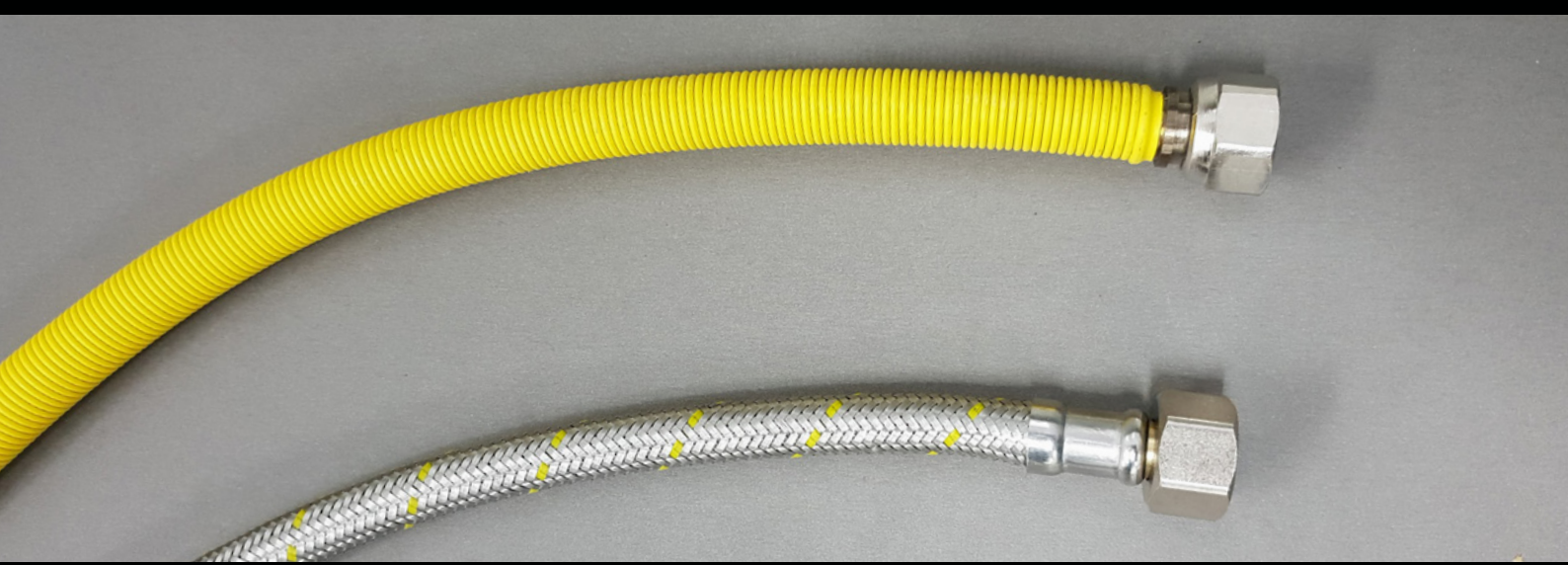


LIMITED FLEXIBILITY CONNECTORS

VS

BRAIDED GAS HOSES



Introduction

For more than 10 years gas fitters have been connecting gas appliances with flexible connectors. Commonly, these flexible hoses are manufactured with a braided stainless steel sheath protecting an EPDM or Nitrile (rubber) inner core hose.



- 1:** Inner tube of either EPDM or Nitrile.
- 2:** Stainless steel braid.
- 3:** End fittings
- 4:** Ferrules.
- 5:** Crimping.

The results of recent independent testing have brought into question the safety, reliability and efficacy of these types of hoses. The concerns raised centre around flame resistance, capacity (flow), chemical resistance and permeation.

Whilst traditional rubber core braided hoses have provided a relatively safe option to date, there are inherent weaknesses in their design and make up. These hoses have the potential to create and exacerbate dangerous situations.

Technology has continued to improve, there is now a new generation of gas connectors available. This document explains some of the issues related to rubber core hoses and provides information about how the new generation connectors overcome these issues to provide a safer, lower risk alternative.

Compliance

By law in Australia and New Zealand, all gas appliances and components must be certified by a recognized body. Gas connectors must also comply with AS/NZ installation codes. The 2013 Installation Code is enforced in Australia and New Zealand. With the exception of NSW which is enforcing the 2004 Installation Code.

Limited Flexibility Connectors



New generation limited flexibility connectors comply with AS4361. These connectors are permitted for use under both the 2004 and the 2013 Gas Installation Codes.

AS/NZS 5601-2004 part 5.6.2
AS/NZS 5601.1:2013 part 6.1.1
AS/NZS 5601.1 2022

Extendo Connectors are AGA Approved to AS4631

AGA approval number AGA 8633G



Traditional Gas Hoses



Traditional gas hoses comply with AS1869. These hoses are permitted for use under both the 2004 and the 2013 Gas

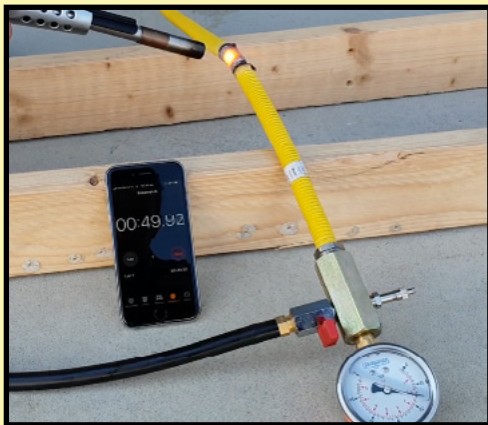
Installation Codes.
AS/NZS 5601-2004
AS/NZS 5601.1:2013



Flame Resistance

Given that gas connectors convey either LPG or Natural gas when forming part of a supply line to an appliance, it is imperative that these connectors have good flame resistance. According to fire authorities most house fires start in the kitchen, thus a gas connectors ability to withstand fire and heat cannot be overstated.

In recent years the frequency and ferocity of bush fires has also increased the need for a more fire resistant connection.



New Generation hoses have superior heat and flame resistance. Note the attached video showing a limited flexibility connector under pressure being subjected to 60 seconds of continuous high temperature flame without the connector wall failing. Also note that the plastic coating is self-extinguishing when the flame is removed.



[CLICK HERE TO WATCH THE VIDEO 1](#)

[CLICK HERE TO WATCH THE VIDEO 2](#)



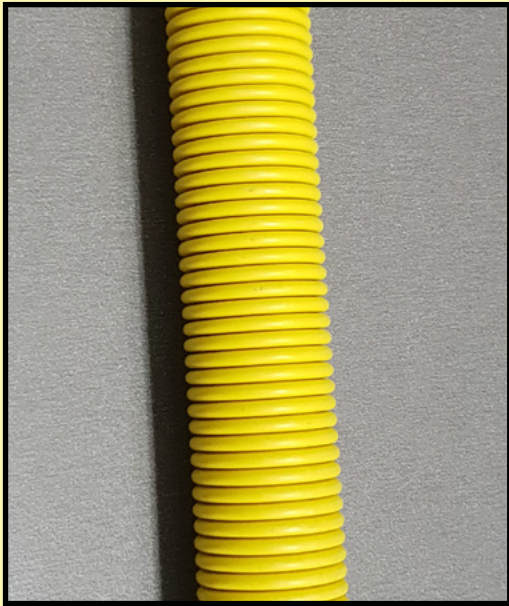
Recent testing has brought into question the flame and heat resistance of commonly used gas hoses. The rubber core hose is easily ignited with a relatively low temperature flame. Once the hose is ignited it continues to burn even when the flame is removed. (see attached video 2) The hose will continue to burn until the hose wall is breached. Once perforated the connection will spill combustible gas continuously into the flames.



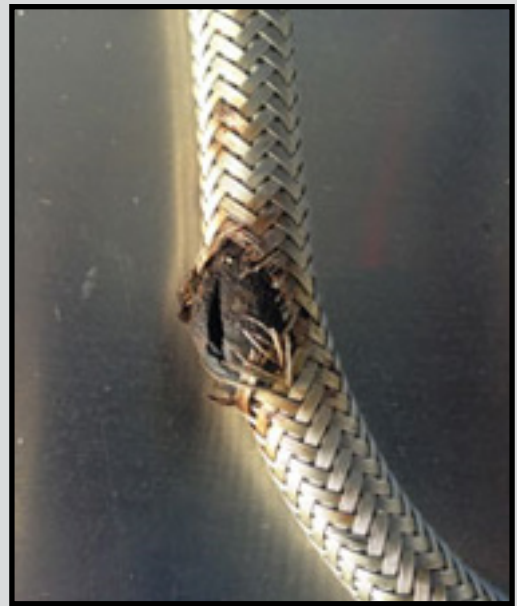
Chemical Resistance

The importance of chemical resistance should not be understated when considering the design and manufacture of gas connectors.

A variety of household chemical cleaners are stored in close proximity to gas appliances, often creating a corrosive environment. Chlorides are particularly corrosive to stainless steel and this compound is present in many household cleaners and swimming pool consumables. Increased humidity and temperature created by hot water services, dish washing machines and hot water supply lines in close proximity to gas connections exacerbate this potential for corrosion.



The new generation of connectors are protected from chemical corrosion by a Polyefin coating. The coating is particularly resistant to chlorides. Made from 304L stainless steel, new generation connectors have superior resistance to corrosion. 304L refers to SS that has a low carbon content, .03% and compared to .08% in 304 SS. The lower carbon rate creates a greater corrosion resistance.



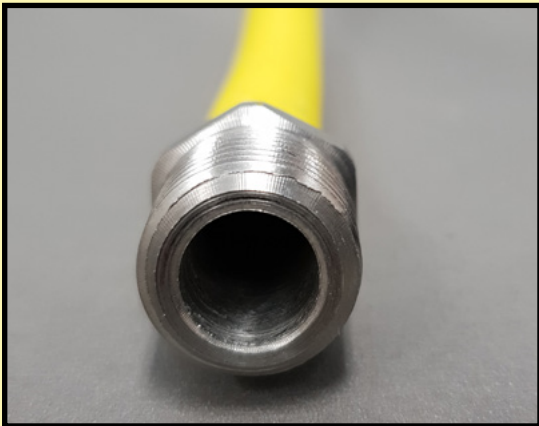
The braided design of traditional gas connectors makes them susceptible to corrosion. The fine strands of the braiding increase the surface area exposed to the environment. The strands of the hose are made from 304 SS, the braiding has no barrier to a corrosive environment. Failure of the protective braided sheath exposes the rubber core of the hose to heat, abrasion and further chemical degradation potentially causing gas leaks.



Capacity (Flow)

The predominant method of obtaining the correct mix of gas and oxygen at the burner is the use of a venturi system, that is, the gas jet is placed centrally at the opening of a venturi and as gas passes down the venturi it draws in air containing oxygen to make an optimal mix of fuel and air for combustion at the burner.

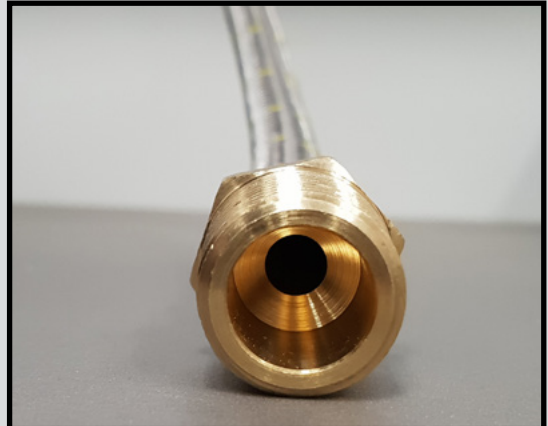
The mix of air and gas is critical in producing a clean burning flame that does not produce high levels of Carbon Monoxide. Any restriction of gas flow due to the internal bore of the hose or kinking of the hose in installation can facilitate the production of Carbon Monoxide and the fatal consequences that may follow.



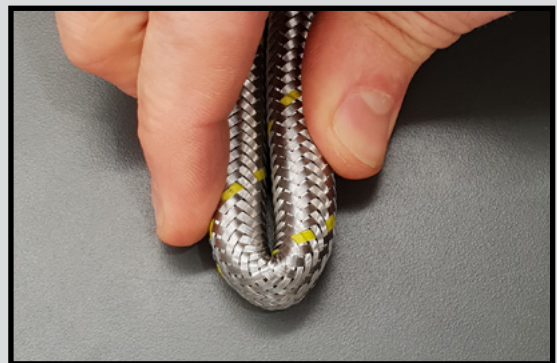
The new generation hoses have an unrestricted 12mm bore. This gives them 3.5 times the flow of hoses that are restricted to a 6.5mm aperture.



New generation connectors are helical welded corrugated stainless steel. This design is inherently stronger and almost impossible to kink.



The design of traditional gas hoses mean they have at the constrictions down to 6.5mm in a nominal 1/2 inch hose.



Braided hoses with rubber core are easily kinked during or post installation.



Flexibility

Plumbers have moved away from using steel and copper pipe to connect to gas appliances. Flexible connectors and hoses are preferred because of their flexibility and ease of installation.

Limited flexibility connectors are easy to manipulate into the desired shape making installation time efficient. Some gas fixtures are required to be removed regularly for cleaning and maintenance. The use of limited flexibility connectors in this instance are not recommended.



Braided stainless steel hoses with a rubber core are more suited to commercial installations where the appliance is designed to be removed regularly for cleaning or maintenance. In fact, hoses that are certified under AS1869 are tested to withstand more than 7000 flexes.

