakage exceeds 0.1 mR/hr (0.001 mSv/hr).
- The XIS is recognized by the U.S. Food and Drug Administration (FDA) as a cabinet x-ray device.
- In the U.S., the XIS is regulated by *U.S. FDA Center for Devices and Radiological Health*. The XIS complies with U.S. Statutes including but not limited to *U.S. Code of Federal Regulation (CFR), Title 29, Section 1020.40*, Performance Standards for Cabinet X-ray Device.
- In Canada, the XIS is regulated by *Health Canada*. The XIS complies with Canadian statutes including but not limited to *Canada Safety Code 29*.



- In Canada, Health Canada requires registration of all baggage x-ray machines.
- United States and Canadian law requires that the XIS should ONLY be installed, relocated, and serviced by a (factory) trained and certified technicians. There are no user serviceable parts inside the machine.
- American and Canadian law requires the usage of only factory certified replacement parts in the XIS.
- For service and support contact:

A yellow rectangular box with a black border containing the company logo and contact details. The logo is in the top left corner. The text is centered and reads: "Customer Support Department", "21481 Ferrero Parkway", "City of Industry, California 91789-5233", "United States", "Telephone: (USA) 909-527-6750", "Fax: (USA) 909-595-6750", and "E-Mail: service@astrophysicsinc.com".

 **Astrophysics Inc.**TM
Tomorrow's Technology for Today's Security

Customer Support Department
21481 Ferrero Parkway
City of Industry, California 91789-5233
United States

Telephone: (USA) 909-527-6750
Fax: (USA) 909-595-6750
E-Mail: service@astrophysicsinc.com

U.S. Federal Health and Safety Regulatory Compliance

The XIS is classified as a *Cabinet X-ray Device*. It complies with the following U.S. Federal Health and Safety Regulations applicable at time of manufacture:

- U.S. Food and Drug Administration, Department of Health and Human Services, Center for Devices and Radiological Health, Code of Federal Regulations Title 21 Section 1020.40, *Radiological Health Standards for Cabinet X-Ray Systems*;
- U.S. Federal Aviation Administration, Code of Federal Regulations Title 14 Section 108.17, *Use of X-ray Systems*; and;
- U.S. Federal Aviation Administration, Code of Federal Regulations Title 14. Section 129.26, *Use of X-ray Systems*.

Local Regulatory Compliance

- Local radiation safety requirements differ significantly from one jurisdiction to another.
- Some jurisdictions require the registration of x-ray producing equipment **PRIOR** to their usage.
- Many jurisdictions require initial and annual radiation safety surveys.



- Some jurisdictions, including Canada, require certification of baggage x-ray machine operators.
- In Canada, personal dosimeters are not required for baggage x-ray machine operators.
- XIS users are responsible for their compliance with all applicable Federal, state, and local laws. Failure to comply may result in substantial penalties.

Facility Safety

During security screening operations you may identify hazardous contraband, weapons, explosives, and other threats in the bags, packages, and articles that you are examining with your XIS. Plan ahead. Have your facility security manager prepare clear and concise instructions for handling these situations. Be prepared to follow them.

Differences Between Dual- and Single-View

This manual covers both single view and dual view machines. Though there are numerous similarities in technology and use between single and dual-use XIS machines, there are also significant differences that need to be taken into account when installing, operating and maintaining these machines.

LXDA Arrays and PCs

Single-View machines

Single View machines have a single LXDA array, controlled by a single PC.

Dual View machines

Two independent LXDA arrays with two corresponding PCs, master & slave, each with a PCI DAS board for collecting imaging data for the given view's array.

The main functions of the slave PC are displaying and archiving its own images. The slave handles no other control or interfacing tasks.

The master PC handles all input and output control signals to/from the system, Inputs from the system include:

- key switch
- photocells
- interlocks
- all diagnostics signals;
- outputs to the PLC:
 - heartbeat
 - conveyor L/R
 - X-ray on command for both generators
 - system shutdown signal

Each PC runs Xray Client software. Only the master PC runs AstroDiagnostics since it interfaces with the DAQ (LabJack or DCI board).

The two PCs are networked on a Gigabit LAN connection via crossover cable for passing all control and sensor signals from master to the slave PC.

Each PC has a unique static IP address and Windows PC name.

Each PC has a "DAS synch board" to synchronize the digital clock signals to the LXDA's. This minimizes cross-talk between the two DAS boards. This cross-talk is a source of image noise, which is especially visible in high-penetration tests.



Dual View machines have added or changed relays:

- Slave PC power relay added (E-M).
- Fan relay added (high-amp E-M).
- X-ray relay added (E-M, DPDP for the two XRG control boards to use the same x-ray output signal from the PLC).
- E-stop changed (from E-M to SSR).

Diode plot must be running on both the master and slave in order for imaging adjustments to be made on the slave.

The master PC assigns all inputs to the PLC. The PLC in turn outputs the control signal to the x-ray relay for turning both generators on.

The slave PC has no direct command of its own x-ray generator and therefore requires the diode plot on the master to be running in order to give the technician x-ray control.

NOTE: In the 200kV dual-view system, each PC does control its x-ray generator directly via RS232 serial port communication. However, the master PC diode plot must still be used for x-ray on commands due to the software handling of the x-ray signal.

Two screens is the standard setup for all DV systems. Early systems had a three-screen design with two-screens dedicated to the master view and one to the slave, but that arrangement has been superseded by the two-screen arrangement. Many three-screen systems still exist in the field. Also, in certain cases (special order), a four-screen arrangement is used, with two screens per PC.

Screen selection (via Screen 1 / Screen 2 AOCP buttons) is necessary for the six primary imaging functions:

- Color
- Organic
- Inorganic
- B/W
- B/W Reverse
- Pseudo Color.

This is much like a single-monitor, single-view system where each view has a single-monitor. As with all systems XIS, Zone Zoom and Contrast adjustments also still require screen selection.

NOTE: In some older versions of DV software, the Operator must also use a form of screen selection for HiPen and Edge Trace, by pointing the cursor on a particular PC's monitor screen with the touchpad. In these older versions, these functions were mouse cursor "focus-dependent." In even earlier versions, the operator also had to point the mouse cursor for focus-dependent screen selection when using the Save RGB function.

Software

Dual View machines use Synergy or Input Director multi-PC KVM synchronization software. This third-party software allows seamless sharing of the AOCPC keypad and mouse pad between screens as if they were a single computer, similar in look to a two-monitor, single-view system in “Horizontal Stretch” or “Horizontal Span” mode.

Following are the Runtime.ini Dual-View Parameters for Dual View systems.

[Display]

```
DualDisplay=
                ;Number of monitors per PC:
                ;
                ;           Master   Slave
                ;Two-screen DV   =0     =0
                ;Three-screen DV  =2     =0
                ;Four-screen DV   =2     =2
```

[Options]

```
Two Screen DV=
                ;Set for given number of screens in the system to let the
                ;software know how to display the x-ray status bar. If it's a
                ;two-screen system then the value is =1. ;If it's other than a
                ;two-screen system, then the value is =0.
```

[Dual View]

```
Dual View=1
                ;0=single-view, 1=master, 2=slave.
Remote Machine=192.168.1.251
                ;static IP address of the other PC in a dual-view system.
DualView Delay=940
                ;number of video columns to delay the display of lead view
                ;for a given scan direction to synchronize the scrolling of
                ;both images.
DualView Queue Size=1
                ;N/A.
Remote Server=Slave
                ;Windows PC name of the other PC set via ;System
                ;Properties > Computer Name tab. ;Only necessary on the
                ;Master PC.
```

DAS 2.0 Synch Board Configuration in Dual-View XIS

Dual-view XIS machines use an auxiliary board in both PCs called the “DAS Synch Board.” The DAS Synch Board facilitates the use of a shared clock signal between the two DAS boards. The purpose is to eliminate cross-talk between the two 800kHz DAS clock signals which injects noise in the imaging data.

The cross-talk noise shows up as thin periodic vertical lines, especially in very low signal/high density regions of scanned objects. The problem is mostly apparent with steel penetration performance testing.

The apparent penetration of steel step wedges may be significantly reduced by the effect of cross-talk. Normal scanning is not generally affected by DAS clock cross-talk, so if synch boards fail in the field, it’s not an immediate requirement to repair unless a performance test is required. The machine will generally continue to run for normal use.

The relatively small DAS Synch Boards are connected locally to their respective DAS boards by a 20-pin ribbon cable (inside the PC), and remotely to each other by an 8-pin mini-DIN cable.

The DAS Synch Boards are mounted on a bracket and occupy a space next to the DAS boards. This is a space that would normally be used for one of the motherboard PCI card expansion slots. However, the Synch Boards do actually use the PCI slots, and are connected only indirectly to the PC via their respective DAS boards.

The two Synch Boards act in a master/slave configuration. The slave shares the clock of the master DAS board. Thus the clocks are not technically “synched.” Instead, both Synch Boards share the common clock of the master DAS board, with the slave DAS board’s clock remaining unused. In this sense, either Synch Board may be the master or slave, unlike the “master PC” and “slave PC” relationship of the Dual View XIS machine itself.

The configuration of the dual-DIP switch on each Synch Board determines the master/slave roles as follows:

DIP Switch	1	2
Meaning	Board enabled	Board role
Master synch board setting	ON	OFF
Slave synch board setting	ON	ON

Figure 2: Normal DIP Switch Settings

NOTE: Which Synch Board is configured as Master and which is configured as Slave is not critical, as long as both boards have DIP Switch 1 set ON (board enabled), and one board or the other, not both, has DIP Switch 2 set ON to designate it as Slave, so that it follows/uses the other DAS board’s clock.

When connected and configured correctly, and both PCs are booted, the LED indicators on each of the synch boards are as follows:

LED	Green	Amber	Red
Master synch board	ON	Flashing at same frequency as DAS clock (amber LED on DAS)	OFF
Slave synch board	Flashing at same frequency as DAS clock (amber LED on DAS)	Flashing at same frequency as Master's DAS clock (amber LED on DAS). Will generally be out of synch with its own PC's DAS clock.	OFF

Figure 3: Normal LED Indications: When configured according to Table 1

When connected, but configured incorrectly and both PCs are booted, the LED indicators on each of the synch boards are as follows:

LED	Green	Amber	Red
Both synch boards	ON	Flashing at same frequency as DAS clock (amber LED on DAS)	ON

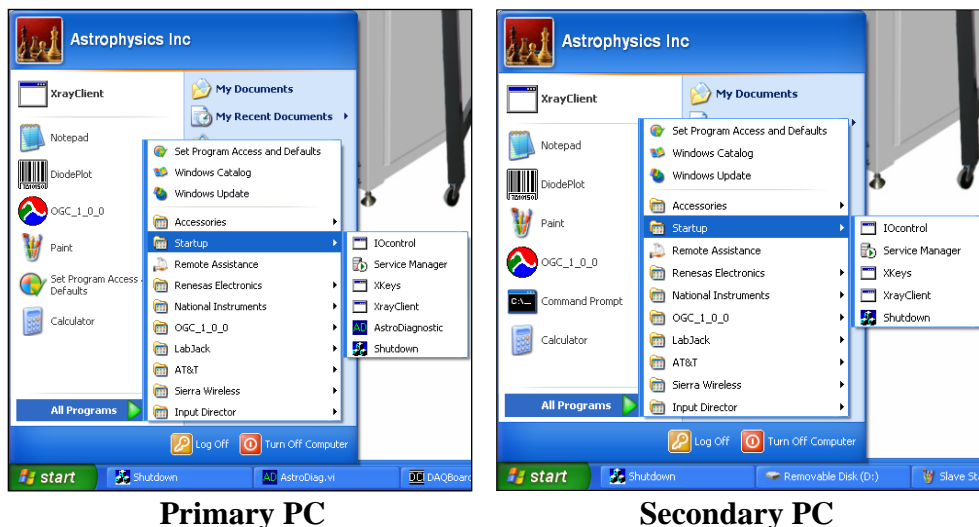
Figure 4: Abnormal LED Indications: Both configured as Master Synch Board in Table 1

LED	Green	Amber	Red
Both synch boards	Flashing at same frequency as DAS clock (amber LED on DAS)	OFF	ON

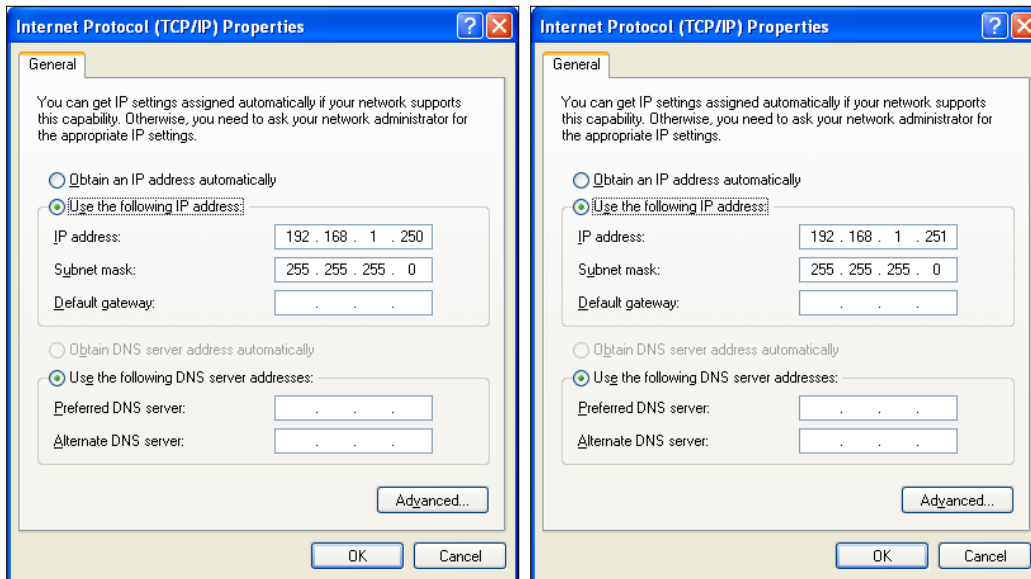
Figure 5: Abnormal LED Indications: Both configured as Slave synch board in Table 1

Dual-View Configuration Points

1. Windows Startup folder contents:



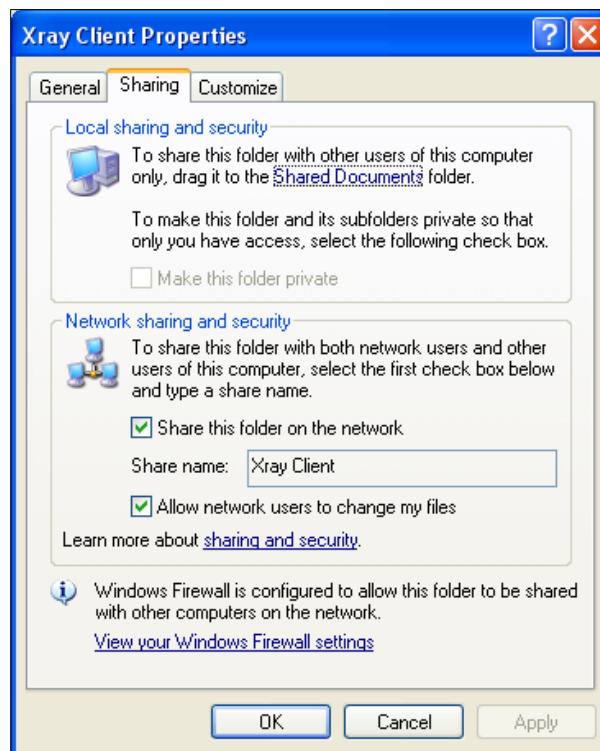
2. Static IP Addresses



Primary PC

Secondary PC

3. Shared folder settings required for the secondary PC “Xray Client” folder:



Secondary PC

Dual-View PC Network Troubleshooting

Network:

1. Confirm the cable is a proper cross-over cable, is not damaged, and is connected securely at each end. The LEDs in the Ethernet connector on each PC should also be flashing when connected.
2. Confirm the Windows firewall is turned off on both PCs via: Start > Control Panel > Windows Firewall > General > select “Off” > OK.
3. Confirm the network adapter speed is the same on both PCs. This is set via: Start > Control Panel > System > Hardware > Device Manager > Network Adapters > right-click on the network card (usually “...Gigabit Network Connection”) > Link Speed > Speed and Duplex: > 1.0 Gbps Full Duplex > OK.
4. Confirm the actual IP address of each PC is different. These are typically 192.168.1.250 for the Master PC and 192.168.1.251 for the Slave PC, and set via: Start > Control Panel > Network Connections > right-click on Local Area Connection > Properties > General > select Internet Protocol (TCP/IP) > Properties > General > select “Use the following IP address:” > IP Address: > OK.
5. Confirm the local area network is now connected via: Start > Control Panel > Network Connections > Name > Local Area Connection & Status > Connected.

Keyboard/Mouse Sharing:

1. Confirm the Master PC’s Windows name is “Master” and the Slave PC’s Windows name is “Slave.” The multi-PC keyboard/mouse sharing applications use the PC name when setting the master/slave relationship. This is set via: Start > Control Panel > System > Computer Name > Change > Computer name: > OK.

Imaging Software:

1. Confirm that Xray Client’s runtime.ini file for each PC has the correct settings for critical dual-view parameters under the header [Dual View] near the bottom of the file.
 - a. Master PC:

i. Dual View=1	Sets it as the Master PC
ii. Remote Machine=192.168.1.251	Points to the other PC’s IP address (Slave)
iii. Remote Server=Slave	Parameter exists only on the Master PC
 - b. Slave PC:

i. Dual View=2	Sets it as the Slave PC
ii. Remote Machine=192.168.1.250	Points to the other PC’s IP address (Master)



2. Confirm the slave PC's Xray Client folder is shared with full privileges. This is set via:

Slave PC > right-click on the folder C:\Program Files\Xray Client > Properties
> Sharing > select "Share this folder" > select "Share this folder on the

Installation

The non-pallet XIS systems covered by this manual ship in one package, which consists of the following items:

1. A complete x-ray machine consisting of
 - a. A frame and panels,
 - b. One conveyor bed consisting of one segment,
 - c. One Conveyor belt,
 - d. One motor and one end roller,
 - e. Double x-ray curtains at each end of the tunnel,
 - f. One X-ray source,
 - g. One Computer with associated electronics,
 - h. 10 detector boards with associated electronics
 - i. PLC with interface electronics,
 - j. Electrical system and power supplies,
2. Two 19 inch monitors placed inside the tunnel,
3. One AACP (Advanced Operator Control Panel)
4. One set of manuals (User and Installation/Maintenance).

Pre-Arrival Work Instructions



Figure 6: XIS-6545VI Security X-ray Machine

1. Get a copy of the sales order for the unit(s) being installed.



- a. Get the following customer contact information:
 - i. The shipping address
 - ii. The contact's name
 - iii. The contact's telephone number
 - iv. The contact's email address
 - b. Check for any special configuration requirements.
 - c. Check for any special training requirements.
 - d. Identify the electrical requirements (110VAC or 220VAC operation).
 - e. Identify the "foot-print" and width of the XIS unit.
 - f. Prepare your installation toolkit.
2. Get shipping information:
 - a. Determine the expected delivery date of the unit(s).
 - b. Follow up with the shipper to confirm the delivery schedule.
3. Call the customer:
 - a. Check the background of the customer. Ask if he or she has previous experience with installing and operating other x-ray imaging systems.
 - i. Does the customer have special or unique training needs?
 - b. Advise the customer of the site requirements:
 - i. Advise the customer on the physical clearance requirements of the unit(s). Use the following table.

XIS Model	Maximum (uncrated) length*	Maximum (uncrated) width*	Maximum (uncrated) Height*
5335	132 cm (52.0 in)	77 cm (35 in)	123 cm (49 in)
5335S	132 cm (52.0 in)	77 cm (35 in)	123 cm (49 in)
5878	253 cm (100 in)	138 cm (54 in)	126 cm (50 in)
6040	142 cm (56 in)	85 cm (33 in)	126 cm (49 in)
6040M	142 cm (56 in)	85 cm (33 in)	137 cm (54 in)
6545	217 cm (86 in)	88 cm (35 in)	132 cm (52 in)
6545VI	217 cm (86 in)	95.2 (37 in)	131 cm (52 in)
6545DV	213 cm (84 in)	107 cm (42 in)	129 cm (51 in)
7858	188 cm (74 in)	103 cm (41 in)	140 cm (55 in)
7858VI	188 cm (74 in)	103 cm (41 in)	140 cm (55 in)
1080	258 cm (102 in)	138 cm (54.0 in)	171 cm (68 in)
1080D	237 cm (94 in)	128 cm (51 in)	172 cm (68 in)
100X	278 cm (110 in)	138 cm (54.0 in)	192 cm (76 in)
100XD	237 cm (94 in)	128 cm (51 in)	191 cm (76 in)
100XDX	305 cm (120 in)	184 cm (73 in)	189 cm (75 in)
100XDV	314 cm (124 in)	174 cm (67 in)	196 cm (77 in)
1210D	287 cm (113 in)	146 cm (58 in)	189 cm (75 in)
1517	671 cm (264 in)	260 cm (102 in)	225 cm (88 in)
1517DV	793 cm (312 in)	260 cm (102 in)	286 cm (112 in)
1517 200kV	671 cm (264 in)	260 cm (102 in)	225 cm (88 in)
1517DV 200kV	793 cm (312 in)	260 cm (102 in)	286 cm (112 in)
1517 320kV	974 cm (384 in)	279 cm (110 in)	241 cm (95 in)
1517DV 320kV	1096 cm (431 in)	279 cm (110 in)	292 cm (113 in)
1818	671 cm (264 in)	290 cm (114 in)	236 cm (93 in)
1818DV	793 cm (312 in)	290 cm (114 in)	316 cm (124 in)
1818 200kV	671 cm (264 in)	290 cm (114 in)	235 cm (92 in)
1818DV 200kV	793 cm (312 in)	290 cm (114 in)	316 cm (124 in)
1818 320KV	996 cm (393 in)	311 cm (122 in)	240 cm (95 in)
1818DV 320kV	1117 cm (440 in)	311 cm (122 in)	315 cm (124 in)
1819	766 cm (300 in)	333 cm (131 in)	233 cm (92 in)

Figure 7: Machine Dimensions (Uncrated)

*All dimensions rounded up (e.g. 32.1 in. rounded up to 33 in., 92.5 cm rounded up to 93 cm) in order to ensure adequate site space for the various models.

- c. Get information about the site
 - i. Verify that the install site is ready.
 - ii. Verify that the power requirement of the XIS unit matches the available AC outlet power.
 - iii. Verify that the install site is located inside and protected from weather.
 - iv. Verify that the ambient temperature of the install site is within the operating range of the XIS (5oC to 40oC).
 - v. Verify that the install site is level.

- vi. Verify that there is room for the XIS and that there is adequate clearance for the operator.
 - d. Confirm that there is a clear path from the receiving area to the final install site.
 - e. Ask the customer to notify you when the unit(s) arrives.
 - f. Confirm that the appropriate users will be available for training.
 - g. Schedule the installation.
 - h. Get information on where to park (if necessary).
 - i. If the XIS will be crated, ask the customer if a forklift or pallet jack is available to lift the XIS off of the crate's base.
 - j. Advise the customer that you will be bringing in tools and that you may need an escort to get past their security staff.
 - k. Advise the customer that after the system has been setup, it will be necessary to discard the crating, wrapping, and other packaging materials afterward.
4. Book your travel arrangements.
 - a. Advise the customer of your itinerary.

Required Resources

Tools

- Fluke 123 Travel O-Scope
- Fluke Amp Probe 80i-110s
- Radiation meter
- Jensen Tool Kit JTK-17 WW includes more than 100 tools in all, as follows:
 - Alignment tools (2)
 - Feeler gauge
 - Hammer, ball peen, 4 oz.
 - Handle, driver blades (2): 3-1/8, 4-1/8"
 - Hex key set (10), .028-5/32"
 - Hex key set (7): Fold up 1.5-6mm
 - Hexdriver blades (9): .050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16"
 - Icepick scribe
 - Knife, electrician's

- Mirror, inspection
 - Nutdriver blades (9): 3/16, 7/32, 1/4, 9/32, 5/16, 1-1/32, 3/8, 7/16, 1/2"
 - Penlight w/batteries
 - Pliers (6): diagonal cutter, 4-1/4"; diagonal cutter, 5-1/4"; groove joint, 10"; long nose, 4-3/4"; long nose with cutter, 6-3/4"; retaining ring, external/internal
 - Punch, center, 3/32"
 - Punch, Pin (2): 1/16, 1/8"
 - Rule, stainless, 6"
 - Screwdriver, offset ratchet, Phillips/slotted
 - Screwdriver, Phillips #0 x 3", pocket clip
 - Screwdriver, Phillips (3): #1 x 3"; #2 x 1-1/4"; #2 x 4"
 - Screwdriver, slotted 3/32 x 3", pocket clip
 - Screwdriver, slotted (6): 1/8 x 4"; 1/8 x 8"; 3/16 x 3"; 1/4 x 1-1/4"; 1/4 x 4"; 5/16 x 6"
 - Screwdriver set, jeweler's, (7 pc.)
 - Screwstarter, Phillips/slotted
 - Socket set, 1/4" drive, (14 pc.)
 - Solder aid, fork and hook
 - Soldering iron, 115V*
 - Spring tool, pull
 - Spring tool, push
 - Tweezer, reverse action
 - Wire crimper/stripper
 - Wire stripper/cutter
 - Wrench, adjustable (2): 4"; 8"
 - Wrench set, ignition, (8 pc.)
 - Tool case with pallets
- Soft Rubber Mallet for aligning generator mount



- Small flashlight for checking funnel mount alignment
 - Chain Adjustment tool for installing chains
- Leather Gloves for handling wooden crates
 - ½” ratchet for fastening bolts
 - Medium Phillips Screw Driver
- 2mm bubble level for leveling frame modules
- “Click” Torque Wrench for tightening mounting bolts
- Power screwdriver
- Volt meter
- Ladder
- Adjustable lift table for the top and front panels of the radiation shield box and generator.

Recommended Personal Protective Equipment

- Fall harness
- Auto retractable fall harness lanyard
- Eye protection
- Suction Panel lifters

On-Site Work Instructions

The site should be large enough to not only accommodate the XIS machines themselves, but also to allow for receiving, uncrating/unwrapping and installing the final, working machine. It is important to convey this to the customer, and to insure that there is space not only to locate and operate the machine, but the extra space needed for service personnel to work freely both while installing and, later, servicing the machine.

1. Locate the customer’s principal site contact person.
 - a. The customer’s principal site contact that accepts and “signs-off” on the completed installations. Get to know this person well.
 - b. Clearly identify yourself. Bring photo ID.
 - c. Note the names of everyone you meet.
 - d. Exchange business cards.
2. Visit the XIS unit.
3. Note the condition of the unit.
 - a. Check the packing list immediately.

- b. Verify that the correct unit has arrived by model and serial number.
4. Inspect the shipment for any damage.
 - a. Note any damage on the shipping manifest.
 - b. Photo-document all shipment damage. Include a sign in the photo, identifying the date and serial number of the unit(s) in all photographs.
5. If the unit is not in its final install site, visit the final install site immediately.
 - a. Find a clear path from the receiving site to the final install site.
 - b. Verify that the XIS unit can safely pass through all doors and elevators along the way.

Once all the crated unit has been moved to the final installation site:

1. Inventory the XIS machine and any additional packages that may have shipped with it (e.g. accessories). Compare the actual delivery to the delivery manifest.

NOTE: Machines can be shipped with optional extension conveyor or roller beds. Each of these beds (entry or exit) will require its own crate. So, for example, a machine shipping with two additional exits and two additional entry extension roller or conveyor beds will necessitate four crates in addition to the XIS machine itself.

2. Inspect the crated and/or wrapped XIS machine and any and all additional crates or packages for damage that might indicate corresponding damage to the equipment inside the crates or wrapping.
3. Inspect “TiltWatch” and “Shockwatch” monitors where these are present (see Figure 8).
4. Photo-document all damage to crates or wrapping before removing the machine or accessories from such crating or wrapping.



Figure 8: TiltWatch and Shockwatch Monitors

Uncrating/Unwrapping the XIS Machine

XIS units can be shipped either crated or wrapped. If the unit is shipped within the continental U.S., it is wrapped but not crated. If it shipped anywhere else, the units are always crated, no matter what the size or model of the XIS unit.

Figure 9 shows an XIS-100X being uncrated, while Figure 10 shows an XIS-100 wrapped but not crated, ready for shipping.

Therefore, the instructions for uncrating in this section may not apply to your particular unit, depending on where you are located. If your unit was wrapped but not crated, disregard the specific references to crates.



Figure 9: Uncrating an XIS-100X



Figure 10: XIS-100x Wrapped for Shipping

If the unit has still to be moved to its final installation/operation site:

1. Find a clear path from the receiving site to the final install site.
2. Verify that the unit can safely pass through all doors and elevators along the way.
3. Determine whether keeping the unit crated or wrapped will facilitate its safe arrival at the final install site.
4. Verify that the final location has enough space not only for the assembled machine, but to accommodate the crated (and possibly disassembled) unit.

If the XIS arrives at the installation site in a crate, the top, sides and floor of the crate are fastened to each other with drywall screws. When uncrating the machine, it is important to proceed in the following order:

1. Use a ladder if necessary to be able to access and remove the screws from the crate's lid.
2. Carefully remove the lid from the crate and set it aside.

NOTE: Protect the LED lights and Emergency Stop switches from damage when removing the top and sides of the crate.

3. Remove the drywall screws from each of the crate's sides, careful not to allow the sides to fall.
4. Remove the crate's end panels.
5. Remove and discard all of the crating material.
6. Cut the internal restraining straps holding the equipment to the base of the crate.
7. Discard all straps.
8. Locate and check the packing list. Verify that the correct unit has arrived by model and serial number.
9. Unwrap the system(s):

- a. Cut any remaining restraining straps.
- b. Cut the plastic wrapping and bubble wrap at the corners of the XIS frame.

NOTE: Carefully cut away the wrapping. Do NOT cut or scratch the sides of the XIS.

- c. Pull plastic wrapping and bubble wrap away from the XIS.
 - d. Discard the plastic wrapping and bubble wrap.
10. Inspect the XIS unit for any damage.
- a. Note any damage and record it on the shipping manifest.
 - b. Photo-document all shipment damage. Include a sign identifying the date and serial number of the unit(s) in all photographs.
 - c. Report any and all damage to the shipper and to Astrophysics.
11. Take inventory.
- a. Check-off items on the packing list.
 - b. Note any missing or damaged items on the packing list.
 - c. Locate the key switch key(s) and panel key(s).

NOTE: The key to the key-switch and panel are very important. Keep track of the keys!

12. If necessary, unload the components from the crate using a forklift.

NOTE: If using a forklift to move a machine or a section of a machine, the load must be lifted a minimum of 17inches above the ground while being moved. A pallet jack will not work.

13. When using a forklift to move a machine or large accessory such as a roller or conveyor bed, use the forklift holes when present to move the machines or accessories to their final installation location.

14. Move the system to its final operating location/position.

- a. Clear the transit path of all obstacles.
- b. Carefully push the system into its final install site.

NOTE: Enlist all the help you need when you push (or forklift) the XIS.

- c. Set the leveling feet on the XIS. (4x)



Figure 11: Leveling Feet

15. Unwrap the monitor boxes.
 - a. Install the base stand on the monitor.
 - b. Discard the monitor boxes.
 - c. For models that include supervisor and other upgraded or custom stations, see the manuals for those models for more detailed instructions for setting up monitors and PCs.
16. Remove the X-ray Generator (XRG) side panel.
17. Perform an internal visual inspection.

Assembly and Adjustment

1. Verify that all PC cables are correctly connected.
2. Connect the monitors.
 - a. Plug in the monitor's power cord.

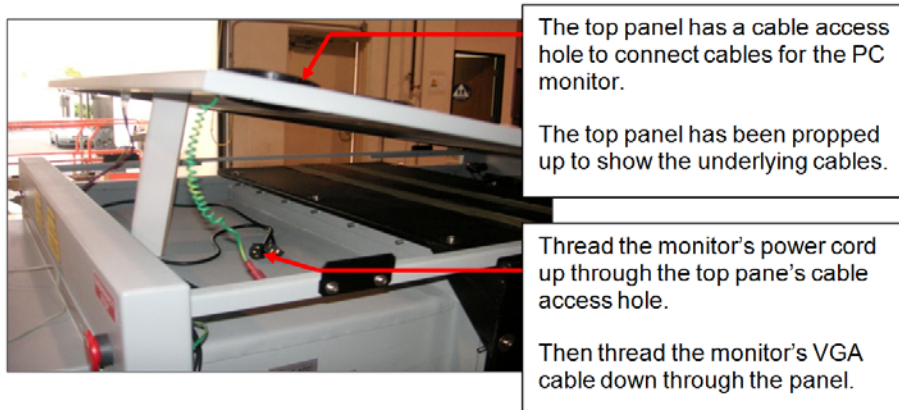


Figure 12: XIS 6545 with the top cover panel lifted up

- b. Plug the video monitor cords into the VGA extension cable inside the XIS.

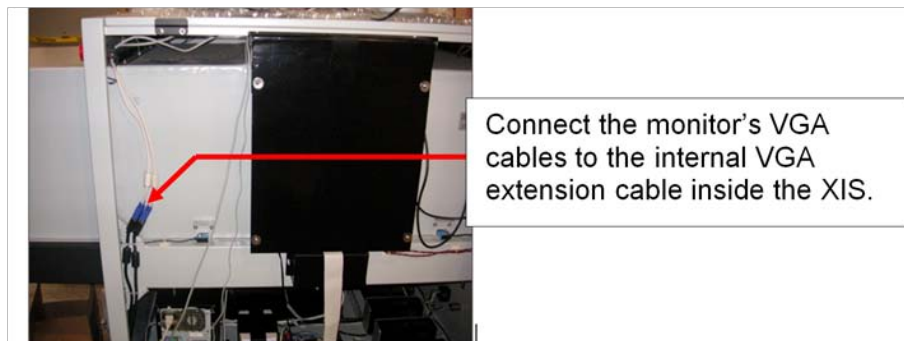


Figure 13: XIS 6545 with the Side Panels Removed

3. If necessary, assemble the AOCB panel stand.
 - a. Mount the panel stand on the side panel.
 - b. Place the AOCB on the panel stand.
 - c. Connect the AOCB USB cable to the USB extension cable.

4. If required, assemble the remote table.
 - a. Put the monitors on the remote stand.
 - b. Connect the monitor's power cord.
 - c. Connect the monitor's VGA cables.
 - d. Connect the XOC's USB cable to the USB extension cable.
5. If the monitors are to be located on top of the top panels of the XIS, place the monitors on the top panel and connect the monitor cables.
 - a. Place the monitor on the top panel.
 - b. Connect the monitor's power cord.
 - c. Connect the monitor's VGA cables.
6. Plug the main power cord into the XIS.
 - a. Use the correct XIS 14 AWG power cord.
7. Clockwise twist and pull out all Emergency Stop switches.
8. Turn the main AC circuit breaker to the ON position.
 - a. Allow XRG to preheat the X-ray generator for at least 30 minutes.
 - b. Clean up the area around the XIS while you are waiting.
9. Briefly inspect conveyor belt alignment. Ensure that the conveyor belt is ready to run.
 - a. Ensure the conveyor belt is aligned about the conveyor rollers.
 - b. Ensure that the conveyor belt and tunnel are clear.
10. If extended length conveyor ends were ordered for the unit, the conveyor ends may be shipped separately. If the conveyor ends are not already installed, install them now.
11. In Some cases, one of the conveyor-bed ends is not attached to the remaining parts. Attach the conveyor bed.
12. Install the conveyor belt.
13. Run the conveyor belt in the "FORWARD" motion and track the belt. The tracking screws are shown in Figure 1.

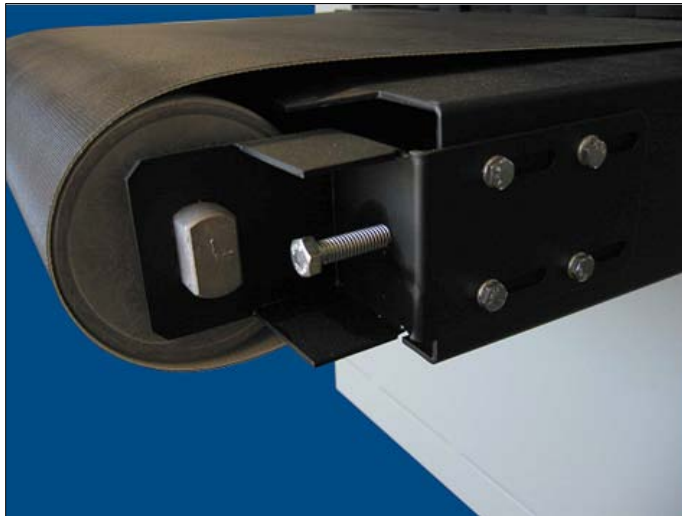


Figure 14: Tracking mechanism for conveyor belt.

The tracking mechanism is located at every corner of the conveyor bed / belt.

14. Move the switch of the UPS supply to the “ON” position.
15. Plug the key into the key-switch and turn the key-switch to the ON (horizontal) position.
16. Run the Diode Plot Program.
 - a. Check diode output (baseline) with the XRG off.
 - b. Check diode output with the XRG on.
17. Check the imaging of the XIS.
 - a. Take screen captures of the sample images.
 - b. When you are satisfied that everything is running properly, securely close all open side panels.
18. Carefully check the conveyor belt alignment.
 - a. If conveyor belt requires alignment, align the conveyor belt.
19. Run the conveyor belt for at least 30 minutes to verify that the conveyor belt well is aligned.
 - a. Complete the System Installation Report (SIR) while you are waiting.

Pre-Power Up Inspection

This procedure is a visual inspection of key internal items to the instrument, which should be performed prior to initial power up.

1. Temporarily bypass interlocks as required.
2. Open and/or remove access covers to verify the proper operation of the:
 - a. Computer and interfacing connections
 - b. DC Power Supplies
 - c. X-Ray Generator

- d. Power Rollers
- e. Programmable Logic Controller (PLC)
- f. Uninterruptible Power Supply (UPS)
3. Verify that no oil leaks from the X Ray Generator tank.
 - a. Repair or replace leaking part(s) as necessary.
4. Verify that no oil leaks from the power rollers.
 - a. Replace leaking parts as necessary
5. Verify that the computer and cables are present and that the PC boards are seated properly inside the PC.
 - a. Record and address any deficiencies.
6. Verify that the necessary ICs for the DAS board are present and seated correctly.
 - a. Reseat the ICs as necessary.
7. Verify model and serial number.
 - a. Record on installation report.
8. Verify that the inside of the inspection tunnel is clear of all foreign matter.
 - a. Clean as necessary
9. Verify that the photo sensors are unobstructed.
10. Verify that the UPS is switched to the ON position.

Initial AC PWR Connection and Checks

After all pre-power up inspections have been satisfactorily completed, initial AC power connections and checks may be performed.

1. Verify that the key is NOT in the key-switch on the control panel.
2. Turn the breaker/switch on the AC power unit connector at the exit end of the unit to the OFF position.
3. Connect the supplied power cord to the AC power input connector at the exit end of the unit.
4. Connect the other end of the power cord to the facility power receptacle.
5. If applicable, verify that all EMERGENCY STOP switches are in the CLOSED position.
6. Turn the breaker/switch on the AC power unit connector at the exit end of the unit to the ON position.
7. Verify the status of the PLC. Green LED should be "ON", for power on.
8. If AC voltages are not present, refer to AC power distribution troubleshooting
9. Verify DC voltages at Power supply 1, 2, and 3. They should measure +5.2 VDC (+/- 0.2 VDC)
10. Verify DC voltages at Power supply 4, 5, and 6. They should measure -5.2 VDC (+/- 0.2 VDC)



11. Verify DC voltages at Power supply 7. They should measure +12 VDC (+/- 0.2 VDC)
12. Verify DC voltages at Power supply 8. They should measure +65VDC (+/- 5 VDC)
13. If AC voltage is correct but DC voltages are not, attempt to adjust at DC power supply.
14. If DC voltages do not adjust, refer to DC power distribution troubleshooting.

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XIS Startup / Shutdown Procedures

Introduction

This chapter covers only the most basic operation procedures for Astrophysics non-pallet units. For more detail, refer to the Astrophysics User Manual.

The XIS has four phases of operation:

1. System Startup
2. Login
3. X-ray Screening
4. System Shutdown

Procedures for each phase of operation are described below.

Starting the XIS

The first phase of operation is *System Startup*. System Startup involves the following steps:

1. The XIS AC power cord should already be “plugged-in.” If it is not plugged in, plug it in now. The cord is located under the exit end conveyor bed.

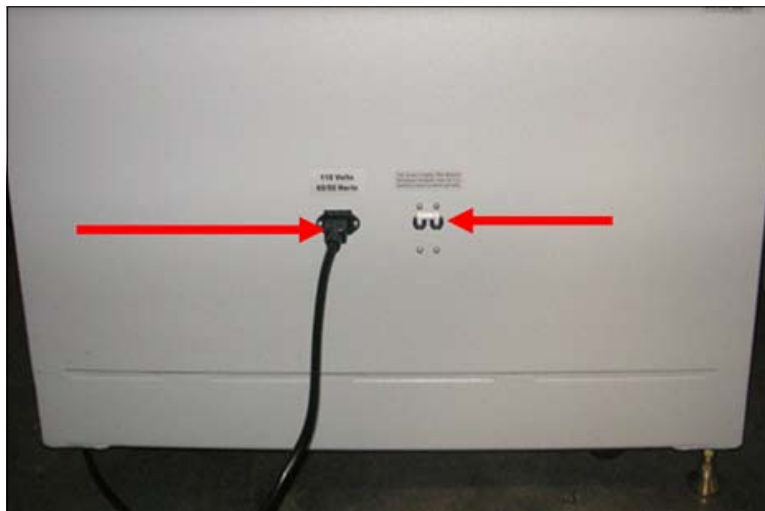


Figure 15: AC Power Cord and Main Circuit Breaker Switch

2. The main circuit breaker switch should already be in the **ON**, or up position. If it is not in the **ON** position, push it up to the **ON** position now. The circuit breaker is also located beneath the exit end conveyor bed.

NOTE: Always leave the main AC switch in the **ON** position. This allows the batteries in the internal UPS (Uninterruptible Power Supply) to remain fully charged. The UPS battery slowly discharges on its own if the XIS is not plugged in and turned **ON**. If the UPS battery becomes fully discharged, it may require up to eight hours to fully recharge.

- Turn the key-switch on the **AACP** 90 degrees clockwise from the vertical “**OFF**” position to the horizontal “**ON**” position. Leave the key-switch in the “**ON**” position until you have finished using the XIS.

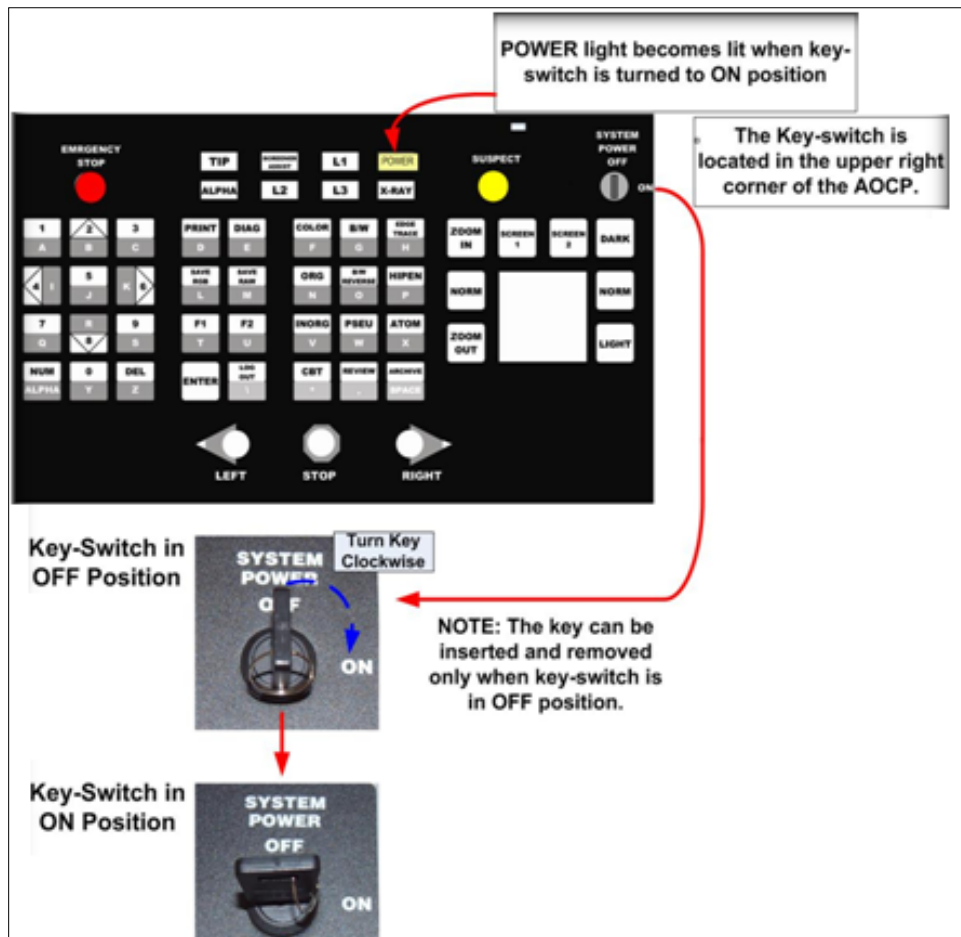


Figure 16: AACP (Advanced Operator Control Panel) Key-switch sequence

NOTE: When the key-switch is turned to the **ON** position, the following sequence of events will occur:

- The LED lights on the computer monitor screen(s) turn on.
 - The computer screen briefly displays the PC computer's BIOS startup messages.
 - The Windows Operating System briefly displays its startup messages on the monitor screen(s).
 - The Windows Operating System briefly displays the Windows Desktop screen.
- Wait for the “Please Log In” screen to appear.

Logging In

There are two versions of operating systems currently used on XIS machines: Version 2.0 and the more recent Version 2.1, as shown in Figure 17. Though using slightly different interface designs, the instructions herein can easily be used with either operating system. Both make use of the AOCPS touchpad's “double tap” feature which is equivalent to clicking the left mouse button in the Microsoft™ Windows operating system.

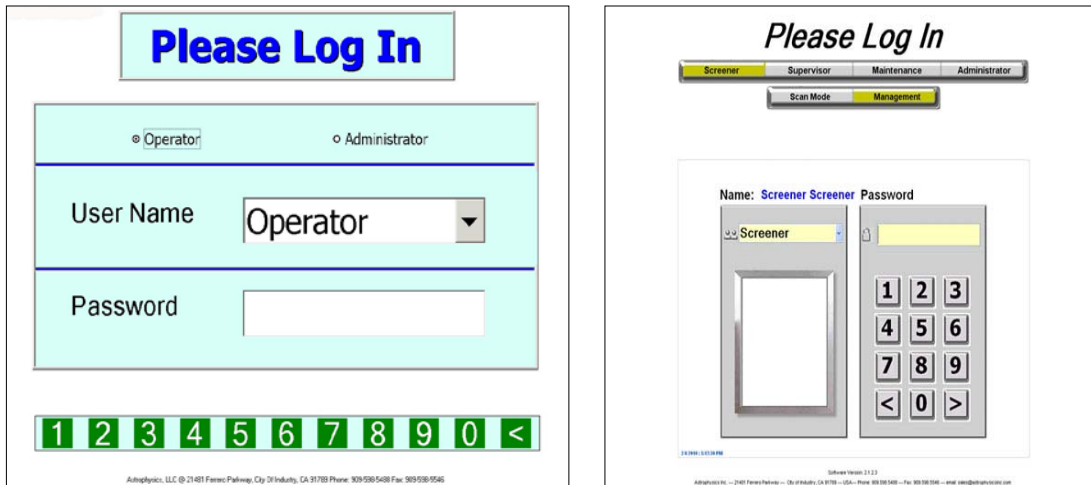


Figure 17: Please Log In Screen (Version 2.0 on left, 2.1 on right)

Operating System Version 2.0

1. In operating system version 2.0, use the AOCPS touchpad to position the cursor over the [**Operator**] button and double tap the touchpad. This selects the Operator rather than Administrator mode.

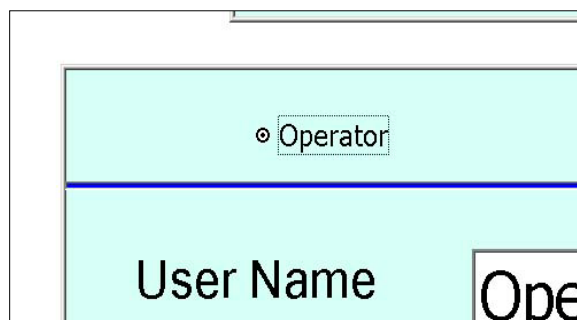


Figure 18: Operator Button

2. Double-tap the down arrow, [▼] (located right of the User Name entry box).
3. Position the cursor over your User Name in the drop down list and double tap the touchpad (i.e. click on your User Name). You must select your User Name from the drop down list. You cannot add a new User Name if it does not appear on the drop down list. Contact your supervisor if you need to change or add a new User Name and Password for yourself.
4. Enter your password. Please note:



- a. Asterisk characters (*) are displayed on the screen when you type in your password entry. To ensure security, the actual password characters are never echoed to the screen.
 - b. All passwords are four characters long. Shorter or longer password entries are NOT allowed.
 - c. Passwords can consist of either alphabetic (alpha) or numeric characters.
 - d. To enter alpha characters, press the [ALPHA] shift button to enter alpha entry mode. In alpha entry mode, the XIS recognizes the alpha (i.e. upper shift) characters of each button. Alpha shift characters are labeled on the operator control panel. The ALPHA status light will be lit when you are in alpha entry mode.
 - e. Pressing [ALPHA] shift button again will toggle you into numeric entry mode. The ALPHA status light will be off (unlit) when you are in numeric entry mode.
 - f. You can also enter your password numbers by positioning the cursor over the digits on the bottom of the screen and then double tapping the touchpad.
 - g. If a PC keyboard is available, you can also enter your password by typing the characters in and pressing the [Enter] key. All alpha character entries are automatically shifted into upper case characters for entry.
5. Wait for the System Ready screen to appear. The system is now ready for immediate use.

NOTE: Please remember, Windows will display “warming up” messages before the System Ready screen appears.

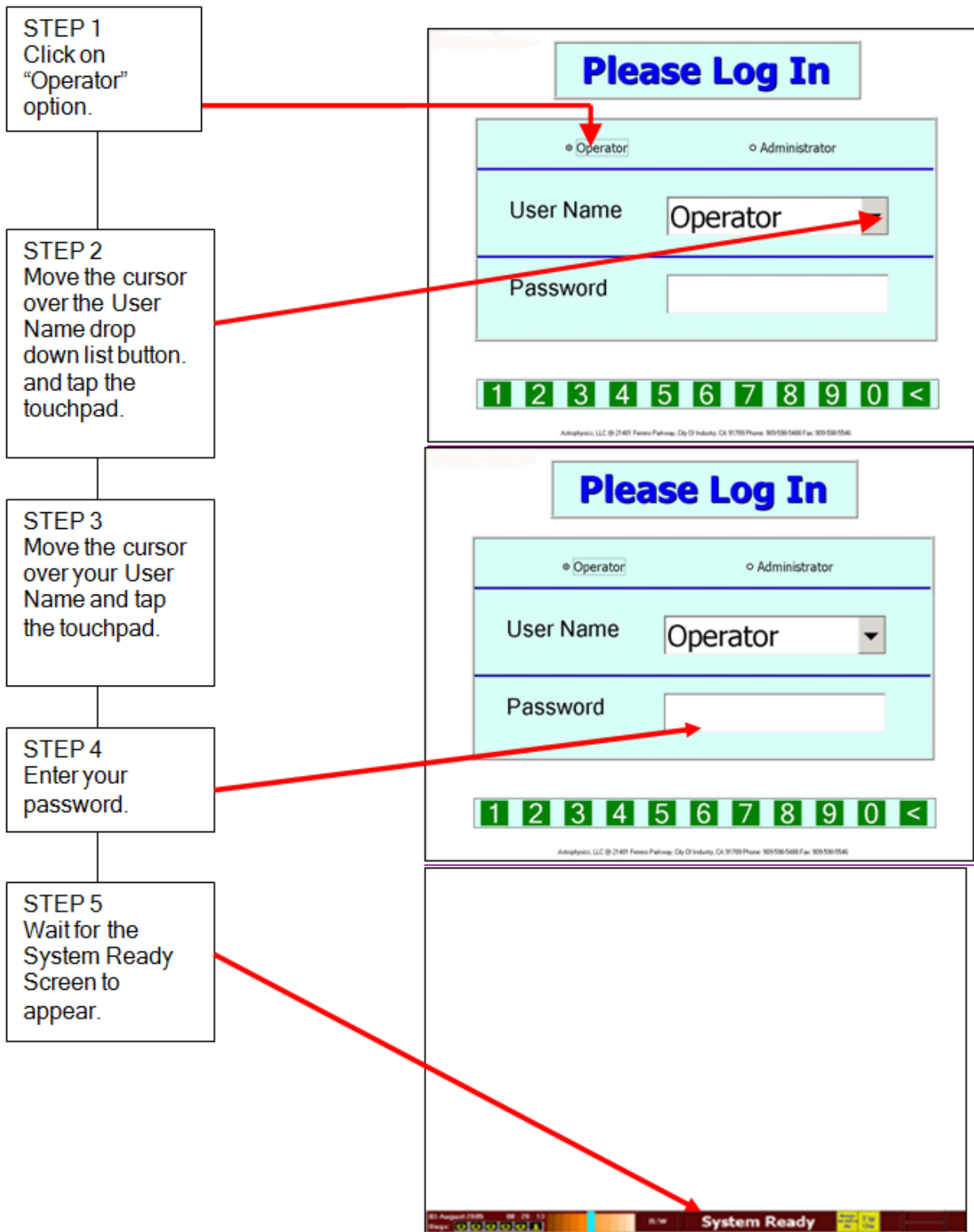


Figure 19: Version XIS 2.0.X.X - Login Steps

Operating System Version 2.1

Figure 20 shows the Advanced Operator Control Panel (AOCPP) and the key-switch sequence.

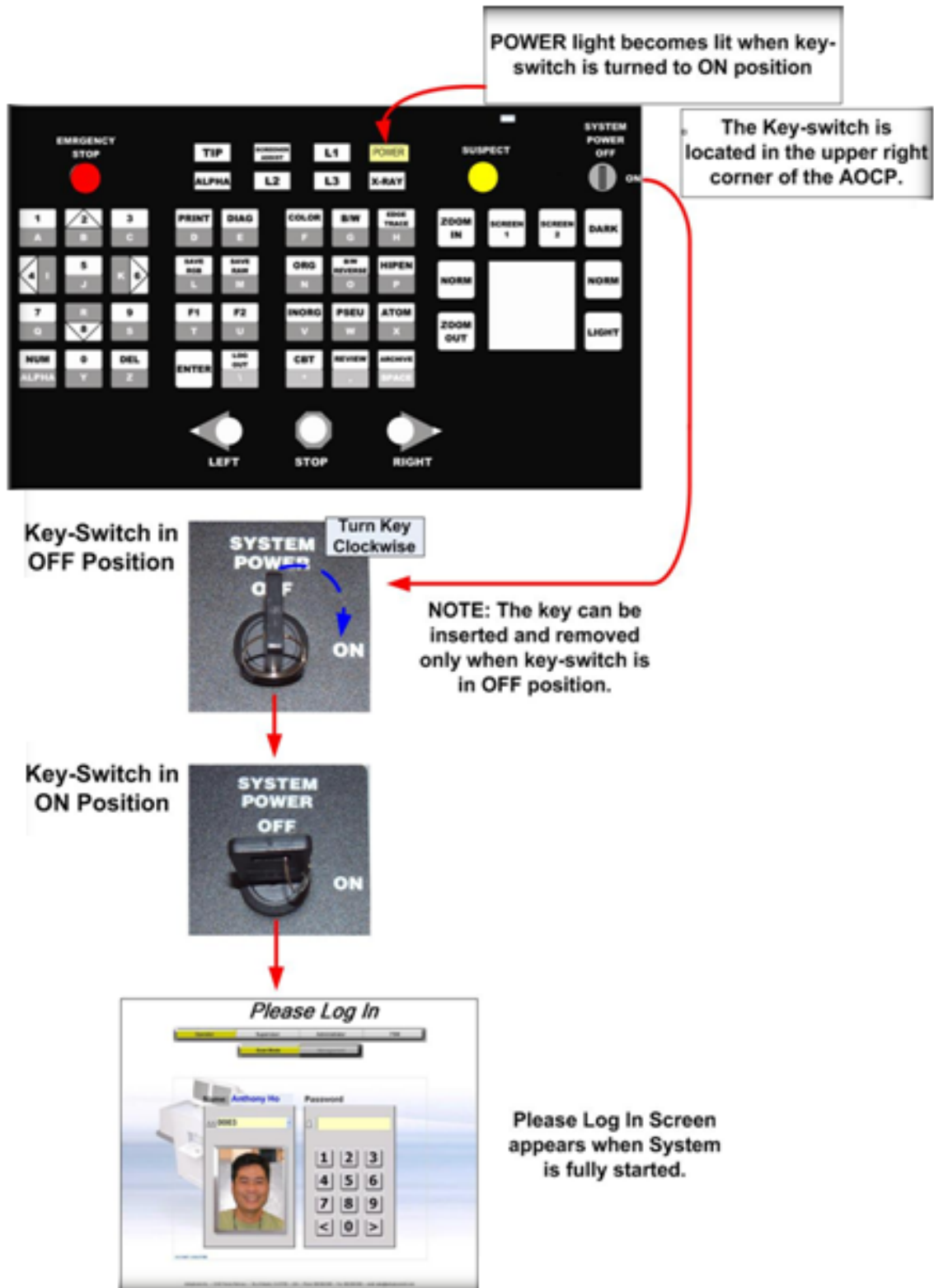


Figure 20: Advanced Operator Control Panel (AOCPP)

In order to log in, follow these steps:

1. Switch the key-switch to the “ON” position. After a brief warm-up, the following message will appear. Click “Continue.”

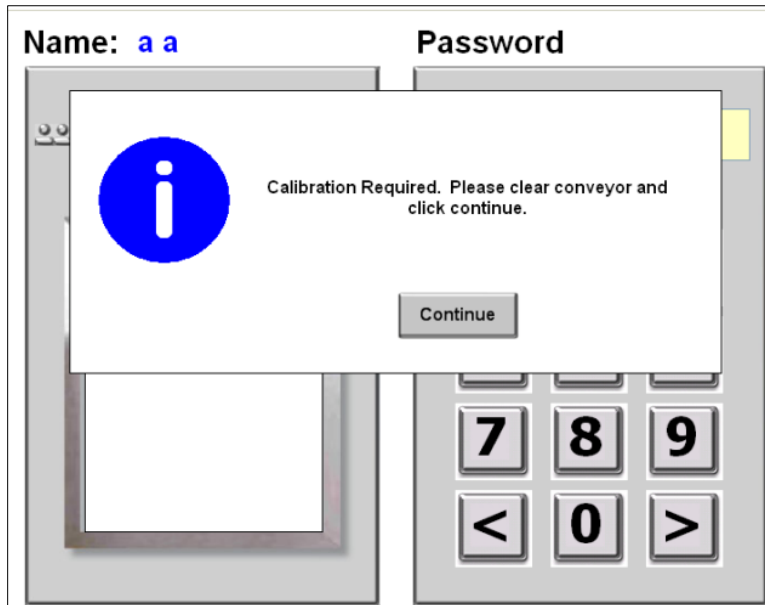


Figure 21: “Calibration Required” screen

2. When the following message appears, click “OK.”

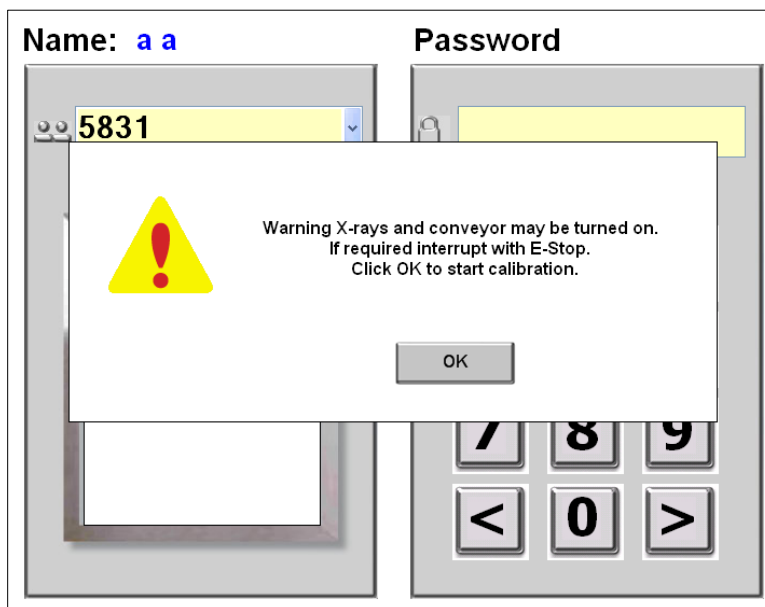


Figure 22: “Warning X-rays” screen

Once the XIS completes calibration, including turning the X-rays and conveyors on and off, the Log In screen is now available.

3. Click on [Screener].

- Click on [Scan Mode].

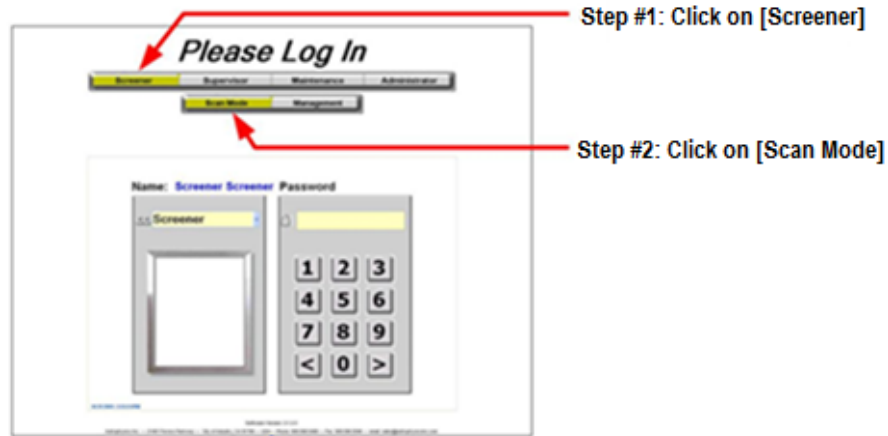


Figure 23: Log In Screen Enabled

- Click on the drop-down list button, and select your username.
- Type in your password, using the control panel keyboard or clicking on the screen keypad.

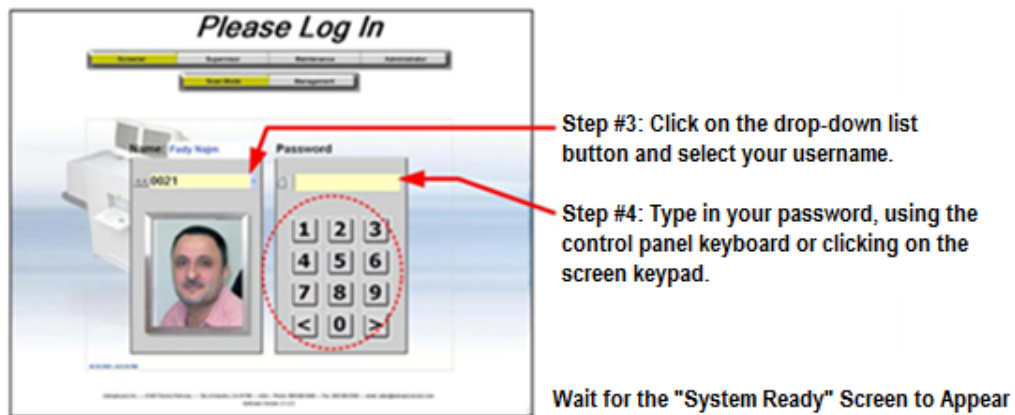


Figure 24: Entering User Information

After a brief pause, the "System Ready" screen will appear. You are now logged in.

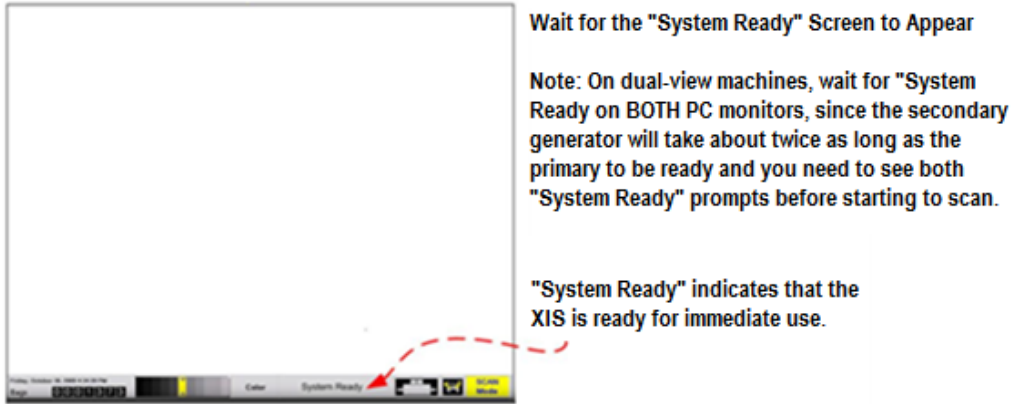


Figure 25: "System Ready" screen

The System Ready screen differs slightly from Version 2.0 to Version 2.1. The Version 2.0 System Ready screen is shown in Figure 26.

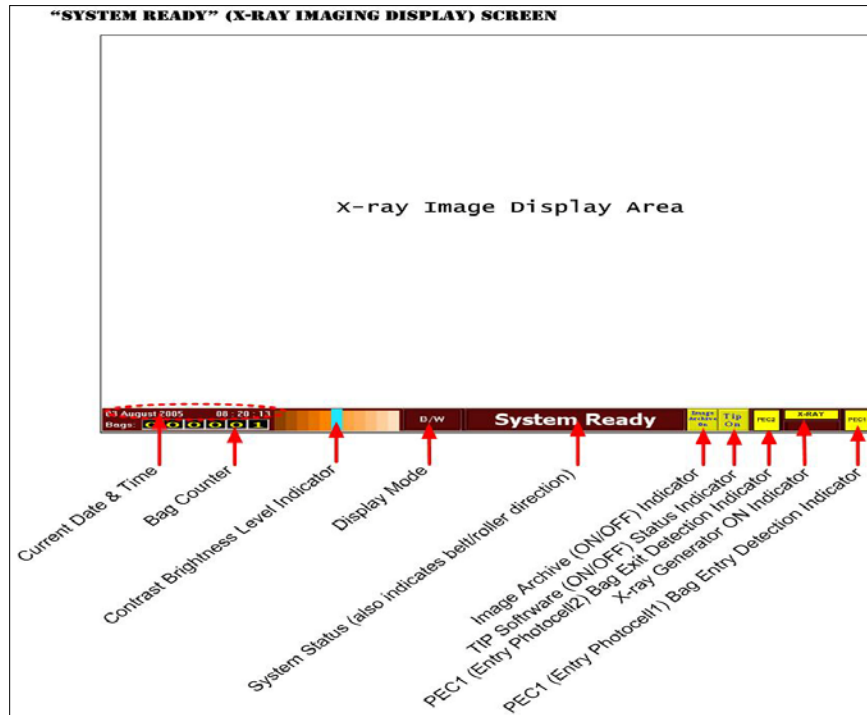


Figure 26: "System Ready" Screen – XIS Application Software Version 2.0.x.x

The Version 2.1 System Ready screen is shown in Figure 26Figure 27.

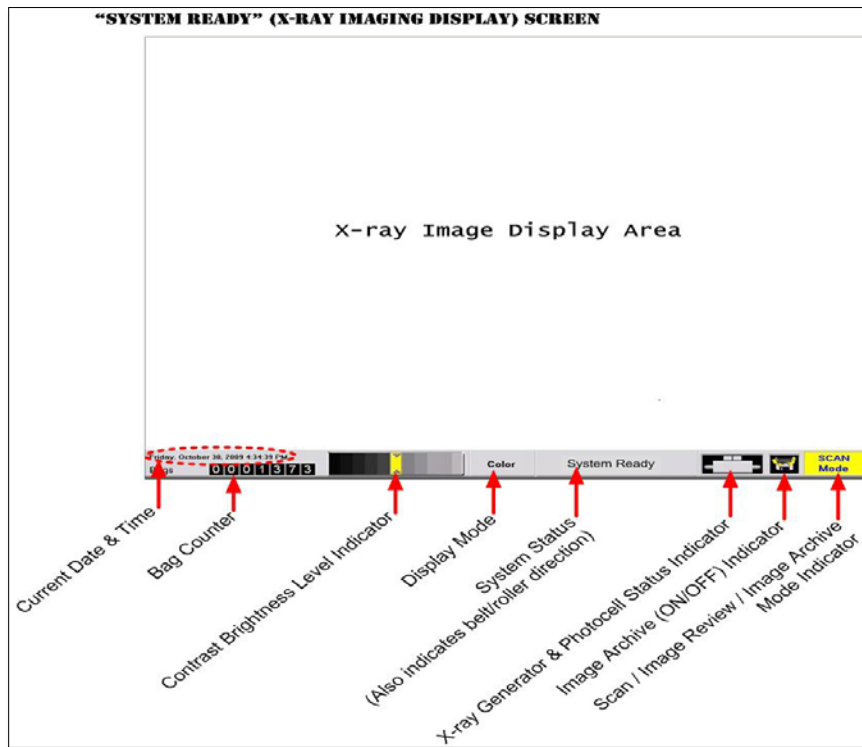


Figure 27: “System Ready” Screen – XIS Application Software Version 2.1.x.x

X-Ray Image Screening Procedures

Successful x-ray imaging security screening requires:

- Knowledge of how to operate the x-ray imaging system to produce x-ray images and
- Knowledge of how to interpret those x-ray images.

This section provides you with instructions on how to operate the Astrophysics X-ray Imaging System. Since need differs, it is beyond the scope of this manual to provide specific instructions on how to analyze and interpret x-ray images for every situation. Contact the Astrophysics Sales Department for further information and referrals on training on x-ray imaging security image analysis.

In *X-Ray Screening Mode* bags, packages, and other articles are placed on the conveyor belt and are carried through the inspection tunnel by the conveyor belt. Inside the x-ray tunnels, items are exposed to penetrating x-rays. The XIS then generates and displays a scanned “x-ray” image revealing the internal contents of each item.

1. Press the [LEFT] button to start the conveyor in the left (forward) direction. If your system has a footmat switch, stand on it.

NOTE: If a footmat switch is present, the XIS requires the presence of an operator standing on the footmat to run the machine. If no one is standing on foot-mat, the XIS will stop and display an “INTERLOCK” warning message on the bottom right corner of the screen. Stepping on the foot mat will clear INTERLOCK message from the screen and allow further operation of the machine. If the INTERLOCK warning is not cleared in

30 seconds, the XIS application will logout the user and return to the “Please Login Screen”. Make sure the foot-mat is properly plugged into the XIS and placed near the operator control console.

Pressing the [**LEFT**] key commands the conveyor to move in the left (forward) direction (moving from entry end to exit end).

NOTE: Do **NOT** continuously run the conveyor in the RIGHT (reverse) direction for more than 30 seconds at a time. Running the belt in the forward direction keeps the conveyor belt in optimum alignment.

Pressing the [**STOP**] button stops the conveyor.

2. Place the articles that you want inspected on the conveyor so that they are carried into the x-ray inspection tunnel.

Items carried into the inspection tunnel are automatically x-ray scanned and imaged. The resulting x-ray image is displayed on the computer monitors.

Scanned bag images remain on the screen (i.e. do not scroll off) until next item is scrolled on to the screen.

During x-ray imaging, please note the following:

- Although pets are not harmed by the XIS, please be sensitive to the pet and its owner. The TSA (Transportation Security Administration), for example, requires metal detector, visual, and physical inspection of pets. Request that the pet owner remove the pet from its carrier. Pet carriers should be inspected separately using the XIS.
- Foods and drinks (in closed containers) are not affected by x-rays from the XIS. They can be safely inspected using the XIS. However, do NOT allow the entry of open containers of liquid into the x-ray tunnel. They may spill and damage the electrical components inside the XIS.
- Mobile phones, calculators, computers, and other electronics devices are unaffected by the x-rays from the XIS. They can be safely inspected by the XIS.
- All developed film and printed pictures are unaffected by x-ray from the XIS. They can be safely inspected using the XIS.
- Most undeveloped film with a film speed of 1600 ASA or 33 DIN or slower are unaffected x-rays from the XIS. They can be safely inspected using the XIS. X-ray radiography film and very high speed scientific film should NOT be inspected by the XIS.

3. Carefully inspect each scanned image.
4. Repeat Steps #2 and #3 for every bag.
5. To LOGOUT press the [**EXIT**] button on the Operator Console.
 - Logout allows others to login and continue using the system.
 - Logout also prevents unauthorized persons from using the system when it is unattended.

XIS Shutdown

When servicing the XIS, it is often necessary to shut down the XIS for the sake of safety. This procedure describes how to shutdown the XIS.

1. Turn the key-switch to **OFF** position.



2. Wait for the monitors to shut down.
3. Turn the main AC breaker to the off position.
4. Confirm that the XIS is **off**.
 - a. The XIS frame fan should be off and not audible.
 - b. The XIS monitor screens should be blank.
 - c. The XIS monitors should be turned **off**.
 - d. The keypad "System **ON**" and the "System **ON**" light on the frame unlit should both be off.

Operational Testing

After the initial installation and inspections have been performed it is necessary to verify the satisfactory performance of the instrument. Performance verification may be viewed as three (3) general areas:

- Functional Testing
- X-Ray Image Quality
- Radiation Survey.

Functional Testing

Functional testing encompasses all routine operations of the instrument. It includes, but is not limited to:

- Indicator Lights
- Conveyor Operations
- Control Panel Operation
- Monitor Operation

Following are the steps necessary to perform functional testing on the instruments. See XIS Startup / Shutdown Procedures on page 42 for more detailed instructions on Start-up and Shut-down.

1. Insert the key into the key-switch on the control panel and turn the key to the "ON" (horizontal) position.
2. The computer starts booting, and after about 45 seconds, it will prompt the "LOG-IN" screen. After logging in, the green light indicators will be energized.

The monitors should now be displaying "SYSTEM READY". At this time you can operate the machine, or you can exit and continue testing.

3. Verify that the PC and PLC are operating.
4. Verify that the system fan is operating.
5. Verify that the instrument performs a self-test. When the self-test is successfully completed, a "SYSTEM READY" message is displayed in the message bar at the bottom of the monitor screen.
6. Verify proper KV and MA settings are correct.
 - a. Record and adjust if necessary.
7. Compare against XIS 6545 x-ray inspection system Final Inspection Test Data Sheet.
8. Verify that the conveyor operates properly by standing on the foot-mat (if present) and using the control panel:

9. Press the FWD button. The conveyor should move forward, and the message “Forward” should be indicated on the monitor.
10. Press STOP to stop the conveyor.
11. Press the REV button. The conveyor should move in the reverse direction, and the message “Reverse” should be indicated on the monitor.
12. Press STOP to stop the conveyor.
13. If the conveyor does not operate correctly, refer to conveyor subsystem adjustments and troubleshooting.

NOTE: When the conveyor is moving in either direction, pressing any of the conveyor control buttons (FWD, STOP, or REV) stops the conveyor.

14. Verify that the conveyor is tracking correctly and is properly tensioned. If the conveyor does not operate correctly, refer to conveyor subsystem adjustments and troubleshooting.
15. Verify system operation by scanning a "test bag" in both forward and reverse directions and observing the image.
16. If the general image quality is poor, verify monitor adjustments, computer operation, and possible EMI issues to resolve the problem before continuing.
17. If ONLY the X-ray image is poor, continue functional testing of the instrument and address the problem in the X-Ray Image Quality procedure. Sometimes, an incorrect SOFT SWITCH setting can cause image problems.
18. Verify settings and enter any necessary corrections.
19. Verify that the operator control panel functions operate correctly:
 - a. Zoom Keypad
 - b. 2 times ZOOM up to 32 times zoom
 - c. Color Imaging
 - d. Inorganic Imaging
 - e. Organic Imaging
 - f. Black and White
 - g. Pseudo Color
 - h. Reverse monochrome
20. If these functions do not operate correctly change the PC if necessary.
21. Verify that interlocks and EMERGENCY STOP switches (if installed) stop the conveyor and de-energize the X-ray generator when access panels are opened or removed.

X-Ray Image Quality

After the functional testing of the instrument is complete, it is necessary to optimize X-ray image quality. X-ray image quality is dependent upon a number of factors:

- X-ray generator condition and alignment
- X-ray controller operation
- X-ray KV and MA settings
- Collimation
- Alignment of the diode boards.
- DAS board operation

Before continuing it is important to distinguish between a general image quality issue and an X-ray image quality issue.

"Ghosting" and "fussy" images (including the menus) are general image quality issues and should be addressed before continuing.

Black or Green screens and "banding" are X-ray image quality issues and can usually be resolved through X-ray alignment, collimation, and LXDA corrections.

NOTE: Typical instruments shipped from the factory will have very good X-ray image quality.

If the X-ray images displayed during the functional testing were acceptable, no adjustments are necessary.

1. Display the diode plot and view diode response with X-ray OFF
2. Verify that with X-ray OFF that all diodes are even, with no spike or dip in the graph line. Any gap, spike or dip in the graph line is a suspected bad diode and the applicable detector board might need to be replaced.
3. Display the diode plot and view diode response with x -ray ON.
4. Verify that with X-ray ON that all diodes are even, with no spike or dip in the graph line. If necessary, adjustments can be made to "correct" the diode plot response curve (See Diagnostics on page 91).
5. Adjust alignment of collimator bars, X-ray generator, and detector boards as required. See X-ray Collimation on page 83.
6. Any gap, spike or dip in the graph line is a suspected bad diode and the applicable detector board(s) should be replaced. After an acceptable diode plot is achieved, X-ray image quality testing can begin:
 - a. Scan the new ASTM "test bag" for image evaluation. If the test bag is not available, use the old ASTM tests or their equivalent.
 - b. Verify operation against the Standard Minimum Acceptance Criteria.

- c. Upon successful completion of the Minimum Acceptance Criteria, remove all interlock bypasses, and replace all panels.

Radiation Leakage Survey

This section describes the procedure for surveying the XIS 6545 for radiation emission. Astrophysics LLC suggests you use one of the following meters:

- Victoreen® 190
- 450P Ion Chamber Survey meter
- Geiger-Mueller #489-4 probe.

The survey meter must be calibrated by a recognized laboratory on a regular basis — usually once annually. Keep copies of the calibration report with the survey results. The most recent calibration date must be marked on the meter.

Astrophysics LLC offers training of clients and technicians to perform a radiation survey. Depending on local or national regulations, a different checklist may be required. Specific countries or states will likely require that the radiation survey be repeated according to a fixed timetable.

Astrophysics LLC recommends a radiation survey every three months. Write the results in the approved form, which is filed in a special file cabinet. Copies of the report are often sent into the state or country and extra copies are often sent to a remote data warehouse.

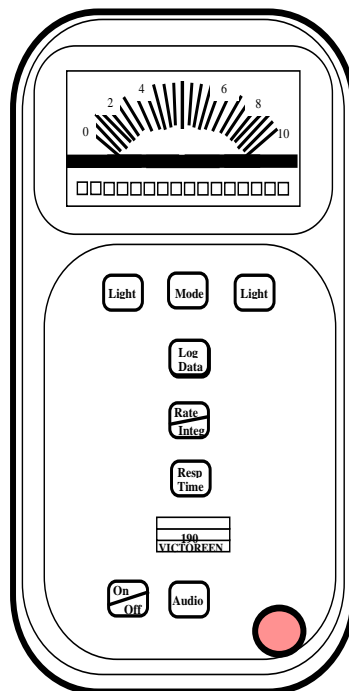


Figure 4: Handheld Radiation Survey Meter (Victoreen Model 190)

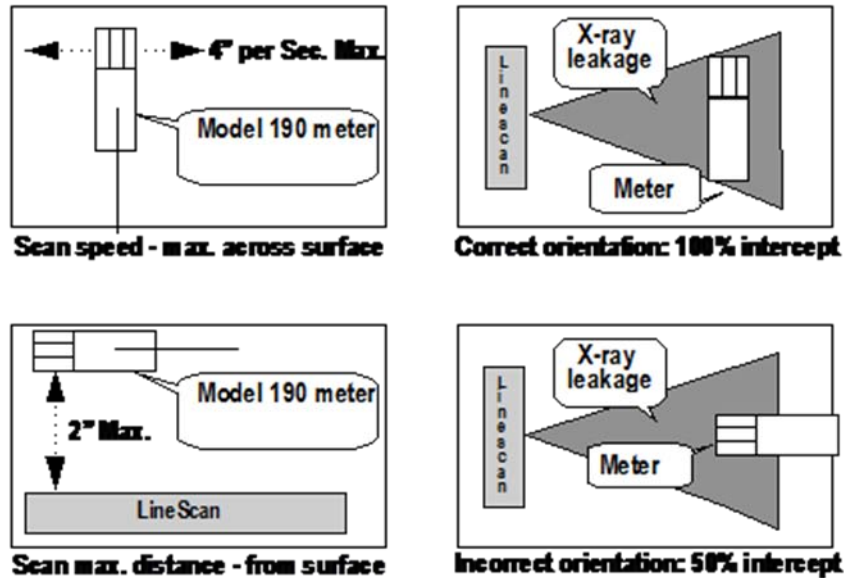


Figure 5: Radiation Scan Test Points (Model 190)

Performing the X-Ray Safety Scan

Items in hand:

- X-ray Radiation Survey form
- meter (Victoreen 190, Victoreen 450P, Geiger-Mueller 489-4 or equivalent)
- calibration certification dated not more than a year ago

1. Calibrate the meter:
 - a. Expose the probe.
 - b. Press the "ON/OFF" button.
 - c. Wait until meter completes its self test (several seconds during which the calibration date appears on the indicator).
 - d. Press the "RESP TIME" button to display "RESPONSE IS 6S."
 - e. Expose the CHECK SOURCE—a bit of radioactive material supplied with the meter.
 - f. Put meter probe on the CHECK SOURCE and check for a suitable reading.
 - g. Cover the CHECK SOURCE and move the meter away from it.

If you get no reading from the check source, shake the meter **gently** and check for rattling sounds from the probe, indicating that the meter is damaged.

Radiation “background”

With the X-ray machine “OFF,” measure & record the BACKGROUND radiation. Background radiation is a natural low-level radiation that exists everywhere at all times regardless of any other radiation source.

1. Turn on X-Rays
 - a. Turn the remote-console key-switch “on” (sideways).
 - b. Wait until “System Ready” appears on screen.
 - c. Run the conveyor belt continuously to keep the X-ray machine generating X-rays. Alternatively, run the diode plot program.
2. Scan Meter over X-ray machine
 - a. Scan the meter over all surfaces of the X-ray machine.
 - b. Move very slowly, at a maximum of 4 inches per second (10 cm/second).
 - c. Stay within 2” (5 cm) of the X-ray machine surface.

NOTE: Orient the meter so that the flat side of probe faces the X-ray machine. Do not hold the meter probe “sideways,” as this gives readings that are too low.

3. Record readings from each surface on the form entitled **X-RAY RADIATION SAFETY TEST RECORD** (or your local equivalent). All readings should be below 0.5 mR/h.
4. Remember to scan the meter over the following areas:
 - a. Input conveyor opening
 - b. Exit conveyor opening

NOTE: All readings should be below 0.5 mR/h.

5. Complete an X-ray Radiation Safety Test Record
6. Complete a Site Acceptance Test (SAT) form.
7. Complete a Commissioning Record.



X-RAY RADIATION SAFETY TEST RECORD

Model Number	Background Radiation Level mR per hour	Test Date
System Serial Number		Tested By

WARNING LABEL VERIFICATION		
Required Label:	Required Location:	Accepted
"X-Ray On"	Adjacent to each x-ray on indicator	
"Caution: X-Rays Produced When Energized"	Adjacent to each x-ray on indicator	
"Caution: Do Not Insert Any Part Of The Body When System Is Energized - X-Ray Hazard"	Adjacent to each port	
X-RAY ON INDICATORS		
Required Location:	Required Function:	Accepted
Visible from each access panel and port	Illuminates when x-rays are on	
SAFETY DEVICES and INTERLOCKS		
Device:	Required Function:	Accepted
Safety interlock at each access panel	Terminates x-ray generation when actuated by panel removal	
System power key-switch	Starts and shuts down machine	
Log In Screen	Cannot start application software without operator logging in.	
Emergency stop switch (when installed)	Terminates x-ray generation when actuated.	
DOSE RATE (If Applicable)		
Meter: Victoreen Model _____, Serial Number _____	Calibration Due Date: _____	
Average dose per inspection after ten passes		mR
EXTERNAL RADIATION EMISSION RATE (Federal Limit 0.5 mR/hr)		
Meter: Victoreen Model _____, Serial Number _____	Calibration Due Date: _____	
Entry end panel(s) and port		mR per hour
Exit end panel(s) and port		mR per hour
Left side panels (when viewed from entry end)		mR per hour
Right side panels (when viewed from entry end)		mR per hour
Top panel(s)		mR per hour
CERTIFICATION and SERIAL NUMBER LABELS		By
One label applied on system exterior panel near AC power line receptacle		
One label applied on side of frame near access panel		

Figure 28: X-ray Radiation Safety Test Record

XIS 6545 SITE ACCEPTANCE TEST (SAT)

Instructions	<ul style="list-style-type: none"> Initial each step as performed. Record any comments in the NOTES section. Refer to XIS 6545 Installation Procedure for detailed instructions on each step. 					
Instrument	Serial Number:	Model Number:		Date of Manufacture		
Step	Action					Initials
1	Measure site AC power	VAC	Hz	Neutral to GND		
2	Uncrate and check visually the machine.					
3	Verify all components and accessories are present.					
4	Verify exterior condition of instrument, check for damage.					
5	Verify condition of x-ray generator. Check for oil leak.					
6	Check conveyor motor for oil leaks.					
7	Verify configuration of computer.	USB Ports	Serial port	Parallel port		
8	Verify that all cables connectors are seated correctly (reseat as necessary).					
9	Verify AC circuit breaker is OFF, "plug" into site AC power. Turn ON					
10	Verify that Emergency stop button work properly.					
11	Verify that PLC starts properly with power ON.					
12	Measure voltages -	VAC	+5 VDC	-5 VDC		
		+12 VDC	+65 VDC			
13	Verify successful start-up	Log On Screen				
14	Verify successful shutdown.					
15	Test conveyor operation. (FWD, STOPREV ⁺)	FWD	STOP	REV	Tracking	Tension
16	Verify light indicators	POWER ON		X-RAY ON		
17	Verify operation of x-ray generator					
18	Test operation of interlocks.					
19	Test operation of Photocells					
20	Verify image clarity.					
21	Test imaging functions.	Color	Organic	Inorganic	Lighter	Darker
		B & W	Reverse	Pseudo	Zoom up	Zoom down
22	Test x-ray image quality	Penetration		Wire Gauge Resolution		
23	Collimation adjustment required?	YES		NO		
24	Perform radiation leakage survey.	mR/hr.		mR/hr.		
25	Instrument demonstrated to customer?	YES		NO		
Notes:						
Customer Information:						
CUSTOMER NAME			CUSTOMER ADDRESS			
Instrument installed by:						
PRINT NAME		SIGNATURE		DATE OF INSTALLATION		

Figure 29: Site Acceptance Test (for XIS-6545)

COMMISSIONING RECORD FOR XIS 6545

Equipment Model Number/Type: _____

Equipment Serial Number: _____

Equipment Facility Identification Number _____

Results: (circle as applicable)

Visual Examination	Pass	Fail
Color / organic / inorganic imaging	Pass	Fail
B&W / Reverse monochrome / Pseudo	Pass	Fail
Performance Requirements	Pass	Fail
Conveyor Starting	Pass	Fail
Conveyor Control	Pass	Fail
Radiation Safety and Emissions	Pass	Fail

Commissioning By: _____

Astrophysics LLC Representatives

Date

Approved By: _____

Astrophysics LLC Site Manager

Date

Approved By: _____

Company Representative

Date

Figure 30: Commissioning Record for XIS-6545

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Belt Tension, Tracking and Replacement

The conveyor belt on an XIS security x-ray machine travels through the conveyor assembly, over a series of rollers (see Figure 31 as an example of a typical conveyor assembly).

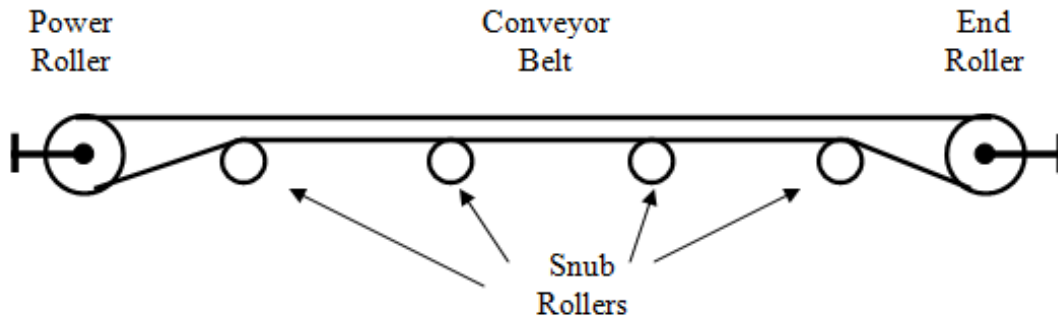


Figure 31: Conveyor belt tension adjustment

The belt is driven by a “Power Roller” on one end, and is guided by an “End Roller” on the other end of the conveyor belt and by a series of snub rollers.

Tension is applied to the conveyor belt by adjusting bolts on either side of the entry and exit conveyor ends. The bolts move the entry conveyor power roller in or out, thus increasing or decreasing tension on the belt. Moving the “End Roller” out also increases or decreases tension on the conveyor belt. The tension on both sides of the exit and entry conveyor rollers should be adjusted equally. If tension is applied only on one side, the belt will lose tracking, which means it will veer to one side or the other of the conveyor assembly.

If a belt is too loose, the belt may slip when items are placed on the conveyor. It is difficult to over tighten the belt, but setting the tension too high could result in premature failure of the conveyor rollers, particularly the power roller.

When adjusting conveyor belt tension, it is important to maintain proper belt tracking. If the belt is tracking properly, the belt will stay in the center of the rollers when the conveyor is running. If the belt is not tracking properly, the belt will move to the edge of the rollers when the conveyor is run.

Tools required:

- Duct Tape
- Razor Blade
- Phillips Screwdriver
- Crescent Wrench
- Socket Wrench

There are three main styles of conveyor/bracket, as shown in the three following figures.

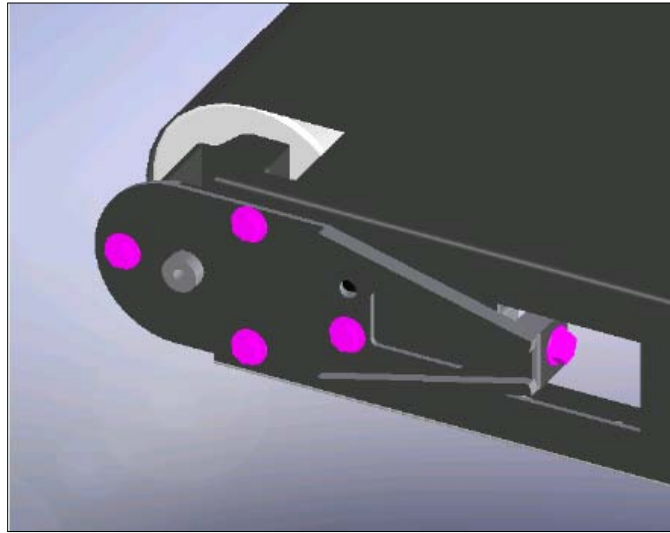


Figure 32: Conveyor Bracket Style 1

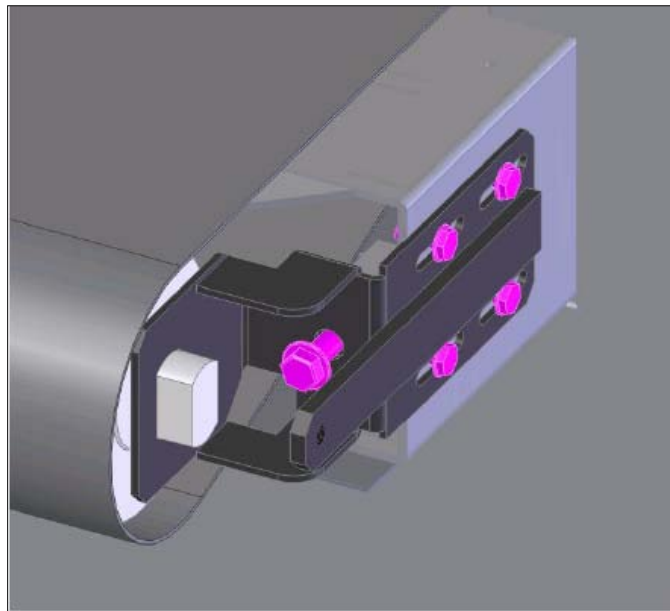


Figure 33: Conveyor Bracket Style 2

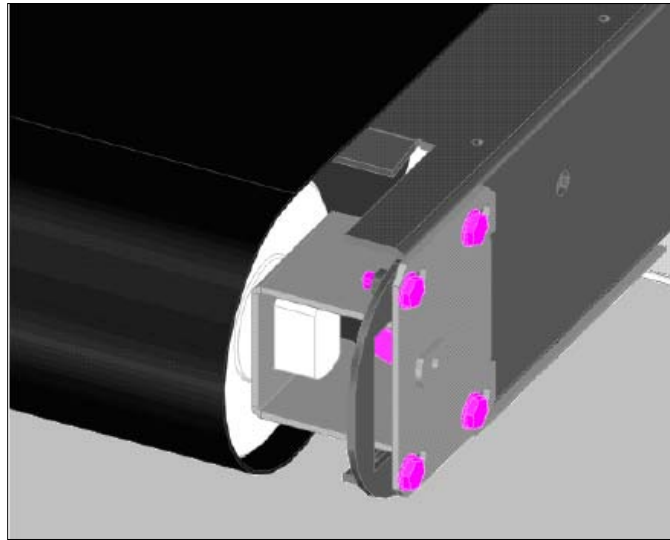


Figure 34: Conveyor Bracket Style 3

Removing a Conveyor Belt

1. Turn the control panel key to the “OFF” (vertical) position.
2. Unplug the power cord for the XIS 6545 unit.
3. Remove the two side covers on one end of the conveyor, and relieve the belt tension.
4. If the old belt is a laced-style belt, remove the nylon wire to open it up. If the old belt is a continuous-style belt, carefully cut the belt laterally with a razor blade. In either case, do not remove the old belt at this time, because you will need it to help you pull the new belt into place.
5. Unfold the replacement belt (*laced-style belt only*).
6. Tape one open end of the new belt to one open end of the old belt.
7. Slowly pull the other end of the old belt in order to thread the new belt through the conveyor system/rollers.
8. Once the new belt has gone around the conveyor, locate the nylon wire which is located on one end of the new belt, and pull it out.
9. Connect both ends the new belt and insert nylon wire in between lace holes.

Once the belt has been replaced, it will be necessary to adjust tension and tracking. The type of bracket used on the machine you’re working on will determine the procedure for adjusting conveyor belt tension and tracking.

Adjusting Conveyor Belt Tension

In order to adjust the belt tension on a conveyor assembly, make sure the conveyor bracket mounting bolts on the non-motor end of the conveyor remain fixed in position. You will adjust the bracket bolts only on the non-motorized end of the conveyor. See Figure 35 in which the Observer is standing at the non-motorized, “Variable” end of the conveyor assembly.

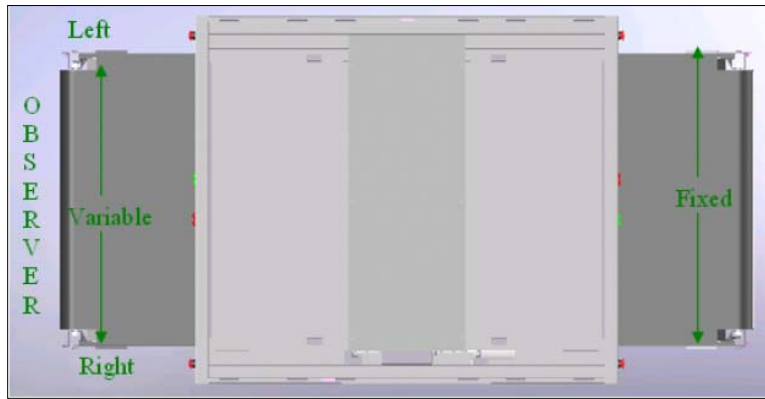


Figure 35: Beginning Position

Measuring Belt Tension

To measure the tension of the conveyor belt, stop the belt. When the belt has stopped completely, lift the belt straight up, as high as you can from the conveyor bed. The distance between the roller bed and the belt at its greatest height as you hold it up, should not exceed 2.0in (not enough tension) and it should not be less than 0.5in (too much tension).

Style 1 Conveyor Bracket

Figure 36 shows a conveyor assembly with a Type 1 bracket. The distance between the edge of the conveyor and the edge of the bracket (as shown in the figure) is known as the “**Reference Distance**.” We use the Reference Distance to determine the optimum tension of the conveyor belt.

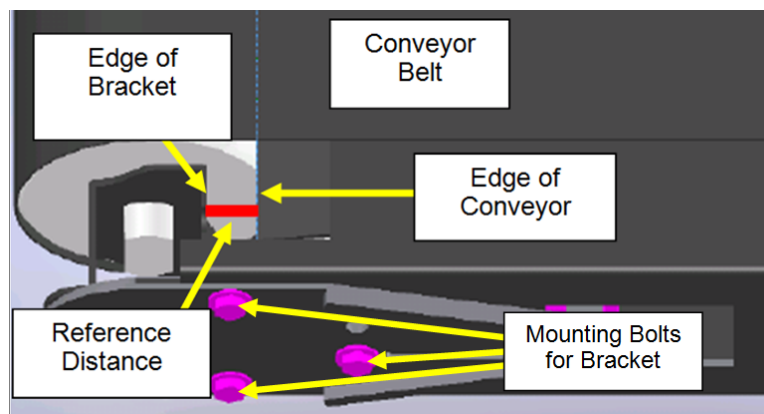


Figure 36: Reference Distance

1. Turn the control panel key to the “OFF” (vertical) position.
2. Unplug the power cord for the XIS 6545 unit.
3. Remove any roller tables or slides attached to the entry or exit end of the conveyor.
4. Remove the “Power and End Roller” conveyor covers.

5. Loosen the mounting bolts on the conveyor bracket and move the bracket so that the Reference Distance is between 0.6in and 1.0in, measured from the edge of the conveyor to the edge of the bracket as shown in Figure 36.
6. Once the desired Reference Distance is achieved, tighten the mounting bolts.

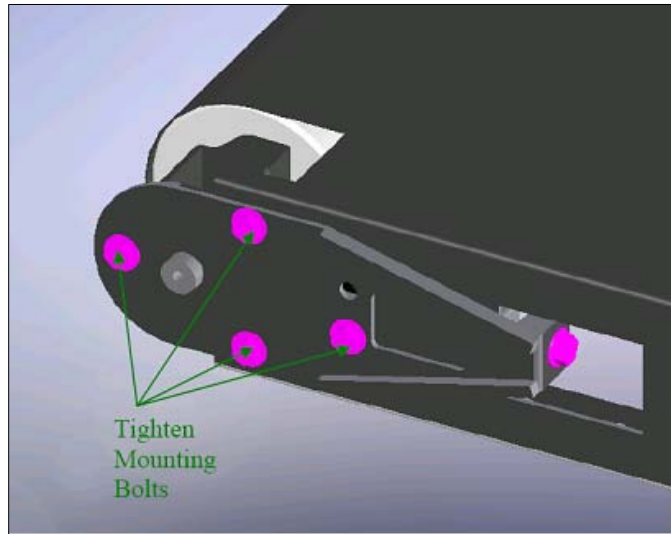


Figure 37: Tighten Mounting Bolts

7. Repeat for the other side of the conveyor assembly (ensuring that the Reference Distance on both sides is the same).
8. Once the desired Reference Distance is achieved, tighten all the mounting bolts of the conveyor brackets.

Once all the mounting bolts have been tightened, turn the Key-switch to “On” and operate the machine so that the upper side of the belt moves towards you. The belt will experience one of three possible displacements. The three possible displacements are

1. The lateral displacement to the right of the conveyor.
2. The lateral displacement to the left of the conveyor.
3. Stable.

Thus, in order to achieve belt alignment, it is necessary to perform the following iterative procedure:

1. Determine the displacement of the belt (right or left), and apply the appropriate solution (descriptions of the solutions are described below).
2. After correction, run the conveyor for approximately 10 minutes, to determine if the displacement still occurs.
3. If the displacement recurs or shifts to the other side, repeat step 1 and 2. If the displacement does not reoccur, operate the conveyor for about 2 hours to confirm stability of the belt.

Lateral Belt Displacement to the Right of the Conveyor

When the machine is operated, the observer will notice the following displacement:

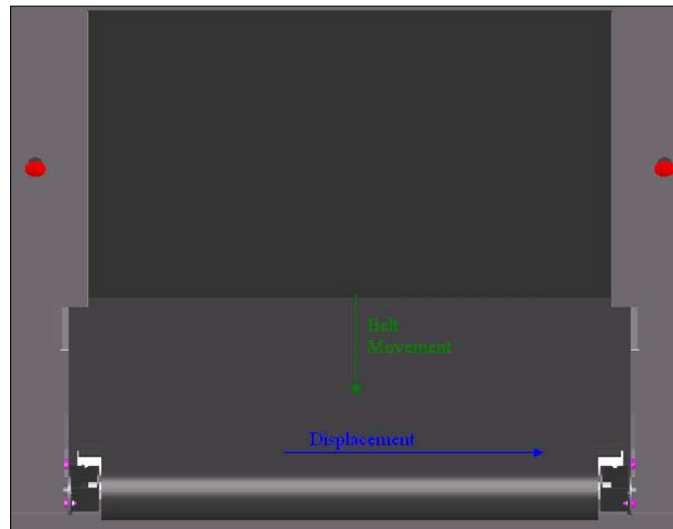


Figure 38: Belt Displacement to the Right

The solution to right-sided displacement is either:

- Rotate the left-side Tension/Tracking bolt counterclockwise, OR:
- Rotate the right-side bolt clockwise.

In both cases, turn the Tension/Tracking bolt approximately a quarter of a turn.

Turning either bolt excessively may cause an increase or decrease in tension on the bracket and possible misalignment of the belt.

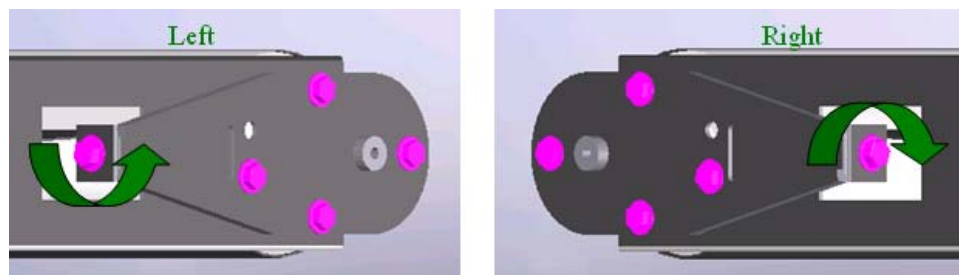


Figure 39: Left Bolt Counterclockwise, Right Bolt Clockwise

Lateral Belt Displacement to the Left

When the machine is operated, the observer will notice the following displacement:

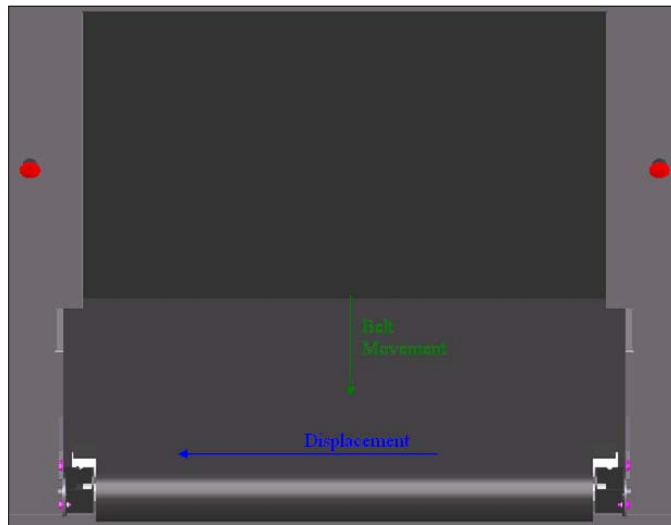


Figure 40: Displacement to the Right

The solution to right-sided displacement is either:

- Rotate the left-side Tension/Tracking bolt clockwise, OR:
- Rotate the right-side bolt counterclockwise.

In both cases, turn the Tension/Tracking bolt approximately a quarter of a turn.

Turning either bolt excessively may cause an increase or decrease in tension on the bracket and possible misalignment of the belt.

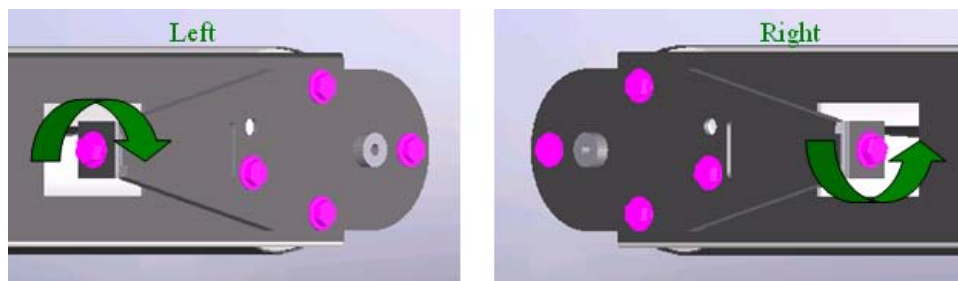


Figure 41: Left Bolt Clockwise, Right Bolt Counterclockwise

Stable

When the machine is operated, the observer will notice the following lack of displacement:

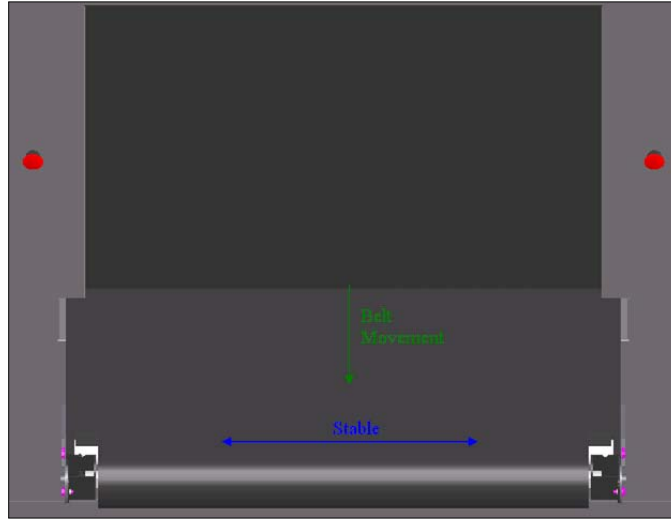


Figure 42: Stable Conveyor Belt

Once stability has been achieved, tighten the bracket bolts and confirm stability by running the conveyor for at least two hours.

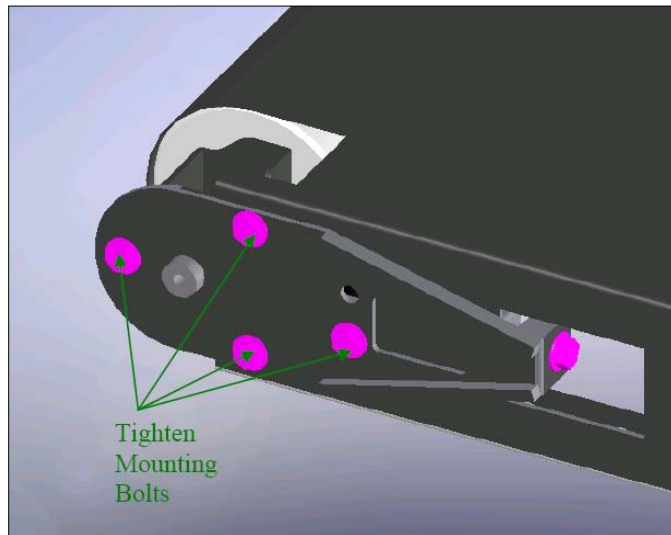


Figure 43: Tighten Mounting Bolts

Style 2 Conveyor Bracket

Figure 36 shows a conveyor assembly with a Type 2 bracket. The distance between the edge of the conveyor and the edge of the bracket (as shown in the figure below) is known as the “**Reference Distance**.” We use the Reference Distance to determine the optimum tension of the conveyor belt.

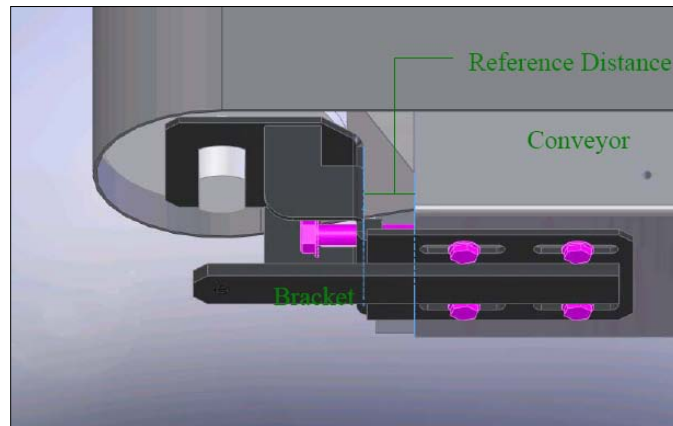


Figure 44: Style 2 Bracket Reference Distance

1. Turn the control panel key to the “OFF” (vertical) position.
2. Unplug the power cord for the XIS 6545 unit.
3. Remove any roller tables or slides attached to the entry or exit end of the conveyor.
4. Remove the “Power and End Roller” conveyor covers.
5. Loosen the mounting bolts on the conveyor bracket and move the bracket so that the Reference Distance is between 0.6in and 1.0in, measured from the edge of the conveyor to the edge of the bracket as shown in Figure 36.
6. Once the desired Reference Distance is achieved, tighten the mounting bolts.

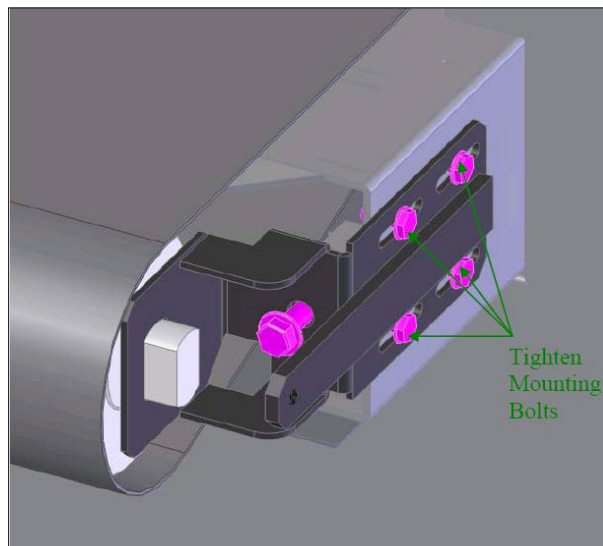


Figure 45: Style 2 Mounting Bolts

7. Repeat for the other side of the conveyor assembly (ensuring that the Reference Distance on both sides is the same).
8. Once the desired Reference Distance is achieved, tighten all the mounting bolts of the conveyor brackets.

Once all the mounting bolts have been tightened, turn the Key-switch to “On” and operate the machine so that the upper side of the belt moves towards you. The belt will experience one of three possible displacements. The three possible displacements are:

1. The lateral displacement to the right of the conveyor.
2. The lateral displacement to the left of the conveyor.
3. Stable.

Thus, in order to achieve belt alignment, it is necessary to perform the following iterative procedure:

1. Determine the displacement of the belt (right or left), and apply the appropriate solution (descriptions of the solutions are described below).
2. After correction, run the conveyor for approximately 10 minutes, to determine if the displacement still occurs.
3. If the displacement recurs or shifts to the other side, repeat step 1 and 2. If the displacement does not reoccur, operate the conveyor for about 2 hours to confirm stability of the belt.

Lateral Displacement to the Right of the Conveyor

When the machine is operated, the observer will notice the following displacement:

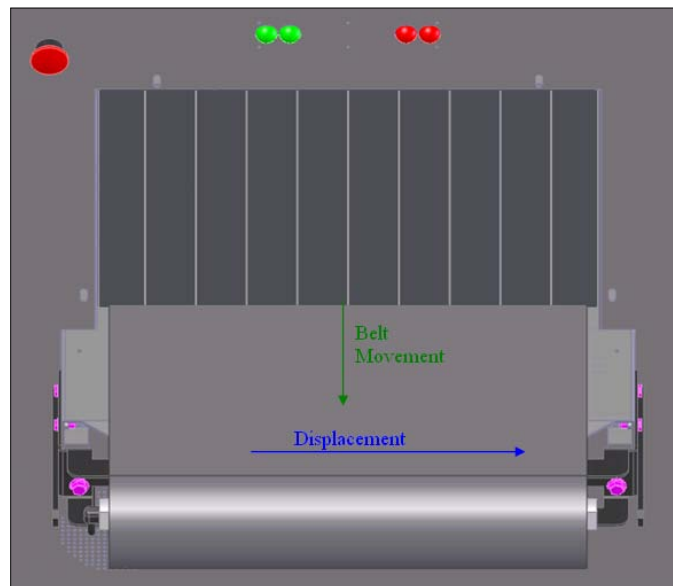


Figure 46: Belt Displacement to the Right

The solution to right-sided displacement is either:

- Rotate the left-side Tension/Tracking bolt counterclockwise, OR:

- Rotate the right-side bolt clockwise.

In both cases, turn the Tension/Tracking bolt approximately a quarter of a turn.

Turning either bolt excessively may cause an increase or decrease in tension on the bracket and possible misalignment of the belt.

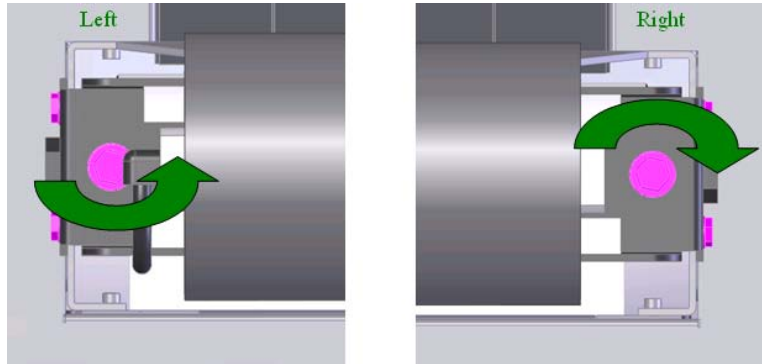


Figure 47: Left Bolt Counterclockwise, Right Bolt Clockwise

Lateral Displacement to the Left of the Conveyor

When the machine is operated, the observer will notice the following displacement:

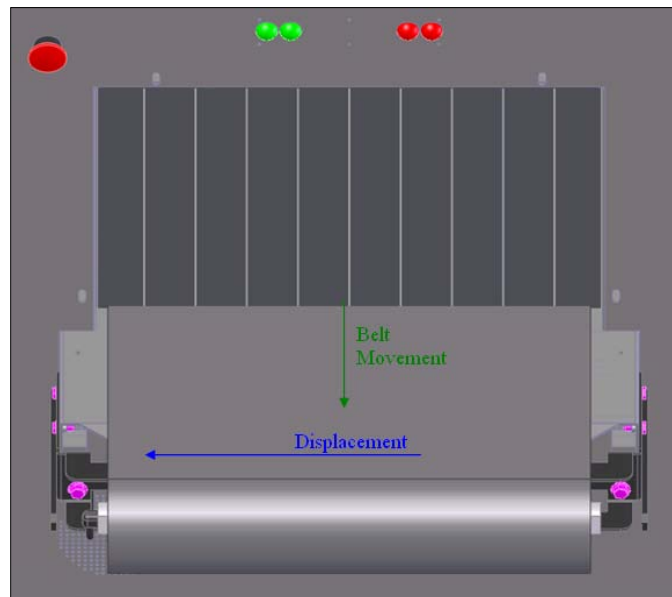


Figure 48: Displacement to the Left

The solution to left-sided displacement is either:

- Rotate the left-side Tension/Tracking bolt clockwise, OR:
- Rotate the right-side bolt counterclockwise.

In both cases, turn the Tension/Tracking bolt approximately a quarter of a turn.

Turning either bolt excessively may cause an increase or decrease in tension on the bracket and possible misalignment of the belt.

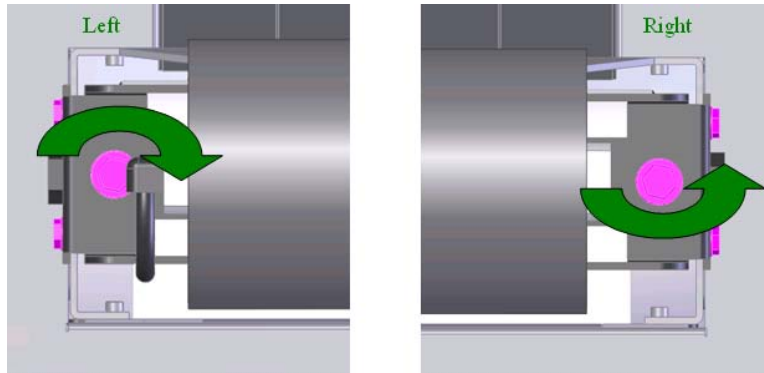


Figure 49: Left Bolt Clockwise, Right Bolt Counterclockwise

Stable

When the machine is operated, the observer will notice the following displacement:

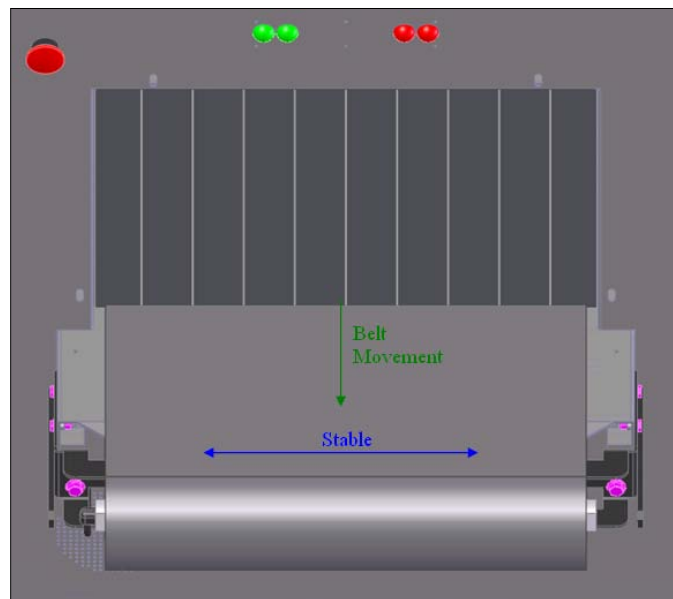


Figure 50: Stable

Once stability has been achieved, tighten the bracket bolts and confirm stability by running the conveyor for at least two hours.

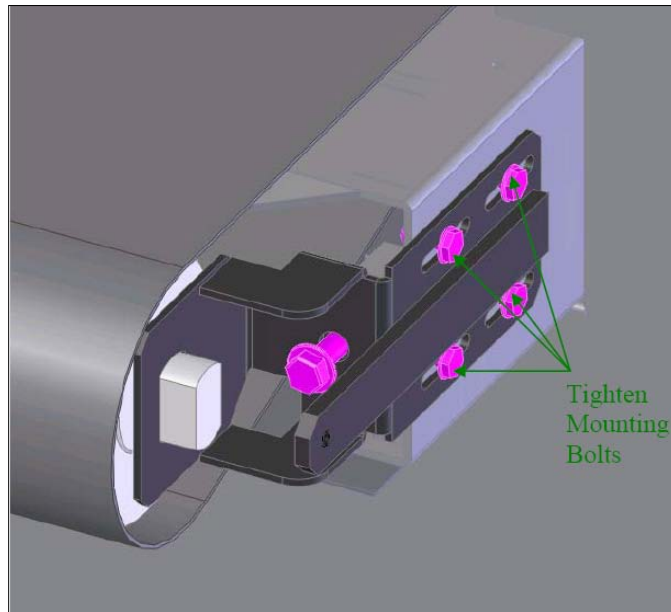


Figure 51: Tighten Mounting Bolts

Style 3 Conveyor Bracket

Figure 36 shows a conveyor assembly with a Type 3 bracket. The distance between the edge of the conveyor and the edge of the bracket (as shown in the figure below) is known as the “**Reference Distance**.” We use the Reference Distance to determine the optimum tension of the conveyor belt.

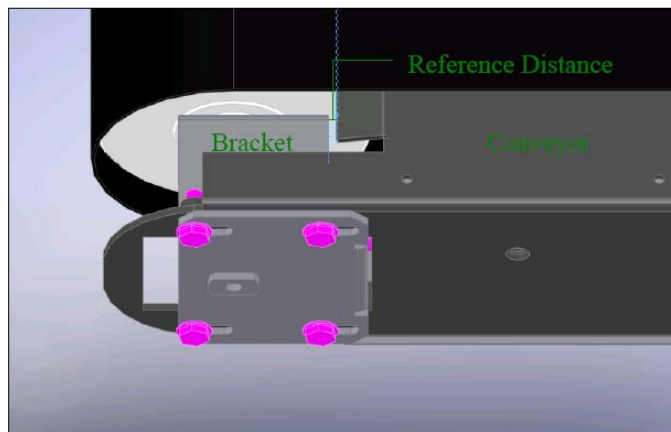


Figure 52: Style 3 Bracket Reference Distance

1. Turn the control panel key to the “OFF” (vertical) position.
2. Unplug the power cord for the XIS 6545 unit.
3. Remove any roller tables or slides attached to the entry or exit end of the conveyor.
4. Remove the “Power and End Roller” conveyor covers.

5. Loosen the mounting bolts on the conveyor bracket and move the bracket so that the Reference Distance is between 0.6in and 1.0in, measured from the edge of the conveyor to the edge of the bracket as shown in Figure 36.
6. Once the desired Reference Distance is achieved, tighten the mounting bolts.

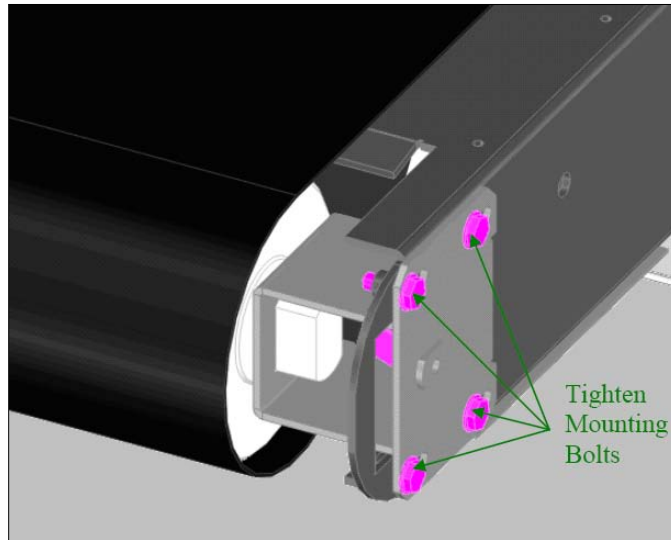


Figure 53: Style 3 Mounting Bolts

7. Repeat for the other side of the conveyor assembly (ensuring that the Reference Distance on both sides is the same).
8. Once the desired Reference Distance is achieved, tighten all the mounting bolts of the conveyor brackets.

Once all the mounting bolts have been tightened, turn the Key-switch to “On” and operate the machine so that the upper side of the belt moves towards you. The belt will experience one of three possible displacements. The three possible displacements are:

1. The lateral displacement to the right of the conveyor.
2. The lateral displacement to the left of the conveyor.
3. Stable.

Thus, in order to achieve belt alignment, it is necessary to perform the following iterative procedure:

1. Determine the displacement of the belt (right or left), and apply the appropriate solution (descriptions of the solutions are described below).
2. After correction, run the conveyor for approximately 10 minutes, to determine if the displacement still occurs.
3. If the displacement recurs or shifts to the other side, repeat step 1 and 2. If the displacement does not reoccur, operate the conveyor for about 2 hours to confirm stability of the belt.

The Lateral Displacement to the Right of the Conveyor

When the machine is operated, the observer will notice the following displacement:

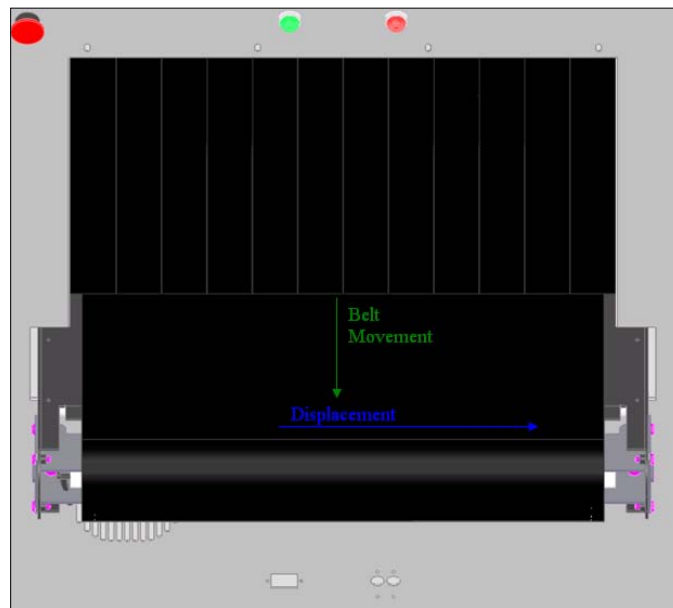


Figure 54: Belt Displacement to the Right

The solution to right-sided displacement is either:

- Rotate the left-side Tension/Tracking bolt counterclockwise, OR:
- Rotate the right-side bolt clockwise.

In both cases, turn the Tension/Tracking bolt approximately a quarter of a turn.

Turning either bolt excessively may cause an increase or decrease in tension on the bracket and possible misalignment of the belt.

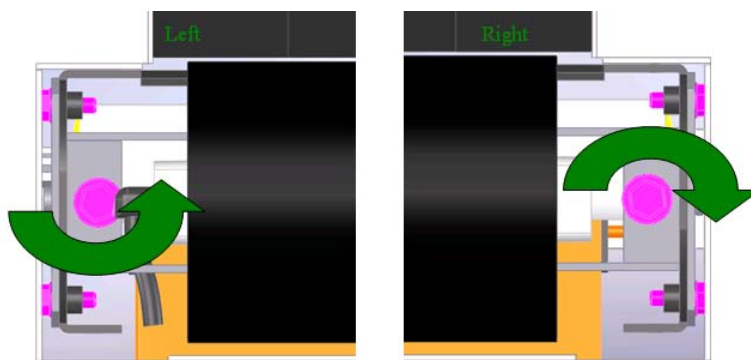


Figure 55: Left Bolt Counterclockwise, Right Bolt Clockwise

Lateral Displacement to the Left of the Conveyor

When the machine is operated, the observer will notice the following displacement:

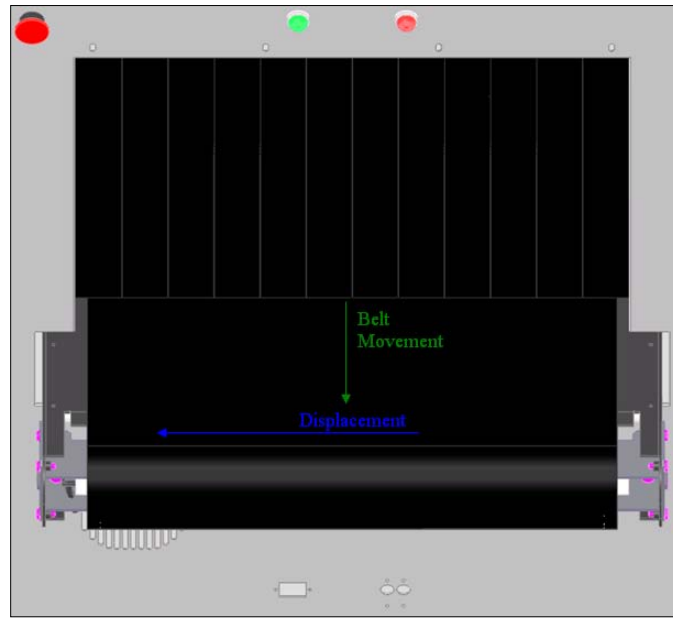


Figure 56: Displacement to the Left

The solution to left-sided displacement is either:

- Rotate the left-side Tension/Tracking bolt clockwise, OR
- Rotate the right-side bolt counterclockwise.

In both cases, turn the Tension/Tracking bolt approximately a quarter of a turn.

Turning either bolt excessively may cause an increase or decrease in tension on the bracket and possible misalignment of the belt.

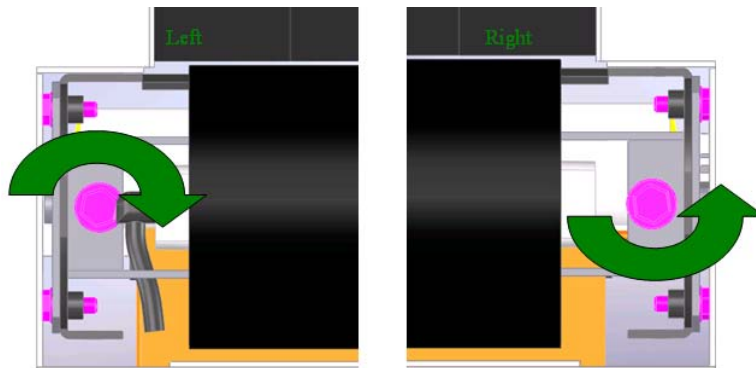


Figure 57: Left Bolt Clockwise, Right Bolt Counterclockwise

Stable

When the machine is operated, the observer will notice the following displacement:

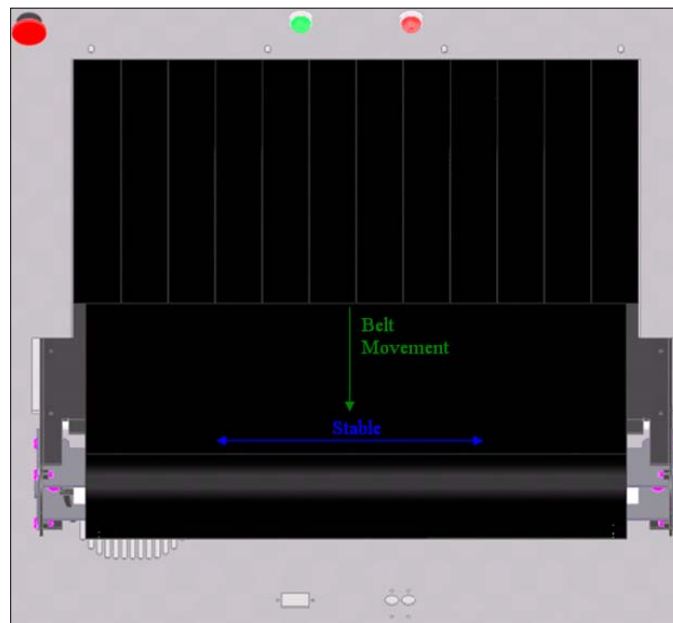


Figure 58: Stable

Once stability has been achieved, tighten the bracket bolts and confirm stability by running the conveyor for at least two hours.

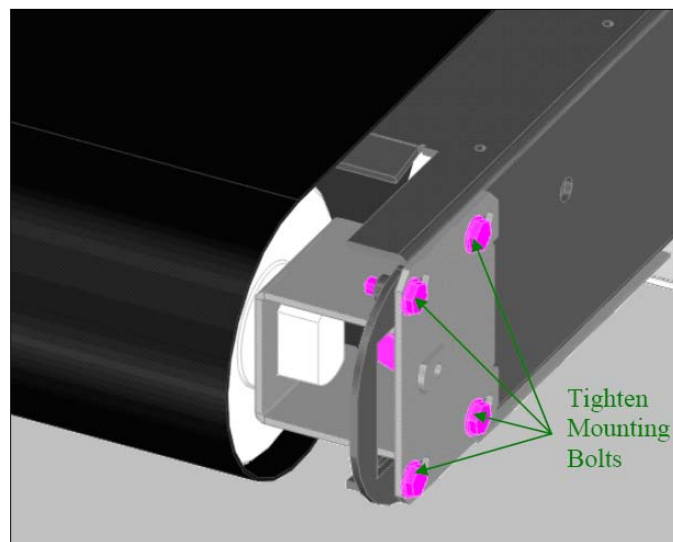


Figure 59: Tighten Mounting Bolts

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X-ray Collimation

WARNING!

Follow proper radiation and electrical safety safeguards while performing any inspection or maintenance procedure when the system is in the "powered" state

Collimation and Alignment: Definitions

There are three ways to "collimate" or "adjust" components of an XIS unit to optimize image quality. To begin with, "collimation" means shaping a beam of light or other energy wavelength by narrowing or widening an aperture (slit or opening) through which the beam passes, and thus focusing the beam on a specific spot or area.

In the case of security X-ray machines such as the XIS, collimation involved widening or narrowing two collimation bars to widen or narrow the x-ray beam so that it falls on the correct area of the LXDA boards on the side of the tunnel opposite the x-ray generator.

"Aligning" an XIS machine means moving either the entire collimation assembly to one side or another, or moving the LXDA boards to one side or another, again so that the x-ray beam balls on the optimal location to create an image of a scanned object.

Both the width ("gap") and position of the collimation bars on XIS machines are set and locked at the factory. In theory, then, there should be no need to adjust either of these in the field. However, if shipping has caused changes in these settings, or changes in the rest of the machine that require changes in gap and/or position, then it may be necessary to readjust both settings.

Most likely, however, the only alignment that will need to be made in the field is in the position of the LXDA boards (as opposed to adjusting the collimation bars). Again, the position of the LXDA boards is set at the factory, but if shipping or other factors have affected collimation (alignment of LXDA boards with the generator and collimator), then adjusting the position of LXDA boards will be the preferred method of re-collimating the XIS.

All three procedures (gap, position and LXDA board alignment) will be described below, even though LXDA board alignment will most likely be the only adjustment needed, and even then only if the shipping process has changed the collimation of the machine.

Purpose of Collimation

The objective of proper collimation is to improve the X-ray image. When all diode responses are similar to one another, the result is a smoother, more-defined image. The best results can only occur if there are no bad diodes and the crystals are accurately placed on the detector boards.

The best responses for both HE (high-energy) diodes and LE (low energy) diodes are to have the maximum HE value on the diode plot graph be about 3000 (the reason for this is explained below), with a minimum of 800 (if any individual board gets less than 800 on the x axis of the diode plot, that board should be replaced). There is no one setting that

will accomplish this for every machine, and therefore it is necessary to perform the following collimation procedures to ensure that every machine has the optimum HE and LE values for optimum scanning efficiency.

Adjusting Gap and Position

There are two collimator bars in every XIS machine that confine the X-ray beam to a narrow fan. The width of the gap between the two collimator bars (the “gap”) and the position (the “position”) of the collimator bar assembly can be adjusted (although again these are usually set and locked at the factory).

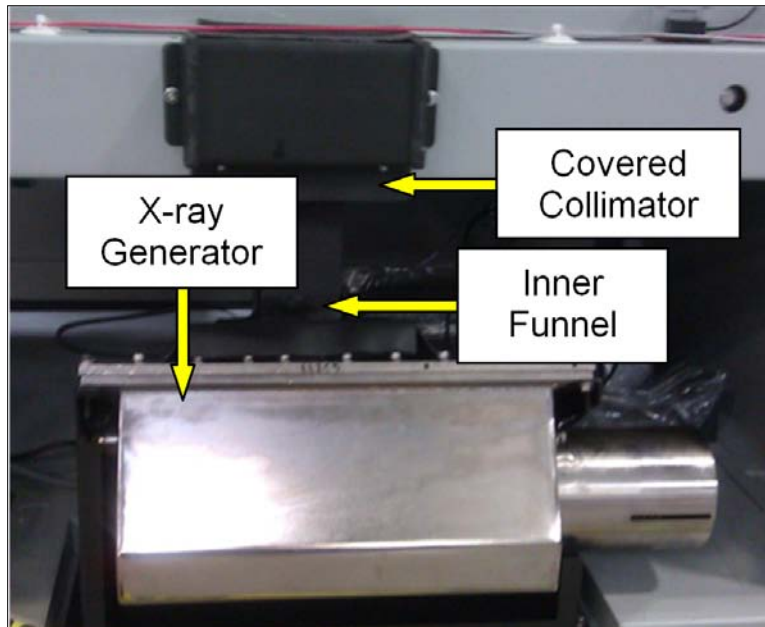


Figure 60: Generator, Inner Funnel, Collimator

The position adjustment screw is on the right side of the uncovered collimator as shown in Figure 61 (both a photo and a drawing of the collimator assembly) and Figure 62.

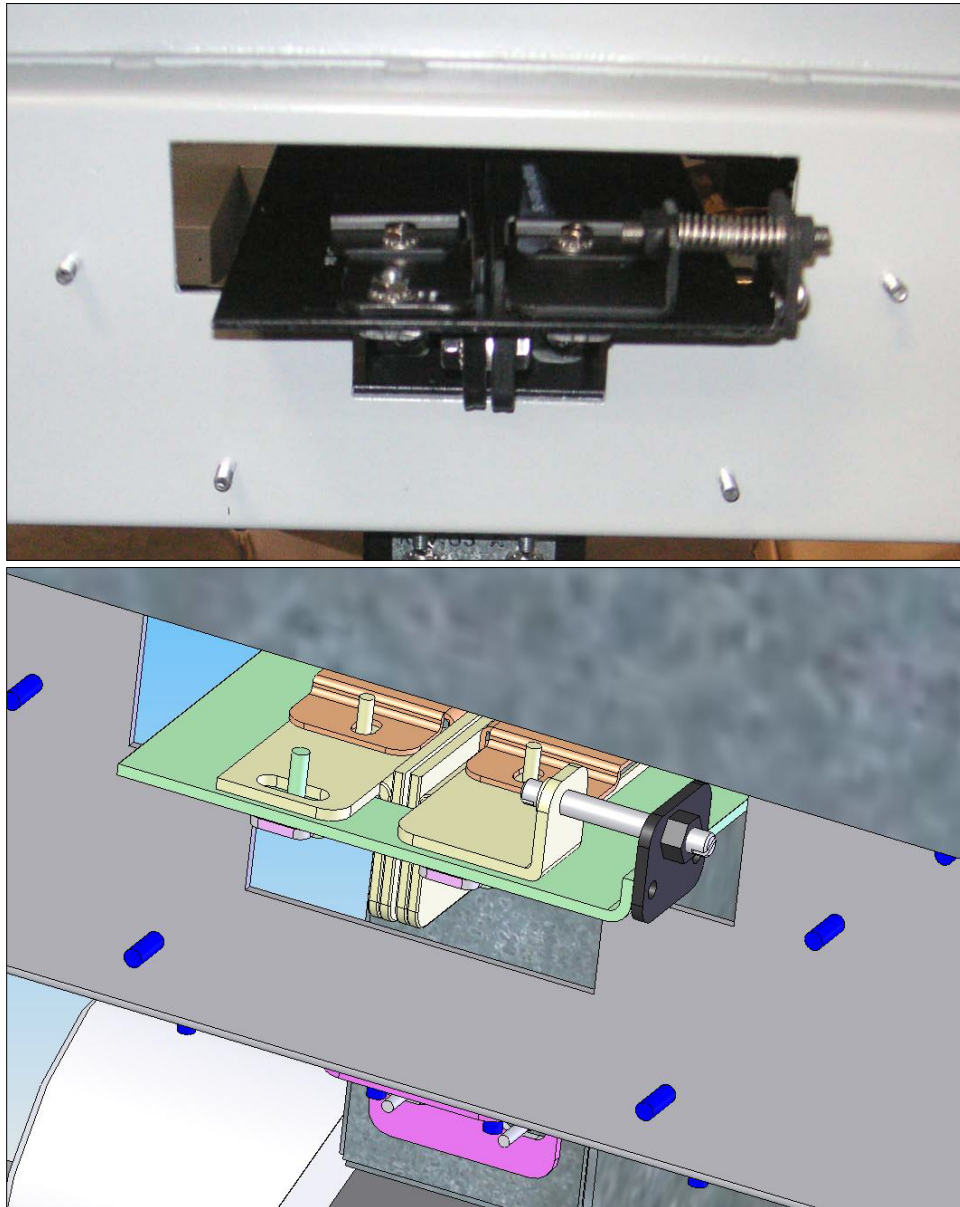


Figure 61: Collimator Bars and Gap Adjustment Screw

Turning the position adjustment screw either pushes the collimator assembly to the left, or pulls it to the right, until the perfect alignment between generator and LXDA boards is achieved. Use Diode Plot (see “Diode Plot” on page 92 **Error! Bookmark not defined.**) in conjunction with the position adjustment screw to determine when the optimal position has been achieved.

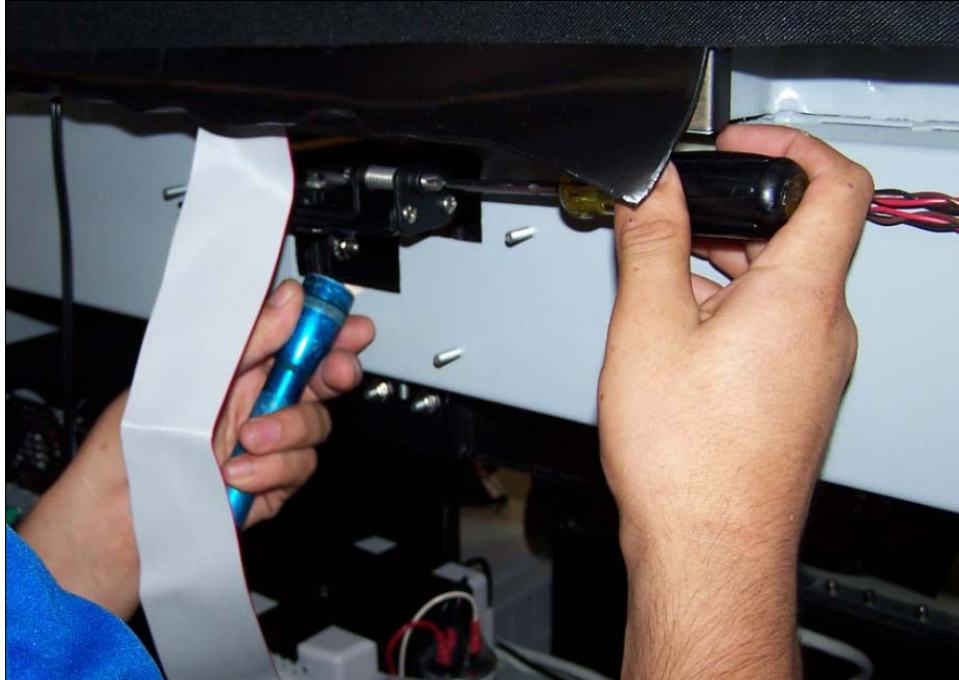


Figure 62: Adjusting Gap

Adjusting the gap increases or decreases the distance between two collimator bars themselves. The gap is adjusted and fixed in place at the factory. In order to fix it properly, thin washers (about 0.7 mm thick) are placed on one side of the collimator to form a gap of 1.4 mm, and three washers with a gap of 2.1 mm are placed on the other side of the collimator. The gap is tightened and secured in order to contain the amount of x-ray that travels through the tunnel.

In order to make adjustments for the position of the collimator, the system monitor must display the diode array plot with the X-ray on. The following section describes the step-by-step collimation procedure.

Collimator Bar Adjustments

1. Begin by turning "ON" the XIS system. The XIS will boot up to the login screen. Insert your password and ID. See "XIS Startup / Shutdown Procedures" on page 43.
2. When "SYSTEM READY" appears at the bottom of the screen, press "Forward" for the motor to run in the forward direction, and a few seconds later press "STOP" for the motor to stop. At this time you can enter your commands for the diode plot. See "Diode Plot" on page 92.
3. Select "Menu" by pressing on the appropriate button.
4. Select "Diode PLOT" to view all the diodes. The plot is displayed on the left monitor.
5. Select "X-Ray ON" to turn the x-ray generator ON and to view the diode plot with x-rays on.
6. Adjust the position adjustment screw, watching the diode plot graph. The values will rise to a certain point and then start to descend. As soon as the values begin to descend, back off until the values are again at their highest level.

7. Press “1” to turn x-ray “OFF.”
8. Press “9” to Exit.
9. Press “7” to Exit from the menu Program.
10. Press “FORWARD” to turn the belt in the forward position.
11. Place a test object on the belt, and verify if the signal is adequate and the diodes are collimated.

LXDA Board Adjustment

The collimation of the LXDA boards requires removal of the top or side panel (depending on whether it is a down-shooter or side shooter) from the machine, but it does NOT require removing the LXDA board cover. This cover is leaded, and should always remain securely positioned on the LXDA boards.

WARNING!

Follow instructions. The LXDA cover should always be securely positioned on the LXDA before turning x-rays “ON.”

The adjustment screw for the LXDA boards is accessible from outside the LXDA, without having to remove the LXDA cover, as shown in Figure 63.



Figure 63: LXDA Board Adjustment Screw

1. Begin by turning “ON” the XIS system. The XIS will boot up to the login screen. Insert your password and ID. See “XIS Startup / Shutdown Procedures” on page 43.
2. When "SYSTEM READY" appears at the bottom of the screen, press “Forward” for the motor to run in the forward direction, and a few seconds later press “STOP” for the motor to stop. At this time you can enter your commands for the diode plot.
3. Select the “Menu” by pressing on the appropriate button.
4. Select “Diode PLOT” to view all the diodes. The plot is displayed on the left monitor.
5. Select “X-Ray ON” to turn the x-ray generator ON and to view the diode plot with x-rays.
6. Adjust each LXDA board position by turning the side screw to one side gradually as shown in Figure 63, watching the diode plot graph. The values of the diodes for this particular board will rise to a certain point and then start to descend. As soon as the values begin to descend, back off until the values are again at their highest level. Repeat the procedure for all the other boards until you achieve the highest HE and LE values on that diode plot graph.
7. Press “1” to turn x-ray “OFF”
8. Press “9” to Exit
9. Press “7” to Exit from the menu Program
10. Press “FORWARD” to turn the belt in the forward position. Place a test object and verify if the signal is adequate and the diodes are collimated.

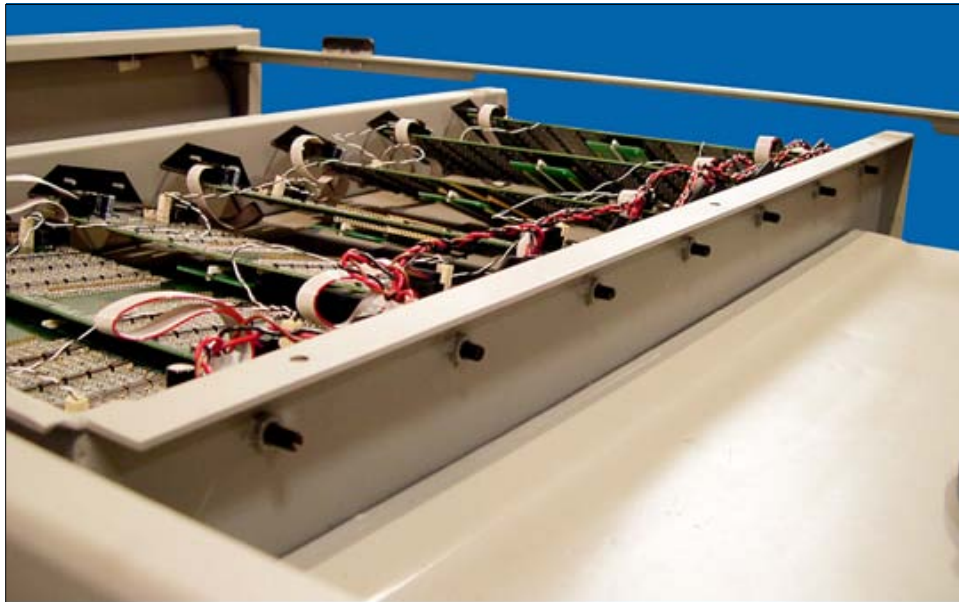


Figure 64: Collimation screws for individual LXDA Boards.

Removing and Replacing LXDA Boards

NOTE: When Removing LXDA boards due to bad diodes or bad boards, extra precautions must be taken to be sure other components are not damaged during the process.

1. Determine which diode board needs replacement by studying the diode plot graph, noting where the line dips or spikes or has an overly large gap.
2. Turn X-rays "OFF."
3. Open LXDA Cover and locate bad diode board. (Use gloves to handle LXDA boards)
4. Unscrew the bracket from one side, and gently remove the LXDA board.
5. Replace with a new LXDA board. Gently screw back the bracket. At this time the LXDA board must be collimated to give best image results.
6. Close LXDA cover and tighten all the screws.
7. Follow LXDA Board adjustment procedure.
8. Observe to see whether the problem has been resolved.

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Diagnostics

The following list of error messages covers most of the Astrophysics line of XIS machines.

	ERROR MESSAGE	COMMENTS / RECOMMENDATION
1.	XRAY KV Fault	Primary View x-ray generator KV feedback fault. Call Astrophysics Service for assistance.
2.	XRAY mA Fault	Primary View x-ray generator mA feedback fault. Call Astrophysics Service for assistance.
3.	Xray Controller Power Supply Fault.	X-ray controller for primary view has malfunctioned. Call Astrophysics Service for assistance
4.	+5VDC PS1's malfunction.	+5VDC Power supply#1 (primary view) has malfunctioned. Call Astrophysics Service for assistance
5.	-5VDC PS1's malfunction.	-5VDC Power supply#1 (primary view) has malfunctioned. Call Astrophysics Service for assistance
6.	+5VDC PS2's malfunction.	+5VDC Power supply#2 (primary view) has malfunctioned. Call Astrophysics Service for assistance
7.	-5VDC PS2's malfunction.	-5VDC Power supply#2 (primary view) has malfunctioned. Call Astrophysics Service for assistance
8.	System 12VDC Power supply's malfunction.	+12VDC Power supply#2 (primary view) has malfunctioned. Call Astrophysics Service for assistance
9.	UPS Fault	Uninterruptible power supply has malfunctioned. Call Astrophysics Service for assistance
10.	-5VDC PS1DV's malfunction.	+5VDC Power supply#1 (secondary view) has malfunctioned. Call Astrophysics Service for assistance
11.	-5VDC PS2DV's malfunction.	-5VDC Power supply#1 (secondary view) has malfunctioned. Call Astrophysics Service for assistance
12.	+5VDC PS1DV's malfunction.	+5VDC Power supply#2 (secondary view) has malfunctioned. Call Astrophysics Service for assistance
13.	+5VDC PS2DV's malfunction.	-5VDC Power supply#2 (secondary view) has malfunctioned. Call Astrophysics Service for assistance
14.	Xray Controller DV Power Supply Fault.	X-ray controller for secondary view has malfunctioned. Call Astrophysics Service for assistance
15.	XRAY DV KV Fault	Secondary View x-ray generator KV feedback fault. Call Astrophysics Service for assistance.
16.	XRAY DV mA Fault	Secondary View x-ray generator mA feedback fault. Call Astrophysics Service for assistance.
17.	E-Stop is pressed please release to continue.	Check and reset all emergency stop switches.
18.	Footmat Detected	Step on foot-mat to operate system
19.	Interlock is OPENED.	Close panel.
20.	Temperature Extreme Detected.	Call Astrophysics Service for assistance
21.	Software Error	Call Astrophysics Service for assistance

Diode Plot

The Diode Plot Program (DPP) is a standalone utility program that monitors the real-time output from the Linear X-ray Detector Assembly (LXDA). LXDA output is crucial in the creating x-ray images that are displayed on the screen. X-rays from the x-ray generator are first projected through the inspection tunnel and then through to the LXDA. X-ray images are created when items entering the inspection tunnel attenuate (i.e. lowers) the x-ray signal.

Following are examples of Diode Plot readouts, including with Diode Plot On and Off, and with "History," meaning it shows previous Diode Plot results on the graph.

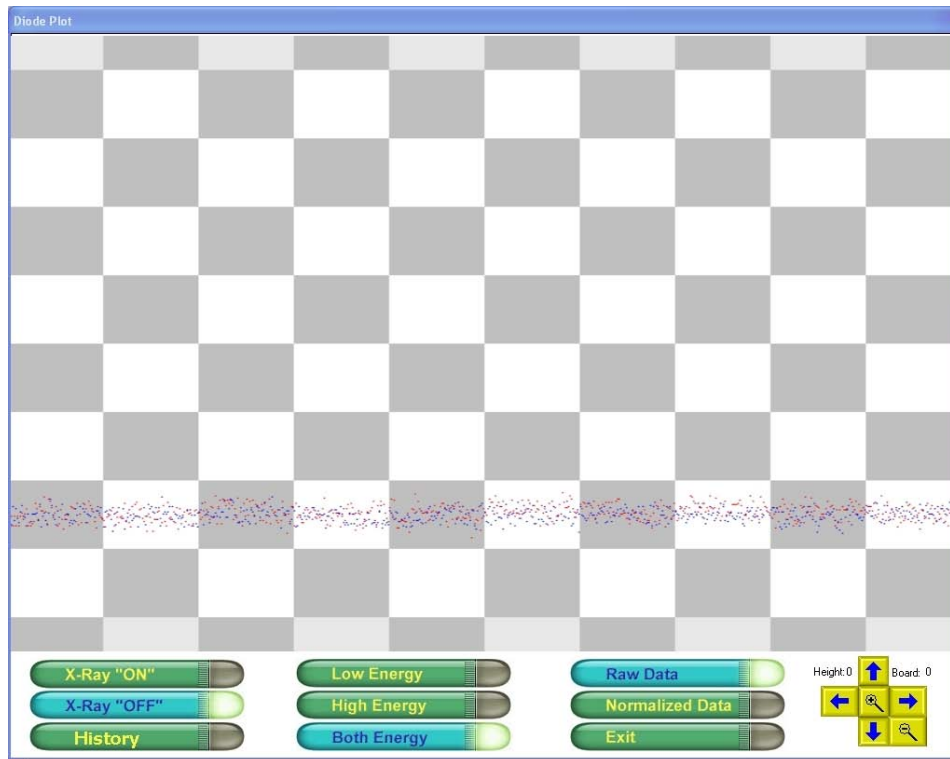


Figure 65: 320kV Diode Plot, X-ray Off, History Off



Figure 66: 320kV Diode Plot, X-ray on, History Off

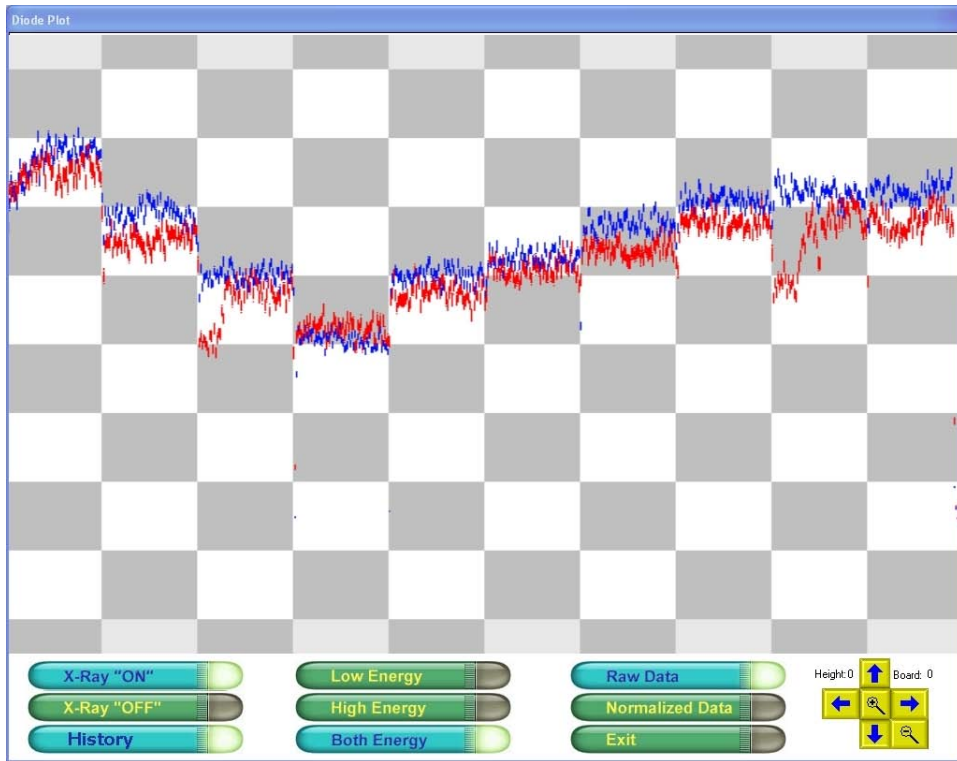


Figure 67: 320kV Diode Plot with History

Instead of displaying x-ray images, the Diode Plot Program (DPP) displays a graph of blue and red dots. The red dots represents output from the “high-energy” (i.e. high frequency spectra output) x-ray detectors and the blue dots represents the output from the “low-energy” detector x-ray detectors. The Y-AXIS of the graph represents signal strength. The detectors are mounted on circuit boards. Each board has 64 diode sets. Each set consists of a “stacked” high energy and low energy diode set. The high energy diode is physically on top of the low energy diode. On the graph, each diode set displayed as a set of one red and one blue dot. The high energy, red dot, is shown next to (i.e. higher than) its corresponding low energy diode, blue dot.

The XIS1818, for example, has 20 boards with 64 high/low energy diode sets (20 x 128=2560 total diodes). The DPP is a powerful diagnostic tool. With it you can inspect and rapidly verify that:

- The x-ray generator is properly working.
- If the x-ray generator is properly working, that indicates that the x-ray machine is properly powered, the DC power supplies are working, the PLC is working properly, the x-ray controller is working properly, the x-ray tube is powered and working, and that the x-ray generator is powered and ON.
- It also indirectly indicates that the x-ray tube oil cooler is powered and properly working.
- It also indirectly indicates that all Emergency Stop switches are “clear” and that all safety inter-lock switches are closed (i.e. all panels are closed and fastened).
- All 20 LXDA boards are working.
- If they are all working, that indicates that all necessary +5, -5, & +12VDC power supplies are properly working, connected and powered up.
- This also indirectly indicates that the computer is properly working and that the DAS (Data Acquisition System) is properly powered, connected, and working.
- All 20 LXDA boards are properly aligned.
- If they are aligned, vertical lines on the screen will appear as a contiguous, straight vertical line.
- All LXDA boards are not blocked and do not overlap.
- That all 20 LXDA boards are generating proper output.
- If they are generating proper output, they DPP will display a characteristic graph that shows a “saddle” (low point) in the middle.

Diode Plot Program – Test Instructions

	Steps	Expected results	PASS?
1.	Start Diode Plot Program (DPP)	The DPP starts up.	
2.	Verify that the DPP started correctly.	The DPP Screen shows the proper format with 20 vertical columns.	
	Inspect the Diode Plot Graph (DPG) with X-rays OFF	The DPG display a characteristic blue-red dot spread (not perfectly linear) at 0.	
	Turn the X-rays ON.	The DPG rises up in steps and stays up. (i.e. it does not rise up and drop down immediately.)	
	Inspect the DPG.	The DPG displays a characteristic blue-red dot spread. The red dots are typically above the blue dots. The dots do NOT show signal saturation. (they do not cluster at the top)	

Diagnostics Screen

The Diagnostics Screen is a diagnostics tool available on your PC monitor, via the AACP.

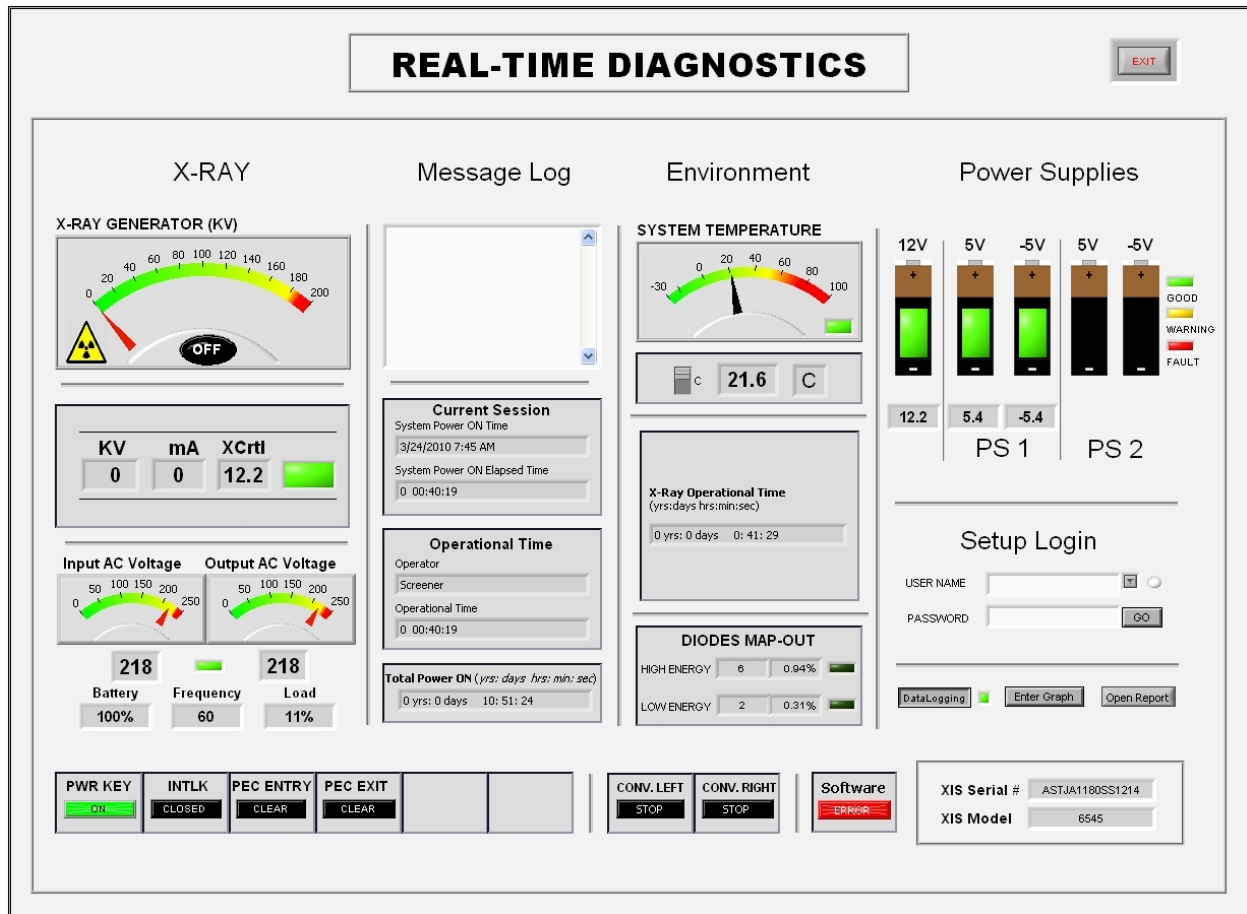


Figure 68: Diagnostics Screen

To access this screen:

- Press the [DIAG] button to activate and display the Real-Time Diagnostic Screen.
- Press the [DIAG] button again to return to the regular x-ray imaging screen.

Error Log – Error Message List

The list below itemizes the various types of error messages that may be displayed in the Diagnostic Screen's ERROR LOG. For a full list of x-ray generator error codes, refer to the Gulmay CP 12 Bit RS232 PCB Version 5.0 Technical Manual.

	ERROR LOG MESSAGE	COMMENTS & DISCUSSION
1	X-RAY Generator's/Controller's malfunction. (KV/mA is under min or over max)	<p>DESCRIPTION</p> <p>X-ray generator has malfunctioned and NO x-rays are being produced. XIS may show a "scrolling" black screen.</p> <p>RECOMMENDATION</p> <p>Contact Customer Support for assistance.</p> <p>Report error message.</p> <p>Request assistance.</p>
2	System 12VDC Power Supply's malfunction.	<p>DESCRIPTION</p> <p>The 12VDC power supply has failed. The key-switch, warning lights, and DAS board will fail to operate. The XIS will not display proper x-ray images.</p> <p>RECOMMENDATION</p> <p>Contact Customer Support for assistance.</p> <p>Report error message.</p> <p>Request assistance.</p>
3	+5VDC PS1's malfunction.	<p>DESCRIPTION</p> <p>The +5VDC power supply (first set) has failed. The x-ray detector assembly will fail to operate. The XIS will not display proper x-ray images</p> <p>RECOMMENDATION</p> <p>Contact Customer Support for assistance.</p> <p>Report error message.</p> <p>Request assistance.</p>

	ERROR LOG MESSAGE	COMMENTS & DISCUSSION
4	-5VDC PS1's malfunction.	<p>DESCRIPTION</p> <p>The -5VDC power supply (first set) has failed. The x-ray detector assembly will fail to operate. The XIS will not display x-proper ray images</p> <p>RECOMMENDATION</p> <p>Contact Customer Support for assistance.</p> <p>Report error message.</p> <p>Request assistance.</p>
5	+5VDC PS2's malfunction.	<p>DESCRIPTION</p> <p>The -5VDC power supply (second set) has failed. The x-ray detector assembly will fail to operate. The XIS will not display x-proper ray images</p> <p>RECOMMENDATION</p> <p>Contact Customer Support for assistance.</p> <p>Report error message.</p> <p>Request assistance.</p>
6	-5VDC PS2's malfunction.	<p>DESCRIPTION</p> <p>The -5VDC power supply is not operational. The x-ray detector assembly will fail to operate. The XIS will not display x-ray images</p> <p>RECOMMENDATION</p> <p>Contact Customer Support for assistance.</p> <p>Report error message.</p> <p>Request assistance.</p>
7	No System malfunction has been detected.	<p>DESCRIPTION</p> <p>The XIS is operating normally.</p> <p>RECOMMENDATION</p> <p>Continue using XIS.</p>

REPUBLICA



MOLDOVA

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AUTORIZAȚIA RADIOLOGICĂ

Seria A

Nr. 1583

Denumirea, forma juridică de
organizare, adresa juridică a
titularului

Societatea cu Răspundere Limitată
"MEDIA SECURITY"
MD-2005, mun. Chișinău, str. Colina Pușkin, 4

Codul fiscal/Codul IDNO

1006600023985

Genul de activitate nucleară sau
radiologică pentru care se eliberează

Importul/exportul și furnizarea
surselor generatoare de radiații ionizante

Limitele de activități și condițiile

Importul/exportul și furnizarea instalațiilor roentgen
pentru scanarea bagajelor de la producătorul: "VMI
"Security" Ltd", "Astrophysics Inc" și modelele :
XIS-6040-6634, X-Ray XIS-6040-6635, X-Ray, XIS-
6040-6636, X-Ray, XIS-6040-6637, X-Ray, XIS-6040-
6638, X-Ray; VMI SPECTRUM Scies X-Ray Scan-
6040 C, NR. 26.21.003610503710100101; VMI
SPECTRUM Series X-Ray Scan- 6040 C. nr. P VMI
19818 cu prezența certificatului de conformitate, eliberat
de un organism notificat și publicat în Jurnalul Oficial al
Comunității Europene

Prenumele, numele persoanei
responsabile de radioprotecție

Victor Găină

Numărul permisului de exercitare

Data emiterii

05.11.2025

Data expirării

05.11.2030

**Conducător,
inspector principal de stat
în domeniul activităților nucleare și radiologice**

Artur HURMUZACHE

(semnătura)



Anexă

la autorizația radiologică

Seria A

Nr. 1583

Titular al autorizației radiologice:

Societatea cu Răspundere Limitată "MEDIA SECURITY"
MD-2005, mun. Chișinău, str. Colina Pușkin, 4
De facto: MD-2001, mun. Chișinău, bd. Dimitrie Cantemir, 5/4

Limite de activități și condiții:

Importul/exportul și furnizarea instalațiilor roentgen pentru scanarea bagajelor de la producătorul: "VMI, Security" " Ltd", "Astrophysics Inc" și modelele : " XIS-6040-6634,X-Ray XIS-6040-6635, X-Ray,XIS-6040-6636,X-Ray, XIS-6040-6637, X-Ray, XIS-6040-6638,X-Ray; VMI SPECTRUM Scies X-Ray Scan- 6040 C,NR. 26.21.003610503710100101;VMI SPECTRUM Series X-Ray Scan- 6040 C. nr. P VMI 19818 cu respectarea prevederilor legislației în vigoare din domeniul radioprotecției și securității radiologice. Respectarea prevederilor art. 9 și art. 27 al Legii nr. 132 din 08.09.2012 privind desfășurarea în siguranță a activităților nucleare.

Prezentarea anuală Agenției Naționale de Reglementare a Activităților Nucleare și Radiologice, până la 31 decembrie, a informației referitor la importul/exportul și furnizare, în conformitate cu pct. 10 alin. 3) al Hotărârii Guvernului nr. 1017 din 01.09.2008 cu privire la Registrul național al surselor de radiații ionizante și al persoanelor fizice și persoanelor juridice autorizate.

Livrarea instalațiilor roentgen se va efectua numai către beneficiari autorizați de ANRANR, în conformitate cu art. 27 c) al Legii nr. 132 din 08.06.2012 privind desfășurarea în siguranță a activităților nucleare și radiologice.

Identificarea subdiviziunii în care se desfășoară activitățile nucleare și radiologice (unitatea, secția etc.):

DECLARAȚIE

Confirmare privind existența, în cadrul întreprinderii, a personalului calificat și atestat

Către Administrația Națională a Penitenciarelor

Stimați domni, Media Security S.R.L. confirmă în cazul desemnării în calitate de câștigătoare la licitația nr.

[ocds-b3wdp1-MD-1774616978570](#), asigurarea cu personalul calificat și instruit în procesul de Servicii de mentenanță și reparație a instalațiilor cu raze X.

Data completării 01.04.2026

Cu stimă,

Ofertant/candidat

SRL „Media Security” _____

Administrator V. Gaina

(semnătura autorizată)

DECLARAȚIE

Confirmare privind deținerea instrumentelor specializate

Către Administrația Națională a Penitenciarelor

Stimați domni, Media Security S.R.L. confirma în cazul desemnării în calitate de câștigătoare la licitația nr.

[ocds-b3wdp1-MD-1774616978570](https://www.onda.ro/actualitate/justitie/licitatie-penitenciare-1774616978570), asigurarea cu instrumente specializate de masurare a radiațiilor ionizate necesare pentru realizarea operatiunilor de mentenanta si reparatie a echipamentelor de model Astrophysics XI-6545 :

Producator	Model	
ATOMTEX	AT1121	https://www.atomtex-usa.com/product/at1121-x-ray-and-gamma-radiation-survey-meter/
ATOMTEX	AT1125/ AT1125A	https://www.atomtex-usa.com/product/at1125-at1125a-radiation-monitors/
FLUKE	451B	https://www.flukebiomedical.com/products/radiation-survey-meters/451b-ion-chamber-survey-meter-beta-slide
FNIRSI	GC-01	https://www.fnirsi.com/products/gc-01?srsIid=AfmBOoq-oAg-IVszGViB6USAxMz0 AVFJLj-1IW7W4v2nz EAeUJirVa
Polimaster	PM1401K-3P	https://polimaster.com/products/riid/pm1401k-3p/#specifications
Ludlum	9DP	https://ludlums.com/products/all-products/product/model-9dp
Thermofisher	RadEye PRD	https://www.thermofisher.com/order/catalog/product/425067126
MIRION	RDS-32	https://www.mirion.com/products/technologies/health-physics-radiation-safety-instruments/portable-radiation-measurement/handheld-health-physics-instruments/rds-32-radiation-survey-meters

Data completării 01.04.2026

Cu stimă,

Ofertant/candidat

SRL „Media Security” _____

Administrator V. Gaina

(semnătura autorizată)



	CHECKLIST ITEM	DESIRED RESULTS	INSPECTION INTERVAL
16.	Inspect the PC Check the power cord connection. Check the PC keyboard cable connection. Check the PC mouse cable connection. Check the USB Security Key connection. Check the Ethernet Loopback connection. Check the DAS board data (40 conductor ribbon cable) connection. Check the DAS board HE Coax cable connection. Check the DAS board LE Coax cable connection. Check the DAS board power cable connection.	The PC is present. The PC is securely fastened down All cables are properly connected and secured. The PC Power Supplies is operational. All cables are properly connected.	Annually
17.	Inspect Ethernet Loopback Connector (ELC)	The ELC is present. The ELC is properly connected. The ELC operates properly.	Annually
18.	Inspect the imaging with F792-88 Step Wedge	XIS F792-88 image ok	Every 6 month
19.	Inspect the diode plot graph	The DPG shows no diode signal saturation.	Every 6 month
20.	Inspect the power rollers	Power roller show no oil leakage. Power roller evidences no unusual grinding noises.	Annually
21.	Inspect conveyor operation	The conveyor operates smoothly in both directions.	Annually
22.	Inspect the x-ray generator (XRG)	The XRG should show no signs of oil leakage The XRG show no sign of internal arcing.	Every 6 month
23.	Inspect the x-ray controller Check the KV controller fuse. Check the mA controller fuse Measure the 5VDC power input Measure the 65 VDC power input	KV Controller Fuse is OK mA Controller Fuse is OK 5VDC P/S is within +/- 5% 65VDC P/S is within +/- 5%	Annually

CHECKLIST TO INSURE PROPER SYSTEM OPERATION

	CHECKLIST ITEM	DESIRED RESULTS	INSPECTION INTERVAL
6.	Check PC/PEC1 and PC/PEC2 operation.	PEC1 and PEC2 operate normally.	
7.	Inspect the interlocks switches.	The interlock switches are tightly fastened down. The interlocks switches are properly wired up. The interlock close properly when the panels are mounted.	Annually
8.	Inspect the Operator Control Panel	All buttons are securely in place. All buttons operate as required. All buttons are properly labeled and mounted in proper order. The USB cable is mechanically intact. The USB connector is good shape.	Every 6 month
9.	Inspect the USB Security Key (USK)	The USK is present . The USK is securely installed. The USK status LED is lit.	Annually
10.	Inspect the Power-ON LEDs lamp	The LEDs are fastened correctly The LEDs are wired correctly The LEDs are properly labeled The LEDs operate correctly	Annually
11.	Inspect the X-ray ON LEDs	The LEDs are fastened correctly The LEDs are wired correctly The LEDs are properly labeled The LEDs operate correctly	Annually
12.	Inspect the PLC	The Power LED is lit. The Run LED is lit. The PLC is properly connected. The PLC properly switches the PC on. The PLC properly switches the XRG on.	Annually
13.	Inspect the PC keyboard	The PC Keyboard is present. The PC keyboard is properly connected. The PC keyboard operates properly.	Annually
14.	Inspect the PC mouse	The PC mouse is present. The PC mouse is properl connected. The PC mouse operates properly.	Annually
15.	Inspect the PC power cord	The PC power cord is the correct 14 AWG cable. The PC power cable plug is good order.	Annually

SECTION 5 - MAINTENANCE CHECK LIST

CHECKLIST TO INSURE PROPER SYSTEM OPERATION

Date	
XIS Model	XIS-6545
XIS Serial Nbr	
Technician	ANTOINE GHOSSOUB

	CHECKLIST ITEM	DESIRED RESULTS	INSPECTION INTERVAL
1.	Inspect the conveyor belt alignment	The belt is centered at both the entry and exit ends of the belt. The separation between the left edge of the belt and left edge of the x-ray tunnel wall should be equal to the separation between the right edge of belt and the right side of x-ray tunnel wall.	Monthly
2.	Inspect the conveyor belt for wear	The belt shows no sign of abnormal wear or tear. The edges of the belt show NO fraying cuts	Every 6 months
3.	Inspect the conveyor belt lacing.	The lacing strip show NO sign of abnormal wear. The lacing wire thread through the entire threading strip. The tail ends of lacing are properly crimped and trimmed	Every 6 month
4.	Inspect the photocells	The photocells are properly wired and securely fastened down. The photocells are aligned. The receiver indicates a clear signal from the transmitter.	Annually
5.	Inspect the x-ray curtains	The curtains should show no sign of abnormal wear. The curtains sheets are layered and staggered correctly. There are no missing vertical curtain strips. The curtain strips are trimmed smartly allowing no light leakage into the tunnel.	Monthly

DECLARAȚIE
privind contravaloarea lucrărilor de mentenanță si reparație

Către **Administrația Națională a Penitenciarelor, mun. Chișinău, str. Nicolae Titulescu 35**

(denumirea autorității contractante și adresa completă)

Stimați domni,

În procedura privind achiziționarea „Serviciilor de mentenanță și reparație a instalațiilor cu raze X (suplimentar)”, (conform clarificarilor din data de 20.02.2026) Mtender ID

ocds-b3wdp1-MD-1774616978570, SRL „Media Security” administrator Victor Gaina declară sub proprie răspundere despre faptul, că contravaloarea lucrărilor de mentenanță si reparație va include atât manopera, cât și costul pieselor de schimb și materialelor consumabile puse la dispoziție de prestator.

Data completării 01.04.2026

Cu stimă,

Ofertant/candidat

SRL „Media Security” _____

Administrator V. Gaina

(semnătura autorizată)

DECLARAȚIE
privind întocmirea și prezentarea rapoartelor detaliate

Către **Administrația Națională a Penitenciarelor, mun. Chișinău, str. Nicolae Titulescu 35**

(denumirea autorității contractante și adresa completă)

Stimați domni,

În procedura privind achiziționarea „Serviciilor de mentenanță și reparație a instalațiilor cu raze X (suplimentar)”, Mtender ID ocds-b3wdp1-MD-1774616978570, SRL „Media Security” administrator Victor Gaina, se angajează să întocmească și să prezinte beneficiarului final rapoarte detaliate la fiecare intervenție, care vor include descrierea lucrărilor efectuate, piesele înlocuite (în baza unui acord prealabil), parametrii tehnici verificați și concluziile de rigoare. Copiile rapoartelor vor fi expediate inclusiv în adresa autorității contractante.

Data completării 01.04.2026

Cu stimă,

Ofertant/candidat

SRL „Media Security” _____

Administrator V. Gaina

(semnătura autorizată)

DECLARAȚIE
privind garanția lucrărilor și pieselor înlocuite

Către **Administrația Națională a Penitenciarelor, mun. Chișinău, str. Nicolae Titulescu 35**

(denumirea autorității contractante și adresa completă)

Stimați domni,

În procedura privind achiziționarea „ Serviciilor de mentenanță și reparație a instalațiilor cu raze X (suplimentar)”, (conform clarificarilor din data de 01.04.2026 Mtender ID [ocds-b3wdp1-MD-1774616978570](#) SRL „Media Security” administrator Victor Gaina, declară despre faptul, că lucrările efectuate și piesele înlocuite vor fi acoperite de garanție pe o durată de cel puțin 6 luni.

Data completării 01.04.2026

Cu stimă,

Ofertant/candidat

SRL „Media Security” _____

Administrator V. Gaina

(semnătura autorizată)