

HOT TAPPING GUIDELINES

INTRODUCTION

The information in this guide is provided for gasfitters intending to apply to the Director of Gas Safety for authorisation to conduct hot tapping work on consumer piping installed in accordance with AS/NZS 5601.1 and other appropriate prescribed standards.

SCOPE

The purpose of the guide is to ensure that gas fitters when undertaking hot tapping work on consumer installations implement safe systems of work

What is hot tapping work?

Hot tapping work is the connection of a pipe (branch) to consumer piping that contains gas under pressure.

Hot Tapping Categories

Table 4.1 of AS/NZS 5601.1 allows a diverse selection of consumer piping materials that require gas fitters installing them to possess differing skills and competencies to ensure piping is installed safely and in accordance with technical standards.

Subsequently a gas fitter can apply for authorisation to undertake hot tapping work on one or more of the following consumer piping categories:

- Carbon Steel (CS)
- Copper (Cu)
- Polyethylene (PE)

Hot Tapping Applications

In accordance with regulation 73 of the Gas Safety Regulations 2021 a person must not carry out hot tapping work unless that work has been authorised in writing by the Director of Gas Safety

Applications to undertake hot tapping work shall be made to Gas Standards and Safety in the form of safety management plan. A plan shall address the criteria outlined below to demonstrate effective systems are implemented to guarantee compliance with relevant technical standards and ensure all foreseeable hazards are assessed by the gasfitter and methods of mitigation are implemented to reduce risks to As Low AS Reasonably Practicable (ALARP).

An applicant shall supply a completed yellow copy of gas fitting notice with an application for hot tapping authorisation.

If modifications to a complex gas installation involve hot tapping the gasfitter must provide a hot tapping application with the application for acceptance of a complex gas installation submitted in accordance with section 54 of the *Gas Safety Act 2019*.

Hazard identification

Systematically identify all hazards, assess the risks and mitigate against those risks and any potential causes of incidents, eg. electrical hazards, manual lifting, weld/joint failure, confined space, squeeze off failure, hydrogen controlled cracking, blow through etc.

Note: Refer attached Risk Assessment and Controls template for guidance.

Training, competencies and skills

Demonstrate to the Director that the applicant and/or personnel involved in hot tapping activities possess relevant competencies, skills and will receive appropriate information, instruction, training and supervision.

Hot Tap Procedure

Detailed hot tap procedure outlining

- Pre- hot tap pipe inspections eg. diameter, checking ovality, actual wall thickness, evidence of corrosion, soundness of any longitudinal seam, carbon equivalent etc.
- Preparation of pipe external service for weld/joint
- Exclusion of moisture during operation eg. tent, preheat etc
- Fit up and alignment
- Weld/joint cleanliness
- Welding /jointing operation
- Tapping operation
- Pressure Testing
- Commissioning/purging
- Final inspections tests

Weld/Joint Procedures Specifications

Proposed weld /joint procedure specifications according to size, pressure and material of the pipe and fittings including results of weld and welder tests conducted on simulated procedure qualification test pieces.

Calculations

Calculations to demonstrate:

- Maximum and minimum permitted pressures and flow rates including velocity calculations. Calculations should take into account pipeline material, wall thickness, pipe diameter, assumed weld/joint temperature etc.
- Branch has sufficient reinforcement taking into account intended opening/cutter size including assessing the potential for buckling of the in-service pipeline.

Equipment

List of anticipated equipment required on site to perform weld/joint, tap, pressure test and purge along with emergency equipment (Eg fire extinguisher, breathing apparatus etc) including equipment maintenance and calibration policy.

Emergency Procedures

Outline emergency procedures addressing all reasonably foreseeable emergencies that have been identified, personnel emergency training and emergency communication systems.

Reporting

Procedure for reporting any incidents or unsafe gas installations

Note: Gas Safety Regulations 2021 requires a gas fitter to report any incident, which occurs during the carrying out of that gas fitting work to the Director of Gas Safety and the gas supplier.

Records

The gasfitter shall maintain records for themselves and the consumer piping owner that are necessary to safely operate and maintain the consumer piping including:

- Design criteria
- Hazard assessments
- The traceability of all materials and components including test results and inspection reports
- All tests and inspections that were conducted to verify the integrity of the hot tap
- Commissioning records
- Safety records
- Approvals and correspondence

Authorisation

Authorisation to conduct a hot tap will be issued in writing when the Director of Gas Safety is satisfied with the information provided in an application.

Subsequent hot tapping activities must be completed in accordance with conditions specified in the authorisation by the Director of Gas Safety and prescribed standards.

Auditing

Authorised Officers may from time to time conduct audits of hot tapping activities to monitor compliance with authorised safety management plans and prescribed standards.

Prescribed Standards

Including any code or standard having effect under that standard:

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|-------------------|--|
| AS/NZS 5601.1: | Gas Installations |
| AS/NZS ISO 45001: | Occupational health and safety management systems |
| AS/NZS ISO 31000: | Risk Management |
| AS 4041: | Pressure Piping |
| AS/NZS 4645: | Gas Distribution Networks |
| AS 1210: | Pressure Vessels |
| AS 1432: | Copper tubing for plumbing, gas fitting, and drainage applications |
| AS/NZS 4130: | Polyethylene (PE) Pipes for Pressure Applications |

Summation

In review, an applicant shall provide the following relevant information to enable Gas Standards and Safety to determine if the relevant standards have been met before undertaking any hot tapping work

- Applicant shall demonstrate the need to conduct a hot tap over other methods of connecting a branch to consumer piping
- Consumer piping and component details eg. material, wall thickness, manufacturing standard, SMYS, class, series, grade, wall thickness, carbon equivalent etc
- Hazard assessments
- Training and competency details
- Proposed safety precautions
- Specify all technical standards applied to or to be used in the design of and manufacture of the hot tap
- Proposed emergency procedures including adequate means of pipeline isolation, personnel access and egress from work site and emergency communications.
- Proposed weld /joint procedure specification including results of any tests conducted on simulated procedure qualification test pieces.
- Proposed technique of non-destructive testing of field welds/joints
- Calculated maximum and minimum permitted flow rate and pressure including proposed method of measurement
- Reporting procedures

Additional Information

For more information contact:

Consumer, Building and Occupational Services
Gas Standards and Safety
PO Box 56, Rosny Park TAS 7018
Phone: 1300 654 499 Fax: 03 6173 0205
Email: cbosinfo@justice.tas.gov.au Visit: www.justice.tas.gov.au