This checklist is attached to the DX-D 400 Service Manual.

DX-D 400 Serial Number:	
DX-D 400 installation date:	
Date of maintenance:	
Maintenance interval:	12 months or other interval: ...
Service Engineer name:	

Purpose of this document:

This document provides the reference guide and checklist for the different Preventive Maintenance Visit (PMV) tasks for the complete DX-D 400 System.

IMPORTANT:

Strictly observe the safety advices in the referenced documents.

Perform the PMV tasks as described in the referenced documents. This checklist does only contain a short description of the tasks.

Defective or worn out parts or misaligned components, which are found during the PMV are *not* included in the below stipulated labor time. Parts and labor cost for such replacements or alignments (labor & parts) need to be charged outside of a PMV.

Required time

REQUIRED TIME:

- 12-month Maintenance: Approximately 6h
- Additional activities for IEC test after 3 years: Approximately up to 1h additionally.
  IEC test depending on local requirements.
  Or shorter period for IEC test if required.
- Additional activities after 5 years:
  - Steel cable replacement at Tube Stand: 2 people, 3h,
  - Steel cable replacement at Wallstand: 2 people, 3h
    For Steel Cable replacements refer to the Maintenance instructions in the DX-D 400 - X-Ray System - Service Manual, ID 31833723.

Components and Maintenance interval

#	Component	Maintenance Interval *	**
1.	X-Ray System	12 months	☐
2.	Control Room	12 months	☐
3.	NX Hardware	12 months	☐
4.	X-Ray Generator	12 months	☐
5.	Collimator	12 months	☐
6.	Service Quality Test (SQT) - AEC Test only: During PMV, only AEC cut-off dose check for Table/Wallstand (depending on configuration).	12 months	☐
7.	IEC 62353 Safety Test *if locally required* (36 month according to standard - or other interval if required.)	36 months (3 years) Or other interval:	☐ ☐
8.	X-Ray System	5 years: Steel Cable replacement	☐
	Detector	Preventive Maintenance by service is not required	-
	Retrofit Box/DR Generator Sync Box		
9.	Completion of Preventive Maintenance	After each PMV	☑

* Maybe shorter in case of heavy workload.
** Select the maintenance task you perform during this maintenance intervention. The different maintenance intervals are color-coded.

Required tools

- Vacuum cleaner with a brush attachment
- Torque wrench(es) 0-100 Nm (0-75 lbf·ft)
- Large ratchet with assortment of metric sockets
- Standard tool kit
- Loctite 243
- Step ladder
- Digital or analog level
- Tools for the SQT. Refer to SQT instructions, Document ID 54513844.
- Tools for the IEC 62353 test. Refer to Document ID 39773390.
- Steel Cable replacement: As described in the applicable replacement description, Document ID 31833723.

Required cleaning material

- Rags and cleaning tissues
- Isopropylalcohol CM+9999992540

Required lubricants and fluids

- ISOFLEX TOPAS NB 52 Multi-purpose grease CM+9999992470
- Silicone insulating paste HV cables (X-Ray Tube side) CM+6074010
- Silicone oil HV cables (Generator side) SK+01787035

1 X-Ray System	
Maintenance	☐ 12 months ☐ other
Reference	DX-D 400 - X-Ray System - Service Manual, ID 31833723 Service Manual, Chapter 11 Maintenance

Topic	Task	N.A.	OK / Done	Comment *
Floor mounted Tube Stand	Chapter 11 Maintenance, 11.1 & 11.2			
Electrical cables and connections	Visually check for electrical cables proper isolation and proper connection inside and outside the unit.	☐	☐	#
Functional checks	As described in chapter 11.2 Checking the Floor mounted Tube Stand.	☐	☐	#
Brakes, locks and detents	Perform a functional check of all the locks, brakes and detents.	☐	☐	#
Cleaning	Clean from dust or moist inner components as Electronic Racks, grids, filters, bearings and rails.	☐	☐	#
Lubrication	Lubricate mobile components such as chains, guides, bearings.	☐	☐	#
Tube/Collimator Assembly				
Collimator fixing	As described in topic 5 Collimator within this document.	☐	☐	#
Radiographic Table	Chapter 11 Maintenance, 11.1 & 11.3			
Electrical cables and connections	Visually check for electrical cables proper isolation and proper connection inside and outside the unit.	☐	☐	#
Functional checks	As described in chapter 11.3 Checking the Radiographic Table.	☐	☐	#
Brakes, locks and detents	Perform a functional check of all the locks, brakes and detents.	☐	☐	#
Cleaning	Clean from dust or moist inner components as Electronic Racks, grids, filters, bearings and rails.	☐	☐	#
Lubrication	Lubricate mobile components such as chains, guides, bearings.	☐	☐	#
Wallstand (Vertical Bucky)	Chapter 11 Maintenance, 11.1 & 11.4			
Electrical cables and connections	Visually check for electrical cables proper isolation and proper connection inside and outside the unit.	☐	☐	#
Functional checks	As described in chapter 11.4 Checking the Wall Stand.	☐	☐	#
Brakes, locks and detents	Perform a functional check of all the locks, brakes and detents.	☐	☐	#
Cleaning	Clean from dust or moist inner components as Electronic Racks, grids, filters, bearings and rails.	☐	☐	#
Lubrication	Lubricate mobile components such as chains, guides, bearings.	☐	☐	#

* If applicable, fill in a comment number and add the comment description in the comment table.

Topic	Task	N.A.	OK / Done	Comment *
Steel Cable	Chapter 11 Maintenance, 11.6 Steel Cable Preventive Maintenance			
Steel Cable	Check the condition and grease as described in the referenced document. (Change them every 5 years.)	☐	☐	#

Comments for X-Ray-system

#	Description
1	
2	
3	
4	
5	
6	
7	

* If applicable, fill in a comment number and add the comment description in the comment table.

2 Control Room	
Maintenance	after ☐ 12 months ☐ other
Reference	N.A.

Topic	Task	N.A.	OK / Done	Comment *
Interview customer	Record issues reported by customer.	☐	☐	#
Cables in control room	Check cabling in control room for integrity.	☐	☐	#
Devices in control room	Check condition of all devices in the control room (On-off-box, Monitor, NX Workstation, Retrofit Box/DR Generator Sync Box and so on).	☐	☐	#

Comments for Control Room

#	Description
1	
2	
3	

* If applicable, fill in a comment number and add the comment description in the comment table.

3 NX Hardware	
Maintenance	after ☐ 12 months ☐ other
Reference	NX/MUSICA Acquisition Workstation - Service Manual, ID 74737949 Chapter: Maintenance

Topic	Task	N.A.	OK / Done	Comment *
NX Workstation Hardware	See referenced document: Perform the described maintenance checks and fill out the provided checklist. Attach the completed NX checklist to this Checklist.	☐	☐	#

Comments for NX

#	Description
1	

* If applicable, fill in a comment number and add the comment description in the comment table.

4 X-Ray Generator	
Maintenance	☐ 12 months ☐ other
Reference	X-Ray Generator - Service Manual - DX-D 400, ID 41655926 Chapter 8 Maintenance

Topic	Task	N.A.	OK / Done	Comment *
Test exposure for generator function	Before starting the periodic maintenance procedures, it is recommended to make a test exposure (flatfield) using the same operating factors and conditions as a typical exposure. Perform the X-ray tube warm-up procedure if the tube has not been in use for approximately one hour.	☐	☐	#
Cleaning	Chapter 8 Maintenance, 2.3 General Cleaning			
External Surfaces Cleaning	As described in the referenced document.	☐	☐	#
Internal Cabinet Cleaning	As described in the referenced document.	☐	☐	#
CTSC Touch Screen Console	As described in the referenced document.	☐	☐	#
Cables	Chapter 8 Maintenance, 2.4 Cable Checks			
Ground Cable Connections	As described in the referenced document.	☐	☐	#
AC Power Supply in X-ray Room	As described in the referenced document.	☐	☐	#
CTSC Touch Screen Console	As described in the referenced document.	☐	☐	#
Control Console	Chapter 8 Maintenance, 2.5 Control Console Condition			
Control Console Condition	As described in the referenced document.	☐	☐	#
HV Transformer	Chapter 8 Maintenance, 2.6 HV Transformer Condition			
HV Transformer Condition	As described in the referenced document.	☐	☐	#
X-ray Tube	Chapter 8 Maintenance, 2.7 X-Ray Tube Condition			
X-ray Tube Condition	As described in the referenced document.	☐	☐	#
Radiographic Parameters	Chapter 8 Maintenance, 2.8 Radiographic Parameters			
Test for kV Loop	As described in the referenced document.	☐	☐	#
Test for Digital mA Loop Open	As described in the referenced document.	☐	☐	#
Test for Digital mA Loop Closed	As described in the referenced document.	☐	☐	#
AEC				
AEC	As described in topic 6 Service Quality Test (SQT) - AEC Tests only, within this document. • AEC cut-off dose Table (03_01_00) • AEC cut-off dose Wall Stand (03_06_00)			

* If applicable, fill in a comment number and add the comment description in the comment table.

Comments for X-Ray Generator

#	Description
1	
2	
3	
4	
5	
6	
7	

5 Collimator	
Maintenance	after ☐ 12 months ☐ other
Collimator Type	Ralco R225 ACS ☐
Reference	Collimator Ralco R225 ACS/DHHS (Automatic) - Service Manual - DX-D 300 / DX-D 400 / DX-D 600 / DX-D 800, ID 41588872, Chapter: Maintenance
Collimator Type	R225 DHHS ☐
Reference	Collimator Ralco R225 DHHS (Manual) - Service Manual - DX-D 300 / DX-D 400 / DX-D 600, ID 46857177, Chapter: Maintenance

Topic	**Task** (short instruction – for the detailed description refer to the referenced document)	**N.A.**	**OK / Done**	**Comment ***
Cleaning				
Collimator Housing	Observe description in section Cleaning Recommendations.	☐	☐	#
Mounting points				
Fixation	Check if screws and tabs that secure the collimator to the flange/tube adapter are correctly tightened. Observe the tightening force mentioned in the referenced documents.	☐	☐	#

Comments for Collimator

#	Description
1	
2	

* If applicable, fill in a comment number and add the comment description in the comment table.

6 Service Quality Test (SQT) - AEC Tests only		
Maintenance	after ☐ 12 months	☐ other
Reference	Service Quality Test Tool, Document ID 55022710	

Perform the following AEC tests in the SQT software.
Up to SQT 2.1: The below test suite will be offered (see Figure 1).

- Perform the green marked tests and complete (successfully).
- For the red crossed tests: Open each test and fill in n.a. (not applicable) in the comment field as shown in Figure 2.

For future SQT versions: The test suite for PMV will be adapted accordingly.

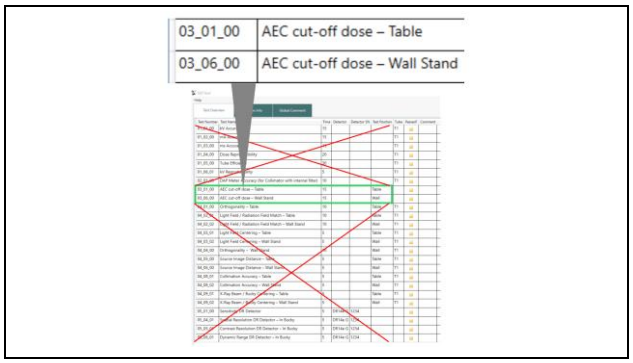

Figure 1

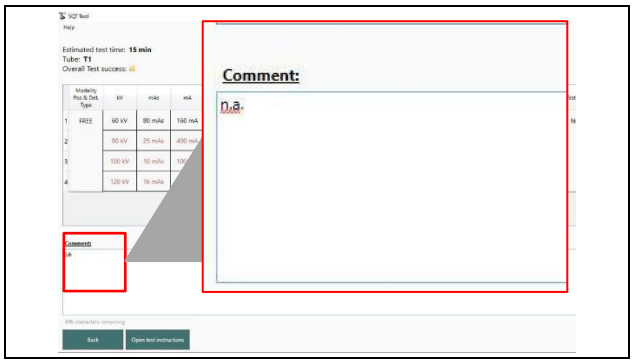

Figure 2

Topic	Maintenance related tests	N.A.	OK / Done	Comment *
AEC cut-off dose	AEC cut-off dose Table (03_01_00)	☐	☐	#
	AEC cut-off dose Wall Stand (03_06_00)	☐	☐	#
Additional documentation				
	Document the results (e.g. create report) and attach to this Checklist.	☐	☐	#

Comments for SQT

#	Description
1	

IMPORTANT:
After finishing the 12-month Maintenance, complete it as described in topic 9 Completion of the Preventive Maintenance.

* If applicable, fill in a comment number and add the comment description in the comment table.

IMPORTANT:
Any activities outside the described PMV tasks in this document may require more extensive SQT testing.

When the PMV is only used to do preventive maintenance activities as described in this document (i.e. as requested by suppliers and Agfa: checking screws, oil, tensions, connections, ...) and is *not* dismantling *nor* changing parts, *nor* taking actions that could lead to another operational behavior of the machine, then above mentioned SQT testing is sufficient.

Please also note, when a Field Service Engineer makes changes to parts or replacing parts or changing the behavior of the device, then the "repair" procedures should be followed and these may include additional SQT test, as further described in the respective sections of the service manual.

7 IEC 62353 Safety Test (as required)	
Maintenance	after ☐ 36 months (3 years) ☐ other
Reference	DX-D 400 - Electrical Test according IEC 62353, Document ID 39773390

Topic	Task	N.A.	OK / Done	Comment *
Electrical Tests	Referenced document: Perform the described tasks and fill out the form. Attach the completed form to this Checklist.	☐	☐	#

Comments for Safety Test

#	Description
1	

IMPORTANT:

After finishing the 3-years Maintenance, complete it as described in topic 9 Completion of the Preventive Maintenance.

* If applicable, fill in a comment number and add the comment description in the comment table.

8 Replacements at X-Ray System		
Maintenance	after ☐ 5 years	☐ other
Present stand	Tube Stand ☐	Wallstand ☐
Reference	DX-D 400 - X-Ray System - Service Manual, ID 31833723 Chapter 10, Job Cards for Adjustment/Replacement Procedures	
Required Time:	Steel cable replacement at Tube Stand: 2 people, 3 hours Steel cable replacement at Wallstand: 2 people, 3 hours	

Topic	Task	N.A.	OK / Done	Comment *
Tube Stand				
Steel Cable	Change steel cable. Refer to Service Manual, chapter 10 Replacements, Job Card 2.3 Replacement of the Column Steel Cables -- Tube Stand	☐	☐	#
Wall Stand				
Steel Cable	Change steel cable. Refer to Service Manual, chapter 10 Replacements, Job Card 2.18 Replacement of the Column Steel Cables -- Wall Stand	☐	☐	#

Comments for Replacements

#	Description
1	

IMPORTANT:
After finishing the 5-years Maintenance, complete it as described in topic 9 Completion of the Preventive Maintenance.

* If applicable, fill in a comment number and add the comment description in the comment table.

9 Completion of the Preventive Maintenance				
Topic	**Task**	**N.A.**	**OK / Done**	
Results	Explain results to customer.	☐	☐	#
Checklist	• Archive the maintenance work according to your local regulations. For example attach the completed checklist to ASSM PMV Workorder. • Hand out this checklist to the customer as needed.		☐	#

Comments for Completion of Preventive Maintenance

#	Description
1	
2	

* If applicable, fill in a comment number and add the comment description in the comment table.