



Government of **Western Australia**
Department of **Commerce**
EnergySafety

Guidelines for the approval of Type B (industrial) gas appliances in Western Australia



Guidelines for the approval of Type B (industrial) gas appliances in Western Australia

These guidelines have been developed and issued by the Director of Energy Safety, EnergySafety Division of the Department of Commerce, Western Australia.

The guidelines assist members of the gas industry by providing information on:

- how to obtain approval for installing and operating Type B gas appliances;
- the roles of industry participants in having a Type B gas appliance approved; and
- the regime used to manage approval of Type B gas appliances in WA.

This is the second edition of the guidelines. Comments and suggestions for improvements during periodic reviews are welcome.

Any enquiries or comments in relation to the guidelines can be addressed to:

Principal Engineer Gas Utilisation
EnergySafety WA
303 Sevenoaks Street
Cannington WA 6107
Email: energysafety@commerce.wa.gov.au
Internet: www.energysafety.wa.gov.au

K Bowron
Director of Energy Safety
EnergySafety WA

Table of contents

1	Scope and application	1
2	Introduction	2
3	Referenced documents.....	2
4	Definitions.....	3
5	Regulatory regime	4
5.1	Approval of Type B gas appliances	4
5.2	Performance of gasfitting by licensed gas fitters	6
5.3	Notices of completion	7
5.4	Request of gas for commissioning.....	8
5.5	Compliance badges for gasfitting work.....	8
5.6	Inspection and issue of certificate of compliance.....	9
6	Approval process	10
6.1	New Type B appliance.....	10
6.2	Existing Type B appliance that is modified	12
6.3	Relocating a Type B appliance	15
6.4	Flowcharts of approval process	16
7	Roles of industry participants involved in getting a Type B appliance approved for use.....	19
7.1	The applicant.....	19
7.2	The licensed gas fitter	20
7.3	The commissioning person.....	20
7.4	The Type B Gas Appliance Inspector	21
7.5	The gas supplier	22
7.6	The owner/operator	23
7.7	EnergySafety WA	23
8	Technical considerations	24
8.1	Contents of a technical submission	24
8.2	Installation	26
8.3	Commissioning	27
Appendix A	Notice of completion.....	28
Appendix B	Certificate of compliance.....	29
Appendix C	Typical technical submission.....	30

1 Scope and application

These guidelines outline the regulatory and technical requirements and the roles and responsibilities of the various industry participants involved in having a Type B gas appliance approved for use.

'Approval for use' is a detailed gas appliance inspection and certification function designed to ensure the safety of people, plant and property.

A Type B gas appliance is a defined term in the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999, and generally encompasses large commercial and industrial type gas appliances.

Examples of such gas appliances include, but are not limited to the following:

- Calciners
- Gas turbines
- Bake ovens
- Industrial ovens
- Heat-treatment furnaces
- Incinerators
- Dry out burners
- Process kilns
- Stationary gas engines
- Steam and hot-water boilers.

With the aid of flow charts, the guidelines explain each step of the various stages of the approval process – from preparing a technical submission, applying for installation approval through to obtaining final certification and permanent gas supply.

The guidelines apply to:

- new Type B gas appliances;
- modifications to existing installed Type B gas appliances; and
- existing Type B gas appliances that are relocated.

If any part of these guidelines is found to be in conflict with
legislation, the legislation takes precedence.

2 Introduction

The guidelines have been developed to assist gas appliance manufacturers, engineering consultants, licensed gas fitters and owner/operators of Type B gas appliances to understand the regulatory and technical requirements and processes involved in having these appliances approved for use in Western Australia.

The legislation relevant to the inspection, approval and certification of industrial gas appliances is the *Gas Standards Act 1972* and the associated Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999.

Type B Gas Appliance Inspectors certify to the owner/operator of the appliance and/or the gas supplier that any installed Type B appliances, whether new, modified after installation or relocated comply with regulatory requirements including any guidelines issued by the Director of Energy Safety (the 'Director') and have been properly commissioned to ensure safe operation.

The Director offers an advisory service to consultants and project managers for installations involving Type B appliances. This service, under the direction of the Principal Engineer Gas Utilisation, is intended to provide rulings on acceptable technical standards at the early planning stages of an installation, particularly for imported equipment, which does not carry Australian certification.

3 Referenced documents

The following publications are referenced in this document:

*Gas Standards Act 1972**

Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999*

AS 1375 — Industrial fuel fired appliances

AS 3814 — Industrial and commercial gas-fired appliances*

AS 5601 — Gas installations*

AS 61508 — Fundamental safety of electrical/electronic/programmable electronic safety-related systems

(* denotes the publication is for sale at the Energy Safety WA Licensing Centre)

4 Definitions

For the purpose of this guideline, the following definitions apply. Words or terms not specifically defined below are to be interpreted as defined in relevant legislation or relevant technical standards/codes.

AGA	Australian Gas Association
Appliance, Type A	An appliance of a class or type specified in Regulation 42B of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999
Appliance, Type B	An appliance that has a maximum hourly input rate exceeding 10 megajoules, but is neither a Type A appliance nor a mobile engine
Gas appliance	An appliance that consumes gas as a fuel
Approval for installation	Means obtaining written approval from a Type B Gas Appliance Inspector (after the review of the technical submission) so that the appliance can be installed
Approved	Means approved by the Director of Energy Safety
Certification	The issuing of a certificate of compliance by a Type B Gas Appliance Inspector for the appliance to be permanently connected to a gas supply
Commissioning	Bringing into operation of the appliance
Gas for commissioning	Gas made available for the testing and commissioning of the appliance for a defined period (which requires the approval of a Type B Gas Appliance Inspector) prior to the appliance being permanently connected to the gas supply
Director	Director of Energy Safety
EnergySafety WA	The EnergySafety Division of the Department of Commerce in Western Australia
Gas supplier	A gas undertaker; a pipeline licensee; an operator of a reticulated gas supply system; or a person who supplies gas through a pressurised container

Licensed gas fitter	A gas fitter currently licensed by the Director - This includes a holder of a permit, an authorisation, or a certificate of competency
Modification	Means an upgrade to the gas valve train equipment, combustion/purge air system, flame monitoring system, and/or burner management system (not involving only 'like for like' exchange of components) that changes the safety integrity of the existing system or takes the appliance out of its original approval criteria. Also encompasses conversions to use gas of a different type – from another fuel to gas or from LP gas to natural gas and vice versa
Regulation	One or more regulation(s) referred to in the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999
Technical submission	A submission referred to in Appendix A of AS 3814, as an aid to the assessment of a Type B gas appliance to gain 'approval for installation'
TUV	Technische Überwachung Verein (Technical Surveying Organisation)

5 Regulatory regime

The following information provides key features of the gas utilisation regime in Western Australia. It is not a substitute for legislation currently in force.

5.1 Approval of Type B gas appliances

The Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999 (regulations) set out the requirements for approving, inspecting and certifying Type B appliances for permanent operation. The requirements apply to:

- new gas appliances;
- modifications to existing gas appliances; and
- gas appliances that are relocated.

A brief summary of the regulatory regime that needs to be satisfied to allow these appliances to be approved for use is provided in Schedule 6, Clause 501 items (2) and (3) of the regulations as follows:

Item "(2) A Type B appliance must not be installed in a consumer's gas installation unless –

- a) it is the same as an appliance that is currently approved for such installation by the Director; or
- b) it is individually approved in writing for such installation by an inspector."

4 APPROVAL OF INDUSTRIAL GAS APPLIANCES (TYPE B APPLIANCES) IN WA

Item “(3) Before a Type B appliance is installed by a gas fitter, the gas fitter must either –

- a) obtain a copy of the appropriate approval by the Director under paragraph (2)(a) and satisfy himself or herself that the appliance is covered by that approval; or
- b) determine that the appliance has been individually approved for installation under paragraph (2)(b), by obtaining a copy of the approval.”

The following outlines the stages involved in approving a Type B gas appliance.

Stage 1 – Approval for installation

Generally, an industrial gas appliance requires individual approval in writing by an inspector. This requires the owner/operator to satisfy a Type B Gas Appliance Inspector, through a technical submission (that is, a desktop appraisal), that the appliance will satisfy the technical standards required by the regulations, resulting in gaining an ‘approval for installation’.

Stage 2 - Installation

After obtaining approval for installation, the Type B gas appliance can be installed.

Stage 3 – Compliance demonstration

This stage requires on-site demonstration to the Type B Gas Appliance Inspector that the installed appliance complies with all the technical and safety requirements for example, checks of the combustion process, and safety controls/interlocks.

The Type B Gas Appliance Inspector issues a certificate of compliance when he/she is satisfied that the installation meets prescribed requirements. This is done in accordance with Regulation 22A(1) which states: An inspector may issue a certificate of compliance for a Type B appliance if the inspector has inspected the appliance and ascertained, so far as is practicable, that it complies with the requirements referred to in Regulation 32.

Stage 4 – Gas supplier approval

Once a certificate of compliance is issued by the inspector, the appliance is allowed to be connected to a gas supply for permanent operation subject to the approval of the gas supplier. This usually involves an inspection of the total gas installation by the gas supplier.

Alternative to inspection on-site (provision for inspection other than at place of installation)

The inspection necessary under regulation 22A(1) and the necessary certification and badging may, with the approval of the Director (which must be sought), be carried out at another place for example, at the manufacturer’s premises as provided for in the remainder of regulation 22A.

This approach is an option to avoid unnecessary on-site inspections where simple appliances such as small kilns or furnaces are installed in remote areas.

Examples where safety assurances can be demonstrated without on-site inspections are when:

- appliances are produced in quantity, to a specific design, are relatively small and merely require connection to a gas supply (similar to Type A appliances); and/or
- specific arrangements are in place for the installing gas fitter to install and commission to a demonstrated process or procedure.

In this case, three copies of the certificate of compliance are to be issued to the manufacturer. The manufacturer must give a copy to the gas fitter, the owner/operator and the gas supplier.

Generally, if an appliance manufacturer is seeking to obtain 'type approval' (that is, for more than one appliance), approval must be sought from the Director.

5.2 Performance of gasfitting by licensed gas fitters

Gasfitting work on an industrial gas installation must be carried out by a gas fitter with an appropriate gasfitting permit issued by EnergySafety WA.

The following classes of gasfitting work are set out in Schedule 5 of the regulations.

Class	Description
Class G	All gasfitting work except gasfitting work classed as Class I, E or P
Class I	Gasfitting work – (a) on a consumer's gas installation associated with a Type B appliance; or (b) on piping that has an operating pressure of more than 200 kPa, not being gasfitting work referred to in paragraph(a) or classified as Class E or P
Class E	Gasfitting work associated with a mobile engine
Class P	Gasfitting work on a gas installation associated with the storage and dispensing of gas for refuelling of a motor vehicle as defined in section 5 of the <i>Road Traffic Act 1974</i>

Class I is the class of gasfitting permit that applies to work on installations involving Type B appliances.

Current holders of a certificate of competency are able to carry out such gasfitting work only if appropriate authorisation is registered on their certificates.

The Director may also issue a gasfitting authorisation to an applicant employed by the owner/operator to carry out or supervise the gas installation or commissioning (classed as gasfitting work), on large complex projects or specialised work (coded welding) if the Director is satisfied that the applicant:

6 APPROVAL OF INDUSTRIAL GAS APPLIANCES (TYPE B APPLIANCES) IN WA

- has adequate theoretical and practical knowledge and adequate skills to carry out the gasfitting;
- has an adequate knowledge of the Act and its regulations; and
- is otherwise a fit and proper person to carry out the work.

To obtain a gasfitting authorisation the applicant must submit the following information to the Director:

- scope of work to be carried out;
- location of the work;
- qualifications held to do the work;
- letter from employer or appliance manufacturer stating applicant is competent to do the work;
- the name of the Type B Gas Appliance Inspector who will carry out the final inspection of the appliance (if known);
- application form; and
- application fee.

For further information on licensing matters, contact the Licensing Centre of EnergySafety WA.

5.3 Notices of completion

The regulations require the licensed gas fitter to submit a notice of completion for the gas installation.

These notices are available free of charge from EnergySafety WA or the gas supplier, in a book of sets of three forms with matching serial numbers.

Within 48 hours of the completion of the work, the licensed gas fitter must give a notice of completion to the following:

- the original (blue form) to the gas supplier or EnergySafety WA as applicable;
- the duplicate copy (green form) to the person requesting the gasfitting work; and
- the triplicate copy (white form) to be retained by the gas fitter who performed the gasfitting work.

In the notice of completion, the licensed gas fitter must certify that every part of the gas installation on which the gasfitting work was carried out, or that is affected by the work, complies with the requirements of the regulations, is safe to use and is completed to a trade finish.

See Appendix A for a copy of a notice of completion.

5.4 Request of gas for commissioning

The permission of the gas supplier is required for the provision of gas for commissioning purposes. The gas fitter who is carrying out the commissioning of the appliance is responsible for applying to the gas supplier for commencement of gas. To satisfy the gas supplier's requirement, the request needs to be endorsed by a Type B Gas Appliance Inspector.

The period during which the appliance can remain on gas for commissioning, that is, the period the appliance is connected to the gas supply for testing and commissioning prior to on-site inspection of the appliance by the Type B Gas Appliance Inspector, has to be approved by this Inspector.

A Type B Gas Appliance Inspector may approve any period of no more than 28 days or a maximum of 90 days if a longer period for commissioning is required, provided he/she gives written notice to the Director of the approval. In special cases a further extension may be sought with the approval of the Director.

5.5 Compliance badges for gasfitting work

An approved compliance badge (a label or metal plate) certifying compliance with the *Gas Standards Act 1972* and its regulations must be attached to the appliance as described below. This identifies to the owner/operator and the gas supplier and subsequently to an Energy Safety WA Inspector that the gasfitting work complies with the requirements of the *Gas Standards Act 1972* and its regulations.

A compliance badge must be attached to the appliance in the following instances:

a) Upon completion of the gas installation

The licensed gas fitter must attach an approved metal badge to the appliance in an approved location, for example, alongside the appliance data plate.



This badge signifies that the gas installation complies with the requirements of the relevant standards and the regulations.

b) Upon completion of the commissioning of the gas appliance

The commissioning gas fitter must attach an approved metal badge to the appliance in an approved location, for example alongside the appliance data plate.

This badge signifies that the commissioning of the gas appliance complies with the requirements of the relevant standards and the regulations.

Only approved metal compliance badges (shown below) must be used and they can be purchased from EnergySafety's Licensing Office.

 EnergySafety WA  <small>Gas Standards Act 1972 - Compliance Badge</small>	
Gasfitting work: New Connection <input type="checkbox"/> Pipework <input type="checkbox"/> Additional Work <input type="checkbox"/> Appliance Connection <input type="checkbox"/> Repair Work <input type="checkbox"/> Commissioning <input type="checkbox"/>	NOC No.: Variation/ Exemption No.:
Installation address/registration number of mobile for non-propulsive purposes:	
I confirm that this gasfitting work complies with the Gas Standards Act 1972 and its regulations.	Work Completion Date:
Registered Gas Fitter's Name:	Gas Fitter's No.:
<small>ESWA G013 1010</small>	

Gasfitting compliance badge

5.6 Inspection and issue of certificate of compliance

People designated as Inspectors (Gas) for inspecting and approving Type B appliances are known as Type B Gas Appliance Inspectors. The Director has statutory authority under the provisions of the *Energy Coordination Act 1994* to designate a person as an Inspector (Gas).

Some Type B Gas Appliance Inspectors are employees of gas suppliers, such as WestNet Energy and Wesfarmers Kleenheat Gas, others are 'independent' Inspectors employed by others or running their own inspection business. The current tendency is for independent inspectors to carry out much of this work.

A list of independent Type B Gas Appliance Inspectors can be obtained:

- from EnergySafety WA's website; or
- by contacting the Gas Inspection Branch of EnergySafety WA.

A Type B Gas Appliance Inspector has specific conditions attached to his/her designation, depending upon the holder's qualifications and experience.

Currently there are three levels of Type B Gas Appliance Inspector:

1. Inspectors able to certify Type B gas appliances with an input capacity up to 10 GJ/h.
2. Inspectors able to certify Type B gas appliances with an input capacity up to 20 GJ/h.
3. Inspectors able to certify all Type B appliances.

Independent inspectors normally offer their services on a fee-for-service basis and should be appointed by the owner/operator of the gas appliance installation or gas

supplier, to ensure the certification is seen as independent of the work of persons that have designed or installed the appliance.

After the Type B Gas Appliance Inspector has inspected the appliance installation and has ascertained that it complies with the requirements referred to in regulation 32 of the regulations, he/she is required to issue a certificate of compliance.

This allows the appliance to remain permanently connected to a gas supply in a consumer's gas installation.

The Type B Gas Appliance Inspector issues the certificate of compliance by:

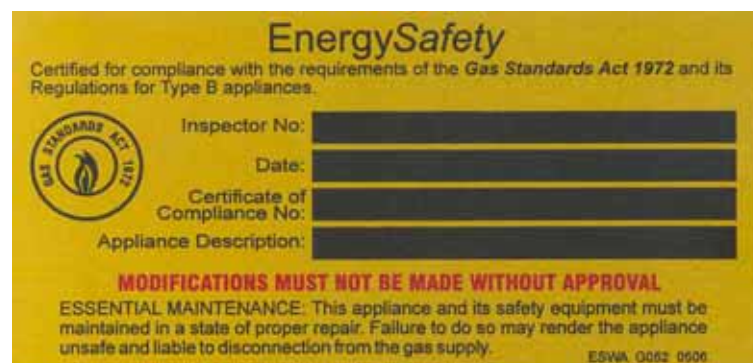
- Providing the certificate in an approved form to the Director (refer Appendix B).
- Providing copies of the certificate to the:
 - licensed gas fitter who commissioned the appliance;
 - consumer; and
 - gas supplier.
- Attaching an approved metal badge (a sample of which is shown below) to the appliance in a conspicuous position.

6 Approval process

6.1 New Type B appliance

The approval process, from getting approval to install the new gas appliance through to final certification and receiving permanent gas supply from the gas supplier to operate the appliance is broken up into four stages:

1. obtaining 'approval for installation';
2. installation of the appliance;
3. commissioning of the appliance; and
4. certification by a Type B Gas Appliance Inspector.



Approval badge issued by Type B Gas Appliance Inspector

The following flowcharts that are shown in Section 6.4 illustrate the different phases of the approval process for the stakeholders.

6.1.1 Approval for installation

The person seeking to have the gas appliance approved for installation must prepare a technical submission for review by a Type B Gas Appliance Inspector.

It is recommended that the owner/operator of the installation engage the inspector to ensure the assessment is independent of the work of people contracted to design and/or install the appliance.

For details of the contents of a technical submission, refer to Section 8 'Technical considerations'. A sample of a typical technical submission, demonstrating how technical compliance issues should be addressed in the submission, is provided in Appendix C of this document.

After carrying out a desktop appraisal of the submission, and if satisfied that the proposed gas installation will meet the technical requirements of the prescribed code/standard, the Type B Gas Appliance Inspector will issue a notice advising that the appliance is 'approved for installation' and can be installed.

The inspector cannot be held responsible for giving an 'approval for installation' for an appliance that is subsequently found not to work satisfactorily as a result of a fault or deficiency in the design of the appliance.

6.1.2 Installation of the appliance

A gas fitter with a Class I permit or an appropriate certificate of competency or gasfitting authorisation issued by EnergySafety WA must carry out the gasfitting installation.

Once installed, the licensed gas fitter must attach a compliance badge to the appliance, fill out the notice of completion and give a copy to the gas supplier and the owner. Refer to Appendix A for an approved form of the notice of completion.

6.1.3 Commissioning of the appliance

The gas appliance must be commissioned by a licensed gas fitter. He/she can be the same gas fitter who carried out the installation or a commissioning person, who holds a Class I permit, working for the gas appliance's vendor.

After satisfactorily completing the commissioning, the commissioning person must attach a compliance badge to the appliance, fill out the notice of completion and give a copy to the gas supplier and the owner/operator.

A copy of his completed commissioning report and safety interlocks verification checklist must be forwarded to the Type B Gas Appliance Inspector for appraisal before requesting an on-site demonstration to the inspector of the operation of relevant safety interlocks.

6.1.4 Certification of the appliance

Before the commissioning person leaves the site with the gas installation permanently connected a Type B Gas Appliance Inspector must first inspect the appliance and issue a certificate of compliance to allow the owner/operator to use the appliance in production mode.

This requires the commissioning person to demonstrate to the Inspector the following compliance with regulatory requirements:

- all the safety interlocks, protective devices operate correctly; and
- the valve train equipment and burner management system installed are in accordance with the original approval given by the Inspector.

If the Type B Gas Appliance Inspector is satisfied with the demonstration, and after inspection of the installation has ascertained that the installation complies with the requirements in regulation 32 of the regulations, the inspector will issue a certificate of compliance for the appliance and then attach an approval badge or label to the appliance.

The following people receive a copy of the certificate of compliance:

- Director of Energy Safety;
- gas fitter who commissioned the appliance;
- owner/operator of the installed appliance; and
- gas supplier.

The gas supplier may only give permission for gas to remain permanently connected to the appliance if the supplier:

- has received all notices of completion of the work;
- has received a copy of the certificate of compliance from the Type B Gas Appliance Inspector; and
- is satisfied that the gas installation complies with all prescribed statutory requirements (this may require additional checks and testing).

A Type B Gas Appliance Inspector is not obliged to certify an appliance that he/she has given 'approval for installation', unless it works and it is demonstrated to comply with prescribed requirements.

6.2 Existing Type B appliance that is modified

If a Type B appliance is to undergo a modification that changes the safety integrity of the existing gas system operation or takes the gas appliance out of its original approval criteria, one of the following processes needs to be followed to have the gas appliance installation approved depending on the appliance certification status.

6.2.1 Existing Type B appliance without evidence of previous approval

Prior to 1996, a Type B appliance required individual approval from a gas supplier inspector before provision of permanent gas supply by the gas supplier. However, certification of the appliance, with a certificate of approval or of compliance and the attachment of an approval badge, were not part of the approval process.

The owner/operator of an existing gas appliance, installed prior to 1996, that is going to be modified is encouraged, as a matter of good engineering practice, to consider getting the appliance as part of the modification certified at the time.

6.2.1.1 Modification and certification of the modified appliance

This approval process only applies to existing Type B appliances without evidence of previous approval, is considered good engineering practice and is preferred as a certificate of compliance and an approval badge is issued.

A Type B Gas Appliance Inspector must give 'approval for installation' in writing for the modified appliance before the gas appliance is modified.

Where existing equipment that forms part of the gas system is to be reused in the installation, the submission must address the extent of any non-compliance of the existing equipment with the current code/standard requirements. The owner/operator can provide equivalent level of compliance/safety proposals for any issues of non-compliance from these requirements by submitting them in writing to the Type B Gas Appliance Inspector in order to enable the inspector to obtain approval from the Director.

After carrying out a desktop appraisal of the submission, and if satisfied that the proposed 'modified' appliance will meet the technical requirements of the prescribed codes/standards (including any approvals for variation/exemption granted by the Director), the Type B Gas Appliance Inspector will then issue a notice advising that the appliance, including the modification, is approved for installation and that work in modifying the appliance can commence.

The installation, commissioning and certification requirements for the modified appliance are similar to that for a new appliance.

6.2.1.2 Modification without certification

This approval process only applies to existing Type B appliances without evidence of previous approval. This process although acceptable, is not considered good engineering practice by EnergySafety and is therefore not the preferred process as a certificate of compliance and an approval badge are not issued.

A Type B Gas Appliance Inspector must give 'approval for installation' for the modification in writing before a gas appliance is modified. This requires the owner/operator to satisfy the Inspector, through a technical submission (a desktop appraisal), that the modification will satisfy the technical standards required by the regulations and the modified appliance will be safe to use. The Type B Gas Appliance Inspector, once satisfied that the modification meets the required standards, will issue a notice approving the modification. This is required before any work in modifying the appliance takes place.

After completion of the modification, the Type B Gas Appliance Inspector may inspect the gas appliance to ensure the modification is carried out in accordance with his/her earlier approval.

As the existing uncertified modified appliance is already connected to the gas supply, there may not be a requirement for the gas supplier to give permission to supply gas for commissioning. Regulation 36(1aa) does however require the consumer to ensure the appliance is made available for testing and commissioning by a gas fitter before the consumer uses the appliance for production purposes.

The existing gas appliance with the approved modification installed is safe to use but a certificate of compliance and an approval badge will not be issued.

6.2.2 Existing Type B Appliance with evidence of previous approval

From May 1999, when the Gas Standards Regulations 1983 were replaced by the new Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999, the Type B gas appliance approval process requires a Type B Gas Appliance Inspector to issue a 'certificate of compliance' instead of a 'certificate of approval' as well as an approval badge.

Proposed modifications to a Type B appliance that has a certificate of approval or a certificate of compliance and an approval badge issued by an inspector are to be addressed in the following manner and the modified appliance must be re-certified.

The owner/operator is still required to satisfy a Type B Gas Appliance Inspector, through a technical submission that the appliance, including the modification, will satisfy the technical standards required by the regulations. However, depending on the complexity of the proposed modification, the owner/operator may only need to address compliance of the proposed modifications with current standards.

For example, an owner/operator proposes a modification, which replaces an existing Programmable Logic Controller (PLC) with a TUV certified PLC and intends using all other existing gas equipment, which are still currently approved for use by having a certificate of compliance or approval badge attached.

Providing all existing protective devices and gas safety interlocks are utilised and set to within the gas appliance original approval criteria, the submission would only need to address in detail the PLC component.

Subject to these modifications meeting the required standards, the Type B Gas Appliance Inspector will issue an 'approval for installation' notice. This is required before any work in modifying the appliance can take place.

The installation, commissioning and certification requirements for the modified appliance are similar to that for a new appliance.

See note over page.

Note: The following are examples of gasfitting work considered to be an appliance modification that do not require re-certification, but a Type B Gas Appliance Inspector's approval:

- relocating valve trains without any significant adjustment to protective limits or affecting the performance of the existing safety interlocks;
- adjusting protective limits, within the limits set in appliance's original operating range; and
- modifying pipework to allow the system to be pressure tested or to allow easier service access to valve train components.

6.3 Relocating a Type B appliance

If a Type B appliance has to be dismantled and then re-assembled in a different location, the relocated appliance requires individual approval in writing by an inspector. The process for gaining 'approval for installation' is similar to that of a modification to a Type B appliance.

The inspection required under regulation 22A(1) and the necessary certification and badging may, with the approval of the Director, be waived if it can be demonstrated that relocating a Type B gas appliance does not involve re-assembly and meets the following criteria:

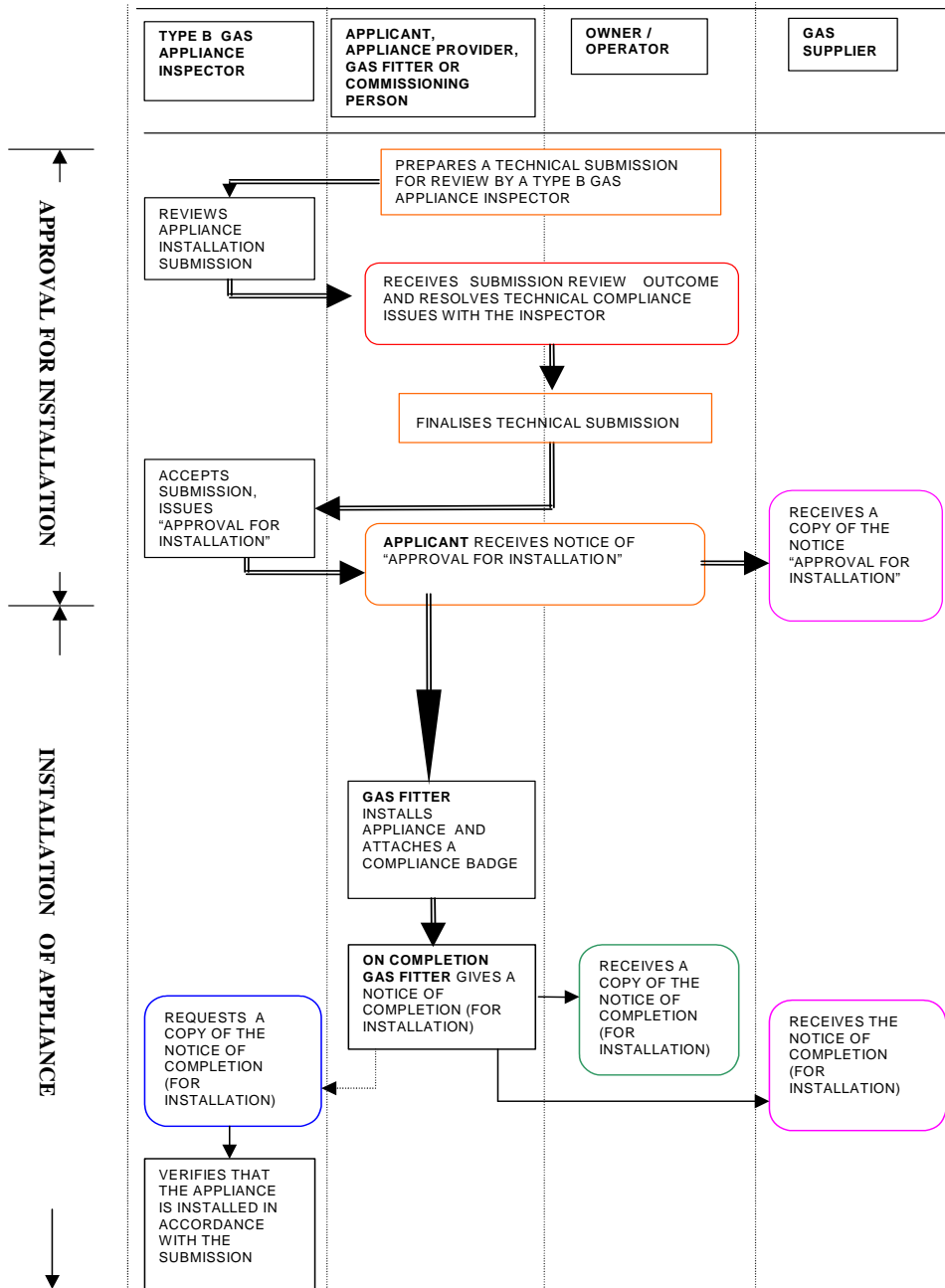
- relatively small gas appliance, eg small kilns and merely requires connection to a gas supply;
- adequate installation and commissioning instructions are in place for the installing gas fitter to install and commission; and
- has a certificate of approval or a certificate of compliance and a compliance badge (recognised by the Director) attached;

This requires the owner/operator to apply in writing to the Director providing evidence to support the waiving of the requirement for having to re-certify and re-badge the appliance.

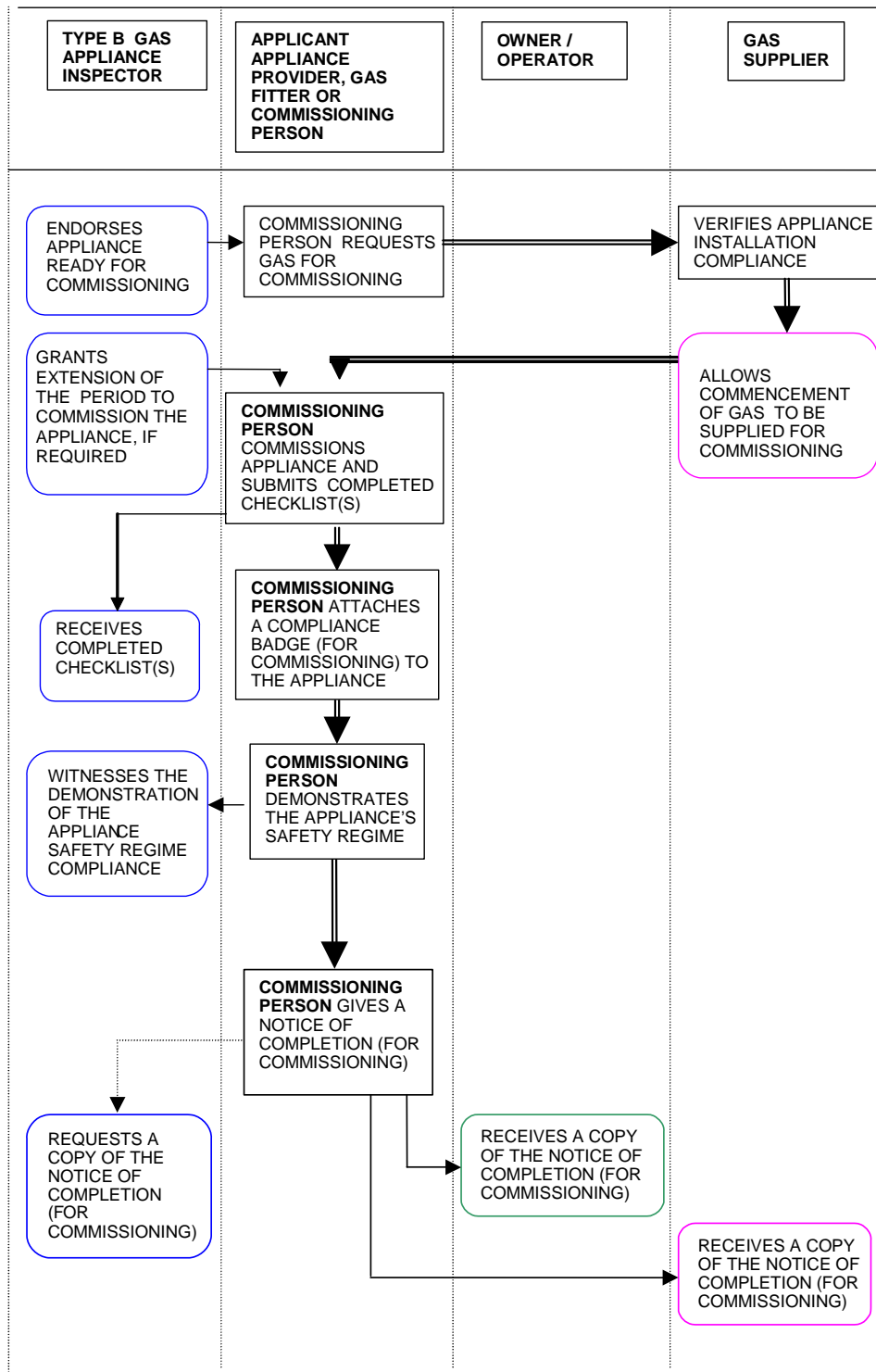
After relocating the gas appliance, the installing gas fitter must then submit a notice of completion for the work to the relevant gas supplier who will inspect the gas installation in accordance with the requirements of the gas supplier's inspection plan.

6.4 Flowcharts of approval process

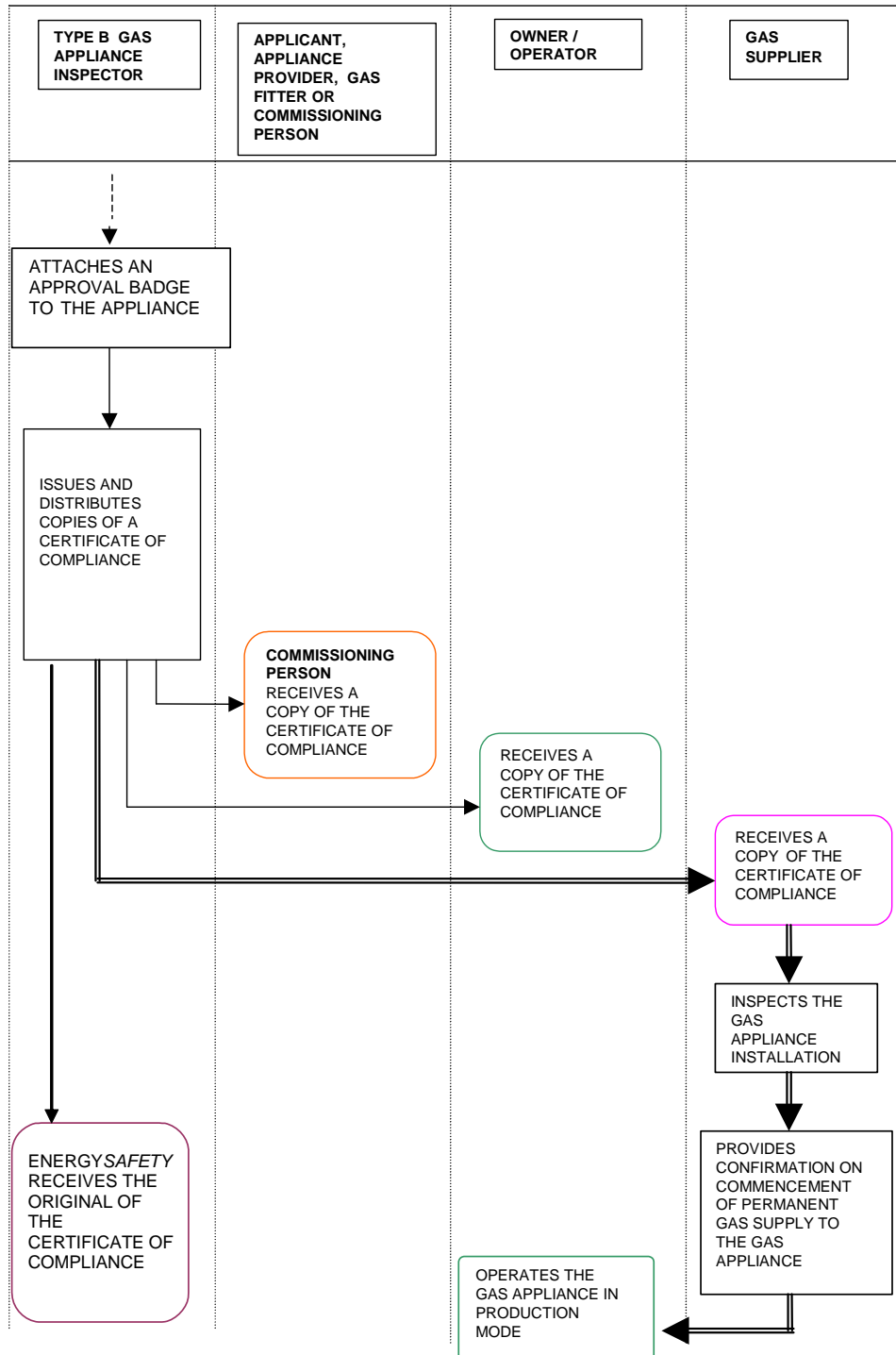
6.4.1 Approval for installation and installation of an appliance



6.4.2 Commissioning of the appliance



6.4.3 Certification of the appliance



7 Roles of industry participants involved in getting a Type B appliance approved for use

The following industry participants are involved in the approval/certification process in getting a Type B appliance approved for use in accordance with regulatory requirements.

7.1 The applicant

The applicant is the person requesting the appliance be approved. He/she may be an appliance manufacturer, engineering consultant/contractor, the owner/operator, or a gas fitter.

The applicant:

- Engages a Type B Gas Appliance Inspector. Note: For appliances constructed and installed on site, it is recommended that the owner/operator of the installation engages the Inspector to ensure the assessment by the Inspector is seen as independent of the people contracted to design and install the appliance.
- Prepares a technical submission in accordance with AS 3814 Appendix A and submits it to the inspector requesting 'approval for installation'. The submission is to refer to the extent of compliance with the applicable code/standard, addressing any areas of non-compliance and providing equivalent level of safety proposals for any such deviations. For more complex installations, a hazard risk analysis or a safety case study may be more appropriate. This will assist the inspector in the review of the submission and speed up the approval process.
- Liaises with the inspector as necessary to resolve and provide information on any technical compliance issues arising from the review of the appliance submission by the Type B Gas Appliance Inspector.
- Receives a notice confirming 'approval for installation' of the appliance from the Type B Gas Appliance Inspector.
- Provides the gas supplier with a copy of the Type B Gas Appliance Inspector's notice of 'approval for installation' for the appliance. This gives the gas supplier notice for future gas requirements.

7.2 The licensed gas fitter

The licensed gas fitter is responsible for installing and/or commissioning the appliance in accordance with all statutory requirements. Gasfitting work associated with a Type B appliance installation is classed as industrial and requires the licensed gas fitter to have a Class I permit, or appropriate gasfitting authorisation or certificate of competency appropriate for industrial gasfitting work.

The licensed gas fitter:

- Carries out the work and attaches an approved metal compliance badge to the appliance after completing the work.
- Within 48 hours, provides a notice of completion for the installation of the appliance to the following:
 - gas supplier (blue original); and
 - applicant (green copy).

The gas fitter retains the white copy of the notice of completion.

- Gives a copy of the notice of completion, together with any test reports (for example pressure testing of pipe work), to the Type B Gas Appliance Inspector who is required to verify that the appliance is installed in accordance with the approved technical submission.
- Keeps records (charts, non-destructive test certificates etc) of all pressure testing of the gas pipe work.

7.3 The commissioning person

Commissioning of a Type B appliance is classed as industrial gasfitting work, for which either a Class I permit, an appropriate gasfitting authorisation or certificate of competency, is required.

The commissioning person may be the same licensed gas fitter who installed the appliance, or another person who specialises in the commissioning of industrial gas appliances. The commissioning person's role is to:

- request gas for commissioning from the gas supplier. This will require endorsement from the Type B Gas Appliance Inspector. The period the appliance can remain connected to the gas supply for commissioning (prior to permanent connection to the gas supply) is limited to 28 days. If a longer period (up to 90 days is the normal limit) is required, written approval from this inspector is required. A further extension requires the Director's approval;
- commission the appliance and verifies that all safety interlocks operate as designed;
- attaches an approved metal compliance badge to the appliance after completion of the commissioning;
- give a notice of completion (for commissioning) within 48 hours of completing the testing/commissioning, to the:
 - gas supplier (blue original); and
 - applicant (green copy).

The gas fitter (commissioning person) retains the white copy.

- provides a copy of the notice of completion, together with any commissioning check sheet on the protective and safety interlocks to the Type B Gas Appliance Inspector;
- arranges for the Type B Gas Appliance Inspector to witness a demonstration of the operation of the appliance's protective devices and safety interlocks;
- demonstrates the operation of the appliance's protective devices and safety interlocks to the Type B Gas Appliance Inspector;
- attends to any defects identified by the Type B Gas Appliance Inspector as a result of the appliance's safety regime demonstration; and
- demonstrates the correct method of operating the appliance to the owner/operator of the installation.

7.4 The Type B Gas Appliance Inspector

The Type B Gas Appliance Inspector:

- carries out a desktop review of the technical submission, ensuring compliance with regulations and technical requirements of AS 3814;
- liaises with the applicant and resolves technical compliance issues arising from the appliance submission review. He/she must not recommend or provide technical solutions;
- issues an 'approval for installation' notice after all compliance issues have been addressed by the applicant to his/her satisfaction;
- requests a copy of the notice of completion (for installation) from the licensed gas fitter after the appliance has been installed;
- endorses that the appliance is ready to receive gas for commissioning at the request of the commissioning person;
- approves the period (up to 28 days) the appliance can remain connected to the gas supply for commissioning (prior to permanent connection to the gas supply). If in a particular case, a longer period is required (up to 90 days is the normal limit), the Type B Gas Appliance Inspector gives written notice to the Director of the approval. If a further extension is required, an application needs to be made and requires the Director's approval;
- requests a copy of the notice of completion (for commissioning) from the commissioning person after the appliance has been satisfactorily commissioned, together with the completed commissioning check sheet for the appliance's safety interlocks and protective devices;

- witnesses a demonstration by the commissioning person of the appliance's safety regime. This is to prove the effective operation of approved safety devices, permissive, interlocks and other protective mechanisms in accordance with code requirements;
- after inspection of the appliance to verify general installation, ventilation and fluing compliance and the successful demonstration of the appliance's protective and safety interlocks, issues a certificate of compliance (see example in Appendix B) for the appliance. The certificate must be in an approved form and is issued to the Director of Energy Safety, with copies to the:
 - applicant;
 - consumer (owner/operator); and
 - gas supplier.
- checks attachment of an approval badge on the appliance in a conspicuous position.

7.5 The gas supplier

The gas supplier or network operator:

- receives a copy of the Type B Gas Appliance Inspector's notice 'approval for installation' from the applicant;
- receives a notice of completion (for installation) from the licensed gas fitter;
- receives a request from the licensed gas fitter who will be commissioning the gas appliance to provide gas for commissioning and testing of the appliance;
- verifies by inspection or other means the following aspects of the installed appliance:
 - pipe work integrity;
 - correct marking / colour coding;
 - correct settings for pressure controls (regulators, over pressure shut-off's);
 - adequate siting with respect to ventilation, flues etc; and
 - compliance badge for the appliance installation has been attached in a conspicuous position by the licensed gas fitter.
- allows the temporary commencement of gas supply for commissioning purposes;
- ensures the gas supply for commissioning is only available for a period approved by the Type B Gas Appliance Inspector;
- receives a notice of completion (for commissioning) of the appliance;
- receives a copy of the certificate of compliance for the appliance from the Type B Gas Appliance Inspector;
- verifies by inspection or other means that the appliance is safe to receive permanent gas supply; and
- provides written confirmation to the owner/operator advising that the gas appliance is able to be used permanently (that is, in production mode).

Note: The above guidelines refer only to Type B gas appliance issues. The general installation inspection obligations of gas suppliers per section 13 of the *Gas Standards Act 1972* remains.

7.6 The owner/operator

The owner/operator:

- establishes the requirements for the installation of a Type B appliance;
- chooses a gas supplier (the company that will physically supply the gas);
- engages the Type B Gas Appliance Inspector;
- advises the gas fitter of the gas supplier;
- receives notices of completion for the appliance installation and also later for appliance commissioning to indicate that the appliance is ready for inspection;
- receives a copy of the certificate of compliance for the appliance from the Type B Gas Appliance Inspector. This indicates that the appliance installation complies with the requirements of the regulations and may remain permanently connected to the gas supply; and
- receives written confirmation from the gas supplier that the appliance can remain permanently connected to the gas supply.

Note: In the case of a Type B appliance being modified, makes the appliance available for testing/commissioning by a gas fitter and verification of safety interlocks by the inspector before the consumer uses the appliance for production purposes.

7.7 EnergySafety WA

The Director of Energy Safety is responsible for the administration of the *Gas Standards Act 1972* and the regulations.

The Director:

- designates people as Inspectors (Gas) for carrying out inspections and approvals of Type B gas appliances (Type B Gas Appliance Inspectors);
- receives the original of the certificate of compliance from the Type B Gas Appliance Inspector. The issue of the certificate by the Type B Gas Appliance Inspector to the Director signifies that a Type B appliance installation has met the prescribed requirements of the regulations and, with the approval of the gas supplier, the appliance can remain permanently connected to the gas supply; and
- carries out sample inspections of such installations and audits the work processes of Type B Gas Appliance Inspectors, to ensure compliance with requirements as generally described in the document 'Code of Practice for Inspectors (Gas) in Western Australia'.

8 Technical considerations

Installations of large commercial and industrial gas fired appliances must comply with the requirements as set out in Schedule 6 of the regulations and AS 3814: Industrial and commercial gas-fired appliances and AS 5601: Gas installations.

AS 3814 provides the minimum requirements for the design, construction and safe operation of Type B appliances and AS 5601 details the technical requirements for the installation of gas appliances.

The requirements in both Standards are mandatory, as both are called up in Schedule 7 of the regulations.

8.1 Contents of a technical submission

A technical submission containing the technical data as set out in AS 3814 Appendix A Standard Information and Technical data, must be submitted to a Type B Gas Appliance Inspector to obtain 'approval for installation'.

8.1.1 General

A technical submission must include, but not be limited to, the following information for the Inspector to review and assess compliance of the gas appliance installation:

- valve train schematic including gas pressure settings;
- specification of components, that is, AGA or SAI Global certification details, pressure ratings and the like;
- purge, start gas and critical energy calculations;
- electrical schematic of the burner management system; and
- a detailed description of the working of the burner management system or a logic diagram. Both should highlight the essential responses of the system, for example, lockout, shutdown or alarm.

See Appendix C for an example of a typical technical submission, including a burner management system logic diagram.

It is the responsibility of the person seeking approval to make the inspector aware of any non-compliance issues. In conjunction with the appliance vendor and the owner/operator, this person should carry out a hazard risk analysis or a full safety case study, depending on the complexity of the gas installation.

This should be submitted to the Type B Gas Appliance Inspector as supporting evidence to address any non-compliance issues.

The inspector should not be used to provide advice or solutions to non-compliance issues, as the Inspector is required to take the role of an independent, third party assessor of the work of others.

Where possible, AGA or SAI Global certified equipment or components should be selected. This will reduce the time taken by the Type B Gas Appliance Inspector to review the submission, and give approval for installation.

Where non-AGA or SAI Global certified equipment or components are proposed for use in the gas train/burner management system/air supply system, the general requirement is for the applicant (preferably the appliance supplier) to make a submission, in writing, to the Inspector that addresses compliance with other equivalent, codes/standards. This should include confirmation by the manufacturer that the components are fit for purpose.

After the inspector assesses the evidence he/she may then write to the Director stating that the proposed equipment is equivalent to prescribed requirements and recommend that it be approved by the Director. Refer to the information below on variations from the requirements of the codes/standards for further information.

8.1.2 Electrical safety system

Generally, any control system in the gas installation, which performs safety related functions, must be hard-wired. If a Programmable Electronic System (PES) is proposed for the control of safety related functions of the burner management system on a Type B appliance, the applicant is required to submit the following information to assist the inspector in evaluating the system for compliance:

- a relevant flow chart containing a description of events to occur within the PES;
- details of relevant parts [only] of the PES programme;
- hard-wired electrical circuit diagram in ladder-logic format, clearly showing connections to the PES; and
- a written statement from the owner/operator acknowledging and accepting the risk level (Safety Integrity Level, SIL) the PES is certified to provide.

For such systems to gain acceptance, evidence of the following needs to be provided:

- the controller is a redundant safety related PES;
- the controller possesses a TUV safety certificate of the appropriate class of DIN V 19250 or equivalent certificate; and
- only TUV approved firmware (or equivalent) is being used in the controller.

To ensure the integrity of the PES user software, the person (or company) that designed the system must have quality assurance accreditation, and must demonstrate adherence to the principles outlined in AS 61508 Functional safety of electrical/electronic/programmable electronic safety related systems.

8.1.3 Calculations

Details of purge time calculations, start gas rate and energy calculations, and ventilation requirements must be provided to verify compliance with the requirements of AS 3814 and AS 1375 - Industrial fuel-fired appliances. Where calculations do not apply to the appliance nominated in the submission, they should be noted and explained in the submission as 'not applicable'.

The sample technical submission provided in Appendix C of this document gives a guide on how to address this issue.

8.1.4 Operating sequence, set points and protective/safety interlocks

The start-up, time limits, operating sequence and designed interlocks should be provided to demonstrate compliance with AS 3814.

8.1.5 Variation to the requirements of the codes/standards

The Director has not delegated to any independent Type B Gas Appliance Inspector the functions of authority as defined in regulation 33(2) of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999. Therefore a Type B Gas Appliance Inspector may not exercise a specified discretion of the authority and instead needs to deal with these issues as follows.

8.1.5.1 *For components of valve train and gas firing system for example, safety shut-off valves or isolation valves, which are not AGA or SAI Global approved*

The applicant must provide written evidence of the approval or certification of the gas equipment to other but equivalent code/standard, and a manufacturer's statement to confirm it is 'fit for purpose'.

8.1.5.2 *For protective systems and safety related functions for example, over pressure, flame detection*

The applicant must provide written evidence that a risk analysis has been carried out on the gas installation and all non-compliance issues have been adequately addressed by the owner/operator.

Note: A requirement of a code/standard that is listed in Schedule 6 and 7 of the regulations may be varied by the Director in accordance with regulation 32(3). Any such request has to be made by the owner/operator, submitted via the applicant to the inspector, complete with detailed technical evidence supporting the owner's/operator's assessment that an equivalent level of safety outcome can be achieved by the proposed means. After assessment by the inspector, the inspector may then recommend, in writing, to the Director that the proposed equipment or system is equivalent to that prescribed and is recommended for approval. Allow at least two working weeks for a formal response from the Director for such variations.

8.2 Installation

Installations of large commercial or industrial gas appliances must be carried out in accordance with the requirements of Schedule 6 and the relevant codes and standards as listed in Schedule 7 of the regulations.

EnergySafety WA has published 'Guidelines for Safe Working with Gas in Consumers' Installations', to assist people involved in carrying out general gasfitting work.

Copies of this guideline can be downloaded from the EnergySafety WA web site at www.energysafety.wa.gov.au

8.3 Commissioning

Before an appliance is put into service, a systematic check must be carried out to ensure that all the items are installed correctly and function and operate in the sequence as designed. Where a gas appliance incorporates a pressure vessel for example, a hot water or steam boiler, a 'certificate of inspection of boiler' issued by the appropriate authority should be obtained prior to the appliance being commissioned.

A typical commissioning procedure is set out in AS 3814 Appendix F, A Typical Commissioning Procedure.

Appendix A

Notice of completion

Within 48 hours of completion of the gasfitting work the licensed gas fitter must give a notice of completion to the relevant gas supplier or Energy Safety WA and the person requesting the work.

Government of Western Australia Department of Commerce Energy Safety		Approved Form Date of Issue: July 2010	
NOTICE OF COMPLETION			No. <input type="text"/>
1 LOCATION OF INSTALLATION			
Owner/Occupier Name:		Builder's/Dealer's Name:	
METER No. (if applicable)			
Lot No.:	Unit No.:	Street No.:	Street:
Suburb/Town:		Postcode:	
Owner/Occupier Telephone No. Directions - please provide (nearest corner etc.) sufficient information:			
2 MOBILE INSTALLATIONS <i>Send Notice to Energy Safety WA</i>			
Automotive	Caravan	Marine Craft	Other
TYPE OF GAS: LPG			NG
DESCRIPTION OF OTHER:		VEHICLE/CARAVAN/VESSEL LICENSE or Registration Number:	
3 FIXED INSTALLATION DETAILS <i>Send Notice to the Gas Supplier</i>			
TO (NAME OF GAS SUPPLIER):		EMERGENCY CHANGE OVER (tick if applicable)	Is water safe? YES <input type="checkbox"/> NO <input type="checkbox"/>
4 INSTALLATION DETAILS			
TYPE OF GAS: NG	LP Gas	CNG	LNG
OTHER: Provide details:			
TYPE OF INSTALLATION: Domestic		Commercial	Industrial
New Home		Existing Home	
OPERATING PRESSURE: 1.25 KPA		2.75 KPA	OTHER: KPA
5 TYPE OF WORK			
NEW CONNECTION		ADDITIONAL WORK	
PIPE WORK		APPLIANCE CONNECTION	
REPAIR WORK		COMMISSIONING	
6 TYPE A (DOMESTIC/COMMERCIAL) APPLIANCE(S)			7 TYPE B (INDUSTRIAL) APPLIANCE(S)
APPLIANCE DESCRIPTION	No.	MJ/h	Make
WATER HEATER			
COOKING APPLIANCE			
SPACE HEATER			
BAYONET			
SPA/POOL HEATER			
OTHER			
DETAILS OF OTHER APPLIANCES:			
DESCRIPTION:			GAS CONSUMPTION <input type="text"/> MJ/h
			PRE-ASSEMBLED <input type="checkbox"/>
			ASSEMBLED ON SITE <input type="checkbox"/>
			CONVERSION <input type="checkbox"/>
			If an appliance is to be left permanently connected, attach Inspector's Certificate of Compliance issued by: INSPECTOR No. <input type="text"/>
8 COMMENTS AND ADDITIONAL DETAILS (include any applicable variation/exemption numbers)			
<input type="text"/>			
<input type="text"/>			
If any part of the above gas installation does not comply with the regulations and/or is unsafe, provide details:			
<input type="text"/>			
<input type="text"/>			
9 ADMINISTRATION DETAILS			
GAS FITTER'S NAME (print):		OFFICE USE ONLY:	
COMPANY NAME:		<input type="text"/>	
BUS. ADDRESS:			
SUBURB:	POSTCODE:		
GAS FITTER'S PHONE NUMBERS:			
Number (Mobile or Other)		Gas Inspector's Signature: _____ Date: _____	
Gas Fitter's Registration No.	GF		
CLASSES OF GASFITTING:			
I hereby certify that every part of the gas installation on which the gasfitting work specified on this notice was done or that is affected by that work complies with the Gas Standards Act 1972 and its regulations, is safe to use and is completed to a trade finish. I further certify that, if the work has included leaving a Type B appliance permanently connected in that customer's gas installation, an Inspector has issued a Certificate of Compliance for that appliance. I declare that I am currently registered to do the gasfitting specified in this Notice.			
GAS FITTER'S SIGNATURE: _____		Date: _____	
Notice of Completion (Blue) - Gas Supplier - Duplicate Copy (Green) - Customer - Triplicate Copy (White) - Gas Fitter.			
ES904 0015 0709			



Government of **Western Australia**
 Department of **Commerce**
 EnergySafety

EnergySafety
 Approved Form
 Issued July 2009

CERTIFICATE OF COMPLIANCE FOR AN INDIVIDUAL TYPE B GAS APPLIANCE

Certificate No.

1. DESCRIPTION OF TYPE B GAS APPLIANCE

2. APPLIANCE IDENTIFICATION (including name of manufacturer/vendor)

3. INSTALLING DETAILS

Gas Fitter's Name:	
Company Name (if applicable):	
Notice of Completion No:	

4. COMMISSIONING DETAILS

Gas Fitter's Name:	
Company Name (if applicable):	
Notice of Completion No:	

5. APPLIANCE LOCATION DETAILS

Appliance Owner's Name:	
Address of Appliance:	
(please include directions)	

The gas appliance described above has been inspected and is hereby certified as complying with Regulation 32 of the Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999. A Compliance Badge (or label) has been fitted to the appliance.

Gas Inspector's Name (printed):		Gas Inspector's No:	GI
Signature:		Date:	

The issue of this Certificate of Compliance does not in any way diminish the responsibility of the gas appliance manufacturer, installer or operator for ensuring the appliance functions, and continues to function, safely and efficiently.

Note: If the appliance is approved in a workshop, three copies of the form are to be forwarded to the appliance manufacturer, for the manufacturer to distribute to the gas supplier (blue copy), consumer (yellow copy) and gas fitter (green copy).

EnergySafety – White Gas Supplier – Blue Consumer – Yellow Commissioning Gas Fitter – Green Inspector – Pink

Appendix C

Typical technical submission

An example of a typical technical submission required to be provided to a Type B Gas Appliance Inspector is shown below. Data entries are indicative only, and shall not be taken as applying to a specific appliance. The example includes a typical burner management system logic diagram.

Submissions shall be in accordance with AS 3814 Appendix A, and units of measurement should be in the SI system.

Item No.	Item description	Data Entry
1	Name and address of appliance manufacturer	MAXWELL INDUSTRIES 40 HOPE ROAD OSBORNE PARK WA 6017
2	Name and address of authorised installer or conversion contractor	FLAMESPEED 25 MORGAN CRESCENT MARTIN WA 6110
3	Name and address of commissioning person	IVAN GORSKY C/- FLAMESPEED (AS ABOVE)
4	Name and address of organisation where appliance is to be installed	MEDITERRANEAN BAKER 23 HADRILL STREET BAYSWATER WA 6053
5	Customer contact and telephone number	JOE MULBURY 08 9309 6694
6	Appliance type, operation and process description	Commercial oven, batch production, baking of bread loaves
7	Number of burners and type	1 only Maxwell forced draught Model No. PL 464 Package burner.
8	Nominal gas consumption for total appliance and for each main burner	Low - Not applicable High - 10,000 MJ/h = 250 m ³ h.
9	Gas consumption at ignition for each burner	400 MJ/h = 10.0 m ³ /h
10	Air flow rate at ignition for each burner	660 m ³ /h
11	Volume of each combustion chamber	2.0 m ³
12	Total volume swept by the combustion products from the burner(s) to each flue connection	2.5 m ³
13	Air flow rate during purge periods	3,300 m ³ /h
14	Details and method of operation of any combustion air or flue dampers	(a) Combustion air damper is fixed. (b) Combustion air is regulated for starting by closing the flue damper. Starting airflow is 20% of maximum airflow. The flue damper is opened and closed (but can never be completely closed) by a control handle. A limit switch indicates that the damper is fully open during the purge cycle.

15	Details of any explosion reliefs including location, cross-sectional area and weight together with calculations (Refer AS 1375 Appendix E)	<p>Spring-loaded door configuration:</p> <p>A = X/sectional area of appliance = 0.81 m², (900mm x 900mm)</p> <p>L = length of appliance = 2.0 m</p> <p>c = Circumference of appliance = 3.6 m, (4 x 900mm)</p> <p>D = Mean hydraulic diameter = 4A/c = 0.9 m</p> <p>P = Max. allowable pressure (see E4.2) = 7kPa</p> <p>S = Flame speed (see Table E1) = 0.4 m / sec</p> <p>L/D = 2.22. For this condition, the relief vent area is given by: R = (8AS)/P, where R is the total relief vent area required. = (8 x 0.81 x 0.4)/7 m² = 0.37 m²</p> <p>For 4 doors ie. 1 in each wall of the combustion chamber, each door is 305mm x 305mm.</p>
16	<p>Appliance marking plate details (Refer AS 3814 Section 4.1):</p> <ul style="list-style-type: none"> (a) manufacturer's name (b) model identification (c) <i>nominal gas consumption</i> (d) <i>gas type</i> (e) max. & min. <i>gas supply pressures</i> (f) <i>purge times</i> (g) <i>gas pressure at the burner head, for the nominal gas consumption</i> (h) combustion chamber volume (i) total volume swept by the <i>combustion</i> products in passing from the <i>burner</i> to the <i>flue</i> connection (j) serial number (k) date of manufacture (l) any other markings required by the Authority 	<p>Markings to be displayed:</p> <p>Maxwell PL 464 10,000 MJ (250 m³)/h Natural gas (NG) 35 kPa max. 10 kPa min. 20 s 3 kPa</p> <p>2.0 m³ 2.5 m³</p> <p>97-464-N-3217 March 11997 Not Applicable</p>
17	Process and instrumentation diagrams for the appliance (See Fig A3)	As per attached drawing
18	Schematic drawing of the valve train, specifying all valve train components (ie their brands, model numbers, sizes and rated working pressures) and proposed settings of all adjustable devices (Refer Fig A1 for a typical example)	As per attached drawing

19	Schematic electrical wiring diagram showing the safety and control circuits including details of the brand, model number and method of operation of each major component and the proposed settings of any adjustable device (Refer Fig. A2 for a typical example)	As per attached Drawing
20	Purge time calculations. (Refer AS 3814 Clause 2.19.2)	Minimum purge time $= (5 \text{ air changes} \times 2.5 \text{ m}^3 \text{ swept volume} \times 3,600 \text{ sec/h}) / 3,300 \text{ m}^3/\text{h}$ $= 14 \text{ s}$ Selected purge time is 20 s
21	Calculations of start gas rate conditions (Refer AS 3814 Clause 3.2.3)	Start gas rate = 10.0 m ³ /h Start gas concentration $= 100 \times (\text{Gas flow, } 10.0 \text{ m}^3/\text{h}) / (\text{Air flow, } 660 \text{ m}^3/\text{h} + \text{gas flow } 10.0 \text{ m}^3/\text{h})$ $= 1.5\% \text{ gas concentration.}$ This is less than 50% of the Lower Explosive Limit for Natural Gas, ie 50% of 5% = 2.5% Therefore, it complies
22	Air dilution rate calculations for process involving solvents or dusts (Refer AS 1375 Appendix F)	Not applicable.
23	Ventilation provided or to be provided in the area where appliance is, or will be installed (Refer AS 5601 Clause 5.4.1)	2 grilles, each 600mm x 600mm, to outside atmosphere.
24	Method of flueing and location and type of flue material	1mm x 150mm dia. stainless steel 430 series grade extending 10m from the oven vertically to outside and fitted with a rain cap.
25	Operating instructions	As attached (Provide a description of the sequential operation of the gas firing system, including the description of any permissives, interlocks or lockouts.
26	Documentation requirements for PES system	Refer attached copy of safety certificate

This is the extent of the technical submission as required by AS 3814 Appendix A. Other details should be listed to address non-compliance issues (if any) and to support this submission in gaining approval for installation.

Additional comments

The schematic shown below is reproduced from AS 3814 Appendix A.

The applicant should include an additional column to include the AGA or SAI Global approval number for each item. Where no AGA or SAI Global number is given, the applicant shall provide alternative proposals to meet compliance requirements.



26 Documentation requirements for PES system.

NOTE: Units of measurement should comply with the SI system.

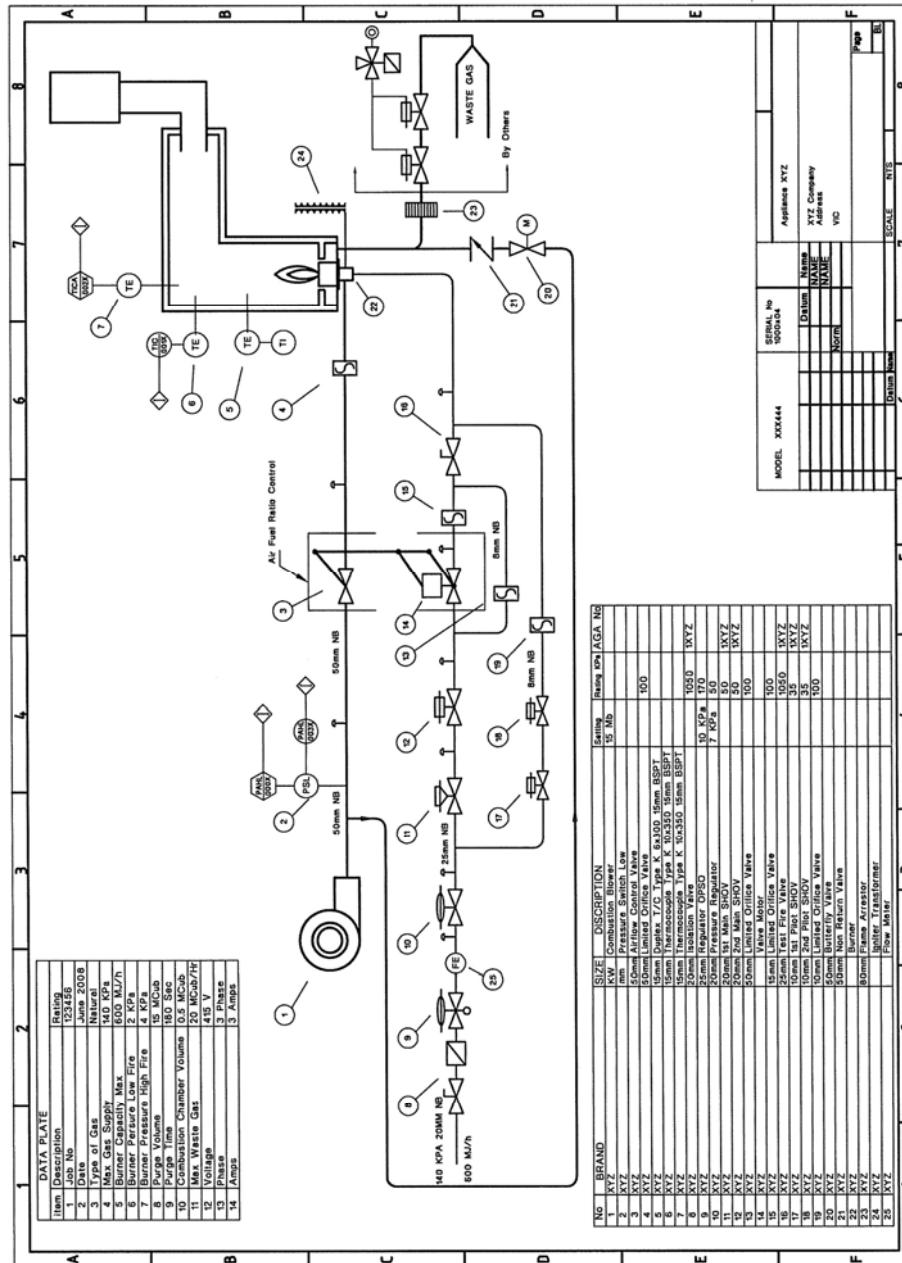


FIGURE A1 EXAMPLE OF A TYPICAL VALVE TRAIN SCHEMATIC

The schematic shown below is reproduced from AS 3814 Appendix A.

SAMPLE

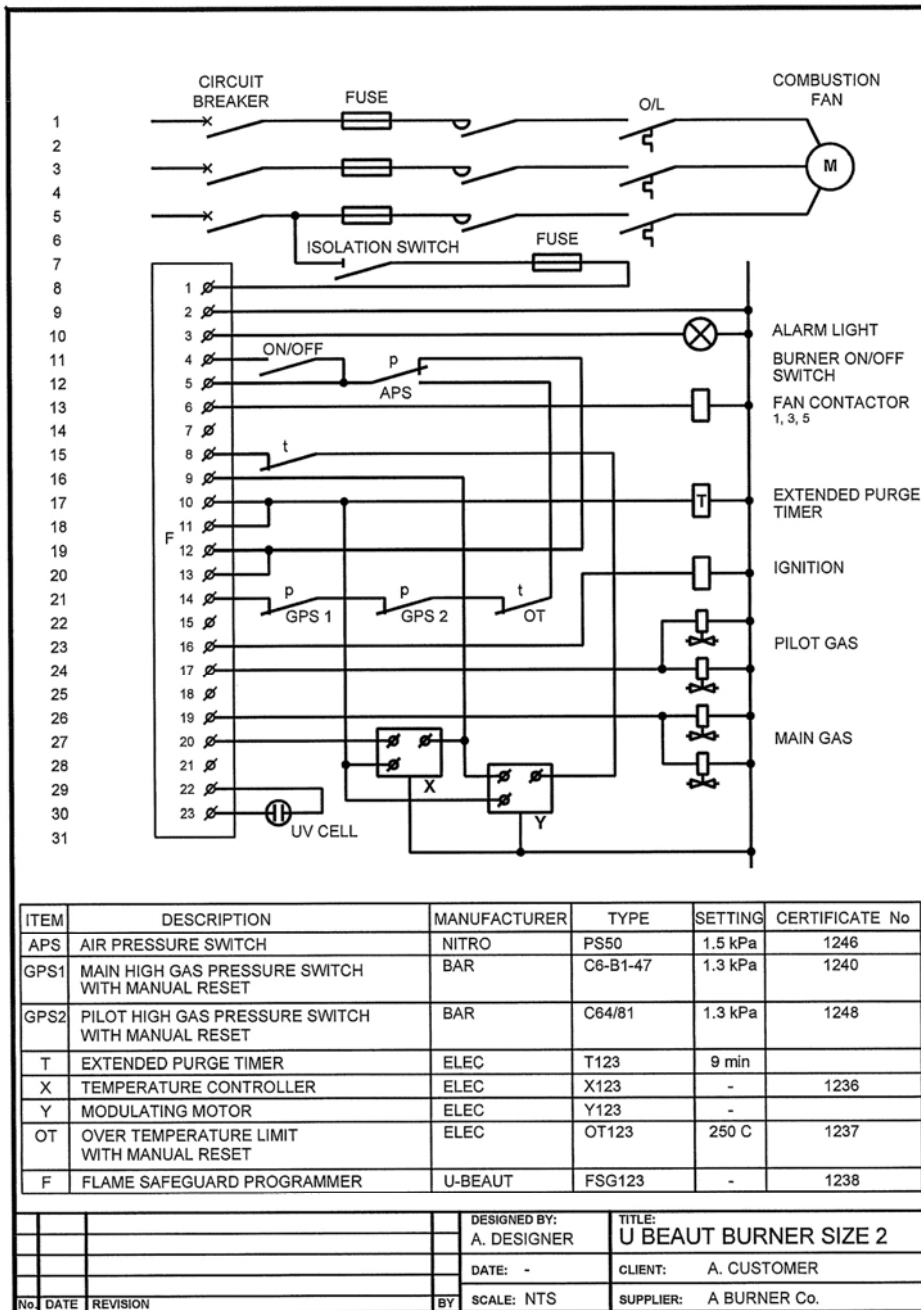
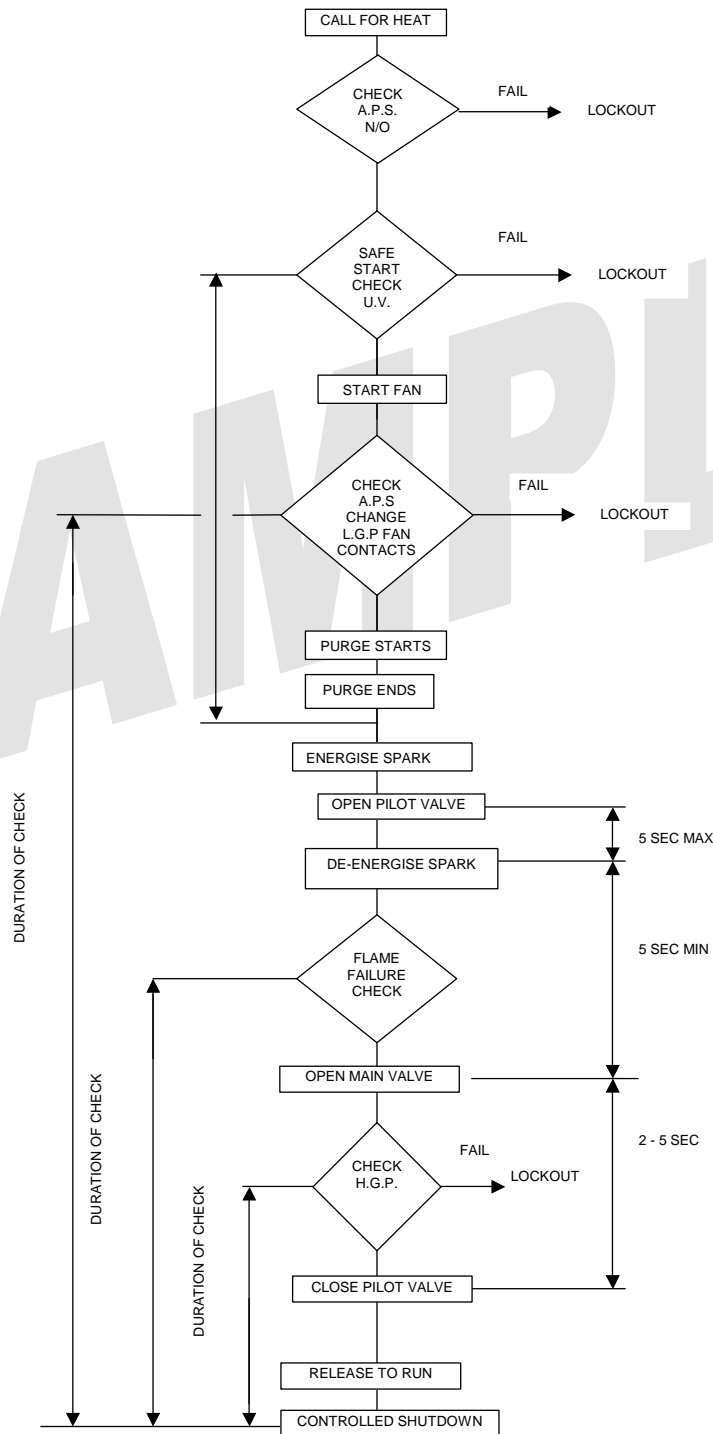


FIGURE A2 EXAMPLE OF A TYPICAL ELECTRICAL SCHEMATIC DIAGRAM

TYPICAL LOGIC DIAGRAM FOR A BURNER MANAGEMENT SYSTEM



This indicates the start-up, time limits, operating sequence and designed interlocks to demonstrate compliance with AS 3814.

Department of Commerce

EnergySafety Division

Level 1, 303 Sevenoaks Street (Cnr Grose Ave) Cannington WA 6107

Telephone: (08) 6251 1900

Facsimile: (08) 6251 1901

National Relay Service: 13 36 77

Mailing address: Locked Bag 14 Cloisters Square WA 6850

Website: www.energysafety.wa.gov.au

Email: energysafety@commerce.wa.gov.au

Energy incident notification (24 hours): 1800 678 198

Regional offices

Goldfields/Esperance (08) 9026 3250

Great Southern (08) 9842 8366

Kimberley (08) 9169 2811

Mid-West (08) 9964 5644

North-West (08) 9185 0900

South-West (08) 9722 2888

If you require the services of an interpreter, contact the Translating and Interpreting Services (TIS) on 131 450 and ask for connection to EnergySafety on 6251 1900.

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