

BUILDING SERVICES BRANCH
TESTING AND COMMISSIONING
PROCEDURE NO. 9
FOR
CATERING EQUIPMENT INSTALLATION
IN
GOVERNMENT BUILDINGS
HONG KONG

HONG KONG SPECIAL ADMINISTRATIVE REGION GOVERNMENT

Building Services Branch
Architectural Services Department
(2000 Edition)

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3. It is hereby declared that the procedure contained therein may not be pertinent or fully cover the Catering Equipment Installation carried out by other Government Departments or private sectors. Prior consent by the Director of Architectural Services must be obtained for adoption of this testing and commissioning procedure for Catering Equipment Installation of other nature or locations.

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Testing and Commissioning progress chart for Catering Equipment Installation

B.S.B. Testing and Commissioning Procedure No. 9 Catering Equipment Installation

1. Introduction

- 1.1 This procedure is intended to lay down the minimum testing and commissioning requirements to be carried out by the Contractor on a new Catering Equipment Installation upon completion or on an existing Catering Equipment installation after a major alteration. Additional testing and commissioning (T & C) requirements may be proposed by the Contractor as appropriate and agreed by the Project Building Services Engineer (PBSE), e.g. for special equipment supplied and/or installed by the Contractor.
- 1.2 This procedure is also written to facilitate the PBSE and Project Building Services Inspector (PBSI) in carrying out the following aspects of work with respect to T & C.
 - (i) To vet and approve the T & C procedures proposed and submitted by the Contractor.
 - (ii) To witness those T & C procedures as specified.
 - (iii) To receive the T & C certificate and other supporting data.

2. General Requirements

- 2.1 The Contractor shall submit the T&C procedures together with the Testing and Commissioning progress chart in Appendix B to the PBSE. The submission shall be made at least one month before the commencement of T&C.
- 2.2 Where tests are required to be witnessed by the PBSE/PBSI, the Contractor shall give due advance notice (usually not less than three days) and provide details of date, time and type of tests to be performed.
- 2.3 Upon completion of such T & C procedure, the Contractor's project engineer shall complete and sign a testing and commissioning certificate as Appendix A, to the effect that agreed T & C procedures have been duly carried out.
- 2.4 Before carrying out any test, the Contractor shall ensure installations comply with the statutory requirements and regulations.
- 2.5 The Contractor shall provide any test certificate(s) for the equipment as required in the Specification.

3. Testing and Inspection

- 3.1 The requirements are in general as specified in the latest General Specification for Catering Equipment Installation issued by Building Services Branch of Architectural Services Department, herein after described as General Specification. If there is any discrepancy between this procedure and the General Specification, the General Specification shall take precedence.
- 3.2 The Contractor shall carry out the tests and inspections as shown in Part 3 and record the test results on Part 4 of Appendix A and as agreed between the PBSE and the Contractor.
- 3.3 The Contractor shall provide all the necessary staff, labour, materials and equipment for a thorough test and examination of the installation.

4. Statutory Inspection/Commissioning

- 4.1 After the proper testing and commissioning of the Catering Equipment Installation, the Contractor shall notify the appropriate Authority, through the PBSE, on the completion of the installation and its readiness for inspection and testing.

5. Calibrated Equipment

- 5.1 The Contractor shall supply calibrated equipment as stipulated in the Specification of the Contract for the inspection, measuring and testing of the installation. The equipment shall be calibrated by laboratories accredited by the Hong Kong Laboratory Accreditation Scheme (HKLAS) or other recognised accredited laboratories.

Testing and Commissioning Certificate on Catering Equipment Installation

Part 1 : Detail of Project

- 1.1 Project title (with location) :
- 1.2 * P.W.P. / Project No. :
- 1.3 *Contract/sub-contract/Quotation No. :
- 1.4 * Contractor/Sub-Contractor :
- 1.6 PBSE :
- 1.7 PBSI :

Part 2 : Declaration

- 2.1 I certify that the Catering Equipment Installation as specified in the Contract/Sub-contract/Quotation at the above location has been inspected, tested and commissioned in accordance with this procedure and/or any other procedures agreed between the PBSE and the Contractor. The results are satisfactory in the aspects as mentioned in Part 3 and/or as recorded in Part 4 of this Certificate, except as indicated in the COMMENTS items.
- 2.2 I also certify that site tests have been performed in accordance with the requirements set out in Appendix A of this procedure and that the results are satisfactory. A record of the tests has been prepared and submitted to the PBSE.

Signature of Contractor's Representative _____

Full Name of Contractor's Representative _____

Designation of Contractor's Representative _____

Name and Stamp of Contractor _____

Date _____

Note : This certificate must be signed by a person authorized by the Firm/Company.
* Delete if not applicable

Items tested / checked by <u>Contractor</u>	Items witnessed by <u>PBSE/PBSI</u>
---	---

Part 3. Items Inspected and Tested3.1 Inspection, Testing and Commissioning of Piping System3.1.1 Visual Inspection3.1.1.1 Steel and Copper Pipework

- | | | | |
|----|---|----------|---------|
| a) | Are all pipelines of the correct types and approved by the Architect? | *Yes/No/ | *Yes/No |
| b) | Are all pipelines up to 13 mm bore of steel or copper made? | *Yes/No | *Yes/No |
| c) | Are all pipelines above 13 mm bore of steel made? | *Yes/No | *Yes/No |

3.1.1.2 Flexible Hoses and Tubing

- | | | | |
|----|--|--------------|--------------|
| a) | Are all flexible hoses and tubing of correct types and approved by the Architect? | *Yes/No | *Yes/No |
| b) | Are corrosion resistant braiding for flexible hoses and tubing used? | *Yes/No/N.A. | *Yes/No/N.A. |
| c) | Are manual shut-off valves installed for vapour pipelines at intermediate pressure or below to which the flexible hoses are connected? | *Yes/No | *Yes/No |
| d) | Are all flexible tubing within 2 m long? | *Yes/No | *Yes/No |
| e) | Is any flexible tubing extended from one room to another or passing through wall or ceiling? | *Yes/No | *Yes/No |
| f) | Are all end fittings of the flexible hoses and tubing of correct and approved type? | *Yes/No | *Yes/No |
| g) | Are fittings for securing flexible hoses and tubing free from burrs/sharp edges and not over-tightened? | *Yes/No | *Yes/No |

3.1.1.3 Pipe Joints and Fittings

- | | | | |
|----|---|--------------|--------------|
| a) | Are all steel pipe joints over 50 mm bore welded or welded flanged? | *Yes/No | *Yes/No |
| b) | Is only electric arc welding used on steel pipes of 125 mm bore and larger? | *Yes/No/N.A. | *Yes/No/N.A. |

Tested / Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Appendix A

		Items tested / checked by <u>Contractor</u>	Items witnessed by <u>PBSE/PBSI</u>
c)	Are copper pipe joints of compression type or sweated type silver soldered or brazed using jointing material of melting point exceeding 540 ^o C.	*Yes/No	*Yes/No
d).	Are pipe fittings of the correct and approved types?	*Yes/No	*Yes/No
e)	Are gaskets used appropriate to the type of gas?		
3.1.1.4	<u>Piping Installation</u>		
a)	Are pipeworks installed in accordance with the approved drawings?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are all pipework buried in floor slabs protected against corrosion and mechanical damage?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are surface pipeworks adequately supported and are the supports made of correct materials and correctly constructed?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are the pipe runs having adequate flexibility and facilities to compensate for thermal expansion and contraction of pipes, or mechanical stress at branch pipes?	*Yes/No	*Yes/No
e)	Are all pipeworks protected against corrosion by wrapping, galvanizing or painting as appropriate?	*Yes/No	*Yes/No
f)	Are pipeworks passing through walls or floor slabs properly wrapped and enclosed in metal sleeves and without joints?	*Yes/No	*Yes/No
g)	Is a minimum clearance of 60 mm maintained between gas pipes and electric conduits, trunking and cables?	*Yes/No	*Yes/No
h)	Have identification labels been provided for all surface distribution pipes?	*Yes/No	*Yes/No
3.1.1.5	<u>Valves and Accessories</u>	*Yes/No	*Yes/No
a)	Are all valves of correct and approved types?	*Yes/No	*Yes/No
b)	Are all valves accessible and with clear indication of direction of operation?	*Yes/No	*Yes/No

Tested / Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Appendix A

Items tested / Items witnessed
checked by Contractor by
PBSE/PBSI

3.1.2. Testing and Commissioning

3.1.2.1 Pipework

- | | | | |
|----|---|---------|---------|
| a) | All pipeworks have been pressure and leak tested, by means of *pressure drop hydraulic method/soap and water pneumatic method, <u>before and after</u> applying corrosion treatment, concealed or buried. | *Yes/No | *Yes/No |
| b) | Before pressure testing, the units which are not capable of accepting the test pressures have been isolated. | *Yes/No | *Yes/No |
| c) | Pressures used for the testing were as follows:-

Working : _____

Testing : _____ | *Yes/No | *Yes/No |
| d) | Are results of pressure test on pipeworks satisfactory? | *Yes/No | *Yes/No |

3.1.2.2 Valves and Accessories

- | | | | |
|----|--|---------|---------|
| a) | During the pressure testing, have all isolating valves and quick-acting shut-off valves been checked and is there no leakage through them at their fully closed positions? | *Yes/No | *Yes/No |
| b) | Are all pressure gauges working properly and reading correct figures? | *Yes/No | *Yes/No |

3.2 Inspection, Testing and Commissioning of Catering Equipment/Appliances

3.2.1 Visual Inspection

3.2.1.1 General

- | | | | |
|----|---|---------|---------|
| a) | Are all equipment/appliances of correct and approved models? | *Yes/No | *Yes/No |
| b) | Are all equipment/appliances installed properly in accordance with manufacturer's instructions? | *Yes/No | *Yes/No |

Tested/ Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Appendix A

		Items tested / checked by <u>Contractor</u>	Items witnessed by <u>PBSE/PBSI</u>
c)	Are adequate access panels provided for equipment operation/maintenance?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are adequate space allowed behind and below equipment to facilitate cleaning?	*Yes/No	*Yes/No
e)	Is manual isolating valve, switch or control provided for each equipment/appliances for the steam, gas, water or electricity supply?	*Yes/No	*Yes/No
f)	Is the manual isolating valve located at a readily accessible position?	*Yes/No	*Yes/No
g)	Are the materials for the equipment/appliances in accordance with the Specification?	*Yes/No	*Yes/No
h)	Are the thickness of the stainless steel sheet in accordance with the specification?	*Yes/No/N.A.	*Yes/No/N.A.
i)	Is welding of stainless steel carried out in accordance with Specification and completed with a high quality finish?	*Yes/No/N.A.	*Yes/No/N.A.
j)	Are all metal casings of the equipment/ appliances provided with the connected to the equipotential bonding?	*Yes/No	*Yes/No
k)	Are all floor mounting equipment provided with adjustable legs?	*Yes/No/N.A.	*Yes/No/N.A.
l)	Is drain of equipment properly connected to drain water channel or drain point?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.2	<u>Electrical Equipment / Appliances</u>		
a)	Are the electrical equipment/ appliances also suitable for 380V/220V?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are the electrical equipment/ appliances provided with isolating switch?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are the electrical equipment/ appliances provided with sufficient length of flexible cable with plug as specified?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Appendix A

		Items tested / checked by <u>Contractor</u>	Items witnessed by <u>PBSE/PBSI</u>
d)	Are the rating of the equipment/ appliances matched that of the power supply switch or socket?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.3	<u>Gas Equipment/Appliances</u>		
a)	Are flues readily accessible for inspection and maintenance?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are flues properly installed where they pass through roof, ceiling and combustible materials?	*Yes/No/N.A.	*Yes/No/N.A.
c)	For flues incorporating forced draught devices and automatically operated damper devices : Are these devices interlocked with the gas supply to burners?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are manual operated dampers incorporated in flue systems maintained in fixed open position?	*Yes/No/N.A.	*Yes/No/N.A.
e)	Is flue discharge to exhaust hood provided with fume diverter?	*Yes/No/N.A.	*Yes/No/N.A.
f)	Are flame failure devices of approved type provided for totally enclosed and semi-enclosed burner?	*Yes/No/N.A.	*Yes/No/N.A.
g)	Are the flame failure devices protected against draught and sheltered from over-spilling and over heating?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.4	<u>Non-pressure Type Water Heating Appliances</u>		
a)	Is vent to atmosphere provided?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is low level water protective device provided?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.5	<u>Pressure Type Water Heating Appliances</u>		
a)	Is pressure safety valve provided?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is vacuum release valve provided?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Is pressure gauge provided?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Is low water level cut out provided?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Appendix A

		Items tested / checked by <u>Contractor</u>	Items witnessed by <u>PBSE/PBSI</u>
e)	Is water level gauge provided (except boiling pan)?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.6	<u>Fryer</u>		
a)	Is high temperature cut-out provided?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is cut-out device provided when tilting pan displaced?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Is permanent maximum oil level marker provided?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.7	<u>Steam Equipment</u>		
a)	Is the working pressure of the equipment suitable for the supply pressure?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is pressure reducing valve provided for lower pressure equipment and accessories?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Is steam trap set provided for collecting condensate?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Is adjustable thermostatic control provided for the equipment?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.8	<u>Refrigeration Equipment/Appliances</u>		
a)	Is internal light provided as specified in the Particular Specification?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is low voltage strip heater provided for doors?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Is dial gauge or other type of thermometer provided as specified in the Particular Specification?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.9	<u>Sink and Fixture</u>		
a)	Is the sink provided with chromium plated brass/bronze faucet?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is the exposed surface free of bolt, screw and rivet head?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are the legs rigid enough and not more than 1800 mm centre?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Appendix A

		Items tested / checked by <u>Contractor</u>	Items witnessed by <u>PBSE/PBSI</u>
d)	Are bracing provided under stainless steel counter table, drain board, dish table top, etc.?	*Yes/No/N.A.	*Yes/No/N.A.
e)	Is sink provided with connected overflow?	*Yes/No/N.A.	*Yes/No/N.A.
f)	Is anti-syphon provided for hand basin?	*Yes/No/N.A.	*Yes/No/N.A.
g)	Is splashback provided for sink, and table counter against wall?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2	<u>Testing and Commissioning</u>		
3.2.2.1	Are the gas supply pressure, water supply pressure and electricity supply voltage within the operating range of the equipment/appliances?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.2	Are all safety controls tested and ensured in proper working order?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.3	Are the indicating lamp and light in proper function?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.4	Do the meter, gauge and other indication devices function accurately?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.5	Is the manual control switch working properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.6	Is the automatic on/off or modulating thermostatic control working properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.7	Is the timer switch and sequencing control switch working properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.8	Are the ignition, combustion and air supply properly sequenced for automatic combustion system?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.9	Are the gas/air ratio of burners adjusted correctly for proper combustion?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.10	Is the interlock between gas supply and forced draught dampers working properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.11	Are the ignition devices working properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.12	Are the flame failure devices working properly?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Appendix A

		Items tested / checked by <u>Contractor</u>	Items witnessed by <u>PBSE/PBSI</u>
3.2.2.13	Is the compressor for refrigeration equipment/appliances working properly without excessive noise?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.14	Is the condenser of the refrigeration equipment/appliances ventilated effectively and not over heated?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.15	Does the door strip heater for refrigeration equipment/appliances function properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.16	Is the refrigeration equipment/appliances able to maintain the specified temperature?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.17	Is the refrigeration equipment/appliances able to achieve the required temperature within the specified period from the loading temperature?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.18	Is the insulation and earth continuity of the electrical circuit of the equipment/appliances within the standards?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Appendix A

Items tested / Items witnessed
checked by Contractor by
Contractor PBSE/PBSI

3.3 Comments (if any) : *Yes/No *Yes/No

Note: *Delete if not applicable

Tested / Checked by _____ Signature _____
(Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
(Name(s) of *PBSE/*PBSI)

Part 4 : Test Record attached to the Test Certificate

4.1 Record of Test

Date of test	Type of test	Test result

Tested / Checked by _____ Signature _____
 (Name of Contractor's Representative)

Witnessed by _____ Signature(s) _____
 (Name(s) of *PBSE/*PBSI)

4.1.1 Test Certificates

Location and address of installation :

This is to certify that the following Catering Equipment Installation *has/have been tested with the following test certificates :-

Date of test	Type of test	Test certificate and details

Tested / Checked by _____ Signature _____
 (Name of Contractor's Representative)

Company Chop

 Name

Witnessed by _____ Signature(s) _____
 (Name(s) of *PBSE/*PBSI)

Testing and commissioning progress chart “Catering Equipment Installation”

Contract No. : _____

Contract Title : _____

Name of Contractor/sub-Contractor : _____

Contract Period : ____ / ____ /20 ____ to ____ / ____ /20 * Revised/Actual Completion Date : ____ / ____ /20

Testing and Commissioning Progress Chart for Catering Equipment Installation (Rev. _____) (1)		Dates (2)																Remark		
No.	Activities	Reference to Appendix A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A		
1.	Water Piping System	3.12.2																		
	Visual inspection																			
	G/F																			
	1/F																			
	2/F																			
	Submission of Record of Test																			
2.	Gas Piping System	3.1.2.2																		
	Visual inspection																			
	G/F																			
	1/F																			
	2/F																			
	Submission of Record of Test																			
3.	Electrical Equipment	3.2.1.2																		
	Visual inspection																			
	G/F																			
	1/F																			
	2/F																			
	Submission of Record of Test																			
4.	Gas Equipment	3.2.1.3																		
	Visual inspection																			
	G/F																			
	1/F																			
	2/F																			
	Submission of Record of Test																			

Testing and Commissioning Progress Chart “Catering Equipment Installation”

Testing and Commissioning Progress Chart for Catering Equipment Installation (Rev.) ⁽¹⁾															
	Dates ⁽²⁾													Remark	
	Activities	Reference to Appendix A	S	A	S	A	S	A	S	A	S	A	S	A	Remark
9.	Submission of T&C Certificate														

Notes

* Delete if not applicable

(1) Insert revision no.

(2) Insert additional columns as necessary

S - schedule % completion

A - actual % completion