

**Fluoroscopic Compliance Inspection Report
Mobile C-arm**

Date of Inspection = 2/28/2018
Equipment Name = Ziehm
Model # Vision

I. GENERAL INSPECTION

PASS/FAIL

1. The radiation exposure switch shall require continuous pressure by the fluoroscopist for the entire time of any exposure. **PASS**
2. A cumulative timer that indicates the fluoroscopic "on-time" is working and produces an audible signal when an elapsed time of not more than 5 minutes occurs. **PASS**
3. The maximum fluoroscopic x-ray field is within the dimensions of the image intensifier. **PASS**
4. If manufactured after 6/10/06, the unit shall have the ability to display air kerma rate and cumulative air kerma. **PASS**
5. If manufactured after 6/10/06, the unit shall be equipped with the means to display last image hold (LIH). **PASS**

II. X-RAY MACHINE TESTS

1. Half-value layer - The half-value layer (HVL), which is a measure of the energy of the radiation produced by the machine, was measured using an Unfors meter. The HVL should measure equal to or greater than the value specified.

Nominal kVp =	82	Measured kVp =	81.1	
Measured half-value layer =	4.71	mm Al		
Minimum allowable HVL =	2.9	mm Al		PASS

2. Automatic Exposure Rate Control (ABC) - Increasing thickness of absorber should produce an increase in kVp, mA or both. An ion chamber was placed on the table-top as various thicknesses of absorber were placed in the radiation beam. The results below indicate whether the ABC is operating and also provide information about patient dose.

Patient thickness	30 p/s 31cm Mode			10 p/s 31cm Mode		
	R/min	Fluoro kVp	Fluoro mA	R/min	Fluoro kVp	Fluoro mA
15 cm	1.46	65	6.7	0.51	66	6.8
19 cm	2.25	73	7.9	0.78	73	7.9
23 cm	2.80	80	7.7	0.97	80	7.7
Max(lead)	4.51	110	6.0	1.59	110	6.0
lead(boost)	9.20	110	11.9	3.17	110	11.9

Patient thickness	30 p/s 15cm Mode			10 p/s 15cm Mode		
	R/min	Fluoro kVp	Fluoro mA	R/min	Fluoro kVp	Fluoro mA
15 cm	1.56	66	7.0	0.56	67	7.1
19 cm	2.34	74	7.9	0.83	74	7.9
23 cm	2.90	81	7.6	1.02	82	7.6
Max(lead)	4.51	110	6.0	1.59	110	6.0
lead(boost)	9.20	110	11.9	3.17	110	11.9

The ABC tracks with patient thickness.

PASS

The maximum radiation output is less than 10R/min at 30 cm from the image intensifier input phosphor.

PASS

The boost mode creates an audible signal and is less than 20R/min at the intensifier input phosphor.

PASS

3. Resolution - Spatial resolution was measured by imaging a wire-mesh test object placed near the image intensifier at low kVp and mA. The system should image the 24 line mesh at a minimum.

II diameter	30 p/s			10 p/s		
	mesh center	mesh edge	kVp	mesh center	mesh edge	kVp
31cm	40	40	44	40	40	45
23cm	50	50	45	50	50	46
15cm	60	60	45	60	60	46

The system was able to image at least the 24 line mesh.

PASS

4. Environmental Survey - Radiation measurements were obtained with an environmental monitor in areas where persons are likely to be exposed. A scattering phantom was placed in the beam. Estimated workload = 2 hours per week.

85 kVp and 2.5 mAs

<u>Location</u>	<u>Exposure (mR/hr)</u>	<u>mR/wk</u>
Operators position - no apron	9	18
Operators position with apron	0	0
At eye level	5	10
Beyond image intensifier	0.5	1
Side of patient	50	100

Radiation levels are within acceptable limits.

PASS

III. Comments

No comments

IV. Recommendations

No recommendations.